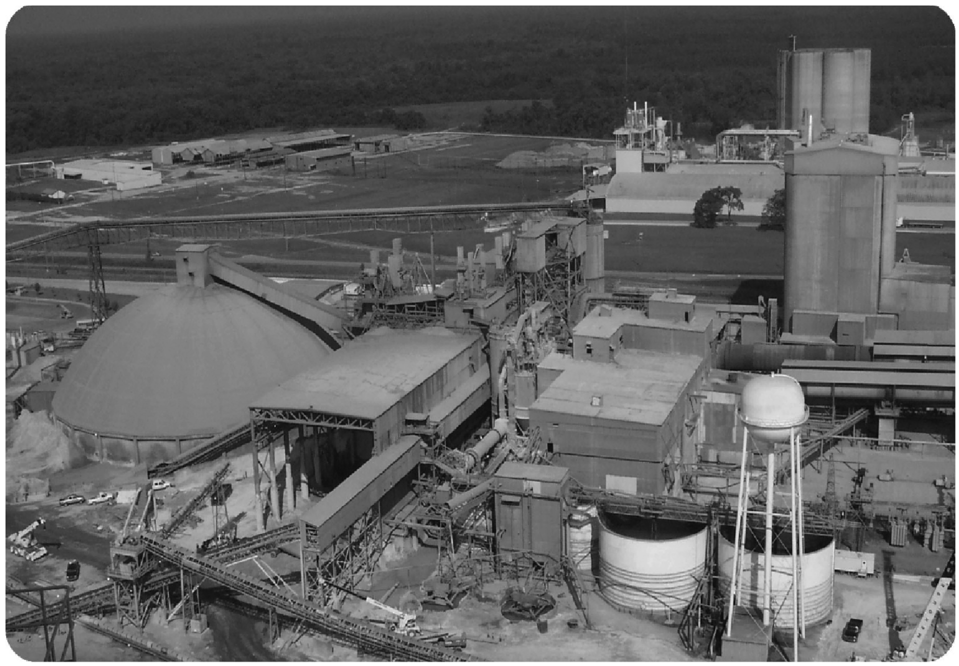
Parameter Manual

Original Instructions

PowerFlex 7000 Medium Voltage AC Drive

Catalog Numbers 7000A, 7000, 7000L



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Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

Access Level 4 Parameters

This manual contains new and updated information as indicated in the following table.

Topic	Page
Added P319 to the P567 description for how the air filter blockage is calculated	57
Changed bit 3 in P699 from Unused to STO Actvtd	65
Added Important table to P3	91
Added bit 8 description for IdcMovingAvg	94
Changed bit 14 (LnUV RunEnab) description for P920	94
Added Enum Text and Description to bits 4…7 on P996	95
Changed description for bit 6 of P90	165
Changed Enum Text from Fault Code 159 to HPTC LnLss	212
Changed P163 description to include details around firmware version	243
Changed the minimum value from 2 to 1 for P319	251, 450, 474
Added description for P185 for running the drive over 65 Hz and 75 Hz	259
Changed the maximum value from 4096 to 16384 for P234	270, 452, 472
Changed HPTC Float3 to Disable Speed Regulator Torque	406, 463, 492
Changed Enum text for bits 14 and 15 for P1054	423
Changed bit 10 on P1066 from S3 Stuck to Reserved	426
Changed Enum text for bits 0, 1, 2, 3, 4, 7 for P1067	427
Changed Enum text for bits 3, 4, 7, 10 for P1078	428
Changed Enum text for bits 0, 1, 2 for P1079	429
Added Appendix B, Critical Faults	495
Added Appendix C, Rockwell Automation only parameters	503

Notes:

PowerFlex 7000 Functional Description

Introduction

The PowerFlex™ 7000 is an adjustable speed AC drive in which motor speed control is achieved through control of the motor torque. The motor speed is estimated or measured and the torque is adjusted as required to make the speed equal to the speed command. The motor and load determine the stator frequency and the drive synchronizes itself to the motor. This is in contrast to the volts/hertz AC drive in which the drive determines the stator frequency and does not attempt to synchronize its output to the motor.

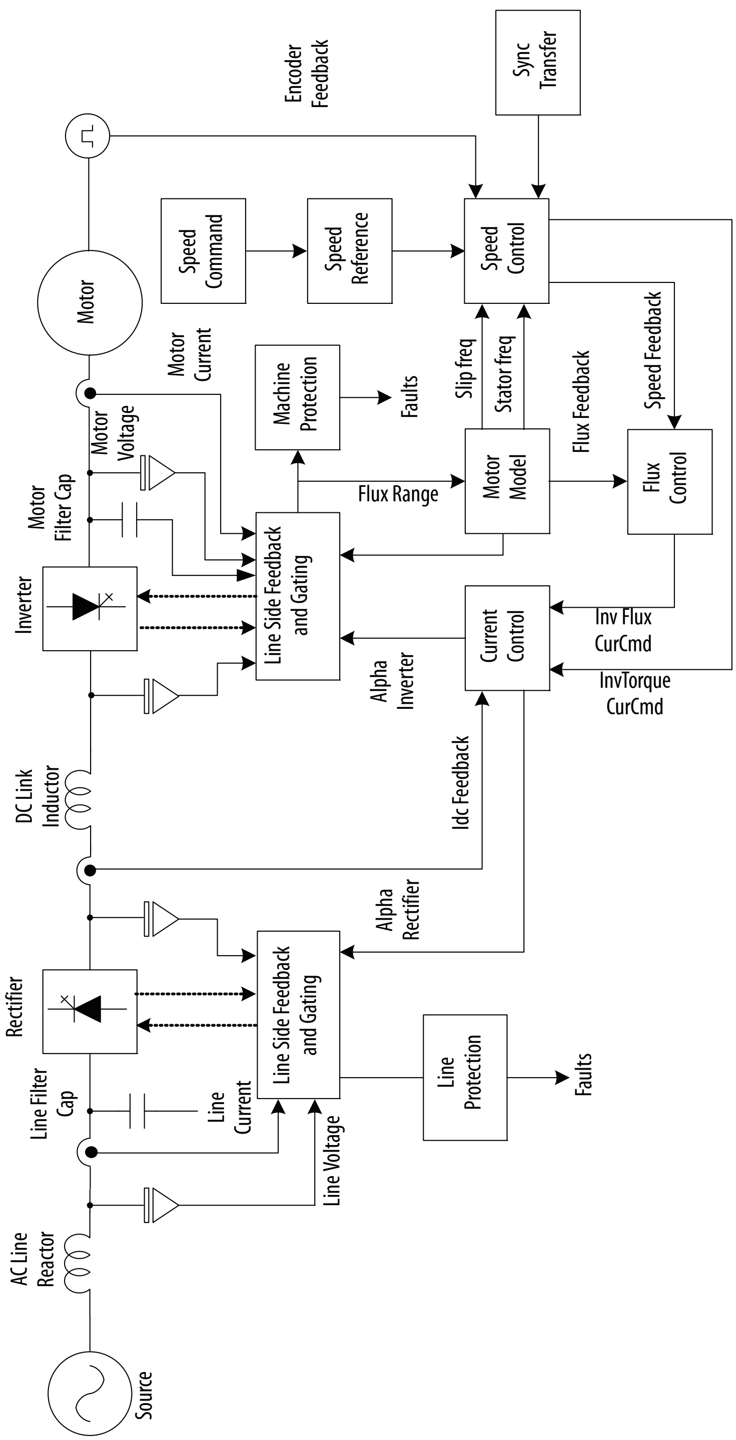
The method of control used in the PowerFlex 7000 drive is known as direct rotor flux oriented vector control. The term rotor flux vector control indicates that the position of the stator current vector is controlled relative to the motor flux vector. Direct vector control means that the motor flux is measured, in contrast to the indirect vector control in which the motor flux is predicted. In both control methods, the stator current (Is) is split into flux producing component (Isd) and an orthogonal torque producing component (Isq) which are controlled independently. The aim of vector control is to allow a complex AC motor to be controlled as if it were a simple DC motor with independent, decoupled field and armature currents. This allows the motor torque to be changed quickly without affecting the flux. For typical medium voltage motors the rotor time constant is in the range of seconds and therefore the flux cannot be changed quickly.

The PowerFlex 7000 drive can be used with either induction (asynchronous) or synchronous motors. Synchronous motor drives are identical to induction motor drives except for the addition of a current regulated field supply to the synchronous drive. The features that are unique to a synchronous motor drive are confined to the flux control function and the encoder option.

Description of Operation

A complete block diagram of the PowerFlex 7000 drive control circuit is shown in Figure 1. The major blocks are described in the following sections.

Figure 1 - PowerFlex 7000 Drive Control System Functional Block Diagram



Speed Command

The function of Speed Command block is to select one of the 10 possible speed command inputs. Parameter *Speed Ref Select (7)* in conjunction with Local/Remote selector switch is used to define the speed command input *Speed Command In (276)*. When the selector switch is in *Local* position, the default speed command is the Analog Speed Potentiometer typically mounted on the LV panel. When the selector switch is in *Remote* position, the parameter *Speed Ref Select (7)* defines the source of speed command. The options available are:

- Local (Speed Potentiometer)
- 3 DPI commands (DPIAdapter1, DPIAdapter2, DPIAdapter5)
- 3 Analog Inputs configured either for 0…10V or 4…20mA (Anlg Inp1, Anlg Inp2, Anlg Inp3)
- 3 Preset speeds (Preset Spd 1, Preset Spd 2, Preset Spd 3)
- 1 Preset Jog

In addition, the speed command can come from a built in PID controller.(1)

The above speed commands are used when the drive is in *Normal* mode of operation. However PowerFlex 7000 drives have many special modes of operation, for example, test modes or auto-tuning for which different speed commands are selected. Table 1 summarizes the speed command during these special modes.

Table 1 - Speed Commands for Special PowerFlex 7000 Drive Operating Modes

Special Operating Modes	Speed Command In (276)
DC test mode and DB MV Test	Rated line frequency
Open Circuit	Rated Line Freq (17)
Open Loop	0.1 x Rated Line Freq (17)
Rs autotune	2Hz
Ls autotune	Rated Line Freq (17)
Flux Reg autotune	Autotune Spd Cmd (213)
Speed Reg autotune	Autotune Spd Cmd (213)
Sync transfer requested	Bypass Frequency (159)

The selected Speed Command *In* is clamped to a minimum and a maximum level by parameter *Speed Cmd Max (290)* and *Speed Cmd Min (293)* to give *Speed Command (277)*. The maximum value of Speed Command cannot be greater than 125% of Base Speed (98).

TIP Contact the factory for applications that require output frequencies greater than 125% of the motor base speed.

Three skip speeds *Skip Speed 1 (49)*, *Skip Speed 2 (50)*, *Skip Speed 3 (51)* are provided to prevent the drive from continuously operating at a certain speed. This feature is sometimes needed to avoid mechanical vibrations occurring in a drive system at certain speeds. The skip speed zone around each Skip Speed is specified by the parameter *Skip Speed Band1 (53)*, *Skip Speed Band2 (54)* and

(1) Contact factory for the availability of this feature.

Skip Speed Band3 (55). If the desired Speed Command lies in a given skip speed zone, the Speed Command is clamped to the lowest value in the zone.

Example

If *Skip Speed 1* is 45 Hz with *Skip Speed Band1* as 1Hz, then the skip speed range extends from 44.5 Hz to 45.5 Hz. If the desired speed command is set to 45 Hz, then the drive will avoid this speed and run at 44.5 Hz.

The final stage in processing the command is the whether the drive has been requested to run forward or reverse. The sign is changed if reverse rotation is selected. The Speed Command is set to zero if the drive is stopped.

Speed Reference

The function of the Speed Reference block is to determine the *Speed Reference (278)* from the desired *Speed Command (277)*. PowerFlex 7000 drives provides two options:

- S-Curve
- Linear Ramp

To select, S curve a non-zero value of *S curve Percent (475)* is selected. Using parameter *S curve Acc1 (481)*, the drive automatically calculates the linear and the non-linear portions of the S curve as shown in Figure 2. Following example shows how to use S curve parameters:

Example

If *S curve Accel 1* is set for 20 sec with 20% in *S curve Percent*, then the total acceleration time is increased by 0.2 x 20 = 4 seconds. The total acceleration time will now be 24 seconds with 4 seconds in the non-linear portion of the S curve. Since the curve is symmetrical, each of the segments will be of 2 seconds duration.

The parameters for deceleration are calculated using parameter *S curve Decel 1 (479)* and *S curve Percent (475)* and shown in Figure 2.

Linear Ramp is enabled if the *S curve Percent* is set to zero. Independent four section ramps are provided for acceleration and deceleration. The ramp is specified by 4 Ramp Speeds, 4 Accel and Decel times and is shown in Figure 3.

Figure 2 - Speed Reference: S-Curve

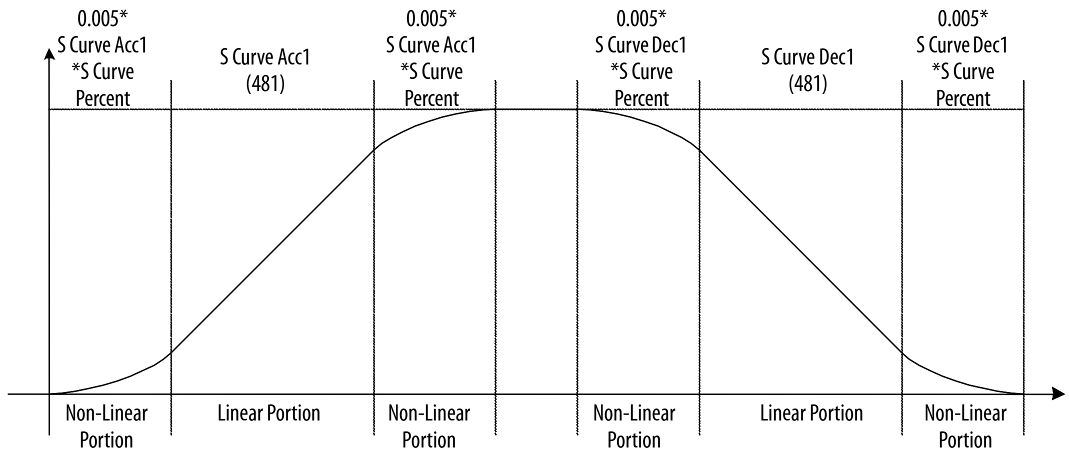
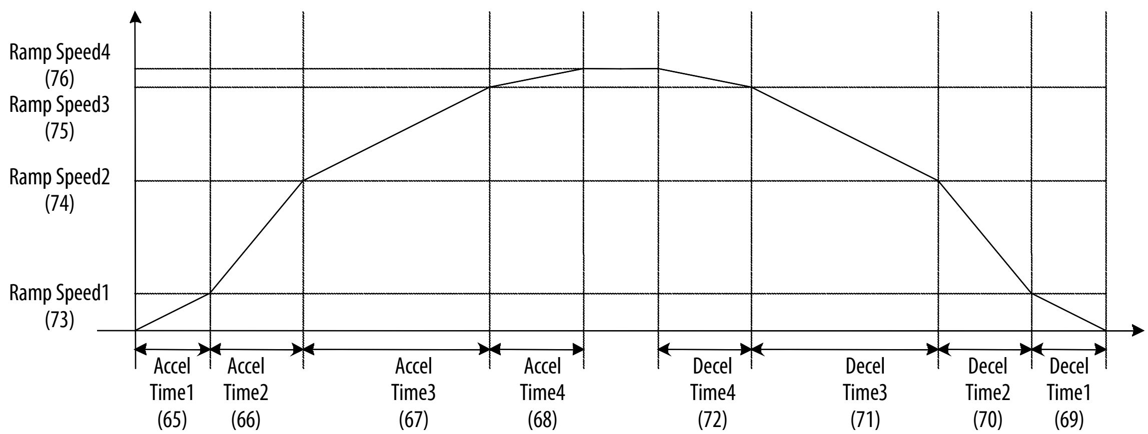


Figure 3 - Speed Reference: Linear Ramp



Speed Control

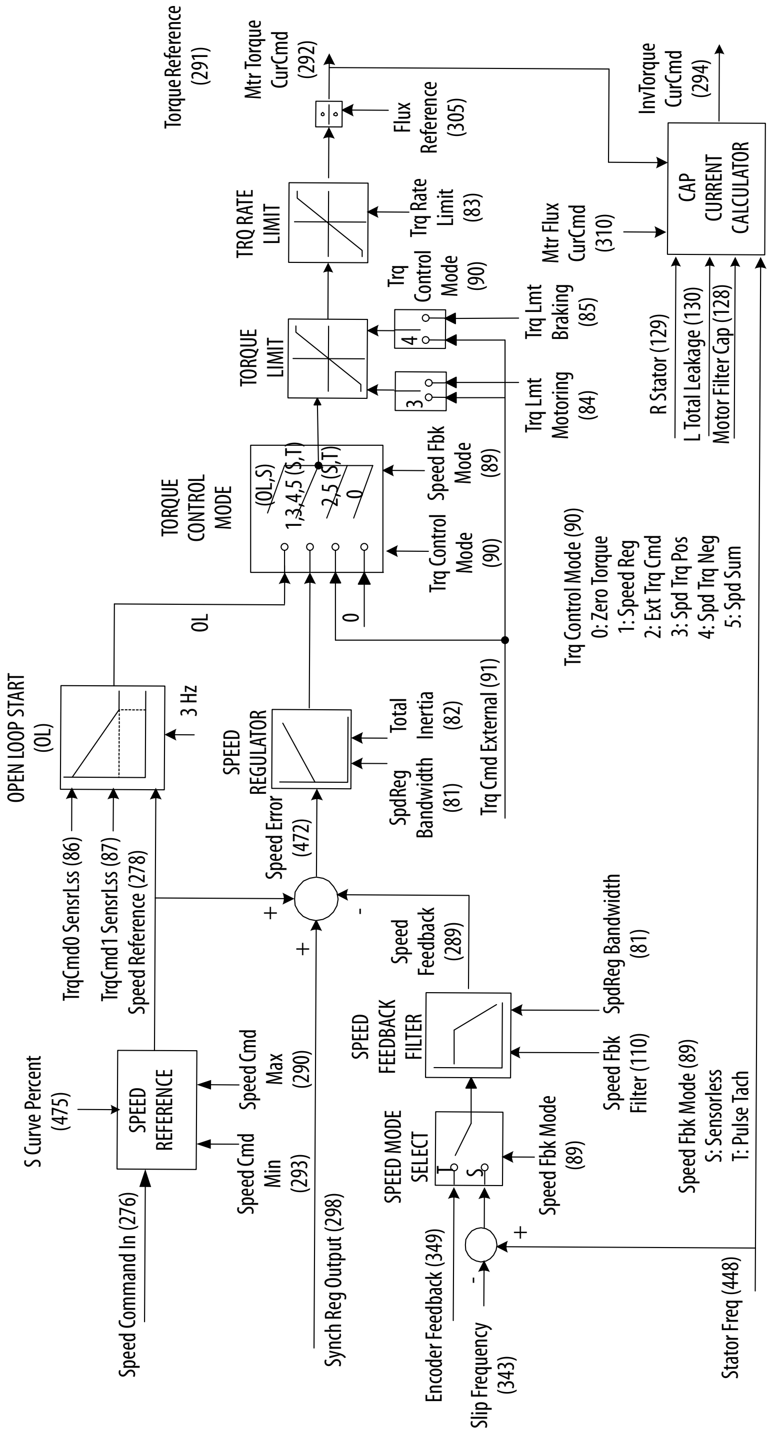
The function of the speed control block is to determine the torque-producing component (I_{sq}) of the stator current (I_s). The inputs to the block are the *Speed Reference (278)* from the speed ramp and the *Stator Frequency (448)* and *Slip Frequency (343)* from the motor model. If drive is installed with an optional encoder, then the motor speed is determined by counting the encoder pulses.

In *Sensorless* operation, the *Slip Frequency* is subtracted from the *Stator Frequency* and filtered to determine the *Speed Feedback (289)*. In *Pulse Encoder* mode, the speed is determined directly by using *Encoder Feedback (349)*. The *Speed Feedback* is subtracted from the *Speed Reference* to determine the *Speed Error (472)* which is processed by the speed PI regulator. The gains of the regulator are based on the *Total Inertia (82)* of the system and the desired *Spdreg Bandwidth (81)*. The output of the speed regulator is the *Torque Reference (291)* whose rate of change is limited by *Trq Rate Limit (83)*. The calculated *Torque Reference* is divided by the *Flux Reference (305)* and motor constant to determine the torque component of the stator current *MtrTorque CurCmd (292)*. To calculate the torque producing current supplied by the inverter *InvTorque CurCmd (294)*, the current supplied by the motor filter capacitor in torque production (orthogonal to motor flux) is calculated and subtracted from *MtrTorque CurCmd*.

In *Sensorless* mode, the drive uses *TrqCmd0 SensrLss (86)* and *TrqCmd1 SensrLss (87)* for an open loop start up. At frequencies greater than 3Hz, the drive enables the speed loop and disables the open loop start mode. In *Pulse Encoder* mode, the drive is always in closed loop. The maximum torque a drive can deliver in motoring mode is determined by *Trq Lmt Motoring (84)*. In regenerative mode the torque is limited to *Trq Lmt Braking (85)*. It should be noted that at speeds above the *Base Speed (98)*, the motor torque capability is de-rated and varies in inverse proportion to the speed (constant power range).

Depending upon the application, a drive can be configured in different torque control modes by setting the parameter *Trq Control Mode (90)*. E.g. in stand-alone drives the parameter is set as *Speed Reg* allowing the drive to be in speed control mode and regulating the torque in the motor. In torque follower applications like conveyors, one of the drives (Master) is set in *Speed Reg* mode which enables the speed regulator while the other drives (torque followers) are set in *Trq Cmd PLC* mode. The torque reference produced by the Master drive is then passed on to the torque follower drives by *Trq Cmd PLC (91)*. Figure 4 shows other various modes of operation.

Figure 4 - Speed Control



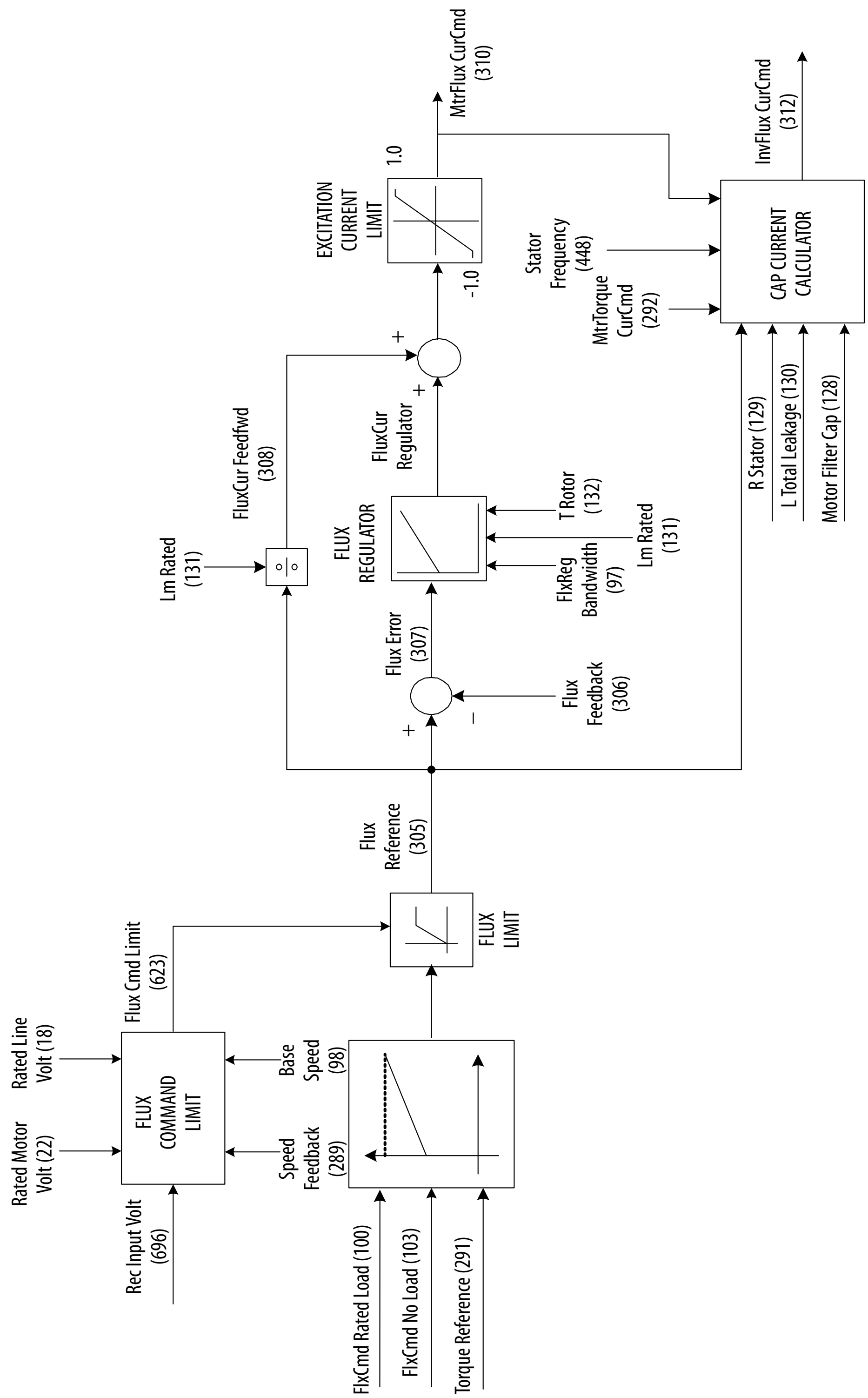
Flux Control

The function of the flux control block (Figure 5) is to determine the magnetizing component (I_{sd}) of the stator current (I_s) needed to maintain the desired flux profile in the motor. The inputs are *Flux Feedback (306)* and *Stator Freq (448)* from the motor model, *Speed Feedback (289)* and *Torque Reference (291)* from the speed control block and the measured voltage at the input of the rectifier, *Rec Input Volt (696)*.

The *Flux Feedback* is subtracted from the *Flux Reference (305)* to determine the *Flux Error (307)*, which is the input to the flux PI regulator. The gains are determined from desired *FlxReg Bandwidth (97)* and motor parameters *T Rotor (132)* and *Lm Rated (131)*. The output of the flux regulator is *FluxCurRegulator (309)*. An open loop estimate of the magnetizing current *FluxCur Feedfwd (308)* is determined by dividing the *Flux Reference* by parameter *Lm Rated*. *FluxCur Feedfwd* and *FluxCurRegulator* are added to produce *Mtr Flux CurCmd (310)* which is the magnetizing component of the stator current command. To calculate the magnetizing current supplied by the inverter *Inv Flux CurCmd (312)*, the current supplied by the motor filter capacitor in magnetizing is calculated and subtracted from *Mtr Flux CurCmd*. It should be noted that as the motor speed increases, *Inv Flux CurCmd* decreases. This is because as the motor voltage increases more of the magnetizing current requirement of the motor is met by the capacitor. At resonant point, *Inv Flux CurCmd* is nearly zero and becomes negative at speeds above resonance. *InvTorque CurCmd* (from Speed Control block) and *Inv Flux CurCmd* are then passed to the Current Control block to determine the DC link current reference (*Idc Reference*) and the firing angles of the two converters (*Alpha Rectifier* and *Alpha Inverter*).

The flux profile in the drive is adjusted by the parameters *Flx Cmd No Load (103)* and *FlxCmd RatedLoad (100)*. Using these parameters, *Flux Reference* is adjusted linearly with the desired *Torque Reference*. At light loads motor flux is decreased allowing reduction in losses while full flux is produced at rated load. The maximum flux reference is limited to *Flux Cmd Limit (623)*. This limit is dependent on the *Rec Input Volt* and the motor speed (*Speed Feedback*). If the drive operates at reduced line voltage, then *Flux Reference* is reduced. Also if the motor is running above the *Base Speed*, the flux profile is made inversely proportional to the speed of the motor resulting in the field weakening or the constant power mode of operation of the drive. This is accompanied by a decrease in the motor torque capability.

Figure 5 - Flux Control



Flux Control for Synchronous Motor[1]

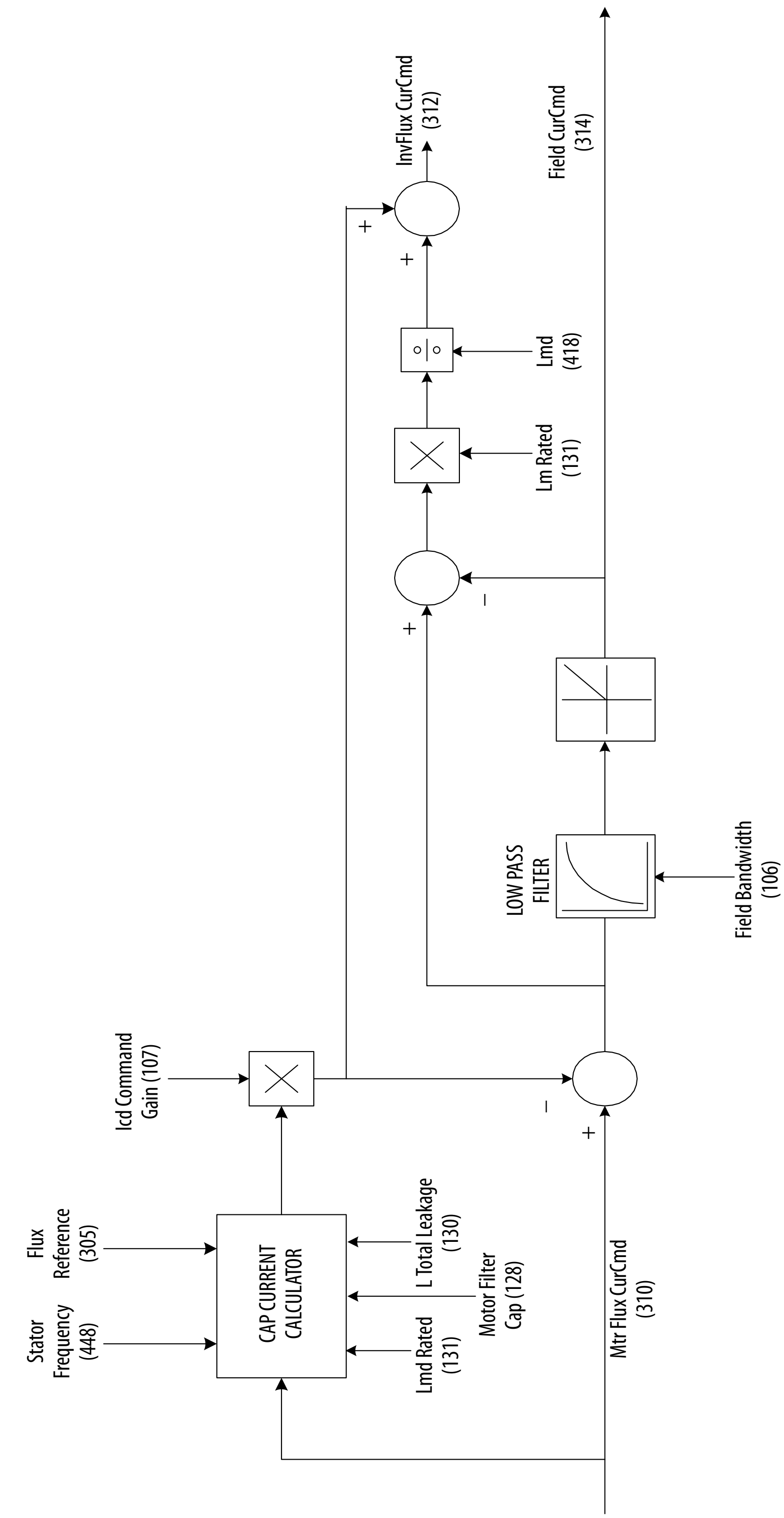
Most of the magnetization for a synchronous motor is supplied by the rotor field winding, unlike an induction motor where all of the magnetizing current is supplied through the stator. However, control of the motor flux through the field current is very slow because of the large time constant of the DC field winding and the current and voltage limitations of the field supply. To obtain sufficiently fast response from the flux regulator the magnetizing current is split into transient and steady state components, with the steady state component supplied through the rotor and the transient component through the stator.

The additions to the flux control required for synchronous machines are shown in the block diagram (Figure 6). The portion of the motor filter capacitor current supplied by the drive is then added to determine *Inv Flux CurCmd*, which is the magnetizing component of the DC link current command.

Parameter *Icd Command Gain (107)* determines how the motor filter capacitor current is split between the motor and the drive. When this parameter is set to its minimum value of 0.0, all the capacitor current is supplied by the drive. The line current is higher than the motor current and the motor operates at approximately unity power factor. When this parameter is set to its maximum value of 1.0, the motor supplies all the capacitor current. The line current is less than the motor current and the motor operates at a lagging power factor with reduced field current.

(1) Contact factory for the availability of synchronous motor control.

Figure 6 - Flux Control for Synchronous Motor



High Performance Torque Control (HPTC)

Speed Control

In High Performance Torque Control (HPTC) mode, the gains of the speed regulator are based on the *Total Inertia (82)* of the system, the desired *SpdReg Bandwidth (81)* and *Spd Reg Damp (1123)*. The output of the PI speed regulator is *PI Trq Cmd (1124)*. In conjunction with the PI regulator, the following two features can be enabled to enhance the speed regulation.

Inertia Compensation

Inertia compensation is active when bit 0 (*JComp Enable*) of *SpecialFeatures4 (996)* is enabled in HPTC mode. The inertia compensation function calculates the motor torque required to accelerate or decelerate based on the acceleration and deceleration rate of *Speed Reference (278)* and *Total Inertia (82)*. The output torque reference signal from the inertia compensation function is *JComp Trq (1143)* and added is to the *PI Trq Cmd (1124)* for improved speed reference tracking performance during acceleration and deceleration of motor speed, especially with high inertia loads.

Load Observer

The load observer feature is active when the bit 10 (*LdObs Enable*) of *SpecialFeatures2 (507)* is enabled in HPTC mode. The load observer feature compensates for load torque changes to minimize the transient effects of the disturbance.

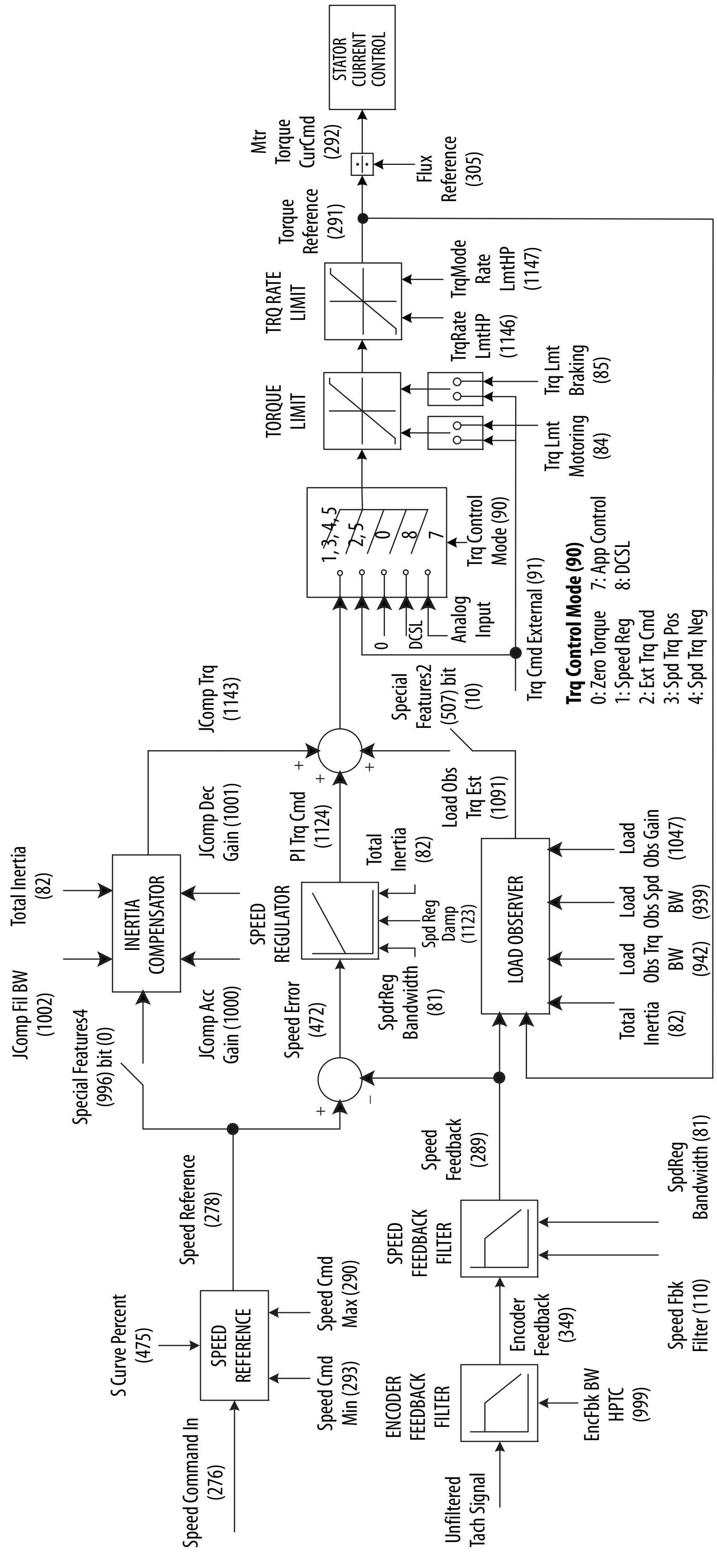
The load torque cannot be measured, but it can be indirectly estimated using the *Torque Reference (291)*, *Speed Feedback (289)* and the *Total Inertia (82)*. The estimated torque reference from the load observer is *Load Obs Trq Est (1091)* and is added to the output of the PI speed regulator.

The load observer can also be used in conjunction with the inertia compensation function. When used together, both the load torque and acceleration/deceleration torque required from the speed regulator are minimized.

The sum of *PI Trq Cmd (1124)*, *JComp Trq (1143)* and *Load Obs Trq Est (1091)* is the *Torque Reference (291)* whose rate of change is limited by *TrqRateLmHP (1146)* for the speed control modes and limited by *TrqModeRateLmHP (1147)* for the torque control modes. The calculated *Torque Reference* is divided by the *Flux Reference (305)* and the motor constant to determine the torque component of the stator current *MtrTorque CurCmd (292)*. This signal is sent to the stator current controls.

Figure 7 shows an overall control block diagram.

Figure 7 - Speed Control in HPTC Mode



Stator Current Control

The function of the stator current control in HPTC mode is to eliminate the steady state error of the torque-producing component (I_{sq}) and the flux-producing component (I_{sd}) of the motor stator current (I_s). This is done by the supplementary stator current regulators in order to improve the field orientation and the accuracy of the torque control.

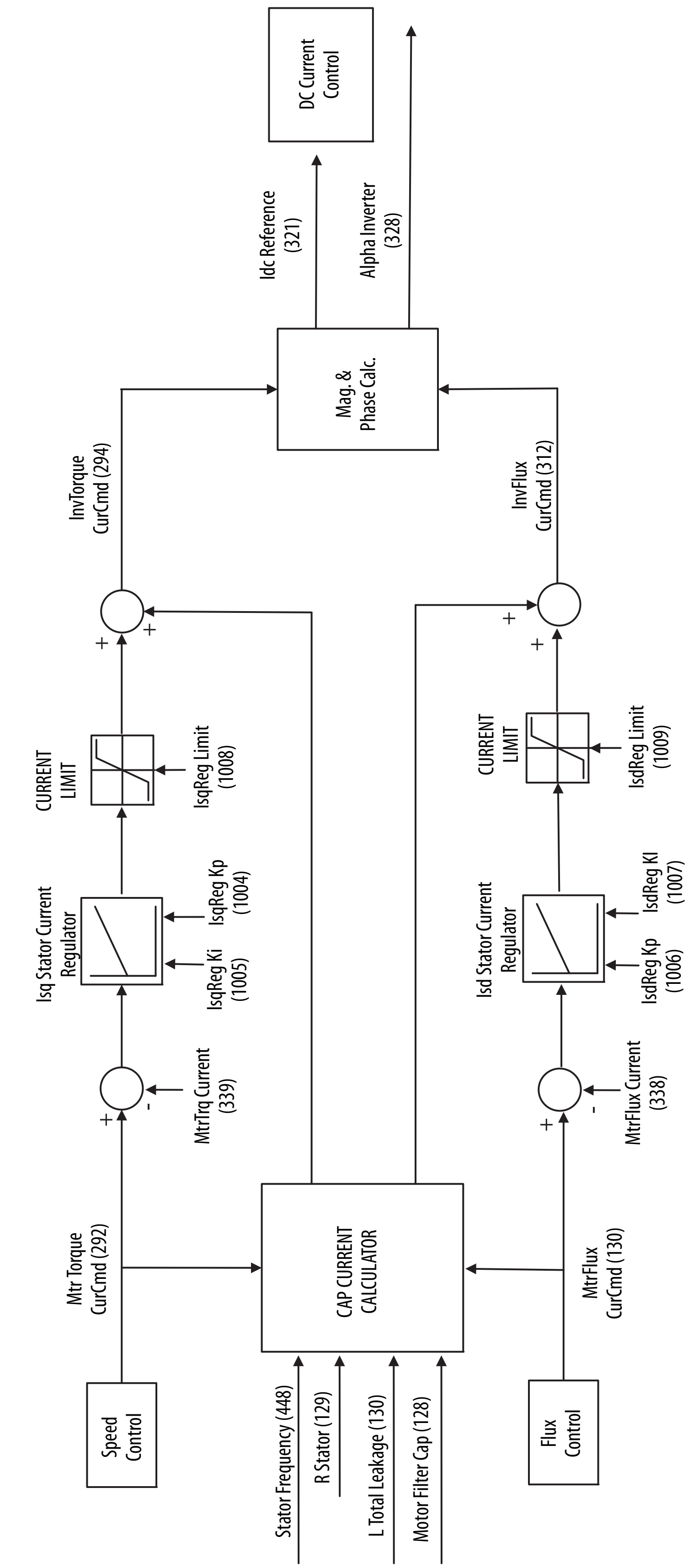
The *Torque CurCmd (292)* from the speed control and the *Mtr Flux CurCmd (310)* from the flux control are compared with the torque-producing stator current, *MtrTrq Current (339)* and the flux-producing stator current, *MtrFlux Current (338)* to be processed by the I_{sd} and I_{sq} stator current PI regulators.

The final torque producing current command supplied by the inverter *InvTorque CurCmd (294)* is the sum of the calculation by the motor model and the output of the I_{sq} stator current regulator. The final flux producing current command supplied by the inverter *Inv Flux CurCmd (312)* is the sum of the calculation by the motor model and the output of I_{sd} stator current regulator.

The maximum allowable stator current regulator outputs, which are added to the motor model calculation, are determined by *IsqReg Limit (1008)* for *InvTorque CurCmd (294)* and *IsdReg Limit (1009)* for *Inv Flux CurCmd (312)*.

Control block diagram is shown in Figure 8.

Figure 8 - Stator Current Control in HPTC Mode

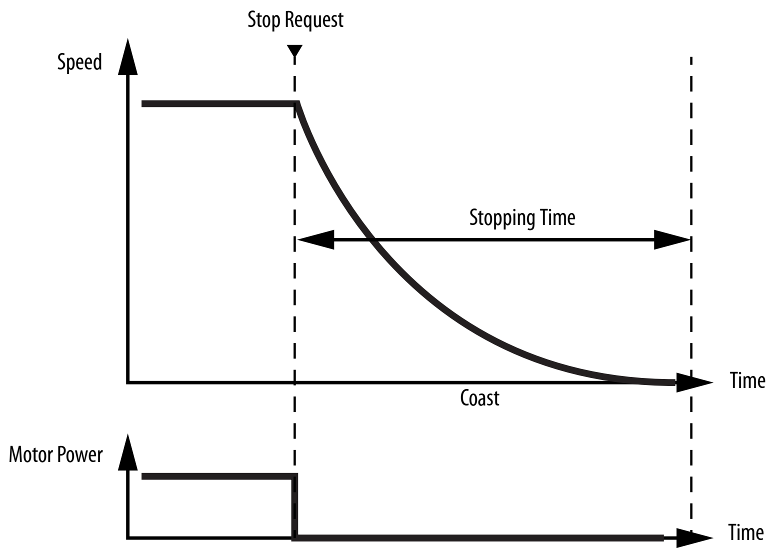


Functional Safety

Safe Torque Off

Safe Torque Off is a functional safety feature integrated into the PowerFlex 7000, available for Active Front End (AFE) and Direct-to-Drive configurations. The drive can receive a safety input signal (e.g. from an optical sensor or a safety gate) and remove rotational power from the motor, allowing the motor to coast to a stop. After the Safe Torque Off command is initiated, the drive will declare it is in the safe state. The drive itself remains powered and the safe state is reliably monitored to ensure no rotational torque can be delivered to the motor. The drive can return rotational power to the motor after Safe Torque Off condition has been reset.

Figure 9 - Safe Torque Off Operation Chart



An internal safety relay provides for the safety input and reset circuits.

Safe Torque Off can be used in Active Front End (AFE) and Direct-to-Drive rectifier drive configurations for A, B, and C frames. It cannot be used for parallel drives, N+1, N-1, synchronous transfer, or 18 pulse drive configurations.

This feature is certified by TÜV for use in safety applications up to and including Safety Integrity Level 3 (SIL3) and Category 3, Performance Level e (Cat 3, PL e). More information on functional safety and SIL and PL ratings can be found in the following standards:

- EN 61508
- EN 62061
- EN 61800-5-2
- EN 13849-1

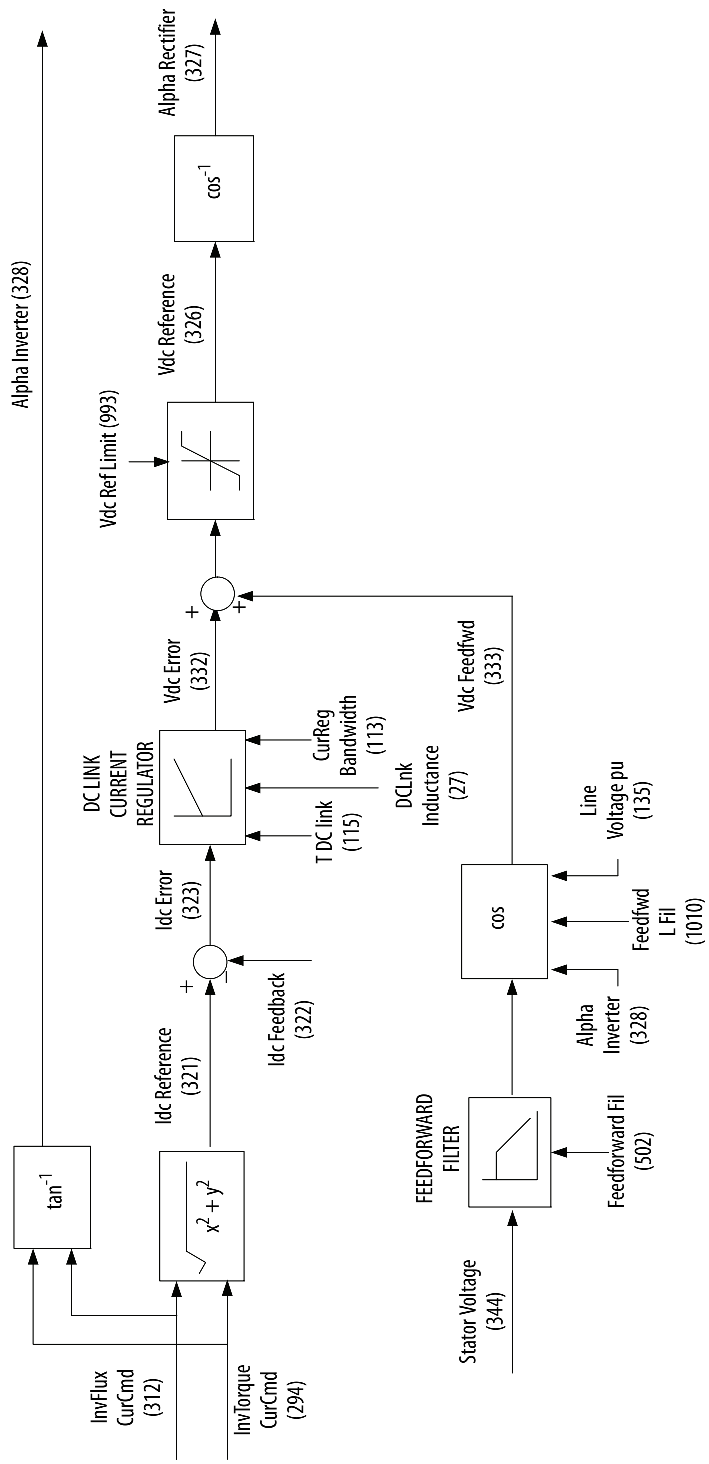
See publication 7000-UM203 for specific information related to the functional safety option.

Current Control

The function of the current control block (Figure 10) is to determine the firing angles for the converters *Alpha Rectifer (327)* and *Alpha Inverter (328).* The inputs are the torque (*InvTorque CurCmd*) and flux producing (*Inv Flux CurCmd*) components of the DC link current command from the speed control and flux control blocks respectively, and the measured DC link current *Idc Feedback (322)*.

The square root of the sum of the squares of *Inv Flux CurCmd* and *InvTorque CurCmd* determines the DC link current reference *Idc Reference (321)*. This is subtracted from the measured DC current feedback to determine *Idc Error (323)*. This is processed by the current regulator to produce *Vdc Error (332)*. To effectively control the DC link current an estimate of the motor side DC link voltage is done to calculate *Vdc Feedfwd (333)* which is added to *Vdc Error* to produce the reference voltage for the line side converter *Vdc Reference (326)*. The rectifier firing angle is the inverse cosine of *Vdc Reference*. The inverter firing angle is determined by taking the inverse tangent of the ratio of *Inv Flux CurCmd* to the *InvTorque CurCmd*. The quadrant of operation is adjusted based on the signs of the current commands.

Figure 10 - Current Control



Rectifier Feedback

The function of the rectifier feedback block is to process (scale and filter) the liner side voltage and current feedback signals to the form required by the drive control software. The circuitry for realizing this is built in the Analog Control Board (ACB).

The first Voltage Sensing Board (VSB) provides three line voltage feedback signals (V_{2u}, V_{2v}, V_{2w}), the second VSB provides two DC (V_{L+}, V_{L-}) and one line side filter capacitor voltages referenced to ground. The three line-to-ground voltages are subtracted from each other to produce the three line-to-line voltages (V_{2uv}, V_{2vw}, V_{2wv}). Two of those line voltages (V_{2uv}, V_{2vw}) are filtered and sampled by software for synchronization and protection. The three line voltages are used to find the peak input voltage ($V_{2\text{-}pk}$). This value is then compared with trip setting (V_{ltrp}) for instantaneous hardware AC over voltage protection. In PWM drives, the neutral point of the line filter capacitor is measured (V_{n1}) and used for line side neutral over voltage protection. The two DC voltages are subtracted to determine the line side DC link voltage (V_{dcr1}), which is then sampled by the drive.

Current transformers (CT) in two of the AC input lines provide the input line current feedback (I_{2u}, I_{2w}). Inverting and adding the two current feedback signals reproduces the current in the remaining phase. A Hall Effect Current Sensor (HECS) is used for monitoring the DC link current and used for hardware overcurrent protection. In addition the average value of the DC link current feedback is measured using a *V-f* converter and used by the DC link current controller to calculate the firing angle for the rectifier.

The preceding description applies to 6-SCR and PWM rectifier options. For drives with the 18 pulse front-end, another VSB is daisy chained with the first one providing additional six line-to-ground voltages from the slave bridges. The slave 1 voltages are monitored using (V_{3uv}, V_{3vw}, V_{3wu}) while slave 2 voltage are monitored using (V_{4uv}, V_{4vw}, V_{4wu}). In addition current feedback from slave bridges I_{3u}, I_{3w} and I_{4u}, I_{4w} are also brought in for protection. As in 6-pulse drives, inverting and adding the two current feedback signals reproduces the current in the remaining phase. Also for 18-pulse drives, the three AC line-to-ground voltages are summed together to determine the neutral to ground voltage on the input transformer.

Inverter Feedback

The function of the inverter feedback block is to process (scale and filter) the motor side voltage and current feedback signals to the form required by the drive control software. The circuitry for realizing this is built in the Analog Control Board (ACB).

The first VSB provides three motor voltage feedback signals (V_u, V_v, V_w), the second VSB provides two DC (V_{M+}, V_{M-}) and one machine side filter capacitor neutral voltage referenced to ground. The motor line-to-ground voltages are subtracted from each other to produce the three motor line-to-line voltages (V_{uv}, V_{vw}, V_{wu}). Two of those voltages (V_{uv}, V_{vw}) are filtered and

sampled by software for synchronization and protection. The three line voltages are used to find peak voltage ($V_{\_pk}$). This value is then compared with trip setting (V_{mtrp}) for instantaneous hardware AC over voltage protection. The motor line-to-ground voltages are summed to determine the motor neutral-to-ground voltage (V_{zs}) and is used for motor neutral over voltage protection. In addition, the neutral point of the motor filter capacitor is measured (V_n) and used for motor side neutral over voltage protection. The two DC voltages are subtracted to determine the machine side DC link voltage (V_{dci1}), which is sampled by the drive.

Two Hall Effect Current Sensor (HECS) provide stator current feedback from two of the motor phases (I_u, I_w). Inverting and adding the two current feedback signals reproduces the current in the remaining phase. The drive control software uses the sampled voltages and currents to determine the motor flux and uses it for synchronization.

For drives with Synchronous Transfer option, an additional VSB is used for sensing three line-to-line bypass voltages (V_{uvs}, V_{vws}, V_{wus}). Two of these (V_{uvs}, V_{vws}) are further filtered and sampled by the software for synchronizing the drive output voltage to the bypass voltage.

If drive is installed with an optional encoder, the board is plugged into the J28. The motor speed is then determined by counting the encoder pulses in the FPGA on the DPM.

Motor Model

The function of the motor model block (Figure 11) is to determine the rotor flux position (*Flux Angle*), flux feedback (*Flux Feedback*), applied stator frequency (*Stator Freq*), slip frequency (*Slip Frequency*) and motor operating variables like stator current (*Stator Current*), stator voltage (*Stator Voltage*), torque (*MtrAirGap Torque*), power (*MotorAirGap Power*) and power factor (*Mtr Pwr Factor*).

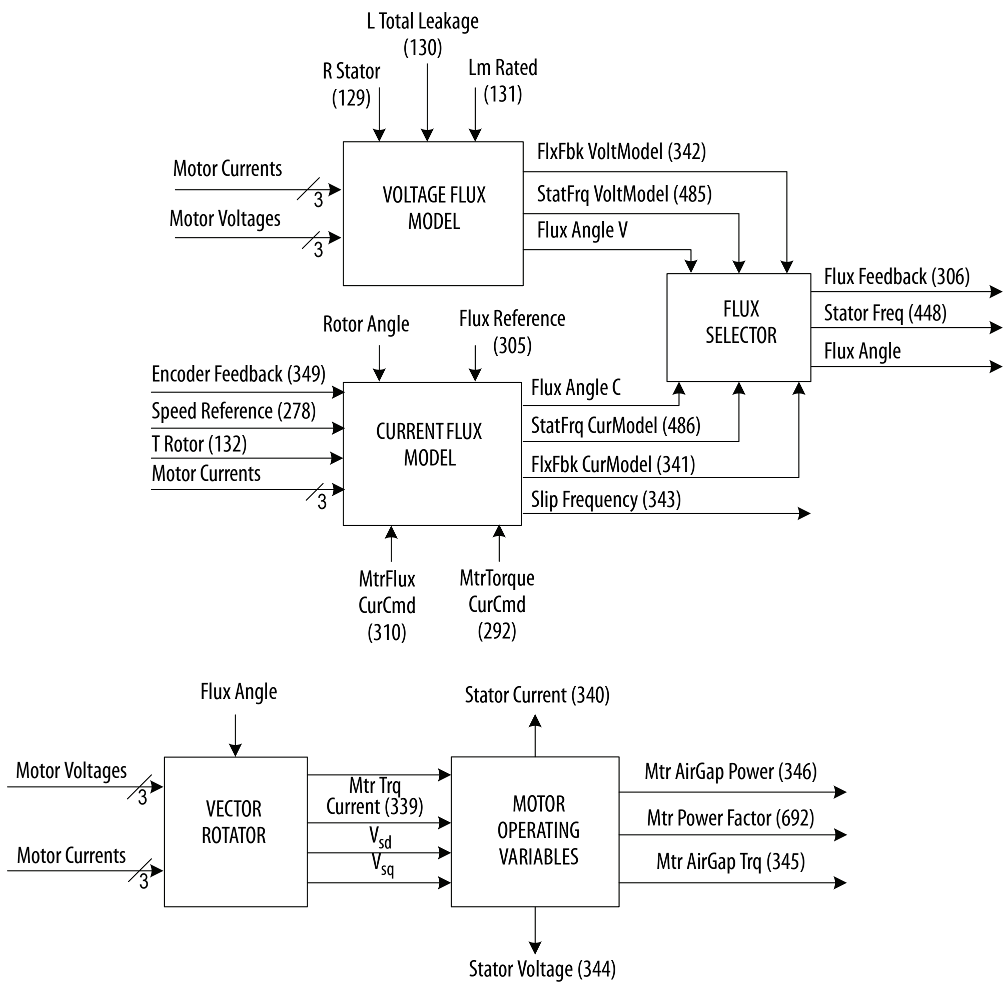
The PowerFlex 7000 uses Rotor Flux oriented control to achieve independent control of motor flux and torque. This is achieved by synchronizing the inverter gating to Flux Angle. To determine the flux feedback, stator frequency and the synchronizing reference frame the drive uses either the Voltage or the Current model. For speeds greater than a threshold value, the drive uses the voltage model (from measured motor voltage and current) to calculate the *Flxfbk VoltModel* and *StatFreq VoltModel*. Below the threshold speed, the drive uses the current model to calculate *Flxfbk CurModel* and *StatFreq CurModel*. The current model uses measured motor current along with motor parameters *T Rotor* and *Lm Rated*. Based on the operating speed of the drive and the speed feedback mode (Sensorless or Pulse Encoder), a flux select algorithm determines the model to be used and ensures smooth transition.

The synchronously rotating frame (*Flux Angle*) is used in transforming the measured motor currents and voltages into *d-q* components. The direct axis components are in phase with the rotor flux, while the quadrature axis

components are displaced 90 degrees from the rotor flux. The stator current (*Stator Current*) and voltage magnitudes (*Stator Voltage*) are calculated by taking the square root of the sum of the squares of the respective d-q components. The motor *Torque* is calculated by multiplying the *Flux Feedback* and I_{sq} with motor torque constant. *Torque* multiplied by the motor speed gives the *Mtr AirGap Power*. *Mtr Power Factor* is determined as the ratio of motor active power and the apparent power.

Drive/Motor Protection

Figure 11 - Motor Model



Except for the DC link overcurrent, rectifier over voltage and inverter over voltage, the entire drive protection is realized in the software. Adjustable parameters specifying the trip level and time delay are provided for each fault.

The response to a drive alarm falls into three categories:

For **Class 1 faults** (with the exception of DC link overcurrent, rectifier overvoltage and inverter overvoltage), the rectifier is immediately phased back to retard limit until the DC link current drops to zero. The gating for both

converters is disabled and the contactors (if installed) are opened. At this point the motor will coast and its speed will depend on the characteristics of the load. For some high inertia loads, the motor may coast for a long time.

The DC link overcurrent, rectifier input overvoltage and inverter output voltage are special cases in that the fault detection is performed by hardware because a very fast response is required. The hardware fault detection responds to instantaneous values. Also the drive response to these faults is different from other Class1 faults because it freezes the SGCT gating (both converters if a PWM rectifier based drive and only the inverter side if a 6P/18P SCR drive) until the DC link current has dropped to zero. The gating is then disabled and contactors are opened.

For **Class 2 faults** the motor is brought to a normal stop before the gating is disabled and the contactors opened. Typical examples of Class 2 faults are motor overload, drive overload and loss of load.

For most **Warnings** no action is taken and drive maintains its normal operation. A warning could be an indication of a problem in drive e.g. an *Air Filter* warning is an indication of a blocked air filter. In addition there are a few warnings in the drive that may cause momentary interruption in the operation of the drive e.g. *Master UV*, *Line Loss* or *Bus Transient*. The action taken is similar to a Class 1 fault and the normal operation is resumed once the transient condition has disappeared. If a drive experiences *Master UV* or *Line Loss*, then *Auto Restart Dly (3)* should be set to a non-zero value in order to resume normal operation automatically.

It is important to understand how contactors (input and output) behave in an event of fault. If the input contactor is set for *Not Running* or *All Faults* via parameter *Input CtCtr Cfg (1)*, then the contactor opens on any fault (Class 1, Critical or Class 2) in the drive. This happens after the DC link current has been brought to zero and the gating for all converters disabled. If the contactor is set for *Critical Flt*, then the contactor will open only when a critical fault (explained above) happens in the drive. For all other faults (Class 1 or Class 2) the input contactor will remain closed after the drive has been shut off.

An output contactor, whose configuration is specified by *Output Ctctr Cfg (5)*, opens for any fault in the drive. This happens after the DC link current has been brought to zero and the gating for all converters disabled.

Power Semiconductor Diagnostics

The PowerFlex 7000 drive tests for the failure of the power semiconductors (SCRs or SGCTs) before running and while running. The method used to detect failed devices is different for starting (off-line diagnostics) and for running (on-line diagnostics), but the same hardware is used in both situations. The drive control receives a feedback signal via a fiber optic cable from each device gate driver, which can indicate whether or not it is healthy. SCR diagnostics are based on sensing the voltage across the device while SGCT has smart diagnostics built in the gate driver board. The feedback and the gating have a certain relationship when the device is healthy or failed. This is shown in

Figure 13 and will be described in detail in following sections. The description applies to all 6P, 18P and PWM PowerFlex 7000 drives. In the drive, the test points are available on the Optical Interface Base Board (OIBB) for monitoring the gating and diagnostic signals. In order to understand how the diagnostics work, it is important to understand the relationship between fiber optic signals and the logic levels on the test points. This is summarized in Table 2 and Table 3.

Table 2 - OIBB Transmitter (TX)

OIBB Transmitter (TX)	TP_CMD on OIBB	Device Status
LIGHT	0V	ON
NO LIGHT	5V	OFF

Table 3 - OIBB Receiver (RX)

OIBB Receiver (RX)	TP_DIAG on OIBB
LIGHT	0V
NO LIGHT	5V

Off-Line Detection of Failed SCRs/SGCTs

Rectifier – 6P-SCR, 18P-SCR and PWM

The rectifier diagnostics are performed when medium voltage is first applied by closing the input contactor and when the drive receives a start command. The drive also performs off-line diagnostics when a drive reset command is issued. These diagnostics are capable of detecting a bad device, loss of feedback fiber optic and loss of gating fiber optic. The diagnostics consist of two stages. A passive diagnostic test followed by an active diagnostic test. In the passive diagnostics test no devices are gated.

SCR Rectifier Passive Off-Line Diagnostics

For SCR rectifiers, when the line voltage is applied to the drive but the drive is not running, the voltage across the rectifier thyristors is high and positive for half cycle except during intervals around the zero of the line voltage. The gate driver transmits light whenever the device is forward biased with a large enough voltage as shown in Figure 12. On the OIBB diagnostic test point this translates into a feedback signal at 0V level. Since the drive is not gating (no light, 5V signal on the OIBB gating test point) the feedback normally toggles state every cycle of the utility voltage. However the feedback will not toggle state if the device is shorted, or if the feedback fiber optic path is incomplete. This is shown in Figure 12. If this occurs, the drive faults and issues an *OfflineShrt* fault for the device.

PWM Rectifier Passive Off-Line Diagnostics

For PWM rectifiers the transmitter on the device should send a light back when the device is healthy (0V on the diagnostic test point). However the light signal will not be received if a device is shorted or if the feedback fiber optic path is incomplete. The drive presumes the device has failed and determines which devices would be safe to gate for the more detailed active off-line diagnostic test.

Figure 12 - Voltage Across a Thyristor when MV is Applied

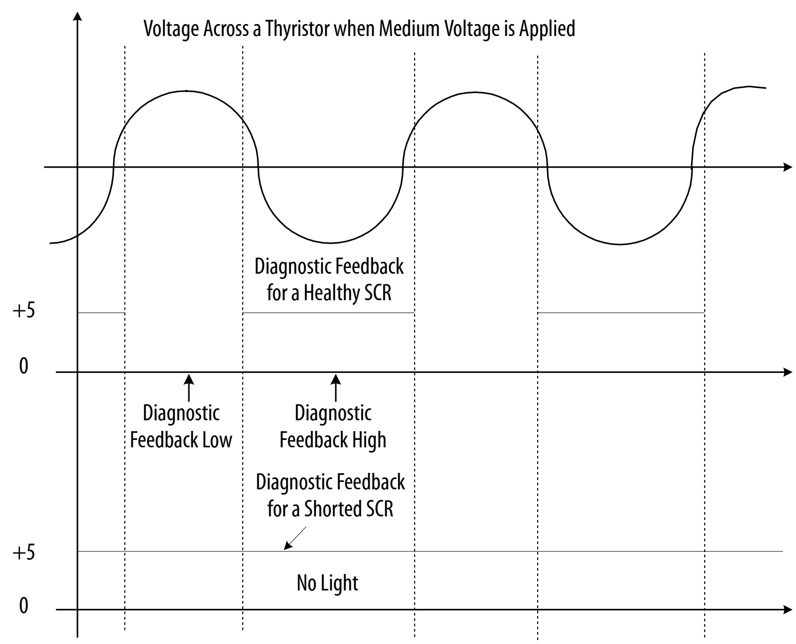
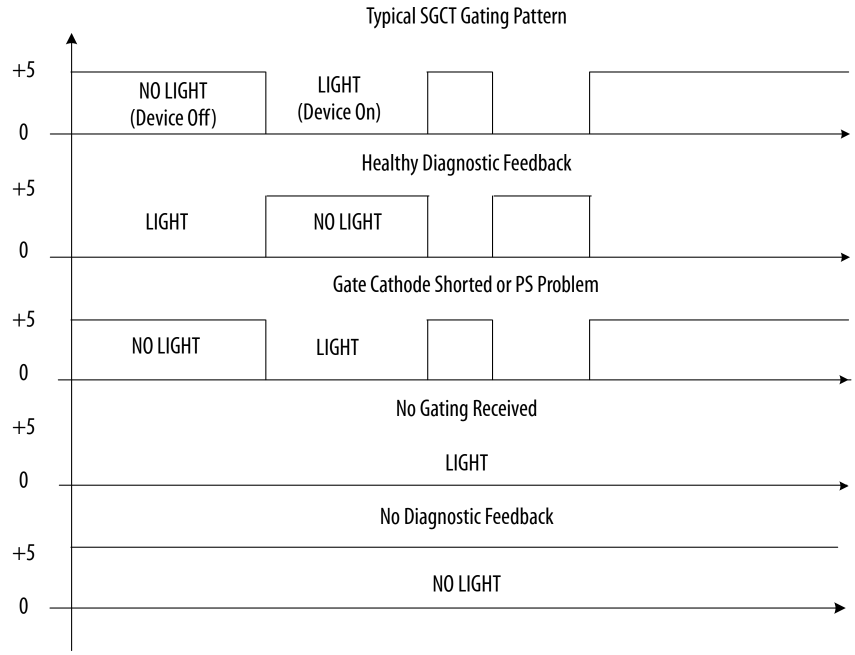


Figure 13 - SGCT Diagnostics



SCR Rectifier Active Off-Line Diagnostics

In the active diagnostic test, each device is gated at maximum blocking voltage. For a healthy SCR, the feedback will normally change from high to low when gated. However the drive will receive a high state (light) both before and after gating if the device is open-circuited, there is an incomplete gating fiber optic path or a damaged gate driver. When this occurs the drive will issue an *Offline Open* fault for the device. If the drive receives a low signal (no light) in both states, there may be shorted device or an incomplete feedback fiber optic. If this occurs drive will issue an *Offline Shrt* fault for the device. Failed or open-circuited snubber connections will shift the device blocking voltage (when not running) which may case either fault to appear. It should be noted that during the active diagnostics stage a DC link voltage which is close to rated voltage will appear due to interaction with the snubber circuit.

PWM Rectifier Active Off-Line Diagnostics

For the PWM rectifier, the active diagnostic test can differentiate between a failed device and a broken fiber optic path because the gate driver toggles the feedback differently when gated as shown in Figure 13. As in the SCR rectifier active off-line diagnostics, each device is gated at peak blocking voltage (if MV is available). Devices which could cause a line-to-line short circuit are not gated. If the drive detects a failed device, an *Offline* fault is issued for the device. A weak gate power supply may also cause a device fault. If the drive receives no light signal (5V on the diagnostic test point) both before and after gating, then there may be an incomplete feedback fiber optic and a *DiagFkbLoss* fault will be issued. A completely failed or unplugged power supply will also cause this fault. If the drive always receives a light signal (0V on the diagnostic test point) both before and after gating, the device may not have received the gating signal and a *Gating Loss* fault will be issued. The drive will not allow the contactor to be closed if it detects enough failed devices to cause a line-to-line short circuit.

Inverter Off-Line Diagnostics

The inverter diagnostics are performed when the drive control is powered up and when the drive receives a start command. The drive also performs off- line diagnostics when a drive reset command is issued. These diagnostics are capable of detecting a bad device, loss of feedback fiber optic and loss of gating fiber optic.

The inverter off-line diagnostics are similar to the PWM rectifier diagnostics except that: no passive diagnostic is done, no consideration is given to line-to-line short-circuits and the input contactor is not involved. The inverter off-line diagnostics will generate *DiagFbkLoss* and *Gating Loss* faults.

On-Line Detection of Failed SCRs/SGCTs

When the gating is enabled for both converters, the feedback from the gate drivers is constantly switching on and off, usually several times per cycle. The diagnostics feedback signals from each device are monitored and the protective measures are performed.

SCR On-Line Diagnostics

For SCR rectifier drives, the drive detects both open and shorted devices while running. Due to notching and interaction with the other phases, the SCR feedback diagnostic changes state many times per cycle, although it is only valid just before and after firing the device. Just before firing a device, the drive takes several samples of the diagnostic feedback from the SCR. If every sample indicates that the device was on before it was fired, the drive considers that the device may be shorted, and starts a timer. When this timer exceeds the number of line cycles specified by the parameter *Rec Dvc Diag Dly (266)* the drive generates an *OnlineShrt* fault. Each device has its own timer. A delay of zero will generate a fault immediately. A delay of 2 will generate a fault after 2 cycles which indicates that the fault has been seen three times in a row.

Shortly after the drive fires an SCR, it checks the feedback from the gate driver boards. If the feedback shows that the device did not fire, the drive considers that the device may be open-circuited and starts a timer. If the fault persists for 6 cycles, the drive generates an *OnlineOpen* fault. As with the short circuit fault, each device has its own timer, however the delay is not adjustable.

Both on-line device diagnostics are not available at all modes of operation due to the nature of the feedback from the gate driver. No diagnostics are done when the rectifier firing angle is less than 15 degrees. No diagnostics are done when the DC current is discontinuous.

SGCT On-Line Diagnostics

The PWM rectifier and inverter generate only one type of on-line diagnostic fault. Due to the intelligent gate driver board the drive is able to check the status of every SGCT in a bridge any time a device in the bridge is fired. The drive takes a sample of every device's feedback before and after firing the bridge. If both samples indicate that the device is not functioning correctly the drive starts a timer for that device. When this timer reaches the value specified by parameter *Rec Dvc Diag Dly (266)* for the PWM rectifier, or *Inv Dvc Diag Dly (268)* for the inverter, the drive generates an *Online* fault. The actual time to trip will vary with the switching frequency of the bridge in question. A bridge changes state at three times the switching frequency. For a PWM rectifier switching at 420Hz (7pulse at 60Hz), the bridge changes state at 1260Hz. This means the delay is in multiples of around 0.8 ms.

Operating Modes

The PowerFlex 7000 AC drive is provided with test modes to check the functionality of the drive during commissioning. These test modes are selected using the parameter *Operating Mode* in the *Feature Select* group. When Test Mode is set to the default value of *Normal*, the drive is in the normal operating mode. The parameter cannot be changed while the drive is running.

Setting *Operating Mode* to *Gate Test* allows the gating checks to be performed on the rectifier and the inverter. Both the input and output contactors must be open and medium voltage must not be applied to the drive. This test is carried out in conjunction with two additional parameters *Inv Gating Test (591)* and *Rect Gating Test (590)*. Upon selecting *Gate Test*, both the parameters are automatically set to *Test Pattern*. A brief description follows in this section.

Setting *Inv Gating Test* to *Test Pattern* will fire the inverter devices in a sequential Z pattern at a low frequency (1Hz) and is verified by observing the LEDs on the SGCT gate driver board. Setting *Inv Gating Test* to *Normal Gate* will result in the inverter devices firing as in normal mode of operation. The frequency of the gating is controlled by parameter *Speed Command In (276)*. Setting *Inv Gating Test* to *Off* stops the inverter test gating sequence.

In 6 or 18-pulse SCR PowerFlex drives, the gate driver boards derive power from medium voltage. Hence to check the rectifier gating in *Gate Test* mode where there is no MV available, a special power harness is required. The rectifier gating is quickly checked by setting the *Rect Gating Test* to *Test Pattern*. This will fire the rectifier devices in a sequential Z pattern at a low frequency (1Hz) with only one device on at a time and is verified by observing the LEDs on the SCR gate driver boards. To set the rectifier gating in normal operation select *Normal Gate*. The SCR firing is at the input line frequency.

For 6-pulse PWM drives, no power harness is required as the SGCTs are powered by the Gate Power Supply.

SHOCK HAZARD: Disconnect all ends of cable before applying medium voltage power. Failure to disconnect cable before applying medium voltage can result in damage to equipment, serious personal injury or death.

ATTENTION: Application of medium voltage to the drive input or output when it is operating in gate test mode may cause severe damage to the drive.

To test the rectifier and to tune the DC link current regulator and the line commutating impedance, the drive *Operating Mode* is selected as *DC Current*. In this test mode, the rectifier operates normally, but the inverter gating is modified to gate both the positive and negative legs in the same phase in order to short-circuit the DC link current through the inverter. The short circuit current is slowly rotated among the three phases with overlap between phases to ensure that an open circuit does not occur during commutation. There is no current in the motor and the output contactor (if installed in the drive) is opened. The DC current command is set equal to the value specified by parameter *Idc Test Command (119)* in the *Current Control* group. In this operating mode the rectifier firing angle *Alpha Rectifier (327)* will be close to 90 degrees. This is because it takes very small DC voltage to build current in a shorted DC link.

Setting *Operating Mode* to *System Test* selects the system operating mode. This mode is used to test the drive as a system, including interfaces with external devices such as programmable controllers, without applying medium voltage power to the drive or motor. The drive behaves as if it was running normally but device gating disabled. Since the input, output, and bypass contactors operate normally in this mode, it must be ensured that the drive and motor are isolated from medium voltage. If isolation switches exist, they should remain open. If the drive detects medium voltage in this test mode, a fault *MV in SystemTest* is issued and the input contactor is opened.

ATTENTION: It is the responsibility of the operator to ensure that the drive and motor are isolated from medium voltage when the drive is operating in system test mode with the input, output, and bypass contactors closed.

Setting *Operating Mode* to *Open Circuit*, selects the open circuit test mode. This mode is used to test the drives at rated output voltage and frequency without connecting it to a motor. In open circuit test mode, AC current sufficient to produce rated voltage at the drive output is forced through the output filter capacitors. When the drive is started in this mode, it ramps up to rated frequency and synchronizes its output voltage with the line voltage. The current reference is set to a value that will produce voltage at the drive output set by the parameter *FlxCmd RatedLoad (100)*.

ATTENTION: Open circuit test mode should not be used when the drive is connected to a load unless an output contactor is provided.

Setting *Operating Mode* to *Open Loop*[1] selects a diagnostic mode in which the drive is run in an open loop manner without closing any of the feedback loops on the motor side (Speed and Flux regulators). Parameters *TrqCmd0 SensrLss (86)* and *TrqCmd1 SensrLss (87)* are used to inject motor current at a small stator frequency (typically 10% of Rated Line Frequency). Motor will be turning in this mode and drive analog flux feedback variables *FlxFbk VoltModel (342)* and *StatFrqVoltModel (485)* are used to ensure the reliability of the analog feedback.

Setting Operating Mode to *UncoupledMtr* selects the uncoupled motor mode of operation in which drive automatically adjusts the starting torques *TrqCmd0 SensrLss (86)* and *TrqCmd1 SensrLss (87)* to 0.2 pu for smoother start up of the uncoupled motor. This mode is useful for starting the motor without the mechanical load with lower starting torque. Upon leaving this mode both of the starting torque parameters are set back to the original values. Please contact factory for availability.

Setting Operating Mode to *DB Gate Test* allows the gating checks to be performed on the power converter in Dynamic Braking (DB) cabinet. This mode is similar to Gate Test mode but is just applicable to DB power converter. Both the input and output contactors must be open and medium voltage must not be applied to the drive. Upon selecting this mode drive will fire the devices of DB power converter in a sequential Z pattern at a low frequency (1Hz) and is verified by observing the LEDs on the SGCT gate driver board. This mode is only applicable for drives with DB system.

To test the rectifier along with Dynamic Braking unit and evaluating the hand-shaking mechanism between rectifier and DB unit, the drive Operating Mode is selected as DB MV Test. From operating point of view this test mode is similar to DC Current mode but drive automatically initiates the hand-shaking mechanism to turn-off rectifier and tries to maintain the desired DC current by switching the DB power converter. There is no current in the motor and the output contactor (if installed in the drive) is opened. Set the first bit DynBrak Enab of *SpecialFeatures3 (920)* to enable Dynamic Braking function. The DC Current command is set equal to the value specified by parameter *Idc Test Command (119)* in the Current Control group. In this operating mode the rectifier firing angle *Alpha Rectifier (327)* will be close to 90 degrees while rectifier is operating. Around 2 seconds after reaching the desired DC current, drive initiates the hand-shaking and commutates the DC current through the DB circuit. After that, because there is no voltage source to maintain the current, it decays rapidly and drive automatically stops after 2 seconds. This test is to make sure DB circuit connections and hand-shaking are done properly otherwise rectifier over-voltage fault occurs. This mode is only applicable for drives with DB system and this test is mainly for factory testing of the DB circuit in the drive.

(1) This feature is available in drives running induction motors only.

To test the power rating of the DB resistor and evaluating the overall DB function, the drive Operating Mode is selected as DB Pwr Test. This mode is only applicable for drives with DB system. **Please note that this test is just for factory testing of the DB unit and must not be used during commissioning of the drive.**

Flying Start (Induction Motor)

Using this feature, the PowerFlex 7000 AC drive is capable of restarting a motor that is not stationary but is already rotating. In normal operation, the output of the drive is synchronized with the motor flux which is derived from the stator voltage and current feedback. Upon starting, if there is no detectable stator voltage, the drive assumes that the motor is stationary. The output frequency starts from an initial value of zero and ramps up until motor flux is detected. Significant flux is created in the motor only when the slip frequency (in other words, the difference between the applied stator frequency and rotor frequency) is small. When the drive is started with the motor stationary, the initial slip frequency is small and the motor flux builds up fairly quickly. But, if the motor is already spinning, then very little flux will be induced until the stator frequency is quite close to the rotor frequency, at which time the motor flux will suddenly rise to a level sufficient for the drive to detect and synchronize. If the drive reaches the maximum allowable speed command without detecting any motor flux, then it will trip on a motor stall fault. There are the following possible causes of a motor stall when starting:

1. The motor has pulled out and stalled during starting due to insufficient torque. The remedy for this is to increase the value of some or all of the parameters *TrqCmd0 SensrLss*, *TrqCmd1 SensrLss* and *Accel Time 1*.
2. The motor was already rotating but the flying start failed because the drive passed through the low slip region too quickly to allow the motor flux to build up. The solution to this problem is to increase the value of parameter *Accel Time 1*. Most medium voltage motors have a rotor time constant in the range of 1 to 5 seconds, and it can take a few seconds for the flux to rise to a detectable level. Until flux is detected, the drive does not use the normal speed ramp but continues to accelerate at the rate defined by parameters *Accel Time 1* and *Ramp Speed 1*. If this rate exceeds 5 Hz/sec, then the drive limits it internally to a maximum of 5 Hz/sec.
3. The motor is rotating in the direction opposite to the commanded direction of rotation. The slip frequency will increase instead of decreasing as the drive accelerates and no flux will be induced in the motor. In such cases, selecting Bidirectional flying start feature allows the drive to search the motor in opposite direction before stalling. This option can be selected by enabling BiDr FlyStrt in *Special Features (99)*.

If the motor is coasting at a high enough speed (above about 40 Hz) and the output contactor is closed, then the motor may self excite with the drive motor filter capacitors and generate a high stator voltage that the drive can detect. The drive will re-synchronize to this voltage and quickly restart.

If the optional encoder feedback is installed, then the drive knows the speed of the motor at all times and can perform a flying start for any speed or direction of rotation.

Flying Start (Synch Motor)

With a synchronous motor, flying start is much quicker and more reliable because a detectable stator voltage is produced whenever the field is applied and the motor is rotating, even with zero stator current. When the drive is started, rated field current is applied to the motor but the stator current remains at zero until the end of the ramp start delay to allow the rotor flux to build up. If the stator frequency is greater than about 2Hz, sufficient stator voltage is generated to allow the drive to detect the speed and direction of the motor and synchronize itself to the motor flux. If the flux feedback does not reach a minimum level of 0.2pu, the drive assumes that the motor is stationary and starts from zero frequency.

If an optional position encoder is installed, a flying start can be performed for any speed or direction of rotation.

Encoder Option

The optional encoder provides two significant enhancements to the drive control:

1. Provides an accurate measurement of motor speed and direction at all times.
2. Extends closed loop speed and torque control down to zero speed.

A pulse encoder, also called a pulse generator or incremental encoder, produces a pulse train output with a frequency proportional to shaft speed. By counting the number of pulses, the motor speed can be determined. The encoder is wired to an optional encoder board installed on connector J28 of the ACB.

Parameter *Encoder Type (233)* specifies which type of encoder has been installed. A *Quadrature* encoder provides two outputs: A and B. Using these signals the motor speed and its direction of rotation can be determined.

Counting the number of encoder pulses over a certain sampling period yields the encoder output frequency, from which the shaft speed can be calculated using the encoder pulses per revolution (PPR) specified by parameter *Encoder PPR (234)*. The encoder resolution determines the minimum motor speed that can be measured. If high starting torque or very low speed operation is required, a high resolution such as 1024 or 2048 PPR must be provided. Otherwise, a low resolution such as 240 or 360 PPR is adequate. E.g., if the encoder frequency is measured to be 30 kHz, then with a 1024 PPR, the motor speed is calculated as:

$$\mathrm{RPM} = \frac{f^{\mathrm{Encoder}} \times 60}{\mathrm{PPR}}$$

The voltage model cannot be used for stator frequencies less than 3 Hz. To control flux and torque at low speeds, the PowerFlex 7000 drive switches to current model. In the current model, the position of the rotor flux is acquired from the measured rotor position by the encoder, the stator current and the motor model including rotor time constant. The stator current is first transformed into the d-q reference frame attached to the measured rotor position, then goes through a first order filter with the rotor time constant to obtain the flux angle in the rotor reference frame. Finally, they are transformed back to the stator reference frame using the measured rotor angle.

Because of its salient pole construction, the position of the rotor flux in a synchronous machine is not arbitrary but is determined by the physical position of the rotor. A synchronous machine therefore requires an absolute position encoder(1) instead of an incremental encoder for indirect vector control. The encoder must also be aligned with the direct axis of the rotor. To avoid having to physically align the encoder, an offset angle specified by parameter *Encoder Offset (644)* is added to the encoder output to compensate for the difference between the encoder zero and the direct axis of the rotor. To reverse the encoder rotation in software if it does not match the rotation of the motor, bit *Rvs Encoder* in *Special Features (99)* should be set to 1. There is no parameter to specify the encoder resolution; it is inferred from the number of motor poles.

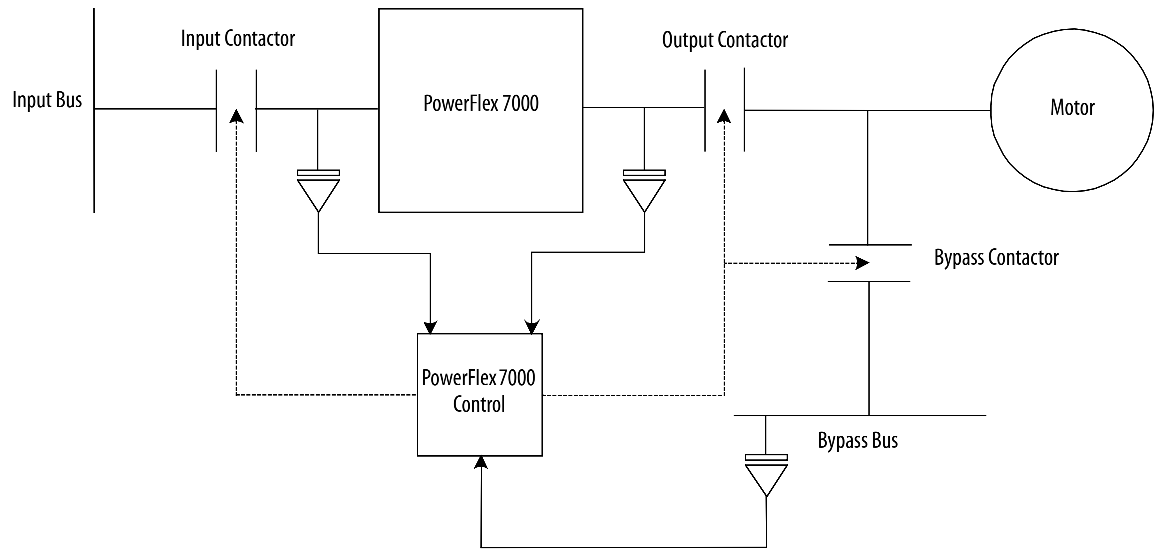
Synchronous Transfer

Synchronous transfer is an optional feature of the PowerFlex 7000 drive which allows either a single or multi-motors to be transferred between the drive and a fixed frequency supply in either direction without stopping and with a very short interruption of power. Compared to non-synchronous transfer in which power to the motor is interrupted for a significant length of time, the transient drop in motor speed is much less with synchronous transfer.

In order to perform a synchronous transfer, a drive output contactor and a bypass contactor are required as shown in Figure 14. The name bypass indicates that the function of this contactor is to connect the motor directly to the fixed frequency supply, bypassing the drive. An additional Voltage Sensing Board (VSB) is used to measure the bypass voltage on the line side of the bypass contactor. These inputs are brought in through ACB and are used in synchronizing the motor voltage directly to the bypass voltage resulting in a reliable synchronous transfer. In addition the measurement of bypass voltage allows certain protection features to be built in. The synchronous transfer is automatically aborted if the drive detects an overvoltage or undervoltage or reverse sequence in the bypass voltage.

(1) Contact factory for the availability of this option.

Figure 14 - Typical Synchronous Transfer Configuration Using a PowerFlex 7000 Drive



For single motor applications, the drive is capable of performing synchronous transfer without the need for a Programmable Logic Controller (PLC). The command to close the bypass and output contactor and their status are realized using the digital IO on ACB. The run time commands *Request to Bypass (Synch)* and *Transfer to drive (De-synch)* are wired to the standard XIO board. Synchronous transfer will not be performed if the phase sequence of the bypass voltage is not positive.

ATTENTION: If the phase rotation and phase angle of the bypass voltage compared to the drive input voltage are not correct, damage may occur to the drive, motor, couplings and driven equipment if a transfer to bypass is attempted.

For all multiple motor synchronizing applications, a PLC is used for overall control of the synchronous transfer operation. Typically, the PLC gives control of the bypass contactor to the drive before performing the transfer, and takes back control after the transfer is completed.

ATTENTION: Since the programmable controller and not the drive controls the output and bypass contactors, the transfer command must always go via the PLC and never directly to the drive from another controlling device (for example, a Remote I/O adapter).

The following section will describe the sequence of operation on single motor synchronous transfer without using a PLC.

Transfer to Bypass

When the motor is running on the drive and a synchronous transfer is required, the transfer takes place in the following sequence:

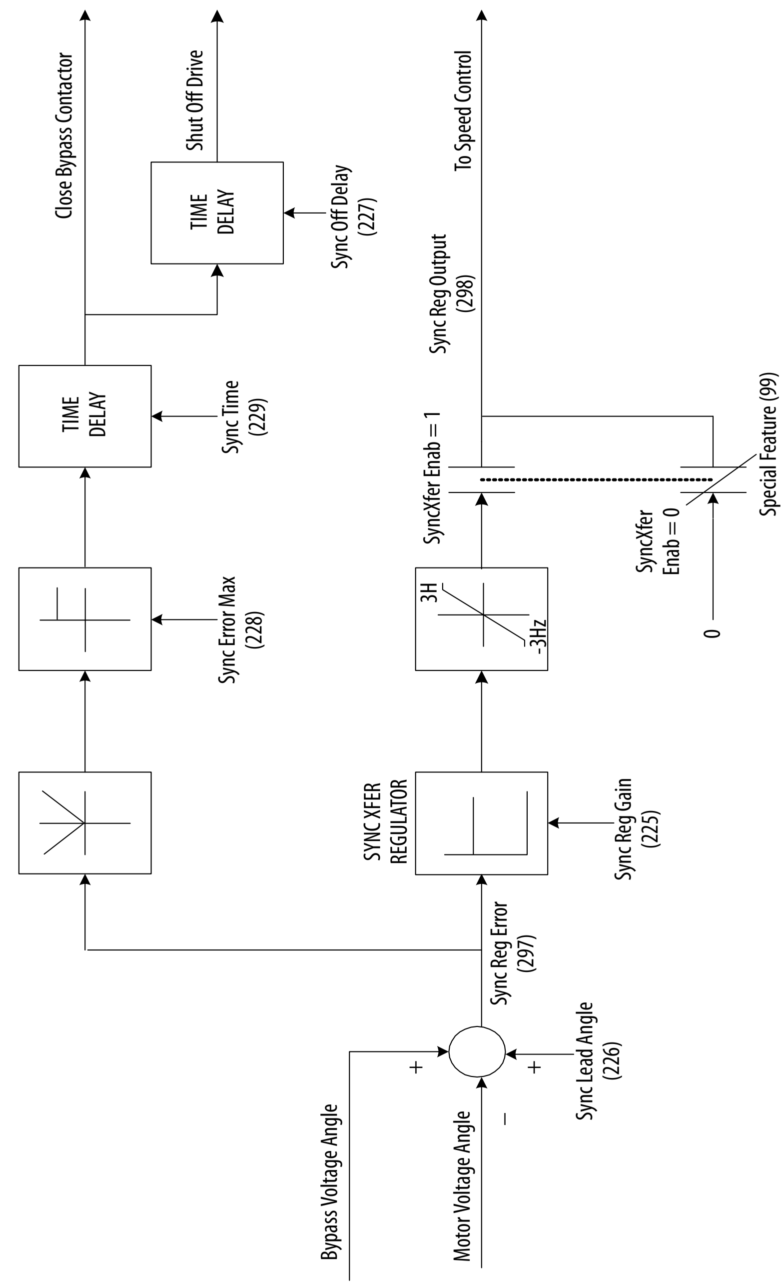
1. The drive is given a *Request to Bypass* command, which must remain active until the synchronous transfer is complete. If the transfer command is removed before the bypass contactor is requested to close, the drive will abort the transfer and return to normal running. When the drive receives the transfer command, it accelerates the motor up to the measured *Bypass Frequency (159)*. If the drive is unable to achieve synchronous speed, it may be necessary to increase parameter *Trq Lmt Motoring (84)*.
2. When the motor reaches synchronous speed, the synchronizing regulator is activated whose response is controlled by parameter *Sync Reg Gain (225)*. It adjusts the drive *Speed Reference* as required, to synchronize the motor to the bypass with the motor voltage leading the bypass voltage by an angle specified by parameter *Sync Lead Angle (226)*. This parameter is used to compensate for the drifts in the motor and bypass voltage before the bypass contactor closes. If the phase error tends to oscillate, it may be necessary to adjust parameters *Sync Reg Gain* or *SpdReg Bandwidth*.
3. When the phase error between the motor voltage and bypass voltage has remained less than the value specified by parameter *Sync Error Max (228)* for the time interval specified by parameter *Sync Time (229)* the drive activates BP CONTACTOR output on the ACB.
4. After a time delay specified by *Sync Off Delay (227)* the drive shuts off. It is important that this parameter is set to the correct value. This should be at least 1-2 cycles less than the contactor closing time. If this time delay is set too short, the motor voltage could drift out of phase with the bypass voltage. If the time delay is set too long, a drive overcurrent fault may occur because the drive is unable to control its output voltage and frequency once the bypass contactor has closed.

ATTENTION: If parameter *Sync Off Delay* is set incorrectly, damage may occur to the drive, motor, couplings, and driven load if a transfer to bypass is attempted.

5. When the *BP CONTACTOR STATUS* input indicates that the bypass contactor has closed, the drive deactivates the OP CONTACTOR output. When the output contactor opens, the drive is disconnected from the motor, leaving the output filter capacitors charged to bypass voltage.
6. The synchronous transfer is now complete and the motor is running on bypass.

7. If in (3), the drive is unable to synchronize within the time specified by parameter *Sync Xfer Time (230)* the synchronous transfer is aborted. At this point the drive can either fault or issue a warning. This is controlled by the parameter *Drive Fault4 (370)*. If the bit *SyncXferFail* is set to 1, then the drive issues a fault. If the bit is set to 0, then a warning is issued.

Figure 15 - Transfer to Bypass



Transfer to Drive

To transfer a motor running on the bypass back to the drive a *Transfer to Drive* command is requested. Following sequence of events take place:

1. The drive is given a *Transfer to Drive* command. After a normal start command is given, the drive closes the output contactor. After the *OP CONTACTOR STATUS* input on the ACB indicates that the output contactor has closed, there is a time delay to allow the output filter capacitors to charge to the bypass voltage. This delay is adjustable using *DeSync Start Dly (763)*. Within this time, the drive synchronizes to the capacitor voltage with the motor still running on bypass. The drive then deactivates its *BP_CONTACTOR* output.
2. When the *BP CONTACTOR STATUS* input on the ACB indicates that the bypass contactor has opened, the drive goes to run mode. As the drive brings the motor torque up to the level required by the load, the motor speed will drop slightly before returning to the commanded speed.
3. The *Transfer to Drive* command is removed. The transfer is now complete and the motor is running on the drive.

PID Process Control(1)

The PID process control feature is now integrated into the PowerFlex 7000 drive. The PID controller provides a single closed loop process control with proportional, integral and derivative control action. This feature is designed to eliminate the need for external control devices in applications that require control of a process.

The drive reads the *Process Variable (357)* from the analog input that is fed by the customer process sensor and compares it to the desired *Process Setpoint (360)*. The analog I/O is either in the voltage range of 0-10V or in the current range of 4…20mA. The algorithm will then adjust the *PID Output Command (313)*, changing the drive's speed command frequency to make the *Process Variable* equal to the *Process Setpoint*. The internal PID process controller uses the velocity form algorithm of the PID equation. This signifies that the loop works on the change in error to adjust the output whereas a traditional positional form algorithm works on the error directly.

The firmware provides several options as to the way the algorithm works. Independent or dependent gain form can be chosen by the *Indpndt Gain* bit in the *PID Output (356)*. The difference should be taken into consideration when tuning the PID parameters; *PID Gain (353)*, *PID Integral Time (354)* and *PID Derivative Time (355)*. The equations for the algorithms in dependent and independent gain form are shown below:

(1) Contact factory for the availability of this feature.

Dependent Gain Form:

In this form of algorithm, the *PID Gain* is working as a controller gain. The change in the *PID Gain* will affect all three terms; proportional, integral, and derivative.

$$PO_n = PO_{n-1} + K_P\left(\Delta E + \frac{1}{T_1}E\Delta t + T_d\frac{E_n - 2E_{n-1} + E_{n-2}}{\Delta t}\right)$$

Independent Gain Form

In this form of algorithm, the *PID Gain* is working as a proportional gain. The change in the *PID Gain* will affect only the proportional term.

$$PO_n = PO_{n-1} + K_P\Delta E + \frac{1}{T_1}E\Delta t + T_d\frac{E_n - 2E_{n-1} + E_{n-2}}{\Delta t}$$

where: PO: *PID Output*

E: Error *(Process Setpoint - Process Variable)*

Δt: Sampling Period used by the loop

K_p: *PID Gain*

T_l: *PID Integral Time* in seconds

T_d: *PID Derivative Time* in seconds

The derivative term will act on the *Process Variable* instead of the error by setting the *DerivProcess* bit in the *PID Output* to 1. In this case, the derivative term in the above equation is replaced as below:

$$\textit{Derivative Term} = -T_d\frac{PV_n - 2PV_{n-1} + PV_{n-2}}{\Delta t}$$

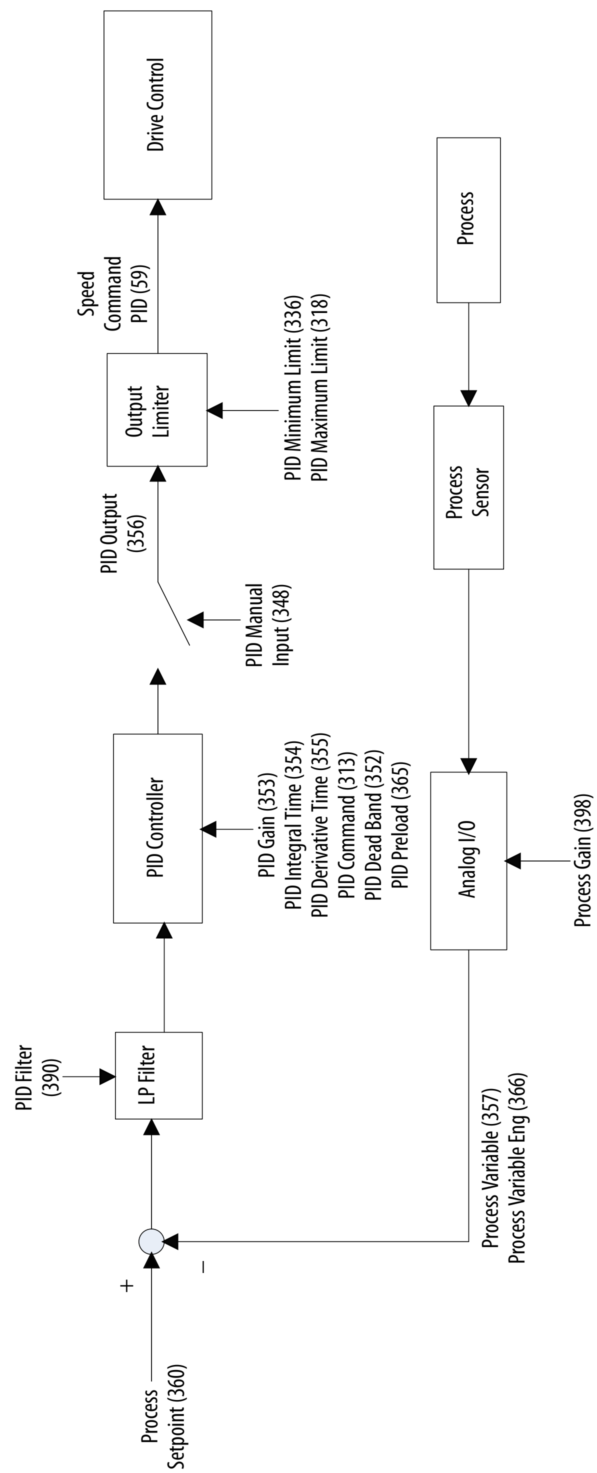
where: PV: *Process Variable*

The PID controller *PID Output* can be selected manually from the *PID Manual Input (348)* when the *Manual* bit in the *PID Command* is set to 1. When the *Manual* bit is set and the *PID Manual input* is still at the default value of 0, the *PID Output* will be latched to the last value from the PID controller and waits for the valid value to be entered.

The control direction of the *Process Variable* can be changed by the *Direct* bit in the *PID Command*. When this bit is set to 1 the PID controller works in direct action, meaning that the *PID Output* increases when the *Process Variable* is larger than the *Process Setpoint*. In reverse action with the *Direct* bit off, the *PID Output* increases when the *Process Variable* is smaller than the *Process Setpoint*.

Figure 16 shows an overall control block diagram.

Figure 16 - Process PID Controller



Power Factor Compensation[1]

This feature is available in drives with PWM rectifier to compensate leading power factor at low motor speeds with a fan/pump type load. Leading or lagging power factor at high motor speeds can also be compensated or improved. The control of power factor is realized by either controlling the modulation index of the inverter using Space Vector Modulation (SVM) gating technique or by adjusting the motor flux profile. This logic is only applicable for variable torque loads and heavy duty or 4-coil Common Mode Choke design.

Analog Outputs

A total of seventeen programmable analog outputs are provided on various boards. They are classified as customer use or diagnostic use. See tables below. There are eight analog outputs on DPM which are intended for diagnostic purposes and are available as test points for connection to an oscilloscope or chart recorder. These analog outputs are 8-bit, non-isolated, with a range of -5V to +5V. The ACB also has one isolated 4…20mA analog output and 8 non-isolated analog outputs with a range of -10V to +10V, for connection to external devices such as meters or isolation modules. The allocation of the analog outputs is shown below:

Table 4 - Analog Outputs Customer Use

No.	Output	Board	Description
1	Meter1	ACB	Connector J10
2	Meter2	ACB	Connector J10
3	Meter3	ACB	Connector J10
4	Meter4	ACB	Connector J10
5	Output1	ACB	Connector J8
6	Output2	ACB	Connector J8
7	Output3	ACB	Connector J8
8	Output4	ACB	Connector J8
9	4-20mAOut	ACB	Connector J8

Table 5 - Analog Outputs Diagnostic Use

No.	Output	Board	Description
1	RecTstPt1	DPM	RTP1
2	RecTstPt2	DPM	RTP2
3	RecTstPt3	DPM	RTP3
4	RecTstPt4	DPM	RTP4
5	InvTstPt1	DPM	ITP1
6	InvTstPt2	DPM	ITP2
7	InvTstPt3	DPM	ITP3
8	InvTstPt4	DPM	ITP4

(1) Contact factory for the availability of this feature.

Any parameter or variable can be assigned to any analog output. Only the outputs for customer use can be scaled by using the corresponding scaling factor.

Analog Inputs

A total of 3 analog inputs are provided in the drive for customer use. Typically these inputs are used for speed command and can be configured to be either 4…20 mA or 0…10V inputs. Analog Input 1 and Analog Input 2 are used for directly controlling the speed of the motor (Refer to section on Speed Command), while Analog Input 3 is used for other applications such as sensing the process output for the built-in PID controller.

Notes:

Parameter Descriptions

PowerFlex 7000/7000L Medium Voltage AC Drive Database Revision # 11.xxx

IMPORTANT Read the following information on overall parameter configuration.

This document provides detailed description of the parameters used in drive control. The parameters are arranged into functional groups. Each description begins with the full name of the parameter, followed by the name displayed on the operator interface. The linear number of the parameter is given followed by the minimum and maximum values showing the position of the decimal point and the units if applicable. Next is the generic value that is assigned when a parameter initialization is performed. The access level at which the parameter can be first seen is given. The access levels are Monitor, Basic, Advanced, Service, and Rockwell. At the Monitor access level, no change to the parameters are allowed. If the parameter is first seen at a certain level (with the exception of Monitor) and it is a Read/Write type, it can be modified at the same or a higher level. Read Only parameters are operational variables that change with different operating conditions. Finally, there is a short functional description of the parameter.

Interpreting Bit-Encoded Parameters

Most bit-encoded parameters follow a basic format. A one (1) in an associated bit represents a true or active condition. A zero (0) in an associated bit represents a false or inactive condition.

The methodology is best illustrated using an example:

Hardware Options 1 [HardwareOptions1]

Linear Number:	141
Default Value:	128
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter allows user to select additional hardware options.

Redn ConvFan	Redundant Converter Fan for Air cooled drives
RednIsoTxFan	Redundant Isolation Transformer Fan
Redn PwrSup	Redundant Power Supply
Output IsoTx	Output Isolation Transformer
Input IsoSw	Input Isolation Switch
Output IsoSw	Output Isolation Switch
Bypass IsoSw	Bypass Isolation Switch
DCNeutralVSB	Voltage Sensing Board for DC/Neutral voltage measurement
Output Ctctr	Output Contactor installed in the drive
Bypass Ctctr	Bypass Contactor installed in the drive
Ambient Temp	Ambient temperature enabled
Rec ChB Temp	Rectifier Channel B temperature
Redn Dvc Inv	Redundant Inverter Device
Redn Dvc Rec	Redundant Rectifier Device
Rockwell UPS	Rockwell specified UPS installed in the drive
Customer UPS	Customer supplied UPS installed in the drive

The description in the manual will always be structured in the same way. The top description (in this case, Redn ConvFan) is always the least-significant bit, or right-most bit. As you move down the list of descriptions, you move to the left on the bit-encoded word. Any unused bits in the middle of a word will be identified, but unused bits in the middle of a word will have no description. This is why a
16-bit word may only have a few descriptions. The rest are reserved for future expansion.

When a bit-encoded parameter is viewed in its associated group, it is actually displayed as a hexadecimal number. The right-most four bits represent the right-most hexadecimal digit. Each subsequent group of 4 represents the next hex digit.

The following table illustrates the relationship:

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Value	8	4	2	1	8	4	2	1	8	4	2	1	8	4	2	1
Example	0	1	0	1	1	1	1	0	1	0	1	1	0	0	1	1
	0 + 4 + 0 + 1				8 + 4 + 2 + 0				8 + 0 + 2 + 1				0 + 0 + 2 + 1			
Sums	5				E				B				3			

When you display a specific bit-encoded parameter, or choose to modify a bit-encoded parameter, it will be displayed in bit format, with an individual description of each bit. When modifying a parameter, highlighting the bit with the cursor keys will automatically pop up the description on screen.

Conversion Table

Binary	Hex	Binary	Hex	Binary	Hex	Binary	Hex
0000	0	0100	4	1000	8	1100	C
0001	1	0101	5	1001	9	1101	D
0010	2	0110	6	1010	A	1110	E
0011	3	0111	7	1011	B	1111	F

Feedback Parameters

Line Voltage pu [Line Voltage pu]

Linear Number: 135
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the estimated value of the input line voltage in per unit. This is calculated from the measured rectifier input voltage *Rect Input Volt (696)* and adding the voltage drop in the input impedance due to the measured line current *Line Current pu (122)*. The *Input Impedance (140)* is determined by auto-tuning. For 18-pulse drives, the line voltage is the summation of the estimated voltage from each of the three bridge voltages.

Rectifier Input Volt [Rec Input Volt]

Linear Number: 696
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter is the measured voltage at the input of the master rectifier bridge in per unit using the voltage sensing board. For 6-PWM drive this is also the voltage across the line filter capacitor. For 18-pulse drives this value represents the voltage at the input of the master bridge and will be approximately one third of the *Line Voltage pu (135)*. This parameter is used for protection and also by the flux controller to adjust the flux command during input voltage sag conditions.

Rectifier DCLink Volt [Rec DCLink Volt]

Linear Number: 645
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured DC Link voltage in per unit on the rectifier side using the voltage sensing board.

Inverter DCLink Volt [Inv DCLink Volt]

Linear Number: 643
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured DC Link voltage on the inverter side in per unit using the voltage sensing board.

Inverter Output Volt [Inv Output Volt]

Linear Number: 761
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter is the measured inverter output voltage in per unit using the voltage sensing board (VSB). This is the voltage across the motor filter capacitor. For standard applications, the motor voltage *Motor Voltage pu (554)* will be equal to the inverter output voltage. However for long cable applications, for example, electrically submersible pumps (ESP), the inverter output voltage will be higher than the motor voltage to compensate the voltage drop in the cable. A new parameter *Surface Voltage (760)* displays the inverter output voltage in Volts.

Motor Voltage pu [Motor Voltage pu]

Linear Number: 554
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the voltage across the motor terminals in per unit. For standard applications, the motor voltage will be equal to the inverter output voltage. However for long cable applications, for example an ESP, the motor voltage is estimated from the measured output voltage *Inv Output Volt (761)* and compensating for the cable resistance drop using measured motor current *Motor Current pu (555)*.

Line Current pu [Line Current pu]

Linear Number: 122
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured value of line current in per unit. It is measured using current transformers (CTs) installed in two phases. The drive internally reconstructs the line current in the third phase by assuming that the sum of the line currents in a three phase system is zero. The line current is the sum of the current flowing into the rectifier bridge and the current flowing into the line filter capacitor.

Motor Current pu [Motor Current pu]

Linear Number: 555
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured value of motor current in per unit. It is measured using Hall Effect Current Sensors (HECS) installed in two phases. The drive internally reconstructs the motor current in the third phase by assuming that the sum of the motor currents in a three phase system is zero.

Rectifier Heat Sink Temp °C [Rec HSink Temp C]

Linear Number: 254
Minimum Value: -40.0 °C
Maximum Value: 100.0 °C
Access Level: Monitor
Read/Write: Read Only

This parameter displays the measured rectifier heat sink temperature in degrees Celsius.

Rectifier Heat Sink Temp °F [Rec HSink Temp F]

Linear Number: 255
Minimum Value: -40.0 °F
Maximum Value: 212.0 °F
Access Level: Monitor
Read/Write: Read Only

This parameter displays the measured rectifier heat sink temperature in degrees Fahrenheit.

Inverter Heat Sink Temp °C [Inv HSink Temp C]

Linear Number: 252
Minimum Value: -40.0 °C
Maximum Value: 100.0 °C
Access Level: Monitor
Read/Write: Read Only

This parameter displays the measured inverter heat sink temperature in degrees Celsius.

Inverter Heat Sink Temp °F [Inv HSink Temp F]

Linear Number: 253
Minimum Value: -40.0 °F
Maximum Value: 212.0 °F
Access Level: Monitor
Read/Write: Read Only

This parameter displays the measured inverter heat sink temperature in degrees Fahrenheit.

Air Filter Blockage [Air Filter Block]

Linear Number: 567
Minimum Value: 0.0 %
Maximum Value: 100.0 %
Access Level: Basic
Read/Write: Read Only

This parameter shows the amount of air filter blockage in %. An increasing value is an indication of air filter blocking. The blockage is calculated from the measured *Conv AirPressure (447)*, the nominal converter air flow *Air Pressure Nom (317)*, and *AirLoPressure Trp (319)*. A drop in pressure sensor value is an indication of reduced airflow in the drive due to a blocked air filter. The drive continuously monitors this value and will trip before the air filter gets fully blocked. This feature is not available on Heatpipe drives.

Air Filter Allow [Air Filter Allow]

Linear Number: 568
Minimum Value: 0.0 %
Maximum Value: 100.0 %
Access Level: Basic
Read/Write: Read Only

This parameter displays the % allowable filter blockage before the drive will trip. A decreasing value is an indication of air filter blocking.

Converter Air Pressure Value [Conv AirPressure]

Linear Number: 447
Minimum Value: -1.0 V
Maximum Value: 10.0 V
Access Level: Basic
Read/Write: Read Only

This parameter displays the output of the air pressure sensor in volts. It is an indication of the airflow in the drive. A drop in pressure value indicates either a blocked air filter or a loss of cooling fan operation. This parameter along with *Air Pressure Nom (317)*, *AirLoPressure Trp (319)*, *AirLoPressure Wrn (320)*, *AirHiPresure Trp (925)*, and *AirHiPresure Wrn (926)* are used for protection.

Isolation Transformer Air Pressure [IsoTxAirPressure]

Linear Number: 653
Minimum Value: -10.0 V
Maximum Value: 10.0 V
Access Level: Basic
Read/Write: Read Only

This parameter displays the output of the air pressure sensor in volts installed in the Isolation Transformer section. This parameter operates with the same

functionality as the converter air flow pressure i.e. a decreasing value is an indication of blocked air filters. This parameter along with *IsoTxPressureNom (656)*, *IsoTxPressureTrp (654)* and *IsoTxPressureWrn (655)* are used for protection. This feature is available when bit 0 of *HardwareOptions2 (274)* is set.

Line Neutral Voltage [LineNeutral Volt]

Linear Number: 589
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Basic
Read/Write: Read Only

This parameter displays the measured line side neutral to ground voltage in per unit. For PWM rectifier drives, the drive uses the measured voltage of the line capacitor neutral. For SCR drives the drive calculates the neutral voltage by summing the line to ground voltages from the master bridge (zero-sequence).

Motor Neutral Voltage [Mtr Neutral Volt]

Linear Number: 347
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Basic
Read/Write: Read Only

This parameter displays the value of the motor neutral to ground voltage in per unit. In 8.00x firmware release and higher, the default value is the measured voltage from the motor filter capacitor neutral point. By setting bit *ZeroSeq Neut* in *HardwareOptions2 (274)*, this parameter will display the calculated value of the neutral voltage by summing the line to ground motor voltages (zero-sequence).

Refer the following table for typical values of neutral voltages in the drive.

Rectifier type	Line Neutral Voltage	Motor Neutral Voltage
18 pulse	> 0.3 pu	< 0.1 pu (with grounding network)
6PWM (grounded system)	< 0.1 pu	> 0.3 pu
6PWM (floating system)	> 0.3 pu	< 0.1 pu (with grounding network)
6PWM (Direct-to-Drive)	< 0.1 pu	< 0.1 pu

Master Bridge Line Voltage [Master Line Volt]

Linear Number: 136
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter is the estimated value of the master bridge input voltage in per unit. This is calculated from the measured rectifier input voltage and adding the voltage drop in the input impedance due to the measured line current *Master Line Cur (382)*. The *Input Impedance (140)* is determined by auto-tuning.

Slave 1 Bridge Line Voltage [Slave1 Line Volt]

Linear Number:	137
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter is the estimated value of the slave 1 bridge input voltage in per unit. This parameter is valid for 18 SCR drives only. This is calculated from the measured slave1 bridge voltage and adding the voltage drop in the input impedance due to the measured line current *Slave1 Line Cur (383)*. The *Input Impedance (140)* is determined by auto-tuning.

Slave 2 Bridge Line Voltage [Slave2 Line Volt]

Linear Number:	138
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter is the estimated value of the slave 2 bridge input voltage in per unit. This parameter is valid for 18 SCR drives only. This is calculated from the measured slave2 bridge voltage and adding the voltage drop in the input impedance due to the measured line current *Slave2 Line Cur (384)*. The *Input Impedance (140)* is determined by auto-tuning.

Master Bridge Line Current [Master Line Cur]

Linear Number:	382
Minimum Value:	0.000 pu
Maximum Value:	4.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter displays the measured master bridge input current.

Slave 1 Bridge Line Current [Slave1 Line Cur]

Linear Number:	383
Minimum Value:	0.000 pu
Maximum Value:	4.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter displays the measured slave 1 bridge input current in per unit for 18-pulse drives.

Slave 2 Bridge Line Current [Slave2 Line Cur]

Linear Number: 384
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured slave 2 bridge input current in per unit for 18-pulse drives.

Master Bridge Line Frequency [Master Line Freq]

Linear Number: 334
Minimum Value: -100.0 Hz
Maximum Value: 100.0 Hz
Access Level: Service
Read/Write: Read Only

This parameter displays the instantaneous frequency of the voltage on the Master rectifier bridge. The sign of the frequency is negative for reverse phase sequence on that bridge.

Slave 1 Bridge Line Frequency [Slave1 Line Freq]

Linear Number: 335
Minimum Value: -100.0 Hz
Maximum Value: 100.0 Hz
Access Level: Service
Read/Write: Read Only

This parameter displays the instantaneous frequency of the voltage on the slave 1 bridge for 18-pulse drives. The sign of the frequency is negative for reverse phase sequence on that bridge.

Slave 2 Bridge Line Frequency [Slave2 Line Freq]

Linear Number: 239
Minimum Value: -100.0 Hz
Maximum Value: 100.0 Hz
Access Level: Service
Read/Write: Read Only

This parameter displays the instantaneous frequency of the voltage on the slave 2 bridge for 18-pulse drives. The sign of the frequency is negative for reverse phase sequence on that bridge.

Slave1 Bridge Phase Angle [Slave1 Angle]

Linear Number: 616
Minimum Value: -360.0 Deg
Maximum Value: 360.0 Deg
Access Level: Service
Read/Write: Read Only

This parameter is the measured phase angle between the Master and the Slave 1 bridges and is applicable for 18 SCR drives only. It should be close to -20 deg.

Slave2 Bridge Phase Angle [Slave2 Angle]

Linear Number: 617
Minimum Value: -360.0 Deg
Maximum Value: 360.0 Deg
Access Level: Service
Read/Write: Read Only

This parameter is the measured phase angle between the Master and the Slave 2 bridges and is applicable for 18 SCR drives only. It should be close to +20 deg.

Harmonic Voltage [Harmonic Voltage]

Linear Number: 683
Minimum Value: 0.000 pu
Maximum Value: 32.767 pu
Access Level: Service
Read/Write: Read Only

This parameter represents the calculated value of the Harmonic Voltage on the input to the rectifier. The firmware looks at the rectifier voltage and will measure the 5th harmonic voltage only. This value is normalized to the rated line voltage, and will trip when the harmonic voltage exceeds the setting in the parameter *Harmonic VoltTrp (675)* for the time specified in *Harmonic VoltDly (676)*.

Common Mode Peak Current [ComModeCur Peak]

Linear Number: 779
Minimum Value: 0.00 A
Maximum Value: 655.35 A
Access Level: Service
Read/Write: Read Only

This parameter is for Direct-to-Drives only and displays the peak value of common mode current flowing in the neutral resistor.

Peak Transient Volt [TransientVoltMax]

Linear Number: 778
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

The peak capacitor voltage during the last bus transient is saved in the variable *Peak Tran Volt (778)*.

Bus Transient Trip [BusTransient Trp]

Linear Number:	684
Minimum Value:	0.000 pu
Maximum Value:	32.767 pu
Access Level:	Service
Read/Write:	Read Only

This parameter shows the internal value of bus transient trip and is used in determining whether a bus transient condition exists in the drive.

Bus Transient Level [BusTransient Lvl]

Linear Number:	767
Minimum Value:	0.000 pu
Maximum Value:	32.767 pu
Access Level:	Service
Read/Write:	Read Only

This parameter shows the internal bus transient level measured by the drive. It is compared to *BusTransient Trp (684)* to determine when the transient occurs.

Capacitor Neutral Volt [Cap Neutral Volt]

Linear Number:	897
Minimum Value:	-2.000 pu
Maximum Value:	2.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter displays the peak value of the line capacitor neutral voltage. It is used for troubleshooting purpose only.

Maximum Instantaneousness Input Voltage [Instant Volt Max]

Linear Number:	1115
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter displays the instantaneous value of maximum line-to-line rectifier input voltage.

Diagnostics Parameters

Logic Command [Logic Command]

Linear Number: 257
Access Level: Monitor
Read/Write: Read Only

This parameter specifies the logic command word used by the drive control. The following commands are displayed, with a one representing an active command:

Bit	Enum Text	Description
0	Not Stop	Drive is ready to Run
1	Start	Start the Drive
2	Jog	Start the drive in Jog mode
3	Clr Flt Que	Clear the Fault queue
4	Clr Warn Que	Clear the Warning queue
5	Drive Reset	Reset the drive
6	Direction	Direction of rotation: 0 for forward, 1 for reverse
7	Start Profle	Drive Start profile
8	Stop Profle	Drive Stop profile
9	Flash Mode	DPI Adapter in Flash Mode
10	Unused	
11	Synch	Synchronous transfer (From Drive to the Bypass)
12	De-Synch	Synchronous transfer (From Bypass to the Drive)
13	Force Stop	Force Stop the drive (DPI)
14	Force Fault	Force Fault the drive (DPI)
15	Trq Mode Sel	Torque (1) or speed mode (0) of operation

Logic Status [Logic Status]

Linear Number: 258
Access Level: Monitor
Read/Write: Read Only

This parameter displays the value of logic status. A ‘1’ represents an active condition, and it is bit encoded as follows:

Bit	Enum Text	Description
0	Ready	The drive is in Ready condition
1	Running	The drive is Running
2	Command Dir	Commanded direction of rotation, 1 is Forward 0 is Reverse
3	Rotation Dir	Actual Direction of rotation 1 is Forward 0 is Reverse
4	Accelerating	The drive is accelerating
5	Decelerating	The drive is decelerating
6	At Speed	The drive has reached commanded speed

Bit	Enum Text	Description
7	On Bypass	The drive is currently running on bypass
8	Rev Enabled	Reverse rotation of the drive has been enabled (Refer Special Features)
9	Drive Fault	Drive is in Fault mode
10	Drive Warn	Drive is in Warning mode
11	Local Lock	An adaptor has local control of the drive
12	Forced Stop	DPI adapter has issued a forced stop command
13	Speed Com1	Speed reference source
14	Speed Com2	Speed reference source
15	Speed Com3	Speed reference source

Drive Not Ready Status Word 1 [Drive Not Ready1]

Linear Number: 262
Access Level: Monitor
Read/Write: Read Only

This parameter displays the status of several different conditions that can cause a Drive Not Ready indication. '1' in the corresponding bit location indicates that condition exists, and '0' indicates that the condition does not exist. The following is description of the individual bits:

Bit	Enum Text	Description
0	Class1 Fault	A Class 1 Fault Exists
1	Class2 Fault	A Class 2 Fault Exists
2	No Line Sync	The drive failed to synchronize with the incoming line voltage
3	No Phase Chk	Phasing Check on the Rectifier has not passed
4	Inp Clse Dly	The drive is waiting for the line filter capacitor to discharge
5	Inp IsoOpen	The Drive Input Isolation Switch is Open when it should not be
6	Out IsoOpen	The Drive Output Isolation Switch is Open when it should not be
7	Byp IsoOpen	The Drive Bypass Isolation Switch is Open when it should not be
8	No Out Ctctr	In Open Circuit Mode, the drive will not start if the drive does not have an Output contactor installed
9	Inp IsoClsd	The Drive Input Isolation Switch is Closed when it should not be
10	Out IsoClsd	The Drive Output Isolation Switch is Closed when it should not be
11	Byp IsoClsd	The Drive Bypass Isolation Switch is Closed when it should not be
12	DPI Flash	The DPI Adapter is being flashed remotely
13	Drv Xfer Dly	The drive is waiting for the motor filter capacitor to discharge after a successful synchronization and will not allow de-sync
14	Line Loss	Loss of Medium Voltage
15	CtrlPwr Loss	Loss of Control Power

Drive Not Ready Status Word 2 [Drive Not Ready2]

Linear Number: 699
Access Level: Monitor
Read/Write: Read Only

This parameter displays the status of several different conditions that can cause a Drive Not Ready indication. '1' in the corresponding bit location indicates that condition exists, and '0' indicates that the condition does not exist. The following is description of the individual bits:

Bit	Enum Text	Description
0	SCR Gate Pwr	The self powered gate drive boards for SCR drives are not charged
1	InpCtctrOpen	The Drive Input Contactor is Open when it should not be
2	Rec Gate SPS	Rectifier Self-Powered Gate Power Supply
3	STO Actvtd	The Safe Torque Off function is Active.
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drive Status Flags 1 [DrvStatus Flag1]

Linear Number: 569
Access Level: Service
Read/Write: Read Only

This parameter displays the drive status flags. Each bit has 2 states, and that allows the parameter to represent 16 conditions. They are as shown below:

0	1
Not Ready	Ready
Not Running	Running
Forward Rotation	Reverse Rotation
No Faults	Faulted
No Warnings	Warnings
Fans Off	Fans On
Input Open	Input Closed
Output Open	Output Closed

Drive Status Flag 2 [DrvStatus Flag2]

Linear Number: 238
Access Level: Service
Read/Write: Read Only

This parameter displays the drive status flag and is used by drive control to make logical decisions. A '1' represents an indicated status. The following states are displayed:

Bit	Enum Text	Description
0	Jog	Drive is in Jog mode
1	Local	Drive is in Local Control Mode
2	Class1 Fault	Drive has tripped on a Class 1 Fault
3	Class2 Fault	Drive has tripped on a Class 2 Fault
4	Run Req	Drive start command has been issued
5	Restart Req	Drive will restart automatically following a line loss
6	Gating Enble	Line and machine converter devices are gating
7	Drive Init	Drive Initialization routines have been completed
8	Gate Test	Drive is in Gate Test mode
9	Shrt Cct Tst	Drive is in DC Current Test mode
10	System Tst	Drive is in System Test mode
11	Open Cct Tst	Drive is in Open Circuit Test mode
12	Param Loaded	Drive Parameters have been loaded
13	Inv Init	Inverter side initialization routines have been completed
14	Rec5PulsRqst	Rectifier gating in 5 pulse is requested
15	Conv Fan2 On	Optional redundant converter cooling fan (Fan 2) has been switched on

Drive Status Flags 3 [DrvStatus Flag3]

Linear Number: 484
Access Level: Service
Read/Write: Read Only

This parameter displays the drive status flag and is used by drive control to make logical decisions. A '1' represents an indicated status. The following states are displayed:

Bit	Enum Text	Description
0	Uncoup Mode	Drive is in Uncoupled mode
1	DB Gate Test	Drive is in DB Gate Test mode
2	DB MV Test	Drive is in DB MV Test mode
3	DB Pwr Test	Drive is in DB Power Test mode
4	StaFlg3Bit4	Not Used bit
5	StaFlg3Bit5	Not Used bit
6	StaFlg3Bit6	Not Used bit

Bit	Enum Text	Description
7	StaFlg3Bit7	Not Used bit
8	StaFlg3Bit8	Not Used bit
9	StaFlg3Bit9	Not Used bit
10	StaFlg3Bit10	Not Used bit
11	StaFlg3Bit11	Not Used bit
12	StaFlg3Bit12	Not Used bit
13	StaFlg3Bit13	Not Used bit
14	StaFlg3Bit14	Not Used bit
15	StaFlg3Bit15	Not Used bit

Contactor Command [Contactor Cmd]

Linear Number: 505
Access Level: Service
Read/Write: Read Only

This parameter displays the command to close the various contactors configured with the drive (input, output, and bypass). The contactors are specified by the parameter *Hardware Options1 (141)*. A '1' indicates that the contactor is being commanded by the drive to close.

Bit	Enum Text	Description
0	Input Ctctr	Close Input contactor
1	Output Ctctr	Close Output contactor
2	Bypass Ctctr	Close Bypass contactor
3	Unused	
4	Unused	
5	Unused	
6	Unused	
7	Unused	

Contactor Status [Contactor Status]

Linear Number: 506
Access Level: Service
Read/Write: Read Only

This parameter displays the status of the various contactors and their isolating switches configured with the drive. A '1' indicates that the contactor or the isolating switch is closed. This parameter is used by the drive for protection. If a contactor has been commanded to close and is determined not to be closed, then the drive will trip. Similarly depending on the Operating Mode of the drive, if the isolating switch status is opposite to the expected then the drive will trip.

Bit	Enum Text	Description
0	Input IsoSw	Status of Input Isolation Switch
1	Input Ctctr	Status of Input Contactor
2	Output IsoSw	Status of Output Isolation Switch
3	Output Ctctr	Status of Output Contactor
4	Bypass IsoSw	Status of Bypass Isolation Switch
5	Bypass Ctctr	Status of Bypass Contactor
6	Unused	
7	Unused	

Rectifier Control Flag 1 [RecControl Flag1]

Linear Number: 264
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the rectifier control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	PLL Locked	Rectifier Synchronized with the Line Voltage
1	PLL Enabled	Input Voltage is high enough to attempt to lock onto the Line Voltage
2	Continuous	DC link current is continuous
3	Rvs Sequence	The incoming line is not UVW
4	Slave Swap	The Slave 1 and Slave 2 Bridges are Swapped (18P only)
5	Phasing OK	The drive has no phasing problems
6	MV Isolated	There is no MV on the input to the rectifier
7	RecAnlgTstDn	Rectifier Analog self tests completed
8	Rec Init	Boot-Up on Rectifier is complete
9	Line Loss	There is a line loss condition present
10	Slv1 RvsRotn	The Slave 1 bridge is UWV (18P only)
11	Slv2 RvsRotn	The Slave 2 bridge is UWV (18P only)
12	Diag Done	The rectifier has completed the device diagnostics
13	Phasing Chk	Phasing check is in progress
14	Gate Freeze	The rectifier is in Gate Freeze Mode
15	InpStdyState	The input voltage has reached steady state after a power up

Rectifier Control Flags 2 [RecControl Flag2]

Linear Number: 160
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the rectifier control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	RecClass1Flt	A Rectifier Class 1 fault exists
1	RecClass2Flt	A Rectifier Class 2 fault exists
2	Rec Warning	A Rectifier Warning exists
3	PhsngChkDone	The drive has completed the input phasing checks
4	No PLL Error	There is no problems with the PLL Lock
5	Offline Diag	The rectifier has completed the off-line device diagnostics
6	FreeWhl Rec	The rectifier is in Free-Wheel mode (caused by Bus Transients)
7	FreeWhl Inv	The inverter is in Free-Wheel mode (caused by Bus Transients)
8	Device Short	The Rectifier has detected a shorted device
9	BusTransient	There is a transient detected on the input of the drive
10	FreeWhlReset	Handshake for Freewheel Mode
11	RecSGCT Pwr	Rectifier SGCTs have Power
12	RtdLimit Req	Drive is requested to go into Retard Limit
13	InvAdvLmtReq	Inverter is requested to go into Advance Limit
14	Drv OL Pend	Drive Overload is Timing
15	Rec Crit Flt	Rectifier has detected a Critical Fault

Rectifier Control Flags 3 [RecControl Flag3]

Linear Number: 368
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the rectifier control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	No Flt Delay	Internal fault timers disabled
1	Act Dschrge	Active discharge
2	Lnk Dschrge	DC Link Voltage Discharge
3	Lnk PDschrge	DC Link Voltage Pre Discharge
4	Gate Enbl Rq	Gate enable request

Bit	Enum Text	Description
5	SCR Gate Pwr	SCR Gate Power
6	Inp Open Req	Input Open Request
7	Gnd OC Disbl	Ground OC disabled
8	BusTran Enbl	Bus Transient enabled
9	DvcLineShort	Device Line-to-Line short
10	DvcCMVE Shrt	Device CMVE SC
11	InpLockOut	Due to Line Over Current condition, the input contactor is being prevented from closing (18P only)
12	InpLock5min	Due to Line Over Current condition, the input contactor is being prevented from closing for 5 minutes (18P only)
13	InpLockIndef	Due to Line Over Current condition, the input contactor is being prevented from closing indefinitely (18P only)
14	Inp Dschargd	Line filter capacitors have been discharged
15	BusTrInpOpen	Due to Bus Transient, input contactor is opened

Rectifier Control Flags 4 [RecControl Flag4]

Linear Number: 471
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the rectifier control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	GateOffRqst	Drive is going to disable gating in rectifier due to DB
1	Gating Off	Drive disabled gating in rectifier due to DB
2	DBCtrlActive	Dynamic Braking control is running in the drive
3	DB SeriesDvc	DB series devices are ON
4	DB ShuntDvc	DB shunt devices are ON
5	DB SGCT Pwr	DB device power is OK
6	DB Diag Done	DB device diagnostic is done
7	DB Dvc Short	DB devices are short
8	DB RecVdcLmt	DB circuit duty cycle reached to One
9	Rect HW OC	H/W DC Link Over Current detected by the rectifier processor
10	Rect HW OV	H/W Line Cap Over Voltage detected by the rectifier processor
11	DBOnlnDvcFlt	DB devices are faulty during online diagnostic
12	FltOvrdReq	Fault override at line/rectifier side is requested
13	MV Applied	Medium voltage detected by the drive
14	Line Closed	Drive input contactor is closed (based on line current feedback)
15	CapProtDlyDn	The time delay to allow line cap failure detection has expired

Rectifier Control Flags 5 [RecControl Flag5]

Linear Number: 476
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the rectifier control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	LowrInvPulse	For future use
1	NegSeqPurged	Negative sequence buffers are reset
2	LineFreqLoss	Drive has detected a deviation in the measured line frequency
3	Pre Empt Flt	A preemptive fault detected by the drive
4	IdcCont Fast	DC link current continuous indication. Fast response without communication delay
5	RecFlg5Bit5	Not Used bit
6	RecFlg5Bit6	Not Used bit
7	RecFlg5Bit7	Not Used bit
8	SPS Charged	Self-Powered Gate Power Supply Charged
9	RecFlg5Bit9	Not Used bit
10	Master UV	Drive has detected an under voltage condition
11	RecFlg5Bit11	Not Used bit
12	RecFlg5Bit12	Not Used bit
13	RecFlg5Bit13	Not Used bit
14	RecFlg5Bit14	Not Used bit
15	RecFlg5Bit15	Not Used bit

Rectifier Control Flags 6 [RecControl Flag6]

Linear Number: 1111
Access Level: Service
Read/Write: Read Only

This parameter displays the drive status flag and is used by drive control to make logical decisions. A '1' represents an indicated status. The following states are displayed:

Bit	Enum Text	Description
0	ConvAlphaLmt	Converter Alpha Limit
1	RecFlg6Bit1	Reserved for future use
2	RecFlg6Bit2	Reserved for future use
3	RecFlg6Bit3	Reserved for future use
4	RecFlg6Bit4	Reserved for future use
5	RecFlg6Bit5	Reserved for future use
6	RecFlg6Bit6	Reserved for future use
7	RecFlg6Bit7	Reserved for future use

Bit	Enum Text	Description
8	RecFlg6Bit8	Reserved for future use
9	RecFlg6Bit9	Reserved for future use
10	RecFlg6Bit10	Reserved for future use
11	RecFlg6Bit11	Reserved for future use
12	RecFlg6Bit12	Reserved for future use
13	RecFlg6Bit13	Reserved for future use
14	RecFlg6Bit14	Reserved for future use
15	RecFlg6Bit15	Reserved for future use

Rectifier Control Flags 7 [RecControl Flag7]

Linear Number: 1112
Access Level: Service
Read/Write: Read Only

This parameter displays the drive status flag and is used by drive control to make logical decisions. A '1' represents an indicated status. The following states are displayed:

Bit	Enum Text	Description
0	RecFlg7Bit0	Reserved for future use
1	RecFlg7Bit1	Reserved for future use
2	RecFlg7Bit2	Reserved for future use
3	RecFlg7Bit3	Reserved for future use
4	RecFlg7Bit4	Reserved for future use
5	RecFlg7Bit5	Reserved for future use
6	RecFlg7Bit6	Reserved for future use
7	RecFlg7Bit7	Reserved for future use
8	RecFlg7Bit8	Reserved for future use
9	RecFlg7Bit9	Reserved for future use
10	RecFlg7Bit10	Reserved for future use
11	RecFlg7Bit11	Reserved for future use
12	RecFlg7Bit12	Reserved for future use
13	RecFlg7Bit13	Reserved for future use
14	RecFlg7Bit14	Reserved for future use
15	RecFlg7Bit15	Reserved for future use

Inverter Control Flags 1 [InvControl Flag1]

Linear Number: 265
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	Mtr PLL Lock	Inverter control is locked to the rotor flux position
1	SpdRamp Enbl	Torque Ramp is complete and the speed ramp has been enabled
2	Mtr Rvs Seqn	The output voltage is not UVW
3	Close Loop	The drive is operating in closed-loop mode
4	FlxFbk Enbl	The drive is using the measured flux feedback from the motor
5	FreqFbk Enbl	The drive is using the measured stator frequency from the motor
6	Gate Freeze	The inverter is in Gate Freeze mode
7	Scurve Prof	The drive is running with an S-Curve Speed Profile
8	Drv Crit Flt	Inverter has detected a Critical Fault
9	TrqRamp Enbl	Motor Flux Time has expired and the drive is increasing the torque reference to TrqCmd0 Snsrless or TrqCmd0 Encoder
10	Coast Stop	Not Currently Active
11	PID Enabled	PID process control is enabled(1)
12	EncdrFbkOptn	The drive has a Tachometer/Encoder feedback signal available
13	EncdrFbkEnbl	The drive is running with Tachometer/Encoder Feedback enabled
14	Torque Lmt	The drive is in Torque Limit
15	FluxInterval	The drive is in Flux Interval

(1) Contact factory for availability.

Inverter Control Flags 2 [InvControl Flag2]

Linear Number: 642
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	InternlStart	Internal Start Command from Setup Wizard
1	InternalStop	Internal Stop Command from Setup Wizard
2	AutotuneCncl	Autotune has been aborted
3	Discharging	The Line filters capacitors are discharging (more than 50V)
4	Dvc Short	The Inverter has detected a shorted SGCT

Bit	Enum Text	Description
5	CtrlPwr Loss	The drive is in a Control Power Loss mode
6	AC Fail	The drive has detected an AC power loss condition
7	InvAnlgTstDn	Inverter Analog test is done
8	FreeWhlReset	Handshake for Freewheel Mode
9	InvSGCT Pwr	Inverter SGCTs have Power
10	AC Pwr Fail	The drive has detected an AC power loss condition from the ACB
11	InvDiag Done	The inverter diagnostics have been completed
12	InvTemp Loss	The inverter temperature feedback is missing
13	VdcVnVSBInst	DC and neutral voltage feedback board is installed
14	Mtr OL Pend	Motor Overload is Timing
15	SpeedRampRvs	Ramp reversing enabled

Inverter Control Flags 3 [InvControl Flag3]

Linear Number: 446
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A ‘1’ in a location indicates that condition is active, and a ‘0’ indicates the condition is inactive.

Bit	Enum Text	Description
0	PF Achieved	Desired power factor compensation has been achieved
1	RestartExprd	AutoRestart Delay timer has expired
2	PFC Standard	Standard Power factor compensation has been enabled
3	Out Dschrgd	Motor filter capacitors have been discharged to 5% of rated
4	UWV Seq	UWV Sequence enabled
5	IsoTx Fan1	Isolation Transformer 1 Fan is ON
6	IsoTx Fan2	Isolation Transformer 2 Fan is ON
7	ESP Drive	ESP Drive selected
8	Restart Mode	Auto Restart mode enabled
9	Cool Fans On	Drive Cooling Fans ON
10	PFC Custom	Custom Power factor compensation has been enabled
11	PFC Mod Ctrl	Power factor compensation using modulation index control
12	Flying Strt1	Flying Start State 1
13	Flying Strt2	Flying Start State 2
14	Flying Start	Flying Start mode is active
15	PFC FluxCtrl	Power factor compensation using motor flux control

Inverter Control Flags 4 [InvControl Flag4]

Linear Number: 469
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	Regen Rqst	Drive is going to start the regeneration mode
1	ZeroTrqIntvl	Drive is in transition to DB with limited regenerative torque
2	RegenInvRdy	Drive/Inverter is ready to start DB
3	Regen Mode	Drive is in Regenerating mode
4	Marine App	Drive application is Marine1
5	SVM Rqst	Space Vector Modulation (SVM) is requested during DB
6	DB to Normal	Dynamic Braking is going to transition to normal/motoring operation
7	FltOvrdReq	Fault override is requested by user
8	FltOvrdActiv	One or more faults are currently overridden in drive
9	SpdTrqTrnsit	Drive acknowledged the transition between torque and speed mode and started the delay counter for final transition
10	DBFanOn Rqst	Fan in DB cabinet are required to turn on
11	DB Fan Ctctr	DB fan contactor is ON
12	PFC SetPoint	Power Factor Correction is in a set-point mode
13	DBPFCDisblRq	Power Factor Correction is going to disable due to DB
14	DBPFCDisbld	Power Factor Correction is disabled due to DB
15	CM Choke	Drive has a common mode choke

Inverter Control Flags 5 [InvControl Flag5]

Linear Number: 470
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	No Flt Delay	Internal fault timers disabled
1	PFC Isd Ctrl	Power factor compensation using motor magnetizing current control
2	Skip A2D Fn	Bit is set during interval when the A2D function is skipped to avoid processing erroneous data
3	ZeroTrq Mode	Drive is running in zero torque mode

Bit	Enum Text	Description
4	LFC Fail XIO	The line filter capacitor (LFC) protection feature using the capacitor can pressure switch wired to the standard XIO is active
5	InvFlg5Bit5	Not Used bit
6	PFC Disabled	Power factor compensation is disabled.
7	PFC Flx Lmt	Drive reaches flux limit during power factor compensation.
8	PFC Idc Lmt	Drive reaches DC-link current limit during power factor compensation.
9	InvFlg5Bit9	Not Used bit
10	HPTC Enabled	The high performance torque control mode is enabled
11	Fast Off	Gating devices are turned off by “Fast Off” logic.
12	FreewheelOff	Gating devices are turned off by “Freewheeling Off” logic.
13	Normal Off	Gating devices are turned off by “Normal Off” logic.
14	FastOff Enbl	“Fast Off” logic is waiting for the condition to turn off the gating devices safely.
15	XIO Frozen	Not Used bit

Inverter Control Flags 6 [InvControl Flag6]

Linear Number: 1053
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A ‘1’ in a location indicates that condition is active, and a ‘0’ indicates the condition is inactive.

Bit	Enum Text	Description
0	Flux Reductn	Flux reduction is active
1	SpdBW Reduced	Speed regulator bandwidth reduced
2	JComp En	Inertia (J) compensation enabled
3	LoadObs En	Load observer enabled
4	FluxBlending	Flux blending is active
5	Tr Adapt	Rotor time constant adaptation is active
6	InvFlg6Bit6	Reserved for future use
7	InvFlg6Bit7	Reserved for future use
8	InvFlg6Bit8	Reserved for future use
9	InvFlg6Bit9	Reserved for future use
10	InvFlg6Bit10	Reserved for future use
11	InvFlg6Bit11	Reserved for future use
12	InvFlg6Bit12	Reserved for future use
13	InvFlg6Bit13	Reserved for future use
14	InvFlg6Bit14	Reserved for future use
15	InvFlg6Bit15	Reserved for future use

Inverter Control Flags 7 [InvControl Flag7]

Linear Number: 1113
Access Level: Service
Read/Write: Read Only

This word indicates various status bits within the inverter control. The word can be used in trending to assist in determining what the rectifier control is doing in a normal or abnormal situation. A '1' in a location indicates that condition is active, and a '0' indicates the condition is inactive.

Bit	Enum Text	Description
0	InvFlg7Bit0	Reserved for future use
1	InvFlg7Bit1	Reserved for future use
2	InvFlg7Bit2	Reserved for future use
3	InvFlg7Bit3	Reserved for future use
4	InvFlg7Bit4	Reserved for future use
5	InvFlg7Bit5	Reserved for future use
6	InvFlg7Bit6	Reserved for future use
7	InvFlg7Bit7	Reserved for future use
8	InvFlg7Bit8	Reserved for future use
9	InvFlg7Bit9	Reserved for future use
10	InvFlg7Bit10	Reserved for future use
11	InvFlg7Bit11	Reserved for future use
12	InvFlg7Bit12	Reserved for future use
13	InvFlg7Bit13	Reserved for future use
14	InvFlg7Bit14	Reserved for future use
15	InvFlg7Bit15	Reserved for future use

Inverter Analog Self Test Code 1 [InvAnlg SelfTst1]

Linear Number: 96
Access Level: Service
Read/Write: Read Only

This parameter displays the power-up diagnostic results on the Analog Control Board. It refers to the signals used by the inverter side processor. If the software detects a problem with the analog signals into the board, or the board itself, an *InvAnlg Self Test* fault will appear. This parameter will help indicate which signals are causing the problem. The action should be to investigate all the connections and feedback paths related to that signal before changing the ACB or the DPM. This is a self-test fault that will only occur at initial power-up.

Bit	Enum Text	Description
0	HECSU Offset	Phase U Motor Current Offset High
1	HECSW Offset	Phase V Motor Current Offset High
2	UV Offset	Phase UV Motor Voltage Offset High
3	VW Offset	Phase VW Motor Voltage Offset High

Bit	Enum Text	Description
4	VSAB Offset	Bypass UV Voltage Offset High
5	VSBC Offset	Bypass VW Voltage Offset High
6	2UV Offset	Master Bridge Phase UV Voltage Offset High (for Synch. Transfer)
7	2VW Offset	Master Bridge Phase VW Voltage Offset High (for Synch. Transfer)
8	VMDC1 Offset	Motor Side DC Link Voltage Offset High
9	VMDC2 Offset	Motor Side DC Link Voltage Offset High(1)
10	UV_2 Offset	Phase UV Motor Voltage Offset High (used for low motor voltage)
11	VW_2 Offset	Phase VW Motor Voltage Offset High (used for low motor voltage)
12	MFCN Offset	Motor Filter Capacitor Neutral Voltage Offset High
13	VZS Offset	Motor Zero Sequence Voltage Offset High
14	UV_NF Offset	Unfiltered Phase UV Motor Voltage Offset High
15	VW_NF Offset	Unfiltered Phase VW Motor Voltage Offset High

(1) Contact factory for availability.

Inverter Analog Self Test Code 2 [InvAnlg SelfTst2]

Linear Number: 251
Access Level: Service
Read/Write: Read Only

This parameter displays the power-up diagnostic results on the Analog Control Board. It refers to the signals used by the inverter side processor. If the software detects a problem with the analog signals into the board, or the board itself, an *InvAnlg SelfTest* fault will appear. This parameter will help indicate which signals are causing the problem. The action should be to investigate all the connections and feedback paths related to that signal before changing the ACB or the DPM. This is a self-test fault that will only occur at initial power-up. Ignoring the faults can result in abnormal drive behavior.

Bit	Enum Text	Description
0	AC1 Offset	Offset measured on AC control power #1
1	AC2 Offset	Offset measured on AC control power #2
2	AC3 Offset	Offset measured on AC control power #3
3	AC4 Offset	Offset measured on AC control power #4
4	AP0 Offset	Offset on Converter airflow Air Pressure 0 Sensor
5	AP1 Offset	Offset on Isolation transformer pressure circuit
6	AOUT_DAC	Reserved for future use(1)
7	METER_DAC	Reserved for future use(1)
8	TRIP_DAC	Reserved for future use(1)
9	Unused	
10	Unused	
11	Unused	
12	Unused	

Bit	Enum Text	Description
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

Rectifier Analog Self Test Code 1 [RecAnlg SelfTst1]

Linear Number: 473
Access Level: Service
Read/Write: Read Only

This parameter displays the power-up diagnostic results on the Analog Control Board. It refers to the signals used by the rectifier side processor. If the software detects a problem with the analog signals into the board, or the board itself, a *RecAnlg Self Test* fault will appear. This parameter will help indicate which signals are causing the problem. The action should be to investigate all the connections and feedback paths related to that signal before changing the ACB or the DPM. This is a self-test fault that will only occur at initial power-up.

Bit	Enum Text	Description
0	CT2U Offset	Master Bridge Phase 2U Current Offset High
1	CT2W Offset	Master Bridge Phase 2V Current Offset High
2	CT3U Offset	Slave 1 Bridge Phase 3U Current Offset High
3	CT3W Offset	Slave 1 Bridge Phase 3V Current Offset High
4	CT4U Offset	Slave 2 Bridge Phase 4U Current Offset High
5	CT4W Offset	Slave 2 Bridge Phase 4V Current Offset High
6	2UV Offset	Master Bridge Phase UV Voltage Offset High
7	2VW Offset	Master Bridge Phase VW Voltage Offset High
8	3UV Offset	Slave 1 Bridge Phase UV Voltage Offset High
9	3UW Offset	Slave 1 Bridge Phase VW Voltage Offset High
10	4UV Offset	Slave 2 Bridge Phase UV Voltage Offset High
11	4UW Offset	Slave 2 Bridge Phase VW Voltage Offset High
12	2UV_NFOffset	Unfiltered Master Bridge Phase UV Voltage Offset High
13	2VW_NFOffset	Unfiltered Master Bridge Phase VW Voltage Offset High
14	3UV_NFOffset	Unfiltered Slave 1 Bridge Phase UV Voltage Offset High
15	3VW_NFOffset	Unfiltered Slave 1 Bridge Phase VW Voltage Offset High

Rectifier Analog Self Test Code 2 [RecAnlg SelfTst2]

Linear Number: 474
Access Level: Service
Read/Write: Read Only

This parameter displays the power-up diagnostic results on the Analog Control Board. It refers to the signals used by the rectifier side processor. If the software detects a problem with the analog signals into the board, or the board itself, a *RecAnlg Self Test* fault will appear. This parameter will help indicate which

signals are causing the problem. The action should be to investigate all the connections and feedback paths related to that signal before changing the ACB or the DPM. This is a self-test fault that will only occur at initial power-up.

Bit	Enum Text	Description
0	HECSDC1Offst	DC Link Current Offset High
1	HECSDC2Offst	DC Link Current Offset High(1)
2	LFCN1 Offset	Line Filter Capacitor Neutral Voltage Offset High
3	LFCN2 Offset	Line Filter Capacitor Neutral Voltage Offset High(1)
4	VZS2 Offset	Line Zero Sequence Voltage Offset High
5	VZS3 Offset	Line Zero Sequence Voltage Offset High(1)
6	VLDC1 Offset	Line Side DC Link Voltage Offset High
7	VLDC2 Offset	Line Side DC Link Voltage Offset High(1)
8	IGND Offset	Ground Fault Current Offset High
9	INN Offset	Common Mode Choke Current Offset High
10	VNN Offset	Common Mode Choke Neutral Resistor Voltage Offset High
11	VSPAREOffst	Reserved for future use(1)
12	HECSDC1_V2F	Reserved for future use(1)
13	HECSDC2_V2F	Reserved for future use(1)
14	Unused	
15	Unused	

(1) Contact factory for availability.

Rectifier Analog Self Test Code 3(1) [RecAnlg SelfTst3]

Linear Number: 494
Access Level: Service
Read/Write: Read Only

This parameter displays the power-up diagnostic results on the Analog Control Board. It refers to the signals used by the rectifier (Master) processor. This parameter is currently not being used and is intended for future use.

Current Sensor Fault Code [Cur Sens FltCode]

Linear Number: 764
Access Level: Service
Read/Write: Read Only

This parameter in *Diagnostic* group helps in understanding why the drive tripped with a *Current Sensor* fault. This feature is active only in inverter short circuit test modes and open-loop mode. The options are:

(1) Contact factory for availability.

Bit	Enum Text	Description
0	HECS/CTError	DC current measured from HECS and estimated from CT do not match
1	CT Phase Seq	CT Phase Sequence is different from measured voltage sequence
2	CT Phs/Alpha	Firing angle does not agree with phase angle of the rectifier current
3	Cap/CT Error	Error in the measured and estimated line current
4	Motor HECS	Motor HECS
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Detailed explanation is as follows:

Drive compares the measured DC current feedback with the estimated DC current feedback from the line current (capacitor compensation done on PWMR) and creates the fault *Current Sensor* if there is a large difference (HECS/CTError bit in fault code). This protects the drive when starting (in test modes) with the DC HECS unplugged, or backwards.

The phase sequence of the CT feedback (forward/reverse) is compared with the phase sequence of the voltage feedback and a *Current Sensor* fault is generated if they are different (*CT Phase Seq* bit in fault code).

When DC current is flowing, the drive compares the firing angle with the angle of the estimated rectifier current and generates a *Current Sensor* fault if there is a large difference (*CT Phs/Alpha* bit in fault code).

On PWMR drives, when not gating (in short circuit and open-loop test modes) the drive compares the measured capacitor current and expected capacitor current and generates a *Current Sensor* fault if there is a large difference (*Cap/CT Error* bit in fault code).

In open-loop test mode, the drive compares the motor current feedback to the DC current feedback and generates a *Current Sensor* fault if there is a large difference (*Motor HECS* bit in fault code).

Drive Overload Value [Drive Overload]

Linear Number:	551
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter displays the normalized value of drive overload. A warning is issued when the value is equal to the parameter *Drv OvrLoad Wrn (240)* and the drive is tripped when the value reaches 1.0.

Motor Overload Value [Motor Overload]

Linear Number:	550
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter displays the normalized value of motor overload. A warning is issued when the value is equal to the parameter *Mtr OvrLoad Wrn (351)* and the drive is tripped when the value reaches 1.0.

Neutral Resistor Overload Value [RNeutral OvrLoad]

Linear Number:	682
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter specifies the normalized value of the Neutral Resistor overload, and is active only for Direct-to-Drive PowerFlex 7000 drives. The drive is faulted when the value reaches 1.0.

Bypass Voltage Unbalance Value [Bypass VoltUnbal]

Linear Number:	428
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter specifies the value of voltage unbalance between the 3 phases of the bypass voltage measured on the top of the bypass contactor for Synchronous Transfer applications. A fault is issued when the value exceeds the parameter *LineVoltUnbalTrp (271)* for the duration set in *LineVoltUnbalDly (272)*.

Master Voltage Unbalance Value [Master VoltUnbal]

Linear Number: 610
Minimum Value: 0.00
Maximum Value: 1.00
Access Level: Service
Read/Write: Read Only

This parameter displays the value of voltage unbalance between the 3 phases on the master rectifier bridge. A fault is issued when the value exceeds the parameter *LineVoltUnbalTrp (271)* for the duration set in *LineVoltUnbalDly (272)*.

Slave 1 Voltage Unbalance Value [Slave1 VoltUnbal]

Linear Number: 611
Minimum Value: 0.00
Maximum Value: 1.00
Access Level: Service
Read/Write: Read Only

This parameter displays the value of voltage unbalance between the 3 phases on the slave 1 bridge (18 pulse drives only). A fault is issued when the value exceeds the parameter *LineVoltUnbalTrp (271)* for the duration set in *LineVoltUnbalDly (272)*.

Slave 2 Voltage Unbalance Value [Slave2 VoltUnbal]

Linear Number: 612
Minimum Value: 0.00
Maximum Value: 1.00
Access Level: Service
Read/Write: Read Only

This parameter displays the value of voltage unbalance between the 3 phases on the slave 2 bridge (18 pulse drives only). A fault is issued when the value exceeds the parameter *LineVoltUnbalTrp (271)* for the duration set in *LineVoltUnbalDly (272)*.

Master Current Unbalance Value [Master Cur Unbal]

Linear Number: 613
Minimum Value: 0.00
Maximum Value: 1.00
Access Level: Service
Read/Write: Read Only

This parameter displays the value of current unbalance between the 3 phases on the master bridge. A fault is issued when the value exceeds the parameter *Line CurUnbalTrp (108)* for the duration set in *Line CurUnbalDly (109)*.

Slave 1 Current Unbalance Value [Slave1 Cur Unbal]

Linear Number:	614
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter displays the value of current unbalance between the 3 phases on the slave 1 bridge (18 pulse drives only). A fault is issued when the value exceeds the parameter *Line CurUnbalTrp (108)* for the duration set in *Line CurUnbalDly (109)*.

Slave 2 Current Unbalance Value [Slave2 Cur Unbal]

Linear Number:	615
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter displays the value of current unbalance between the 3 phases on the slave 2 bridge (18 pulse drives only). A fault is issued when the value exceeds the parameter *Line CurUnbalTrp (108)* for the duration set in *Line CurUnbalDly (109)*.

Motor Current Unbalance Value [Motor Cur Unbal]

Linear Number:	263
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter specifies the value of current unbalance between the 3 phases of the motor measured by the motor side HECS. A fault is issued when the value exceeds the parameter *Mtr CurUnbal Trp (208)* for the duration set in *Mtr CurUnbal Trp (214)*.

Motor Flux Unbalance Value [Motor Flux Unbal]

Linear Number:	619
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter specifies the value of flux unbalance detected in the motor. The flux in a motor is estimated using the motor voltage and motor current feedback. A fault is issued when the value exceeds the parameter *Mtr FluxUnbal Trp (585)* for the duration set in *Mtr FluxUnbal Trp (586)*.

Fault Output [Fault Output]

Linear Number:	490
Minimum Value:	0
Maximum Value:	1
Access Level:	Service
Read/Write:	Read Only

This parameter is used for troubleshooting and allows the user to properly use a chart recorder, oscilloscope or a similar device to trigger on a drive fault and capture useful test point data. The parameter goes from 0 to the maximum value of 1 whenever any fault occurs. Assigning this parameter to any one of the test points on the DPM or 0-10V outputs on the Analog Control Board, an output that will change state from 0V to 10V on a fault will be produced. This output can be used as a trigger for capturing other drive data from test points during a fault.

Warning Output [Warning Output]

Linear Number:	700
Minimum Value:	0
Maximum Value:	1
Access Level:	Service
Read/Write:	Read Only

This parameter is used for troubleshooting and allows the user to properly use a chart recorder, oscilloscope or a similar device to trigger on a drive fault and capture useful test point data. The parameter goes from 0 to the maximum value of 1 whenever any warning occurs. Assigning this parameter to any one of the test points on the DPM or 0-10V outputs on the Analog Control Board, an output that will change state from 0V to 10V on a warning will be produced. This output can be used as a trigger for capturing other drive data from test points during a warning condition.

Scope Trigger [Scope Trigger]

Linear Number:	689
Minimum Value:	0
Maximum Value:	1
Access Level:	Service
Read/Write:	Read Only

This parameter is set high when the Trending is triggered. The parameter can be assigned to a Test Point in order to trigger a scope.

Line Current Unbalance [Line Cur Unbal]

Linear Number:	894
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter displays the value of current unbalance measured in the line current. When compared to *Master Cur Unbal (613)*, this value has a faster response.

Neutral Fundamental Current [NeutralFund Cur]

Linear Number: 895
Minimum Value: 0.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured fundamental component in the neutral current flowing in the line filter capacitor bank (if Neutral CT is installed in the drive, *CapNeutralCT* in *HardwareOptions2 [274]*). This only applies to drives with PWM rectifier.

Neutral Fundamental Voltage [NeutralFund Volt]

Linear Number: 896
Minimum Value: 0.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured fundamental component in the line side neutral voltage. This only applies to drives with PWM rectifier.

Line Current Negative Sequence [LineCur Neg Seq]

Linear Number: 982
Minimum Value: -200.0 A
Maximum Value: 200.0 A
Access Level: Service
Read/Write: Read Only

This variable displays the Negative Sequence level of line current as an indication of unbalance in the input side of the drive. This variable is used for detection of Line Capacitor Malfunction while drive is in ready mode (not-gating). This variable displays zero while drive is gating (e.g. running).

Line Voltage Negative Sequence [LineVolt Neg Seq]

Linear Number: 983
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This variable displays the Negative Sequence level of line voltage as an indication of unbalance in the source voltage. This variable is used for compensating of unbalance contributed to the total unbalance in the input side of the drive. This variable shows zero while drive is gating (e.g. running).

Parameter Error [Parameter Error]

Linear Number:	597
Minimum Value:	0
Maximum Value:	65535
Access Level:	Basic
Read/Write:	Read Only

This parameter displays the linear number of the parameter in the database having a value that's out of range. Only one parameter linear number can be specified at a time in the parameter error. This means that more than one parameter can have an error but only one of them is specified.

Feature Select Parameters

Operating Mode [Operating Mode]

Linear Number: 4
Default Value: Normal
Access Level: Monitor
Read/Write: Read/Write when Stopped

This parameter selects the operating modes of the drive. It is not saved and is set to Normal at power up. This parameter cannot be changed when the drive is running. See Operating Modes on page 36 for detailed description of the test modes.

The possible operating modes are:

Value	Enum Text	Description
0	Normal	Normal operating mode
1	Gate Test	Gate Test mode (medium voltage isolated)
2	DC Current	DC Current test mode
3	System Test	System Test mode (medium voltage isolated)
4	Open Circuit	Open Circuit test mode (needs output contactor or disconnected motor)
5	Open Loop	Open Loop test mode
6	UncoupledMtr	Setting low starting torque for Uncoupled motor operation(1)
7	DB Gate Test	Gate test for SGCTs in the Dynamic Braking circuit (Medium voltage isolated)
8	DB MV Test	Time limited DC Current test for Dynamic Braking circuit
9	DB Pwr Test	Automated ramp test to evaluate DB rated power (for in-house factory use only. Consult factory before using).

(1) Contact factory for availability.

Speed Reference Select [Speed Ref Select]

Linear Number: 7
Default Value: Local
Access Level: Monitor
Read/Write: Read/Write

This parameter specifies the source of the speed command in the drive when in REMOTE/AUTO mode and will update *Control Reference (275)* accordingly.

Value	Enum Text	Description
0	Local	This selects the analog speed potentiometer mounted on the front panel
1	DPIAdapter 1	This selects the digital speed command coming from DPI adapter 1
2	DPIAdapter 2	This selects the digital speed command coming from DPI adapter 2
3	DPIAdapter 5	This selects the digital speed command coming from DPI adapter 5
4	Analog Inp1	This selects the speed command from Analog Input 1 which could be 0…10V or 4-20mA. Default setting is 4-20mA

Value	Enum Text	Description
5	Analog Inp2	This selects the speed command from Analog Input 2 which could be 0…10V or 4-20mA. Default setting is 0…10V
6	Preset Spd 1	This selects the value specified in parameter Preset Speed 1
7	Preset Spd 2	This selects the value specified in parameter Preset Speed 2
8	Preset Spd 3	This selects the value specified in parameter Preset Speed 3
9	App Specific	When in this mode, switching between speed commands is specific to the application e.g. Marine 1 application. Contact factory for details.
10	PFNetServer	Speed reference is from GUI terminal in computer through Ethernet connection (processed by the PFNetServer board connected to DPM module in the drive)(1).

(1) Contact factory for availability.

The most common usage is a 4...20mA signal wired into the ACB. To activate this source, select the parameter as *Analog Inp1*.

If sending a digital Speed Reference through a DPI adapter, select *DPIAdapter 5*.

The DPI protocol allows for a splitter, and if a splitter is installed in the drive, then use either *DPIAdapter 1* or *DPIAdapter 2* for speed command.

Torque Reference Select [TorqueRef Select]

Linear Number: 401
Default Value: None
Access Level: Monitor
Read/Write: Read/Write

This parameter specifies the source of the torque command in the drive and will update parameter *Trq Cmd Drive (404)* accordingly.

Value	Enum Text	Description
0	None	No input for torque command
1	DPIAdapter 1	This selects the digital torque command coming from DPI adapter 1(1)
2	DPIAdapter 2	This selects the digital torque command coming from DPI adapter 2(1)
3	DPIAdapter 5	This selects the digital torque command coming from DPI adapter 5(1)
4	Analog Inp1	This selects the torque command from Analog Input 1 which could be 0…10V or 4-20mA. Default setting is 4-20mA(1)
5	Analog Inp2	This selects the torque command from Analog Input 2 which could be 0…10V or 4-20mA. Default setting is 0…10V(1)
6	App Specific	When in this mode, switching between torque commands is specific to the application e.g. Marine 1 application. Contact factory for details.

(1) Contact factory for availability.

Speed Command Loss [Ref Command Loss]

Linear Number: 749
Default Value: Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the action taken by the drive when a loss of reference command from either a DPI adapter or the 4…20mA current loop is sensed by the drive. The options available are:

Value	Enum Text	Description
0	Fault	Trip the drive on a Class 2 fault
1	Last Speed	Run the drive at the last commanded reference
2	Preset 1	Run the drive at Preset 1 speed command
3	Local	Run the drive at the speed command from the Local source (door pot)
4	Analog Inp1	Run the drive at the reference command from the Analog Input 1
5	Analog Inp2	Run the drive at the reference command from the Analog Input 2

Coast Speed [Coast Speed]

Linear Number: 60
Default Value: 2.0 Hz
Minimum Value: 0.1 Hz
Maximum Value: 100.0 Hz
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the speed at which the drive stops gating and allows the motor to come to a coast stop. For large inertia systems like ID Fan, the motor may come to a stop after a long interval of time.

Automatic Restart Delay [Auto Restart Dly]

Linear Number: 3
Default Value: 0.0 sec
Minimum Value: 0.0 sec
Maximum Value: 10.0 sec
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the time interval following a line under-voltage or line loss event during which the drive will automatically restart if the conditions are restored; assuming that the drive was running at the time of the outage and the control power is maintained. This is typically done by having a UPS feeding the power to the control boards. Automatic Restart Delay can be extended up to 10 minutes by setting *SpFeat2Bit5* in *SpecialFeatures2 (507)*. CONTACT

THE FACTORY PRIOR TO ENABLING THE EXTENDED TIME DELAY.

IMPORTANT The drive does not support Auto-restart feature if HPTC mode is enabled. The Auto-restart feature is disabled under HPTC mode since firmware release 10.002. If the drive is in HPTC mode and detects an under voltage condition, the drive will trip immediately even if the Auto-restart feature is enabled.

Input Contactor Configuration [Input Ctctr Cfg]

Linear Number: 1
Default Value: All Faults
Access Level: Basic
Read/Write: Read/Write when Stopped

This parameter specifies the conditions under which the input contactor will be commanded to open by the drive. The possible contactor configurations specified by this parameter are listed below.

Value	Enum Text	Description
0	Not Running	Open the contactor when not running
1	All Faults	Open the contactor for any fault condition in the drive
2	Critical Flt	Open the contactor for critical faults only. For a complete list of Critical faults refer to Appendix.

Input Contactor Open Delay [InpCtctr OpenDly]

Linear Number: 10
Default Value: 0.0 min
Minimum Value: 0.0 min
Maximum Value: 60.0 min
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time delay between the drive shutting off and the input contactor opening, if the contactor is configured to open when the drive is not running. Refer to *Input Ctctr Cfg (1)*. The purpose of this delay is to keep a harmonic filter energized if the drive is stopped for a short time and not have to wait for the filter capacitors to discharge before restarting.

Overhauling Load [Overhauling Load]

Linear Number: 1160
Default Value: Off
Access Level: Basic
Read/Write: Read/Write when Stopped

This parameter is to turn on or off the protection logics operating with overhauling loads. If drive has an overhauling load, this parameter has to be set to "On".

Value	Enum Text	Description
0	Off	Turn off the overhauling load protection.
1	On	Turn on the overhauling load protection.
2	(reserved)	Reserved for future use

Output Contactor Configuration [Output Ctctr Cfg]

Linear Number: 5
Default Value: Not Running
Access Level: Basic
Read/Write: Read/Write when Stopped

This parameter specifies the conditions under which the output contactor (if installed: Refer to *Output Ctctr* bit in *HardwareOptions1 [141])* will be commanded to open by the drive. The possible contactor configurations specified by this parameter are:

Value	Enum Text	Description
0	Not Running	Open the contactor when the drive is not running
1	All Faults	Open the contactor for any fault condition in the drive

Special Features 1 [SpecialFeatures1]

Linear Number: 99
Default Value: 1000000000000000
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter is used to enable features in the drive. The options available are:

Bit	Enum Text	Description
0	Rvs Enable	Drive Reverse mode is enabled
1	ActDischarge	Active Discharge mode is enabled(1)
2	UWV Ph Rot'n	UWV as Forward Phase Rotation
3	FrceCool Mtr	Force Cooled Motor(1)
4	Rvs Encoder	Reverse Encoder direction (for Sync motor drives only)(1)
5	SyncXfr Enab	Synchronous transfer is enabled
6	Metric Units	Use metric units
7	BiDr FlyStrt	Bidirectional flying start is enabled
8	Heavy Duty	Drive is designed for Heavy Duty Applications
9	UltraHvyDuty	Drive is designed for Ultra Heavy Duty (>150% overload)
10	LineVoltSync	Use Line Voltage for Synchronous transfer(1)
11	EnergySaving	Future Use(1)
12	Process PID	Enable Process PID controller(1)
13	Capablty Dis	Capability Curve feature is disabled
14	DisSyncDrift	Drift angle logic for synchronous transfer is disabled
15	ThermManager	Thermal Manager feature is enabled

(1) Contact factory for availability.

Special Features 2 [SpecialFeatures2]

Linear Number: 507
Default Value: 0000000000000000
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter is used to enable features in the drive. The options available are:

Bit	Enum Text	Description
0	CloseSyncXfr	Closed Synchronous transfer(1)
1	Drv Mode Sel	This bit is to define the operation of the drive's front panel LOCAL/ REMOTE switch. If this bit is not set (Default) switching between reference commands can only occur when the drive is stopped. If the bit is set then the operation will be Manual/AUTO and the reference commands can be switched while running.
2	PD DlydStart	Not Used bit
3	A2D SeqError	Enable A2D sequence Error detection
4	Slip Uncomp	For firmware revision 8.002 and higher, if this bit is not set, Slip Compensation is active (Rotor frequency tracks *Speed Command In [276]*). If this bit set, Slip Compensation is bypassed (Stator frequency tracks *Speed Command In [276]*). The proper database enum text shall be updated in database 9.001.
5	Restrt Xtend	For firmware revision 8.002 and higher, this bit enables the Auto-restart delay to be extended up to 10 minutes. Value programmed in *Auto Restart Dly (3)* will be read as minutes (even though its unit of measurement still indicates sec). The proper database enum text shall be updated in database 9.001.
6	Drv Output P	For firmware revision 8.002 and higher, if this bit is not set, *Motor Power (364)*, displays the motor air-gap power. If bit is set, *Motor Power* displays the drive output power. The proper database enum text shall be updated in database 9.001.
7	Source PCC V	For firmware revision 8.002 and higher, if this bit is not set, *Line Voltage (324)*, displays the estimated voltage at the Line Reactor. If this bit is set, *Line Voltage* displays the estimated line voltage at the point of coupling. The proper database enum text shall be updated in database 9.001.
8	LFC Fail XIO	Enable the line filter capacitor (LFC) protection feature using the capacitor can pressure switch wired to the standard XIO.
9	RecDevPS Tst	Enable the Rectifier Device Power up Status Test
10	LdObs Enable	For firmware revision 10.001 and higher, if this bit is set, the load observer will be enabled.The load observer feature can be enabled only if the high performance torque control feature is enabled.
11	SpFeat2Bit11	Not Used bit
12	SpFeat2Bit12	Not Used bit
13	SpFeat2Bit13	Not Used bit
14	SpFeat2Bit14	Not Used bit
15	HPTC Mode	For firmware revision 10.001 and higher, if this bit is set, the high performance torque control feature will be enabled.

(1) Contact factory for availability.

Special Features 3 [SpecialFeatures3]

Linear Number: 920
Default Value: 0000000000000000
Access Level: Advanced
Read/Write: Read/Write

This parameter is used to enable features in the drive. The options available are:

Bit	Enum Text	Description
0	DynBrak Enab	Dynamic Braking feature is enabled.
1	TorqReg Enab	Torque regulator is enabled(1)
2	FreqAdj Enab	Automatic adjustment of converter switching frequency is enabled
3	BlndFlx Enab	Algorithm for blending the flux for transition between current model and voltage model is enabled(1)
4	PF RefSelct	This enables the PF control mode in the drive. With the default setting (0), the drive provides VAR compensation
5	RTS Diag Dis	Specific diagnostics are disabled to be able to use the firmware in Real Time Simulation setup (for factory use only)
6	DisSyncFlux	This disables the flux increase during synchronous transfer.
7	CritFlt Lock	Future use(1)
8	IdcMovingAvg	Upon setting this bit, current feedback is then becoming the moving average of four samples and regulator gains are adjusted to address the delay due to this averaging.
9	CapFlt Reset	Not Used bit
10	RecDvDiagTst	Enable Rectifier Device Diagnostic test
11	LPF Line Cur	Enable Low Pass Filter for line current filtering
12	VbrdgeAvgFil	Enable the Average Bridge Voltage Filter feature
13	Flx Reg FFwd	Reserved for future use.
14	LnUV RunEnab	Enable the feature to maintain drive RUN status during line undervoltage for a certain time, depending on the time delay setting of P168 Line UndVolt Dly.
15	Acc AUC Dis	Disable accelerated area under the curve method

(1) Contact factory for availability.

Special Features 4 [SpecialFeatures4]

Linear Number: 996
Default Value: 0000000000000000
Access Level: Advanced
Read/Write: Read/Write

This parameter is used to enable features in the drive. The options available are:

Bit	Enum Text	Description
0	JComp Enable	For firmware revision 10.001 and higher. This bit is used to enable the inertia (J) compensation feature This bit is valid only if the high performance torque control feature is enabled.
1	Tracking AW	Tracking Anti-windup
2	Enc Warn Sel	For firmware revision 10.001 and higher, if this bit is not set, the drive will be faulted on encoder loss if the encoder is lost at speed higher than 5 Hz. If this bit is set, the drive will switch to sensorless and generate encoder loss warning if the encoder is lost at speed higher than 5 Hz. This bit is valid only if the high performance torque control feature is enabled.
3	Tr Adapt	Rotor time constant (Tr) Adaptation enable
4	Dis bumpless	This bit disables the new "bumpless" feature that forces the speed reference to be equal to speed feedback during the torque mode operation. Once the drive commanded to speed mode, the speed reference follows the speed profile until it reaches the speed command. This feature is only available with HPTC mode.
5	InvOv1msDly	This bit delays the action of Gating Freeze for 1…2 ms when Inverter OV is occurred. The delay action is disabled by default. Once this bit is set, this feature is enabled and the delay is applied to the Gating Freeze protection during the Inverter Over Voltage condition. Enabling this bit can cause damage to the SGCT switching devices. Call the Factory before enabling this bit.
6	HiOvrCurTrp	This bit increases the Maximum DC Link Over Current Trip (P169) value to 4 pu, if the rated motor current and SGCT device current limits allow it. Enabling this bit and changing P169 to a high value (above 2 pu) can damage the drive hardware. Only used for full redundant parallel drive systems, or ultra heavy duty drive systems. Contact the factory before enabling this feature.
7	ZroSpd_RegEn	This bit enables the speed regulator at zero speed and light load condition (torque reference less than 0.05 pu). If this bit is cleared, the speed regulator is disabled when the torque_reference is less than 0.05 pu for zero speed operation. If this bit is set, the speed regulator is always active, based on a programmable parameter Disbl SpdReg Trq (P.1156). Disbl SpdReg Trq (P.1156) sets the torque limit at which the speed regulator is disabled.
8	SpFeat4Bit8	Reserved for future use
9	SpFeat4Bit9	Reserved for future use
10	SpFeat4Bit10	Reserved for future use
11	SpFeat4Bit11	Reserved for future use
12	SpFeat4Bit12	Reserved for future use
13	SpFeat4Bit13	Reserved for future use
14	SpFeat4Bit14	Reserved for future use
15	SpFeat4Bit15	Reserved for future use

Load Loss Detection [Load Loss Detect]

Linear Number: 199
Default Value: Disabled
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the response of the drive to a loss of load condition. This parameter is specifically designed for down-hole pump applications, where the user would normally not want to run with a loss of load, as that is not a normal condition for this type of pump application. Refer to *Motor Protection* group for parameters needed to configure this feature. This parameter has the following options:

Value	Enum Text	Description
0	Disabled	The drive will operate normally in the event of a load loss condition
1	Warning	The drive will run with a warning indication in the event of a load loss condition
2	Fault	The drive will shutdown on a Class2 fault in the event of a load loss condition

Net Server Fault Action [NetSrvr FltAct'n]

Linear Number: 879
Default Value: Fault
Access Level: Advanced
Read/Write: Read/Write

This parameter defines the action the drive will take if it detects a failure within the communications via the optional PFNetServer module.

Value	Enum Text	Description
0	Fault	Create an Adapter Fault in the Drive
1	Stop	Stop the drive
2	Zero Data	Clears the Reference Command and Command Word if in control
3	Hold Last	Data is maintained at last state
4	Ref Cmd Loss	Perform the action defined by the *Reference Command Loss (749)*

Net Server Multi-point Control [NetSrvr MPntCntl]

Linear Number: 981
Default Value: Enabled All
Access Level: Advanced
Read/Write: Read/Write

Reserved Parameter is not used in 9.xxx firmware or earlier.

When devices are connected through the optional PowerFlex NetServer module, one or more devices may control the drive in terms of speed reference, start, stop, reset, etc. This parameter configures how the control will be handled.

Disabled: Only one device can control the drive at a time. This is similar to how the 20-COMM-E adapter would handle a connected device to the drive.

Enabled Any: More then one device can control the drive through the PowerFlex NetServer module at any time. If any of the connected devices experience a communication loss, then an Adapter Loss will occur in the drive.

Enabled All: More then one device can control the drive through the PowerFlex NetServer module at any time. All of the connected devices must experience a communication loss before an Adapter Loss will occur in the drive.

When an Adapter Loss occurs, the action taken by the drive is dependant on parameter *NetSrvr FltAct'n (879)*.

Rectifier Gating Test [Rec Gating Test]

Linear Number: 590
Default Value: Off
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter selects the various rectifier gating test sequences. The drive should be isolated from medium voltage. The following options are available:

Value	Enum Text	Description
0	Off	This stops the rectifier gating test sequence
1	Test Pattern	This parameter applies a pattern that fires the devices sequentially at low frequency[1]
2	Normal Gate	This parameter applies a normal gating pattern to the Rectifier Bridge[1]

(1) For 6 and 18-pulse SCR drives, ensure that the special power harness is connected to the gating boards of all devices. A detailed description is provided in Operating Modes on page 36.

Inverter Gating Test [Inv Gating Test]

Linear Number: 591
Default Value: Off
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter selects the various inverter gating test sequences. The drive should be isolated from medium voltage. The following options are available:

Value	Enum Text	Description
0	Off	This stops the rectifier gating test sequence
1	Test Pattern	This parameter applies a pattern that fires the devices sequentially at low frequency
2	Normal Gate	This parameter applies a normal gating pattern to the Inverter Bridge[1]

(1) For 6 and 18-pulse SCR drives, ensure that the special power harness is connected to the gating boards of all devices. A detailed description is provided in Operating Modes on page 36.

Setup Wizard [Setup Wizard]

Linear Number: 13
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter specifies the progress of the Setup Wizard. A '1' indicates that the step has been completed by the setup wizard. Until all the steps are completed, you will always be prompted to continue with the process each time control power is cycled. The following steps are displayed:

Bit	Enum Text	Description
0	Path Picked	For Internal use only
1	Gating Test	Perform gating checks on the drive
2	Motor Data	Enter motor nameplate data
3	Features	Enter Feature Select parameters
4	Speed Ref	Enter Speed Profile parameters
5	Analog Calib	Calibrate analog system
6	Ext Faults	Configure the External Faults
7	System Test	Perform System Test
8	Phasing Chck	Performed phasing check for an 18-pulse drive
9	Autotuning	Autotune drive and motor parameters
10	DC Test	Run the drive in DC Current Test Mode
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Extended Trend [Extended Trend]

Linear Number: 702
Default Value: Enabled
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter refers to the trending function which can be set up and accessed through the programming terminal. The drive comes with 2 options for the size of the trend buffer. It can be set for either 100 samples or 1000 samples. Using 1000 samples allows more data to be collected although it may slow down the non-critical background tasks. Also the 1000 sample trending cannot be viewed on the programming terminal. It can be accessed through the serial port on the DPM. Contact factory for more information on how to use this feature.

The parameter can be changed while running, but because the memory needs to be reconfigured, the option will not change until control power is cycled. In the interim, the parameter will be set to Pend Disable or Pend Enable to let the user know control power needs to be cycled for the change to take effect. The options for this parameter are as follows:

Value	Enum Text	Description
0	Disabled	100 Samples for Trend Buffer
1	Enabled	1000 Samples for Trend Buffer
2	Pend Disable	Temporary Setting after Disabling Trend. Need to Cycle Power
3	Pend Enable	Temporary Setting after Enabling Trend. Need to Cycle Power

Fan 1 Run Time [Fan1 Run Time]

Linear Number: 491
Default Value: 30.0 Days
Minimum Value: 0.1 Days
Maximum Value: 60.0 Days
Access Level: Service
Read/Write: Read/Write

This parameter is used for drives equipped with Redundant Fan option (specified by *Redn ConvFan* in *HardwareOptions1 [141]*). The parameter sets the amount of run time that the Fan 1 will be the active fan. When this time expires, the drive will automatically switch to Fan 2, and will run on that fan for the time set in Fan 2 Run Time. It will then cycle back to Fan 1 after Fan 2 Run Time expires. The purpose of this control feature is to get a periodic check of the second, redundant fan. The parameters can also be used to even the run time between the fans. This setting is not applicable to Heatpipe drives.

Fan 2 Run Time [Fan2 Run Time]

Linear Number: 493
Default Value: 0.1 Days
Minimum Value: 0.1 Days
Maximum Value: 60.0 Days
Access Level: Service
Read/Write: Read/Write

This parameter is used for drives equipped with Redundant Fan option (specified by *Redn ConvFan* in *HardwareOptions1 [141]*). The parameter sets the amount of run time that the Fan 2 will be the active fan. When this time expires, the drive will automatically switch to Fan 1, and will run on that fan for the time set in Fan 1 Run Time. It will then cycle back to Fan 2 after Fan 1 Run Time expires. The purpose of this control feature is to get a periodic check of the second, redundant fan. The parameters can also be used to even the run time between the fans. This setting is not applicable to Heatpipe drives.

Reference Switch Delay [Ref Switch Delay]

Linear Number: 403
Default Value: 300 msec
Minimum Value: 0 msec
Maximum Value: 1000 msec
Access Level: Service
Read/Write: Read/Write

This parameter specifies the time period that the drive maintains the torque reference after it acknowledges a request to change the operating mode from speed to torque or vice versa. Upon the expiration of the timer, drive will go through a torque rate limit (for speed to torque mode transition) or speed command rate limit (for torque to speed mode transition). This is to ensure a bump-less transition between speed and torque mode of operation.

Fault Lock Clear [Fault Lock Clear]

Linear Number:	921
Default Value:	0
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read/Write

This parameter is used to enter a special code to reset certain critical faults which are non-resettable and lockout the drive.

Passcode 0 [Passcode 0]

Linear Number:	11
Minimum Value:	0
Maximum Value:	65535
Access Level:	Monitor
Read/Write:	Read Only

This parameter displays the scrambled password for Basic level access. If the password is lost or corrupted, the value of the pass number can be determined from the encoded value by consulting the factory. This parameter is 0 out of the factory.

Passcode 1 [Passcode 1]

Linear Number:	12
Minimum Value:	0
Maximum Value:	65535
Access Level:	Monitor
Read/Write:	Read Only

This parameter displays the scrambled password for Advanced level access. If the password is lost or corrupted, the value of the pass number can be determined from the encoded value by consulting the factory. This parameter is 0 out of the factory.

Passcode 2 [Passcode 2]

Linear Number:	38
Minimum Value:	0
Maximum Value:	65535
Access Level:	Monitor
Read/Write:	Read Only

This parameter displays the scrambled password for Service level access. If the password is lost or corrupted, the value of the pass number can be determined from the encoded value by consulting the factory.

Passcode 3 [Passcode 3]

Linear Number:	39
Minimum Value:	0
Maximum Value:	65535
Access Level:	Monitor
Read/Write:	Read Only

This parameter displays the scrambled password for Rockwell level access. If the password is lost or corrupted, the value of the pass number can be determined from the encoded value by consulting the factory.

Drive Hardware Parameters

DC Link Inductance [DCLnk Induct pu]

Linear Number: 114
Minimum Value: 0.00 pu
Maximum Value: 10.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the per unit DC link inductance calculated from the nameplate link inductance and the voltage and current ratings of the drive. It is recalculated when any of the parameters affecting its value is changed. This normal value of this parameter varies based on the drive rectifier type. This parameter applies for both standard drives and drives with Direct-to-Drive technology. A warning DC Link Range will be displayed if this parameter is greater than 2.0 per unit or less than the minimum expected as given by:

For 6-PWM, the minimum value is 0.55 pu.

For 18-pulse SCR, the minimum value is 0.35 pu.

For 6-pulse SCR, the minimum value if 0.85 pu.

Line Reactor pu [Line Reactor pu]

Linear Number: 625
Minimum Value: 0.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the per unit AC line reactor value calculated from the parameter Line Reactor and the voltage and current ratings of the drive. It is recalculated when any of the parameters affecting its value is changed. Typical value is around 0.1 pu.

Line Filter Capacitor [Line Filter Cap]

Linear Number: 133
Minimum Value: 0.00 pu
Maximum Value: 2.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the per unit line filter capacitance for the PWM rectifier. It is calculated from the capacitor nameplate parameters (total kVAR, frequency and the voltage rating) and the voltage and current ratings of the drive and motor respectively. This parameter is recalculated when any of the parameters affecting its value is changed. The normal range for this parameter is 0.35 to 0.55 pu. A warning *Line Cap Range* will be displayed if this parameter is outside the range.

Motor Filter Capacitor [Motor Filter Cap]

Linear Number: 128
Minimum Value: 0.00 pu
Maximum Value: 2.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the per unit motor filter capacitance calculated from the capacitor nameplate parameters (total kVAR, frequency and the voltage rating) and the voltage and current ratings of the motor. It is recalculated when any of the parameters affecting its value are changed. The normal range for this parameter is 0.26 to 0.55 pu. A warning *Motor Cap Range* will be displayed if this parameter is outside the range.

Drive VSB Gain [Drive VSB Gain]

Linear Number: 648
Minimum Value: 0.0 V/V
Maximum Value: 6553.5 V/V
Access Level: Service
Read/Write: Read Only

This parameter represents the ratio between the motor and line voltages at medium voltage level to the corresponding voltages sampled by the drive control software. It includes the gain of the resistor divider network on the voltage sensing board and the circuitry for signal processing on the Analog Control Board. The voltage measured on the Analog Control Boards multiplied by this parameter will give the value at medium voltage level.

Drive voltage sensing board Tap [Drive VSB Tap]

Linear Number: 649
Access Level: Service
Read/Write: Read Only

This parameter displays the tap setting of all drive voltage sensing boards. Based on the *Rated Line Voltage (18)* and *Rectifier Type (153)* parameters, the drive knows which tap is used on the VSB. There are 4 taps labeled A, B, C, and D. The following table shows the tap settings and gains for different input voltage to the drive:

Rated Line Voltage (18)	Drive VSB Tap (649)	Drive VSB Gain
100-1450	D	311.3
1450-2500	C	533.4
2500-4800	B	1021.8
4800-7200	A	1554.7

Input filter Cut Off Frequency [InpFilCutOffFreq]

Linear Number: 192
Minimum Value: 0.0 pu
Maximum Value: 100.0 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the corner frequency in per unit of the input LC filter used in PWM rectifier drives. It is determined from parameters *Line Filter Cap (133)* and *Input Impedance (140)*. Multiply the value by *Rated Line Freq (17)* to get the value in Hz.

Drive Model [Drive Model]

Linear Number: 176
Default Value: B Frame
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the PowerFlex 7000 drives Model Type, or Drive Type. There are two standard air-cooled drives: the 'B' Frame and the 'A' Frame. 'B' Frame typically covers high horsepower while 'A' Frame is a smaller version used for limited horsepower applications. There is also a liquid-cooled version of the drive which is the 'C' Frame. The 'D' Frame is reserved for future use. With 8.001 firmware and higher, a higher horsepower air-cooled drive with Heatpipe technology is now available.

Value	Enum Text	Description
0	B Frame	'B' Frame PowerFlex 7000 (standard)
1	C Frame	'C' Frame PowerFlex 7000 Liquid-Cooled
2	A Frame	'A' Frame PowerFlex 7000
3	D Frame	Future Use
4	Heatpipe	High Horsepower Air-Cooled Heatpipe drives

Rated Drive Amps [Rated Drive Amps]

Linear Number: 19
Default Value: 159 A
Minimum Value: 10 A
Maximum Value: 1750 A
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the maximum continuous RMS current rating of the drive. This should be obtained from the dimensional drawing or the drive nameplate.

Rated Line Frequency [Rated Line Freq]

Linear Number: 17
Default Value: 60 Hz
Minimum Value: 50 Hz
Maximum Value: 60 Hz
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the rated input line frequency of the drive, and must be set to either 50 Hz or 60 Hz.

Rated Line Voltage [Rated Line Volts]

Linear Number: 18
Default Value: 4160 V
Minimum Value: 100 V
Maximum Value: 7200 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the rated input line voltage fed to the drive. It is used for normalizing the line voltage calculations and also used in determining the tap position (*Drive VSB Tap [649]*) and the gain (*Drive VSB Gain [648]*) of the voltage sensing board (VSB) on line and motor side.

Rectifier Type [Rectifier Type]

Linear Number: 153
Default Value: 6 PWM
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the power circuit topology of the rectifier used in the drive design. PowerFlex 7000 drives currently provide three different rectifier configurations:

Value	Enum Text	Description
0	6 PWM	This parameter selects control for a 6-pulse PWM rectifier
1	6 SCR	This parameter selects control for a 6-pulse SCR rectifier
2	18 SCR	This parameter selects control for an 18-pulse SCR rectifier
3	12 SCR	This parameter selects control for a 12-pulse SCR rectifier(1)

(1) Contact factory for availability.

Line Capacitor Frequency [Line Cap Freq]

Linear Number: 32
Default Value: 60 Hz
Minimum Value: 50 Hz
Maximum Value: 60 Hz
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the rated nameplate frequency of the line filter capacitors. This parameter only applies to drives with a PWM rectifier.

Line Capacitor kVAR [Line Cap kVAR]

Linear Number: 15
Default Value: 300 kVAR
Minimum Value: 1 kVAR
Maximum Value: 7500 kVAR
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the total three-phase nameplate kVAR of the line filter capacitors. This parameter only applies to drives with a PWM rectifier.

Line Capacitor Voltage [Line Cap Volts]

Linear Number: 16
Default Value: 4160 V
Minimum Value: 100 V
Maximum Value: 10000 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the nameplate voltage rating of the line filter capacitors. This parameter applies to only drives with a PWM rectifier.

Smallest Capacitor kVAR [Smallest CapkVAR]

Linear Number: 985
Default Value: 300 kVAR
Minimum Value: 0 kVAR
Maximum Value: 1000 kVAR
Access Level: Service
Read/Write: Read/Write

This parameter defines the smallest Capacitor out of the total capacitor installed at the line side of the drive. For example if the drive has 3 line capacitors at 400, 400 and 300 kVAR then set this parameter to 300.

Line Reactor Inductance [Line Reactor]

Linear Number: 624
Default Value: 0.00 mH
Minimum Value: 0.00 mH
Maximum Value: 50.00 mH
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the inductance value of the AC side line reactor in mH. Refer to the nameplate mounted on the reactor, or to the dimensional drawings.

DC Link Inductance [DCLnk Inductance]

Linear Number: 27
Default Value: 24.0 mH
Minimum Value: 1.0 mH
Maximum Value: 500.0 mH
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the value of the DC Link inductance in mH. This can be obtained from the DC Link reactor nameplate on the dimensional drawings, from the nameplate on the DC Link, or from the duplicate nameplate mounted externally on the DC Link access panel.

This parameter also applies to Direct-to-Drive technology drives, and the inductance is obtained from the nameplate of the Common-Mode Choke. For these drives, this value corresponds to the lower of the two values specified on the name plate. The larger value is the common mode inductance and is not required for drive control.

Motor Capacitor Frequency [Motor Cap Freq]

Linear Number: 28
Default Value: 60 Hz
Minimum Value: 50 Hz
Maximum Value: 90 Hz
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the rated nameplate frequency of the motor filter capacitors.

Motor Capacitor kVAR [Motor Cap kVAR]

Linear Number: 20
Default Value: 400 kVAR
Minimum Value: 1 kVAR
Maximum Value: 7500 kVAR
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the total three-phase nameplate kVAR of the motor filter capacitors.

Motor Capacitor Voltage [Motor Cap Volts]

Linear Number: 21
Default Value: 4160 V
Minimum Value: 100 V
Maximum Value: 10000 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the nameplate voltage rating of the motor filter capacitors.

CT Burden Ground Fault [CT Burden Gndflt]

Linear Number:	158
Default Value:	1000 ohms
Minimum Value:	10 ohms
Maximum Value:	10000 ohms
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the value of the burden resistor used for sensing the ground fault current feedback. The default is 1000 ohms and is installed on the ACB.

CT Ratio Ground Fault [CT Ratio Gndflt]

Linear Number:	157
Default Value:	2000
Minimum Value:	10
Maximum Value:	10000
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the ratio of the current transformer used to measure the ground fault (zero sequence) current at the input of the drive.

CT Burden Line [CT Brden Line]

Linear Number:	151
Default Value:	5.0 ohms
Minimum Value:	1.0 ohms
Maximum Value:	100.0 ohms
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the value of the burden resistors for sensing the line current feedback. The default value of burden resistor installed on the CT input connector is 5 ohms. For drives with a higher current rating, 2.5 ohms may be required. This is accomplished by placing a 5-ohm resistor in parallel.

CT Ratio Line [CT Ratio Line]

Linear Number:	149
Default Value:	1000
Minimum Value:	10
Maximum Value:	10000
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the ratio of the current transformers used to measure the line current feedback. There are two CTs mounted at the drive input.

Hall Effect Current Sensor Burden DC Link [HECS Brden DCLnk]

Linear Number:	285
Default Value:	50.0 ohms
Minimum Value:	1.0 ohms
Maximum Value:	100.0 ohms
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the value of the burden resistor for sensing the DC link reactor current feedback. The default value of burden resistor on the HECS input connector is 50 ohms. For drives with a higher current rating, 25 ohms may be required. This is accomplished by placing a 50-ohm resistor in parallel.

Hall Effect Current Sensor Ratio DC Link [HECS Ratio DCLnk]

Linear Number:	284
Default Value:	4000
Minimum Value:	10
Maximum Value:	10000
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the ratio of the current transducer used to measure the DC link reactor current feedback.

Hall Effect Current Sensor Burden Motor [HECS Brden Motor]

Linear Number:	152
Default Value:	50.0 ohms
Minimum Value:	1.0 ohms
Maximum Value:	100.0 ohms
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the value of the burden resistor for sensing the motor current feedback. The default value of burden resistor on the HECS input connector is 50 ohms. For drives with a higher current rating, 25 ohms may be required. This is accomplished by placing a 50-ohm resistor in parallel.

Hall Effect Current Sensor Ratio Motor [HECS Ratio Motor]

Linear Number:	150
Default Value:	4000
Minimum Value:	10
Maximum Value:	10000
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the ratio of the current transducers used to measure the motor current feedback.

Rectifier Device Rating [RecDvc CurRating]

Linear Number:	144
Default Value:	800 A
Minimum Value:	0 A
Maximum Value:	3500 A
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the current rating of the power semiconductor device used in the line converter. The 6 SCR and 18 SCR drives use Silicon Controlled Rectifier (SCR) while the 6 PWM drives use Symmetric Gate Commutated Thyristor (SGCT). SCRs are typically 350 A or 810 A, while SGCT ratings can be 400A or 800 A or 1500 A.

Inverter Device Rating [InvDvc CurRating]

Linear Number:	143
Default Value:	800 A
Minimum Value:	0 A
Maximum Value:	3500 A
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the current rating of the power semiconductor device (SGCT) used in the machine side converter. SGCT ratings can be 400 A or 800 A or 1500 A.

Series Rectifier Devices [Series RecDvc]

Linear Number:	145
Default Value:	2
Minimum Value:	1
Maximum Value:	6
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the number of series power semiconductor devices (SCR or SGCT) in each of the 6 legs (for 6 Pulse or 6-PWM) or 18 legs (for 18 Pulse SCR) of the line converter. SGCTs are used in drives with PWM rectifier front end.

Series Inverter Devices [Series InvDvc]

Linear Number:	146
Default Value:	2
Minimum Value:	1
Maximum Value:	6
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the number of SGCT devices connected in series in each of the 6 legs of the machine converter.

Neutral Resistor Value [Neutral Resistor]

Linear Number:	680
Default Value:	0.0 ohms
Minimum Value:	0.0 ohms
Maximum Value:	6553.5 ohms
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter is for Direct-to-Drives only and defines the resistance of the Neutral Resistor in ohms. If the value is 0 (default value) then the software configures the drive to be without a common mode choke.

Neutral Resistor Power Rating [RNeut Pwr Rating]

Linear Number:	681
Default Value:	1500 W
Minimum Value:	0 W
Maximum Value:	65535 W
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter is for Direct-to-Drives only and defines the rated wattage of the Neutral Resistor. This parameter is used in the thermal protection of the Neutral Resistor.

Hall Effect Current Sensor Ratio for Neutral Current(1) [CTRatio CapNeut]

Linear Number:	198
Default Value:	1000
Minimum Value:	10
Maximum Value:	10000
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the ratio of the current transducer used to measure the current in the neutral resistor (Direct-to-Drive only). This parameter is reserved for future use only.

Hall Effect Current Sensor Burden for Neutral Current(2) [CTBurden CapNeut]

Linear Number:	197
Default Value:	25.0 ohms
Minimum Value:	1.0 ohms
Maximum Value:	100.0 ohms
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the value of the burden resistor to measure the current in the neutral resistor (Direct-to-Drive only). This parameter is reserved for future use only.

(1) Contact factory for availability.

(2) Contact factory for availability.

Hardware Options 1 [HardwareOptions1]

Linear Number: 141
Default Value: 0000000010000000
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter allows user to select additional hardware options. A ‘1’ indicates that the option is installed in the drive.

Bit	Enum Text	Description
0	Redn ConvFan	Redundant converter cooling fan for Air cooled drives. Not applicable to Heatpipe drives.
1	RednIsoTxFan	Redundant cooling fan for drives with integral Isolation Transformer
2	Redn PwrSup	Redundant AC/DC power supply
3	Output IsoTx	Output Isolation Transformer
4	Input IsoSw	Input Isolation Switch
5	Output IsoSw	Output Isolation Switch
6	Bypass IsoSw	Bypass Isolation Switch
7	DCNeutralVSB	voltage sensing board for DC/Neutral voltage measurement
8	Output Ctctr	Output Contactor installed in the drive
9	Bypass Ctctr	Bypass Contactor installed in the drive
10	Ambient Temp	Ambient temperature measurement enabled(1). Not applicable on TFB3.
11	Rec ChB Temp	Rectifier Channel B temperature. Not applicable on TFB3.
12	Redn Dvc Inv	Redundant Inverter Device option
13	Redn Dvc Rec	Redundant Rectifier Device option
14	Rockwell UPS	Rockwell specified UPS installed in the drive
15	Customer UPS	Customer supplied UPS installed in the drive

(1) Contact factory for availability.

Hardware Options 2 [HardwareOptions2]

Linear Number: 274
Default Value: 0000000000000110
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter allows the user to select additional hardware options. The options available are:

Bit	Enum Text	Description
0	Intgrl IsoTx	Integral Isolation Transformer installed in the drive
1	InvHSnk Temp	Temperature Feedback Board installed on the Inverter power stack
2	RecHSnk Temp	Temperature Feedback Board installed on the Rectifier power stack
3	SelfPwd SGCT	Contact factory for availability

Bit	Enum Text	Description
4	ZeroSeq Neut	If this bit is not set (default), *Mtr Neutral Volt (347)* displays the measured motor neutral to ground voltage. If this bit set, *Mtr Neutral Volt* displays the zero sequence neutral voltage (from the hardware measurement on the ACB)
5	CapNeutralCT	Current Transformer installed in line filter capacitor bank
6	UEB	Not used
7	HdwOpt2Bit7	Not used
8	HdwOpt2Bit8	Not used
9	HdwOpt2Bit9	Not used
10	HdwOpt2Bit10	Not used
11	HdwOpt2Bit11	Not used
12	HdwOpt2Bit12	Not used
13	HdwOpt2Bit13	Not used
14	HdwOpt2Bit14	Not used
15	HdwOpt2Bit15	Not used

Number of Power Supplies [Number PwrSup]

Linear Number: 575
Default Value: 1
Minimum Value: 1
Maximum Value: 4
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the total number of AC/DC power supplies installed in the drive. This number includes the redundant power supply (if installed and set by *Redn PwrSup* in *HardwareOptions1 [141]*). In a multi power supply system there can only be one redundant power supply.

Rectifier Heatsink Type [RecHeatsink Type]

Linear Number: 399
Default Value: MM Aluminum
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter selects the type of heatsink installed in the rectifier power stack.

Value	Enum Text	Description
0	MM Aluminum	MM Aluminum heatsink
1	Copper	Copper heatsink
2	Webra	Webra Aluminum heatsink
3	Other	Other type of heatsink

UPS Type [UPS Type]

Linear Number: 864
Default Value: None
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter allows user to specify the type of UPS installed in the drive. The following types are available:

Value	Enum Text	Description
0	None	No UPS installed
1	StndUPSCtrl	Standard UPS to back-up only control power
2	StndUPSDrv	Standard UPS to back-up control power and IGDPS
3	SpeclUPSCtrl	Special UPS to back-up only control power
4	SpeclUPSDrv	Special UPS to back-up control power and IGDPS
5	CustUPSCtrl	Customer supplied UPS to back-up only control power
6	CustUPSDrv	Customer supplied UPS to back-up control power and IGDPS

Please note that drive has provision for monitoring the health of Standard and Special UPS only as they are Rockwell supplied. The customer supplied UPS will not be monitored by the drive.

Inverter Heatsink Type [InvHeatsink Type]

Linear Number: 880
Default Value: MM Aluminum
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter selects the type of heatsink installed in the inverter power stack.

Value	Enum Text	Description
0	MM Aluminum	MM Aluminum heatsink
1	Copper	Copper heatsink
2	Webra	Webra Aluminum heatsink
3	Other	Other type of heatsink

DC Link Type [DC Link Type]

Linear Number: 922
Default Value: Normal Duty
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the type of the DC Link installed in the drive.

Value	Enum Text	Description
0	Normal Duty	Capable of handing 110% load for 60 seconds every 600 seconds
1	Heavy Duty	Capable of handing 150% load for 60 seconds every 600 seconds
2	PFC Duty	Capable of meeting power factor requirements[(1)]

(1) Contact factory for availability.

Motor Ratings Parameters

Rated Motor Current [Rated Motor Amps]

Linear Number:	23
Default Value:	159 A
Minimum Value:	10 A
Maximum Value:	1500 A
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the rated full load RMS current of the motor. This parameter is internally scaled and used as the base value in all the drive per unit calculations.

Rated Motor Frequency [Rated Motor Freq]

Linear Number:	29
Default Value:	60 Hz
Minimum Value:	25 Hz
Maximum Value:	90 Hz
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the nameplate frequency corresponding to the parameter *Rated Motor RPM (26)* This value could be different from the input frequency *Rated Line Freq (17)*.

Rated Motor Horsepower [Rated Motor HP]

Linear Number:	25
Default Value:	1250 hp
Minimum Value:	10 hp
Maximum Value:	20000 hp
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the rated power of the motor in Imperial unit. This parameter and the *Rated Motor kW (24)* both specify the motor rating. If imperial unit is selected (default option) from *Special Features (99)*, then this parameter becomes the independent parameter while the *Rated Motor kW* will be calculated by using the following relationship:

$$\mathrm{RatedMotorkW} = \frac{\mathrm{RatedMotorHP} \times 746}{1000}$$

Rated Motor kW [Rated Motor kW]

Linear Number:	24
Default Value:	933 kW
Minimum Value:	10 kW
Maximum Value:	15000 kW
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the rated power of the motor in Metric unit. This parameter and the *Rated Motor HP (25)* both specify the motor rating. The *Rated Motor HP* will be calculated by using the following relationship:

$$Ratedmotor\ HP = \frac{\mathrm{RatedMotorkW} \times 1000}{746}$$

Rated Motor RPM [Rated Motor RPM]

Linear Number:	26
Default Value:	1192.0 rpm
Minimum Value:	0.0 rpm
Maximum Value:	5400.0 rpm
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the rated full load speed of the motor in rpm. It is equal to synchronous speed for a synchronous motor and slightly less than synchronous speed for an induction motor.

Rated Motor Voltage [Rated Motor Volt]

Linear Number:	22
Default Value:	4000 V
Minimum Value:	100 V
Maximum Value:	8000 V
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the rated line-to-line RMS voltage of the motor. This parameter is internally scaled and used as the base value in all the drive per unit calculations. The motor rated voltage should be specified as 2300 V or 4000 V and not 2400 V or 4160 V to ensure that the line voltage is slightly higher than the motor voltage. Since the motor voltage is limited by the line voltage, increasing the motor rated voltage in an attempt to get more out of the drive will only force the drive to go into field weakening at a lower speed.

Service Factor [Service Factor]

Linear Number:	31
Default Value:	1.00
Minimum Value:	0.75
Maximum Value:	1.25
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the service factor of the motor and is typically specified in the motor nameplate. Because the motor parameters are normalized to the service factor, changing this parameter allows the motor rating to be changed without affecting the drive tuning.

Dual Winding Phase [DualWndng Phase]

Linear Number:	402
Default Value:	0 Deg
Minimum Value:	0 Deg
Maximum Value:	90 Deg
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the electrical phase shift between the two sets of windings in a dual winding motor (induction or synchronous).

Motor Efficiency [Motor Efficiency]

Linear Number:	912
Default Value:	96.0%
Minimum Value:	75.0%
Maximum Value:	100.0%
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the motor efficiency (ratio of motor output power to its input power) and is used to determine the motor power factor under rated conditions.

Drive Motor Type [Motor Type]

Linear Number: 30
Default Value: Induction
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the type of motor connected to the drive. If this parameter is changed, the control power must be cycled before the new value takes effect.

Value	Enum Text	Description
0	Induction	Induction (asynchronous) motor
1	Sync Brush	Synchronous Brush-type motor
2	Sync BshlsAC	Synchronous Motor with AC Brushless exciter
3	Sync BshlsDC	Synchronous Motor with DC Brushless exciter
4	PMSM Salient	Permanent Magnet Synchronous Motor Salient type(1)
5	PMSM Non Sal	Permanent Magnet Synchronous Motor Non-Salient type(1)
6	IndDualWndng	Induction Dual Winding motor
7	SynDualBrush	Synchronous Dual Winding motor
8	SynDualBlsAC	Synchronous Dual Winding Motor with AC Brushless exciter
9	SynDualBlsDC	Synchronous Dual Winding Motor with DC Brushless exciter

(1) Contact factory for availability.

Autotuning Parameters

Autotune Warning 1 [Autotune Warn1]

Linear Number: 377
Access Level: Advanced
Read/Write: Read Only

This parameter displays the bit assignment on the Autotune Warning 1. A '1' indicates a warning has occurred during the test. The following warnings are displayed:

Bit	Enum Text	Description
0	Tuning Abort	Auto tuning has been aborted.
1	Drv TestMode	Drive is in test mode
2	Reg in Limit	Flux or Speed Regulator is in limit
3	RStator High	Stator Resistance high
4	Time Limit	Autotune time limit of 4 minutes has expired.
5	Inertia High	Inertia high
6	L Input Low	Input Impedance low
7	L Input High	Input Impedance high
8	T DCLnk Low	DC link time constant low
9	T DCLnk High	DC link time constant high
10	LLeakageLow	Leakage Inductance low
11	LLeakageHigh	Leakage Inductance high
12	L Magn Low	Magnetizing Inductance low
13	L Magn High	Magnetizing Inductance high
14	T Rotor Low	Rotor Time Constant low
15	T Rotor High	Rotor Time Constant high

Autotune Warning 2 [Autotune Warn2]

Linear Number: 419
Access Level: Advanced
Read/Write: Read Only

This parameter displays the bit assignment on the Autotune Warning 2. A '1' indicates a warning has occurred during the test. The following warnings are displayed:

Bit	Enum Text	Description
0	RsTune Skipd	Stator resistance tuning skipped warning
1	RStator Low	Stator resistance low warning
2	Inertia Low	Inertia low warning
3	RtrNotLocked	Motor rotor is not locked warning in absolute encoder offset tuning
4	RotrNotMoved	Motor rotor is not moved warning in absolute encoder offset tuning
5	MCap Tune Hi	Motor Capacitor Tuning High

Bit	Enum Text	Description
6	AutoWn2Bit6	Not Used bit
7	AutoWn2Bit7	Not Used bit
8	AutoWn2Bit8	Not Used bit
9	AutoWn2Bit9	Not Used bit
10	AutoWn2Bit10	Not Used bit
11	AutoWn2Bit11	Not Used bit
12	AutoWn2Bit12	Not Used bit
13	AutoWn2Bit13	Not Used bit
14	AutoWn2Bit14	Not Used bit
15	AutoWn2Bit15	Not Used bit

Autotune Warn Code [Autotune WrnCode]

Linear Number: 875
Access Level: Service
Read/Write: Read Only

This variable displays the bit assignment on the Autotune Warn Code. It indicates the possible reason to why autotuning could not be completed.

Bit	Enum Text	Description
0	Not Running	Drive was not running
1	Reverse	Drive was running in reverse direction
2	Slave Drive	Drive is programmed as a slave drive
3	Faulted	Drive faulted
4	AT Intrupted	Autotune was interrupted prior to completion
5	Motor Type	Autotune is not available in existing motor type
6	AT Select	Default warning code
7	Freewheeling	Drive was in freewheeling mode
8	AT Cancelled	Autotune was cancelled by operator
9	Not SpeedReg	Drive is not in Speed Regulator mode
10	SpdDeviation	Speed deviation too large Autotune speed could not be reached to proceed autotuning
11	Val NotSaved	Autotuned values not updated/transferred to the corresponding drive parameter(s)
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Autotune Select [Autotune Select]

Linear Number: 209
Default Value: Off
Access Level: Advanced
Read/Write: Read/Write

This parameter selects the auto-tuning function to be performed. The value of this parameter is set to default (Off) after completion of the selected function.

Value	Enum Text	Description
0	Off	Auto-tuning off
1	Rectifier	Rectifier tuning (Input impedance and DC Link time constant)
2	Mtr Impednce	Motor Impedance (Stator Resistance and Stator Leakage)
3	FluxSpeedReg	Flux and Speed regulator (Magnetizing inductance, Rotor time constant and Inertia)
4	AbsEncOffset	Absolute encoder offset tuning
5	Idc Control	Reserved for future use
6	T Rotor	Rotor time constant tuning
7	Lmq	Synchronous motor q-axis inductance tuning

To change the selected auto-tune function to another without completing, set to *Off* and then select the desired function.

Autotune Input Impedance [Autotune L Input]

Linear Number: 217
Default Value: 0.00 pu
Minimum Value: 0.00 pu
Maximum Value: 1.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of input impedance determined during auto-tuning. If the auto-tuning is successful, then parameter *Input Impedance (140)* in the *Current Control* group is set equal to the value of this parameter.

Autotune DC Link Time Constant [Autotune T DCLnk]

Linear Number: 218
Default Value: 0.000 sec
Minimum Value: 0.000 sec
Maximum Value: 0.300 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of DC link reactor time constant determined during auto-tuning. If the DC link time constant measurement is successful, then parameter *T DC Link (115)* in the *Current Control* group is set equal to the value of this parameter.

Autotune Stator Resistance [Autotune RStator]

Linear Number: 219
Default Value: 0.00 pu
Minimum Value: 0.00 pu
Maximum Value: 0.50 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of motor stator resistance determined during auto-tuning. If the stator resistance auto-tuning is successful, then parameter *R Stator (129)* in the *Motor Model* group is set equal to the value of this parameter.

Autotune Leakage Inductance [Autotune LLeakge]

Linear Number: 220
Default Value: 0.00 pu
Minimum Value: 0.00 pu
Maximum Value: 0.50 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of motor leakage inductance determined during auto-tuning. If the leakage inductance auto-tuning is successful, then parameter *L Total leakage (130)* in the *Motor Model* group is set equal to the value of this parameter.

Autotune Magnetizing Inductance [Autotune L Magn]

Linear Number: 221
Default Value: 0.00 pu
Minimum Value: 0.00 pu
Maximum Value: 15.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of motor magnetizing inductance determined during flux regulator auto-tuning. If the magnetizing inductance measurement is successful, then parameter *Lm Rated (131)* in the *Motor Model* group is set equal to the value of this parameter.

Autotune Rotor Time Constant [Autotune T Rotor]

Linear Number: 222
Default Value: 0.00 sec
Minimum Value: 0.00 sec
Maximum Value: 10.00 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of rotor time constant determined during flux regulator auto-tuning. If the rotor time constant measurement is

successful, then parameter *T Rotor (132)* in the *Motor Model* group is set equal to the value of this parameter.

Autotune Inertia [Autotune Inertia]

Linear Number:	223
Default Value:	0.00 sec
Minimum Value:	0.00 sec
Maximum Value:	100.00 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the value of total system mechanical inertia measured during auto-tuning. If the inertia measurement is successful, then parameter *Total Inertia (82)* in the *Speed Control* group is set equal to the value of this parameter.

Autotune D-axis Magnetizing Inductance [Autotune Lmd]

Linear Number:	224
Default Value:	0.00 pu
Minimum Value:	0.00 pu
Maximum Value:	10.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the value of d-axis magnetizing inductance for synchronous machines determined during flux regulator auto-tuning. If the magnetizing inductance measurement is successful, then parameter *Lmd (418)* in the *Motor Model* group is set equal to the value of this parameter. This parameter is not used for induction motors.

Autotune Q-axis Magnetizing Inductance [Autotune Lmq]

Linear Number:	325
Default Value:	0.00 pu
Minimum Value:	0.00 pu
Maximum Value:	10.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the value of q-axis magnetizing inductance for synchronous machines determined during flux regulator auto-tuning. If the magnetizing inductance measurement is successful, then parameter *Lmq (296)* in the *Motor Model* group is set equal to the value of this parameter. If the magnetizing inductance measurement fails, then parameter *Lmq* is not changed. This parameter is not used for induction motors.

Autotune DC Current Bandwidth [Autotune Idc BW]

Linear Number: 212
Default Value: 50.0 r/s
Minimum Value: 10.0 r/s
Maximum Value: 100.0 r/s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the bandwidth of the current regulator during auto-tuning of the DC link reactor time constant. A lower bandwidth is used during auto-tuning than during normal operation because a slower response can be measured more accurately. The bandwidth is set to original value after completion of auto-tune.

Autotune DC Current Command [Autotune Idc Cmd]

Linear Number: 210
Default Value: 0.500 pu
Minimum Value: 0.100 pu
Maximum Value: 0.900 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the DC current command used during auto-tuning of the DC link time reactor constant. If the value of this parameter is set too low, the DC link current may become discontinuous and the auto-tuning may produce invalid results.

Autotune DC Current Step [Autotune Idc Stp]

Linear Number: 211
Default Value: 0.250 pu
Minimum Value: 0.000 pu
Maximum Value: 0.500 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of the step that is added to the DC current command during auto-tuning of the DC link reactor time constant. If the value of this parameter is set too high relative to the DC current command, the DC link current may become discontinuous and the auto-tuning may produce inaccurate results.

Autotune Isd Step [Autotune Isd Stp]

Linear Number: 216
Default Value: 0.100 pu
Minimum Value: 0.010 pu
Maximum Value: 0.200 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the size of the step that is added to the magnetizing current command during auto-tuning of the flux regulator for synchronous machines. It is not used for induction motors.

Autotune Speed Command [Autotune Spd Cmd]

Linear Number: 213
Default Value: 30.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 60.0 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the speed command used during auto-tuning of the flux regulator and total inertia. The overall drive Speed Command Minimum (*Speed Cmd Min [293]*) and Maximums (*Speed Cmd Max [290]*) are still active during auto-tuning.

Autotune Torque Step [Autotune Trq Stp]

Linear Number: 215
Default Value: 0.100 pu
Minimum Value: 0.050 pu
Maximum Value: 0.500 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the size of the torque step that is added to the torque command during auto-tuning of the total inertia. A value of 1.000 corresponds to rated torque. The overall Torque Command Limits are still active during auto-tuning.

Autotune Motor Current [Autotune Mtr Cur]

Linear Number: 946
Default Value: 0.500 pu
Minimum Value: 0.100 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the current level injected to the motor stator windings during absolute encoder offset auto-tuning. The base value is selected based on drive rating. Higher value of this parameter leads to more accurate auto-tuning result. However, motor and drive current and thermal limitations should also be considered. For parallel drives, the maximum current level is limited by the single drive current rating. Internal current limitations are also enforced based on drive hardware settings.

Autotune Encoder Frequency [Autotune EncFreq]

Linear Number:	947
Default Value:	0.10 Hz
Minimum Value:	0.01 Hz
Maximum Value:	60.00 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the electrical frequency of the injected current to the motor stator windings during absolute encoder offset auto-tuning. Motor rotor will move along with the applied stator current at the corresponding mechanical frequency. Lower frequency ensures proper locking of the rotor to the desired position.

Autotune Field Current Command [Autotune If Cmd]

Linear Number:	948
Default Value:	0.80 pu
Minimum Value:	0.10 pu
Maximum Value:	2.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the current level injected the motor field windings during absolute encoder offset auto-tuning. Higher value of this parameter leads to more accurate auto-tuning result. However, motor current and thermal limitations should also be considered. Make sure the motor field winding can be constantly supplied with this level of current at standstill condition.

Autotune Absolute Encoder Offset [Autotune EncOfst]

Linear Number:	949
Default Value:	0.00 Deg
Minimum Value:	0.00 Deg
Maximum Value:	360.00 Deg
Access Level:	Advanced
Read/Write:	Read/Write

This parameter is the measured absolute encoder offset obtained from auto-tuning. If the encoder offset auto-tuning is successful, the parameter *Encoder Offset (644)* in the *Encoder Option* group is set equal to the value of this parameter.

Rotor Stopped Delay Time [RtrStop Dly Time]

Linear Number:	950
Default Value:	10.0 sec
Minimum Value:	0.0 sec
Maximum Value:	120.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the motor rotor should remain stopped before the drive confirms the locking of the motor rotor position during absolute encoder offset auto-tuning.

Autotune Permanent Magnetic Flux[1] [AT PM MagFlux pu]

Linear Number: 977
Default Value: 0.000 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter is the measured magnetic flux obtained from auto-tuning for permanent magnet synchronous motor. If the magnetic flux measurement is successful, the parameter *PM MagFlux pu (969)* in the *Motor Model* group is set equal to the value of this parameter.

Autotune Motor Capacitor [Autotune M Cap]

Linear Number: 998
Default Value: 0.000 pu
Minimum Value: -.100 pu
Maximum Value: 0.100 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the per unit motor capacitance correction value determined during FluxSpeedReg auto-tuning. If the motor capacitance correction value is measured successfully, then parameter *Motor Cap Comp (995)* in the *Motor Model* group is set equal to the value of this parameter.

Autotune Complete [AutotuneComplete]

Linear Number: 375
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter indicates the completion of the following auto-tune functions selected by the parameter *Autotune Select*:

Bit	Enum Text	Description
0	Rectifier	Rectifier Tuning
1	Mtr Impednce	Motor Impedance
2	FluxSpeedReg	Flux Speed Regulator
3	AbsEncOffset	Synchronous Field Regulator[1]
4	Idc Control	DC current Control Tuning - reserved for future use
5	T Rotor	Motor Rotor Time Constant
6	Lmq	Synchronous Motor Q-axis Inductance
7	Unused	
8	Unused	

(1) Contact factory for availability.

Bit	Enum Text	Description
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

Autotune Manual[1] [Autotune Manual]

Linear Number: 6
Default Value: Off
Access Level: Service
Read/Write: Read/Write

Reserved Parameter is not used in 9.xxx firmware or earlier.

This parameter allows the user to autotune each tuning feature individually, overriding the normal Autotune process which automatically processes a list of tunings sequentially.

Value	Enum Text	Description
0	Off	Auto-tuning off
1	Comm Induct	Commutation Inductance tuning
2	Current Reg	Current Regulator tuning
3	Stator Rest	Stator Resistance tuning
4	Leakage Ind	Leakage Induction tuning
5	Flug Reg	Flux Regulator tuning
6	Speed Reg	Speed Regulator tuning

(1) Contact factory for availability.

Motor Model Parameters

Stator Current [Stator Current]

Linear Number: 340
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Monitor
Read/Write: Read Only

This parameter is the calculated stator current magnitude. This is a parameter for display purposes.

Stator Voltage [Stator Voltage]

Linear Number: 344
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Monitor
Read/Write: Read Only

This parameter is the calculated stator voltage magnitude. It varies with both speed and torque. If the flux command is set correctly, the stator voltage should be about 1.0 pu at rated speed and rated load. The stator voltage may be less than 1.0 pu at rated speed if the load torque is less than rated or the line voltage is low.

Stator Frequency [Stator Frequency]

Linear Number: 448
Minimum Value: 0.00 Hz
Maximum Value: 120.00 Hz
Access Level: Service
Read/Write: Read Only

This parameter is the measured stator frequency of the motor. It is displayed as an absolute value regardless of the direction of rotation.

Rotor Frequency [Rotor Frequency]

Linear Number: 337
Minimum Value: 0.00 Hz
Maximum Value: 120.00 Hz
Access Level: Monitor
Read/Write: Read Only

This parameter displays the measured rotor frequency. It is displayed as an absolute value regardless of the direction of rotation.

Slip Frequency [Slip Frequency]

Linear Number:	343
Minimum Value:	-2.00 Hz
Maximum Value:	2.00 Hz
Access Level:	Monitor
Read/Write:	Read Only

This parameter is the calculated slip frequency of the motor. It is positive for motoring and negative for regenerating. For synchronous motors, this parameter is always equal to zero.

Motor Power [Mtr AirGap Power]

Linear Number:	346
Minimum Value:	-4.000 pu
Maximum Value:	4.000 pu
Access Level:	Monitor
Read/Write:	Read Only

This parameter is the calculated motor power. A value of 1.000 corresponds to rated power. It is positive for motoring and negative for regenerating regardless of the direction of rotation.

Motor Torque [Mtr AirGap Trq]

Linear Number:	345
Minimum Value:	-4.000 pu
Maximum Value:	4.000 pu
Access Level:	Monitor
Read/Write:	Read Only

This parameter is the calculated motor torque. A value of 1.000 corresponds to rated torque. It is positive for forward torque and negative for reverse torque.

Motor Power Factor [Mtr Power Factor]

Linear Number:	692
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read Only

This parameter displays the measured motor power factor. It is calculated as the ratio of the real power (kW) to total power (kVA). The motor will always have a lagging power factor (unless it is a synchronous motor) and the parameter value is valid when the drive is running in closed-loop mode with valid frequency feedback.

Stator Q-Axis (Torque) Current [MtrTrq Current]

Linear Number:	339
Minimum Value:	-4.000 pu
Maximum Value:	4.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter is the calculated Q-axis or torque component of the stator current. It is positive for motoring and negative for regenerating.

Stator D-Axis (Magnetizing) Current [MtrFlux Current]

Linear Number:	338
Minimum Value:	-4.000 pu
Maximum Value:	4.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter is the calculated D-axis or magnetizing component of the stator current. It is positive for magnetizing and negative for de-magnetizing. This current is provided from the inverter output and the motor filter capacitor.

Stator Frequency from Voltage Model [StatFrqVoltModel]

Linear Number:	485
Minimum Value:	0.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Service
Read/Write:	Read Only

This parameter displays the value of stator frequency determined from the voltage model. This parameter is particularly useful in Open Loop Test Mode, when all the feedback paths are tested to ensure the integrity of the system.

Stator Frequency from Current Model [StatFrqCurModel]

Linear Number:	486
Minimum Value:	0.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Service
Read/Write:	Read Only

This parameter displays the applied stator frequency determined from the Current Model. For *Sensorless* drives, during start up, the frequency is equal to the desired speed reference plus the calculated slip frequency *Slip Frequency (343)*. For *Pulse Encoder* drives, the frequency is equal to the measured speed feedback plus the slip frequency. The *Slip Frequency* is calculated using the indirect vector control model.

Flux Feedback from Voltage Model [FlxFbk VoltModel]

Linear Number: 342
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured rotor flux feedback from the voltage model. The voltage model uses measured motor voltage and current along with known motor parameters to calculate the rotor flux. This is used above 3 Hz for flux feedback.

Flux Feedback From Current Model [FlxFbk CurModel]

Linear Number: 341
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the estimated rotor flux from the current feedback. The drive uses an indirect method of calculating rotor flux. This is used in the lower speed ranges (0-3 Hz) for the flux feedback.

Magnetizing Inductance Predicted [Lm Predicted]

Linear Number: 701
Minimum Value: 0.00 pu
Maximum Value: 15.00 pu
Access Level: Service
Read/Write: Read Only

This parameter represents the expected Magnetizing Inductance for the given load and flux operating conditions. This parameter comes from an extrapolation of the Magnetizing Inductance parameters for different loads and speeds. But for most applications, this parameter will simply be the Magnetizing Inductance value from the Autotune results.

Magnetizing Inductance Measured [Lm Measured]

Linear Number: 134
Minimum Value: 0.00 pu
Maximum Value: 15.00 pu
Access Level: Service
Read/Write: Read Only

This parameter represents the motor magnetizing inductance measured by the drive control. It is obtained by dividing the measured flux feedback by the magnetizing current. This parameter is continuously calculated when the drive is running.

Tr Adaptation [Tr Adaptation]

Linear Number: 1120
Minimum Value: 0.100 sec
Maximum Value: 10.000 sec
Access Level: Service
Read/Write: Read Only

This parameter displays the online calculated value of motor rotor time constant.

Motor Voltage in the D-Axis [MtrVoltage DAxis]

Linear Number: 1121
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

Reserved for future use.

Motor Voltage in the Q-Axis [MtrVoltage QAxis]

Linear Number: 1122
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

Reserved for future use.

Magnetizing Inductance Rated [Lm Rated]

Linear Number: 131
Default Value: 3.50 pu
Minimum Value: 1.00 pu
Maximum Value: 15.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the per unit motor magnetizing inductance. Typical values of this parameter are in the range 2.0 pu to 6.0 pu for induction motors and 1.0 pu to 2.0 pu for synchronous motors. Magnetizing inductance can change significantly with changes in load and flux. This parameter represents the value at rated flux and rated load. This parameter can be set manually or by auto-tuning.

Magnetizing Inductance Regen [Lm Regen]

Linear Number: 693
Default Value: 1.00
Minimum Value: 0.50
Maximum Value: 2.00
Access Level: Service
Read/Write: Read/Write

This parameter represents the ratio between the Magnetizing Inductance of the motor when running at full regeneration to the Rated Magnetizing Inductance. Since a motor is a non-linear device, Magnetizing Inductance is the parameter that changes the most with load and flux levels, and for applications with Encoder/Tachometer enabled and low speed, high torque operating conditions, this parameter may need to be used to extrapolate Magnetizing Inductance for any load and flux reference. For most standard applications, the default value of 1.00 is acceptable.

Magnetizing Inductance No Load Flux Min [Lm Noload FlxMin]

Linear Number:	694
Default Value:	1.00
Minimum Value:	0.50
Maximum Value:	2.00
Access Level:	Service
Read/Write:	Read/Write

This parameter represents the ratio between the Magnetizing Inductance of the motor at no load and minimum flux to the Rated Magnetizing Inductance. Since a motor is a non-linear device, Magnetizing Inductance is the parameter that changes the most with load and flux levels, and for applications with Encoder/Tachometer enabled and low speed, high torque operating conditions, this parameter may need to be used to extrapolate Magnetizing Inductance for any load and flux reference. For most standard applications, the default value of 1.00 is acceptable.

Magnetizing Inductance No Load Flux Max [Lm Noload FlxMax]

Linear Number:	695
Default Value:	1.00
Minimum Value:	0.50
Maximum Value:	2.00
Access Level:	Service
Read/Write:	Read/Write

This parameter represents the ratio between the Magnetizing Inductance of the motor at no load and maximum flux to the Rated Magnetizing Inductance. Since a motor is a non-linear device, Magnetizing Inductance is the parameter that changes the most with load and flux levels, and for applications with Encoder/Tachometer enabled and Low Speed, High Torque operating conditions, this parameter may need to be used to extrapolate Magnetizing Inductance for any load and flux reference. For most standard applications, the default value of 1.00 is acceptable.

Stator Resistance [R Stator]

Linear Number:	129
Default Value:	0.0000 pu
Minimum Value:	0.0000 pu
Maximum Value:	0.5000 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the per unit stator resistance of the motor. It is used in the calculation of the stator voltage and in the software reconstruction of the rotor flux. Stator resistance is usually less than 0.01 pu unless the motor is very small or the motor cables are very long. This parameter can be set manually or by auto-tuning.

WARNING: An excessively high stator resistance may cause the drive to become unstable at low speed and high load.

Total Leakage Inductance [L Total Leakage]

Linear Number:	130
Default Value:	0.25 pu
Minimum Value:	0.00 pu
Maximum Value:	0.75 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the per unit total leakage, short circuit, or transient inductance (Ls') of the motor. It is approximately equal to the sum of the stator and rotor leakage inductances, and the cable inductance, and has a typical value of 0.20 pu. The leakage inductance parameter is used in the calculation of the stator voltage and in the software reconstruction of the rotor flux. This parameter can be set manually or by auto-tuning.

WARNING: An excessively high leakage inductance may cause the drive to become unstable at high speed and high load.

Rotor Time Constant [T Rotor]

Linear Number:	132
Default Value:	1.50 sec
Minimum Value:	0.10 sec
Maximum Value:	10.00 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the rotor time constant of the motor. Typical value is in the range 1.0 to 2.0 sec. The rotor time constant varies significantly with rotor temperature (due to the change in rotor resistance), which has some effect on the response of the flux regulator and the calculation of the slip frequency for induction motors. This parameter can be set manually or by auto-tuning.

D-Axis Magnetizing Inductance [Lmd]

Linear Number:	418
Default Value:	1.00 pu
Minimum Value:	0.10 pu
Maximum Value:	10.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the d-axis magnetizing inductance for synchronous motors. It can be set manually or by auto-tuning. This parameter is not used for induction motors.

Q-Axis Torque Inductance [Lmq]

Linear Number:	296
Default Value:	1.00 pu
Minimum Value:	0.10 pu
Maximum Value:	10.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the q-axis torque inductance for synchronous motors. It can be set manually or by auto-tuning. This parameter is not used for induction motors.

Permanent Magnetic Flux[1][PM MagFlux pu]

Linear Number:	969
Default Value:	0.800 pu
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the per unit magnetic flux of a permanent magnet synchronous motor. It can be set manually or by auto-tuning.

Motor Capacitor Compensation [Motor Cap Comp]

Linear Number:	995
Default Value:	0.000 pu
Minimum Value:	-.100 pu
Maximum Value:	0.100 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the per unit motor capacitance correction value. This parameter is set by auto-tuning in HTPC mode to compensate the error between the actual motor capacitance and the capacitance (128) calculated from the motor capacitor nameplate parameters.

(1) Contact factory for availability.

D-Axis Inductance Minimum[1] [Lmd Min]

Linear Number: 970
Default Value: 1.00
Minimum Value: 0.01
Maximum Value: 10.00
Access Level: Service
Read/Write: Read/Write

This parameter represents the ratio between the d-axis magnetizing inductance synchronous inductance of a synchronous motor at no load minimum flux command to the value defined in *Lmd (418)*. Since a motor is a non-linear device, the inductance changes with the operating conditions, this parameter may need to be used to extrapolate d-axis inductance for any load or flux reference. For most standard options, the default value of 1.00 is acceptable.

D-Axis Inductance Maximum[2] [Lmd Max]

Linear Number: 971
Default Value: 1.00
Minimum Value: 0.01
Maximum Value: 10.00
Access Level: Service
Read/Write: Read/Write

This parameter represents the ratio between the d-axis inductance synchronous inductance of a synchronous motor at no load maximum flux command to the value defined in *Lmd (418)*. Since a motor is a non-linear device, the inductance changes with the operating conditions, this parameter may need to be used to extrapolate d-axis inductance for any load or flux reference. For most standard options, the default value of 1.00 is acceptable.

Q-Axis Inductance Minimum[3] [Lmq Min]

Linear Number: 972
Default Value: 1.00
Minimum Value: 0.01
Maximum Value: 10.00
Access Level: Service
Read/Write: Read/Write

This parameter represents the ratio between the q-axis inductance synchronous inductance of a synchronous motor at no load minimum flux command to the value defined in *Lmq (296)*. Since a motor is a non-linear device, the inductance changes with the operating conditions, this parameter may need to be used to extrapolate q-axis inductance for any load or flux reference. For most standard options, the default value of 1.00 is acceptable.

(1) Contact factory for availability.

(2) Contact factory for availability.

(3) Contact factory for availability.

Q-Axis Inductance Maximum[1] [Lmq Max]

Linear Number: 973
Default Value: 1.00
Minimum Value: 0.01
Maximum Value: 10.00
Access Level: Service
Read/Write: Read/Write

This parameter represents the ratio between the q-axis inductance synchronous inductance of a synchronous motor at rated load minimum flux command to the value defined in *Lmq (296)*. Since a motor is a non-linear device, the inductance changes with the operating conditions, this parameter may need to be used to extrapolate q-axis inductance for any load or flux reference. For most standard options, the default value of 1.00 is acceptable.

(1) Contact factory for availability.

Speed Command Parameters

Speed Command [Speed Command]

Linear Number: 277
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter is the drive speed command, which is the input to the speed ramp. It is set to zero when the drive is not running.

Speed Command Input [Speed Command In]

Linear Number: 276
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter is the value of the selected speed command input. It is valid whether the drive is running or not.

Control Reference [Control Refernce]

Linear Number: 275
Minimum Value: 0.0 Hz
Maximum Value: 6553.5 Hz
Access Level: Basic
Read/Write: Read Only

This parameter indicates the control reference value used by the drive regulators. This value is selected from a local, remote or digital reference command as indicated by the parameter *Speed Ref Select (7)*.

Control Feedback [Control Feedback]

Linear Number: 273
Minimum Value: 0.0 Hz
Maximum Value: 6553.5 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays the actual control reference feedback value measured by the drive.

Speed Command Potentiometer [SpdCmd Pot]

Linear Number: 47
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays the speed command value in Hz from the speed potentiometer.

Speed Command Analog Input 1 [SpdCmd Anlg Inp1]

Linear Number: 48
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays the speed command value in Hz from Analog Input 1.

Speed Command Analog Input 2 [SpdCmd Anlg Inp2]

Linear Number: 56
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays the speed command value in Hz from Analog Input 2.

Speed Command DPI [SpdCmd DPI]

Linear Number: 58
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays the value of the speed command in Hz coming from the DPI adapter.

Speed Command PID(1) [SpdCmd PID]

Linear Number: 59
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays value of the speed command in Hz coming from the process controller (PID) in the drive.

(1) Contact factory for availability.

Speed Command Minimum [Speed Cmd Min]

Linear Number:	293
Default Value:	6.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the minimum value of the Speed Command. When the drive is running, the absolute value of the Speed Command (which is obtained from the active Reference Command, either Local, Remote, or Digital) is limited by this parameter and the Speed Command will not drop below this level regardless of any of the Reference Command Min levels.

Speed Command Maximum [Speed Cmd Max]

Linear Number:	290
Default Value:	60.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the maximum value of the Speed Command. When the drive is running, the absolute value of the Speed Command (which is obtained from the active Reference Command, either Local, Remote, or Digital) is limited by this parameter and the Speed Command will not exceed this level regardless of any of the Reference Command Max levels.

Reference Command Potentiometer Min [RefCmd Pot Min]

Linear Number:	41
Default Value:	6.0 Hz
Minimum Value:	-120.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the minimum value of speed command in Hz that could come from the potentiometer mounted on the door. Along with *RefCmd Pot Max (42)* this parameter is used in determining the slope for interpolating the speed command coming from the potentiometer.

Reference Command Potentiometer Max [RefCmd Pot Max]

Linear Number:	42
Default Value:	60.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the maximum value of speed command in Hz that could come from the potentiometer mounted on the door. Along with *RefCmd Pot Min (41)* this parameter is used in determining the slope for interpolating the speed command coming from the potentiometer.

Reference Command Analog Input Min [RefCmdAnlgInpMin]

Linear Number:	43
Default Value:	6.0 Hz
Minimum Value:	-120.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the minimum value of speed command in Hz that could come from Analog Input 1 or Analog Input 2. Along with *RefCmdAnlgInpMax (44)* this parameter is used in determining the slope for interpolating the speed command coming from Analog Inputs.

Reference Command Analog Input Max [RefCmdAnlgInpMax]

Linear Number:	44
Default Value:	60.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the maximum value of speed command in Hz that could come from Analog Input 1 or Analog Input 2. Along with *RefCmdAnlgInpMin (43)* this parameter is used in determining the slope for interpolating the speed command coming from Analog Inputs.

Reference Command DPI Min [RefCmd DPI Min]

Linear Number:	45
Default Value:	6.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the minimum value of speed command in Hz that could come from the DPI adapter. Along with *RefCmd DPIMax (46)* this parameter is used in determining the slope for interpolating the digital speed command.

Reference Command DPI Max [RefCmd DPI Max]

Linear Number:	46
Default Value:	60.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	120.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the maximum value of speed command in Hz that could come from the DPI adapter. Along with *RefCmd DPIMin (45)* this parameter is used to in determining the slope for interpolating the digital speed command.

Preset Jog Speed [Preset Jog Speed]

Linear Number:	40
Default Value:	6.0 Hz
Minimum Value:	1.0 Hz
Maximum Value:	60.0 Hz
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the preset jog speed command, which is selected by the parameter *Speed Ref Select (7)*.

Preset Speed 1 [Preset Speed 1]

Linear Number:	33
Default Value:	30.0 Hz
Minimum Value:	0.5 Hz
Maximum Value:	75.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the preset speed 1 command which is selected by the parameter *Speed Ref Select (7)*.

Preset Speed 2 [Preset Speed 2]

Linear Number:	34
Default Value:	35.0 Hz
Minimum Value:	0.5 Hz
Maximum Value:	75.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the preset speed 2 command which is selected by the parameter *Speed Ref Select (7)*.

Preset Speed 3 [Preset Speed 3]

Linear Number:	35
Default Value:	40.0 Hz
Minimum Value:	0.5 Hz
Maximum Value:	75.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the preset speed 3 command which is selected by the parameter *Speed Ref Select (7)*.

Speed Control Parameters

Speed Reference [Speed Reference]

Linear Number: 278
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Monitor
Read/Write: Read Only

This parameter is the drive speed reference, which is the output of the speed ramp.

Speed Feedback [Speed Feedback]

Linear Number: 289
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Monitor
Read/Write: Read Only

This parameter is the calculated speed feedback after filtering. For *Sensorless* drives, the speed is calculated from the applied stator frequency while for *Pulse Encoder* drives, the speed is measured from the encoder/tachometer feedback. The speed feedback is positive for forward rotation and negative for reverse rotation.

Speed Error [Speed Error]

Linear Number: 472
Minimum Value: -10.00 Hz
Maximum Value: 10.00 Hz
Access Level: Advanced
Read/Write: Read Only

This parameter is the speed error obtained by subtracting the speed feedback from the speed reference. It is useful for checking the step response of the speed loop.

Stator Q-Axis Current Command [MtrTorque CurCmd]

Linear Number: 292
Minimum Value: -4.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter specifies the Q-axis or torque-producing Stator current command obtained by dividing the torque reference by the flux reference. It is positive for motoring and negative for regenerating.

Inverter Torque Current Command [InvTorque CurCmd]

Linear Number: 294
Minimum Value: -4.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the inverter torque current command and is obtained from Stator Q-Axis Current Command. The inverter produces almost all of the torque-producing current to the motor.

Actual Speed Regulator Bandwidth [Actual SpdReg BW]

Linear Number: 994
Minimum Value: 0.0 r/s
Maximum Value: 60.0 r/s
Access Level: Advanced
Read/Write: Read Only

This parameter displays the value of speed regulator bandwidth. This parameter is particularly useful if there are any conditions that limit the speed regulator bandwidth setting such as encoder loss condition or parallel drive configuration. In these conditions the actual speed regulator bandwidth will display bandwidth value of 5 rad/sec (as the speed bandwidth will be clamped to 5 rad/sec) if the setting of the speed bandwidth is higher than 5 rad/sec.

PI Torque Command [PI Trq Cmd]

Linear Number: 1124
Minimum Value: -4.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the value of the drive torque reference generated by the PI speed regulator.

Total Acceleration Time [Total Accel Time]

Linear Number: 61
Default Value: 32.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Monitor
Read/Write: Read/Write

This parameter specifies the time the drive will take to accelerate to rated speed. It is used in conjunction with the parameter *Inertia Type (63)* to automatically calculate the acceleration and deceleration times. Any changes to the individual acceleration ramp times will automatically change this value to reflect the new sum, and changes to this parameter will in turn be reflected in automatic changes to the acceleration ramp times. This parameter is not active if S-Curve percentage is any value other than 0%.

Total Deceleration Time [Total Decel Time]

Linear Number: 62
Default Value: 32.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Monitor
Read/Write: Read/Write

This parameter displays the time the drive will take to decelerate from rated speed to standstill. It is used in conjunction with parameter Load Inertia to automatically calculate the acceleration and deceleration times. Any changes to the individual deceleration ramp times will automatically change this value to reflect the new sum, and changes to this parameter will in turn be reflected in automatic changes to the deceleration ramp times. If the drive reaches the coast speed parameter value during a stop command deceleration, the drive will stop gating and coast to a stop. This parameter is not active if S-Curve percentage is any value other than 0%.

Load Inertia Type [Inertia Type]

Linear Number: 63
Default Value: Low
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the type of load inertia. It is used in conjunction with parameters *Total Decel Time (62)* and *Total Accel Time (61)* to calculate the acceleration and deceleration times. Some examples of low inertia applications include pumps and refiners. Some examples of high inertia loads include fans and banbury mixers. By setting this parameter from low to high, you will increase the default acceleration and deceleration times by a factor of 5.

The available options are:

Value	Enum Text	Description
0	Low	The application is a low inertia load
1	High	The application is a high inertia load

Total Inertia [Total Inertia]

Linear Number: 82
Default Value: 1.00 sec
Minimum Value: 0.10 sec
Maximum Value: 50.00 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the total inertia of the motor and load, which is defined as the time in seconds required to accelerate to the rated speed at the rated torque. In conjunction with Speed Regulator Bandwidth, it is used to calculate the gains for the speed regulator.

Speed Feedback Mode [Speed Fbk Mode]

Linear Number: 89
Default Value: Sensorless
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the type of speed feedback used. The available options are:

Value	Enum Text	Description
0	Sensorless	Calculated speed feedback using measured voltage and current.
1	Encoder	Tachometer/Encoder

The drive automatically switches to stator frequency feedback when an *Encoder Loss* warning occurs. If the *Encoder Loss* warning is successfully cleared the drive switches back automatically to encoder/tachometer feedback mode.

Speed Regulator Bandwidth [SpdReg Bandwidth]

Linear Number: 81
Default Value: 1.0 r/s
Minimum Value: 0.0 r/s
Maximum Value: 60.0 r/s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the small signal bandwidth of the speed control loop. It is used in the calculation of the speed regulator gains. This parameter affects only the response time of the speed regulator and not the overshoot.

Speed Regulator Kp(1) [SpdReg Kp]

Linear Number: 873
Default Value: 1.00
Minimum Value: 0.00
Maximum Value: 655.00
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the proportional gain for speed regulator.

Speed Regulator Ki(2) [SpdReg Ki]

Linear Number: 874
Default Value: 1.0 /s
Minimum Value: 0.0 /s
Maximum Value: 6553.0 /s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral gain for speed regulator.

(1) Contact factory for availability.

(2) Contact factory for availability.

Speed Regulator Damping Ratio [Spd Reg Damp]

Linear Number: 1123
Default Value: 3.00
Minimum Value: 0.50
Maximum Value: 5.00
Access Level: Advanced
Read/Write: Read/Write

This parameter set the speed loop's characteristics. Damping ratio value will affect the integral gain when a non-zero speed regulator bandwidth has been entered. The default value of this parameter is 3. Lowering the damping ratio will produce faster load disturbance rejection, but may cause a more oscillatory response. When the speed regulator bandwidth is set to zero, speed regulator gains are set manually and the damping ratio has no effect. This parameter is used only when the high performance torque control feature is enabled.

Speed Reference Step [Speed Ref Step]

Linear Number: 88
Default Value: 0.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 2.0 Hz
Access Level: Service
Read/Write: Read/Write

This parameter specifies the magnitude of the step that is added to the speed error to demonstrate the step response of the speed loop. It is not saved and is initialized to zero at power up.

Encoder Feedback Filter Bandwidth for Standard Control [EncFbk BW STD]

Linear Number: 1012
Default Value: 100.0 r/s
Minimum Value: 1.0 r/s
Maximum Value: 200.0 r/s
Access Level: Service
Read/Write: Read/Write

This parameter sets the corner frequency (bandwidth) of the 2nd order filter of encoder feedback signal for the standard speed control scheme (not high performance torque control scheme). The default value of this parameter is 100 rad/sec.

Speed Profile Parameters

Acceleration Time 1 [Accel Time 1]

Linear Number:	65
Default Value:	5.0 sec
Minimum Value:	0.0 sec
Maximum Value:	1200.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time for the speed reference to increase from zero to Ramp Speed 1. In conjunction with *Ramp Speed 1 (73)*, it is used to determine the rate at which drive will ramp the output stator frequency during flying starts. For details Flying Start (Induction Motor)on page 39 and Flying Start (Synch Motor) on page 40.

Acceleration Time 2 [Accel Time 2]

Linear Number:	66
Default Value:	3.0 sec
Minimum Value:	0.0 sec
Maximum Value:	1200.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time for the speed reference to increase from Ramp Speed 1 to Ramp Speed 2.

Acceleration Time 3 [Accel Time 3]

Linear Number:	67
Default Value:	14.0 sec
Minimum Value:	0.0 sec
Maximum Value:	1200.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time for the speed reference to increase from Ramp Speed 2 to Ramp Speed 3.

Acceleration Time 4 [Accel Time 4]

Linear Number:	68
Default Value:	10.0 sec
Minimum Value:	0.0 sec
Maximum Value:	1200.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time for the speed reference to increase from Ramp Speed 3 to Ramp Speed 4.

Deceleration Time 1 [Decel Time 1]

Linear Number: 69
Default Value: 5.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time for the speed reference to decrease from Ramp Speed 1 to zero.

Deceleration Time 2 [Decel Time 2]

Linear Number: 70
Default Value: 3.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time for the speed reference to decrease from Ramp Speed 2 to Ramp Speed 1.

Deceleration Time 3 [Decel Time 3]

Linear Number: 71
Default Value: 14.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time for the speed reference to decrease from Ramp Speed 3 to Ramp Speed 2.

Deceleration Time 4 [Decel Time 4]

Linear Number: 72
Default Value: 10.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time for the speed reference to decrease from Ramp Speed 4 to Ramp Speed 3.

Ramp Speed 1 [Ramp Speed 1]

Linear Number:	73
Default Value:	5.0 Hz
Minimum Value:	5.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the first break point in the speed ramp. In conjunction with *Accel Time 1 (65)*, it is used to determine the rate at which the drive will ramp the output stator frequency during flying starts. See Flying Start (Induction Motor) on page 39 for details.

Ramp Speed 2 [Ramp Speed 2]

Linear Number:	74
Default Value:	12.0 Hz
Minimum Value:	5.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the second break point in the speed ramp. It must be greater than Ramp Speed 1.

Ramp Speed 3 [Ramp Speed 3]

Linear Number:	75
Default Value:	54.0 Hz
Minimum Value:	5.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the third break point in the speed ramp. It must be greater than Ramp Speed 2.

Ramp Speed 4 [Ramp Speed 4]

Linear Number:	76
Default Value:	60.0 Hz
Minimum Value:	5.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the fourth break point in the speed ramp. It must be greater than Ramp Speed 3.

S Curve Percent [S Curve Percent]

Linear Number: 475
Default Value: 0%
Minimum Value: 0%
Maximum Value: 100%
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the non-linear part of the S-Curve acceleration profile expressed as percentage of the total S-Curve profile. Set this parameter to 0% to disable S-Curve Profile and allow Ramp Profile to be the active profile.

S Curve Acceleration Time 1 [S Curve Accel 1]

Linear Number: 481
Default Value: 20.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the total acceleration time when the S-Curve starting profile is selected, and the acceleration 1 time is chosen through DPI logic command. This is the default time when S-Curve is enabled.

S Curve Acceleration Time 2 [S Curve Accel 2]

Linear Number: 482
Default Value: 20.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the total acceleration time when the S-Curve starting profile is selected, and the acceleration 2 time is chosen through DPI logic command.

S Curve Deceleration Time 1 [S Curve Decel 1]

Linear Number: 479
Default Value: 20.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the total deceleration time when the S-Curve starting profile is selected, and the deceleration 1 time is chosen through DPI logic command. This is the default time when S-Curve is enabled.

S Curve Deceleration Time 2 [S Curve Decel 2]

Linear Number: 480
Default Value: 20.0 sec
Minimum Value: 0.0 sec
Maximum Value: 1200.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the total deceleration time when the S-Curve starting profile is selected, and the deceleration 2 time is chosen through DPI logic command.

Skip Speed Band [Skip Speed Band1]

Linear Number: 53
Default Value: 0.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 5.0 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the width of skip speed zone 1.

Skip Speed Band 2 [Skip Speed Band2]

Linear Number: 54
Default Value: 0.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 5.0 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the width of skip speed zone 2.

Skip Speed Band 3 [Skip Speed Band3]

Linear Number: 55
Default Value: 0.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 5.0 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the width of skip speed zone 3.

Skip Speed 1 [Skip Speed 1]

Linear Number:	49
Default Value:	90.0 Hz
Minimum Value:	1.0 Hz
Maximum Value:	90.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the center of skip speed zone 1 and is used to avoid mechanical resonances at certain speeds.

Skip Speed 2 [Skip Speed 2]

Linear Number:	50
Default Value:	90.0 Hz
Minimum Value:	1.0 Hz
Maximum Value:	90.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the center of skip speed zone 2 and is used to avoid mechanical resonances at certain speeds.

Skip Speed 3 [Skip Speed 3]

Linear Number:	51
Default Value:	90.0 Hz
Minimum Value:	1.0 Hz
Maximum Value:	90.0 Hz
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the center of skip speed zone 3 and is used to avoid mechanical resonances at certain speeds.

Ramp Test Step [Ramp Test Step]

Linear Number:	80
Default Value:	0.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	30.0 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the magnitude of the step that is added to the speed command to demonstrate the response of the speed ramp. If this parameter is set to a non-zero value, the drive will continuously ramp up and down between a maximum speed equal to the speed command plus the value of this parameter, and a minimum value equal to the speed command minus the value of this parameter. The ramp test function is intended for use in factory test only. This parameter is not saved and is initialized to zero at power up.

Current Control Parameters

DC Current Reference [Idc Reference]

Linear Number: 321
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter is the DC link current reference.

DC Current Feedback [Idc Feedback]

Linear Number: 322
Minimum Value: -2.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter is the measured DC link current feedback.

DC Current Error [Idc Error]

Linear Number: 323
Minimum Value: -1.000 pu
Maximum Value: 1.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter is the DC current error obtained by subtracting the DC current feedback from the DC current reference.

DC Voltage Reference [Vdc Reference]

Linear Number: 326
Minimum Value: -1.000
Maximum Value: 1.000
Access Level: Advanced
Read/Write: Read Only

This parameter is the DC voltage reference, which is the output of the current regulator after the advance limit and retard limit have been applied. A value of 1.000 corresponds to maximum positive voltage (motoring) and a value of -1.000 corresponds to maximum negative voltage (regenerating) regardless of the direction of motor rotation.

Alpha Rectifier [Alpha Rectifier]

Linear Number: 327
Minimum Value: 0.0 Deg
Maximum Value: 180.0 Deg
Access Level: Advanced
Read/Write: Read Only

This parameter displays the rectifier firing angle relative to the input line voltage. It is equal to the inverse cosine of the DC voltage reference, *Vdc Reference (326)*. It is in the range of 0 to 90 degrees for motoring and 90 to 180 degrees for regenerating.

Source Delta Angle [SourceDeltaAngle]

Linear Number: 1011
Minimum Value: -90.0 Deg
Maximum Value: 90.0 Deg
Access Level: Service
Read/Write: Read Only

This parameter specifies the phase shift between line side capacitor voltage and line source voltage.

DC Current Reference Limit Motor [IdcRefLmt Motor]

Linear Number: 773
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Service
Read/Write: Read Only

This is the maximum allowable DC current reference the rectifier will use based on the DC link over current trip and DC current ripple.

DC Current Reference Limit in DC Test [IdcRefLmt DCTest]

Linear Number: 260
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays maximum DC current reference allowed during DC test mode.

DC Current Reference Limit in Auto-tuning [IdcRefLmt Autotn]

Linear Number: 261
Minimum Value: 0.000 pu
Maximum Value: 4.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays maximum DC current reference allowed during auto-tuning.

Vdc Reference Limit [Vdc Ref Limit]

Linear Number: 993
Minimum Value: -1.500
Maximum Value: 1.500
Access Level: Service
Read/Write: Read Only

This parameter specifies the allowable advance limit and retard limit of DC current regulator output, which is DC voltage reference (326). This parameter is referenced to the input source voltage and in the range of 1.0 to -1.0. A positive value is displayed in motoring operation to specify the maximum positive DC voltage reference limit, and a negative value is displayed in regenerating operation to specify the maximum negative DC voltage reference limit.

Current Regulator Bandwidth [CurReg Bandwidth]

Linear Number: 113
Default Value: 200.0 r/s
Minimum Value: 50.0 r/s
Maximum Value: 6500.0 r/s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the small signal bandwidth of the current control loop. It is used in the calculation of the current regulator gain. This parameter affects only the response time of the current regulator and not the overshoot. It is normally set to 200 radian/second.

DC Current Test Command [Idc Test Command]

Linear Number: 119
Default Value: 0.000 pu
Minimum Value: 0.000 pu
Maximum Value: 1.500 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of the DC current command when the drive is operating in DC current test mode. It is not saved and is initialized to zero at power-up.

DC Current Reference Step [Idc Ref Step]

Linear Number: 120
Default Value: 0.000 pu
Minimum Value: 0.000 pu
Maximum Value: 1.000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the magnitude of the step that is added to the DC current command to demonstrate the step response of the current loop. It is not saved and is initialized to zero at power-up.

DC Link Time Constant [T DC Link]

Linear Number:	115
Default Value:	0.040 sec
Minimum Value:	0.015 sec
Maximum Value:	0.150 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time constant of the DC link reactor. It affects both the response time and overshoot of the regulator, and should be adjusted to produce a step response that has zero or a very small overshoot. This parameter can be set manually or by auto-tuning.

Idc Regulator Kp [IdcReg Kp]

Linear Number:	1107
Default Value:	1.000
Minimum Value:	0.000
Maximum Value:	65.500
Access Level:	Advanced
Read/Write:	Read/Write

This parameter displays the proportional gain used in the DC current regulator.

Idc Regulator Ki [IdcReg Ki]

Linear Number:	1108
Default Value:	1.00 /s
Minimum Value:	0.00 /s
Maximum Value:	655.00 /s
Access Level:	Advanced
Read/Write:	Read/Write

This parameter displays the integral gain used in the DC current regulator.

Input Impedance [Input Impedance]

Linear Number:	140
Default Value:	0.0500 pu
Minimum Value:	0.0000 pu
Maximum Value:	1.0000 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the input impedance between the drive and the source, including the isolating transformer if present, expressed in the per unit system of the drive. It is used in the calculation of the retard limit for the line converter, and reconstruction of the line voltage parameters. This parameter can be set manually or by auto-tuning.

Feedforward Filter [Feedforward Fil]

Linear Number:	502
Default Value:	2.0 Hz
Minimum Value:	0.1 Hz
Maximum Value:	100.0 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the corner frequency of the filter used in calculating the inverter side DC link voltage from the measured stator voltage. This value is used as a feed-forward term in the current regulator to determine the firing angle for the line side converter. This parameter is useful in load-sharing conveyor applications, where it can be used to effectively dampen system mechanical resonance.

Feedforward Line Filter [Feedfwd L Fil]

Linear Number:	1010
Default Value:	0.2 Hz
Minimum Value:	0.1 Hz
Maximum Value:	100.0 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the corner frequency of the digital filter for line side capacitor voltage measurement. This value is used in the calculation of feed-forward term in the DC current regulator to determine the firing angle for the line side converter. This parameter is useful in generator applications, where it can be used for the DC current regulator to effectively adapt to the soft source voltage.

Torque Control Parameters

Torque Reference [Torque Reference]

Linear Number:	291
Minimum Value:	-4.000
Maximum Value:	4.000
Access Level:	Advanced
Read/Write:	Read Only

This parameter displays the value of the drive torque reference obtained from different sources such as speed regulator or external torque command.

Active Torque Limit [Active Trq Limit]

Linear Number:	147
Minimum Value:	-4.000
Maximum Value:	4.000
Access Level:	Advanced
Read/Write:	Read Only

This parameter displays the torque limit which the drive will use in limiting its torque output. The parameter could have a value different than the specified *Trq Lmt Motoring (84)* or *Trq Lmt Braking (85)*. It is because the drive adjusts the torque limit based on either field weakening, overload or input voltage sag conditions.

Power Limit [Power Limit]

Linear Number:	405
Minimum Value:	0.00
Maximum Value:	4.00
Access Level:	Advanced
Read/Write:	Read Only

This parameter displays the pu amount of power limit based on the value from analog input 3 and *Pwr Lmt Motoring (747)* in Marine 1 application. The reading from analog input 3 will be scaled such a way that 20mA is equivalent to zero and 4mA is equivalent to *Pwr Lmt Motoring*. Therefore loss of analog input 3 is equivalent to *Pwr Lmt Motoring*. The torque command will be reduced as required to keep the motor power from exceeding this limit. This Power Limit will be ignored in MANUAL mode of operation.

Torque Command Drive [Trq Cmd Drive]

Linear Number:	404
Minimum Value:	-4.000
Maximum Value:	4.000
Access Level:	Advanced
Read/Write:	Read Only

This parameter displays the amount of torque command which comes from an input to the drive other than a PLC, for example analog inputs or DPI.

Torque Feedback Filter [Torque Fbk Fil]

Linear Number: 1127
Minimum Value: -4.000
Maximum Value: 4.000
Access Level: Service
Read/Write: Read Only

This parameter is reserved for future used.

Torque Command 0 Sensorless [TrqCmd0 SensrLss]

Linear Number: 86
Default Value: 0.40
Minimum Value: 0.00
Maximum Value: 4.00
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of the torque command at zero speed used in starting mode. It may be higher or lower than *TrqCmd1 SnsrLss (87)*. If this parameter is set too low the motor may not start. If it is set too high the start will be excessively rough and noisy. A value of 1.00 corresponds to rated motor torque. This parameter has no effect if the optional tachometer or encoder feedback is enabled.

Torque Command 1 Sensorless [TrqCmd1 SensrLss]

Linear Number: 87
Default Value: 0.40
Minimum Value: 0.00
Maximum Value: 4.00
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of the torque command at the speed when the drive switches to close-loop after an open loop start. It may be higher or lower than *TrqCmd0 SensrLss*. In starting mode, the torque command changes linearly from *TrqCmd0 SensrLss* at zero speed to *TrqCmd1 SensrLss* at close-loop speed. When the drive switches from starting mode to normal running mode and the speed regulator is released, the torque command is initially equal to the value of this parameter. If it is set too low, the motor may stall before the speed regulator has time to increase the torque command. If it is set too high, the motor will accelerate very rapidly after the transition until the speed regulator is able to decrease the torque command to the value required to follow the speed ramp. A value of 1.00 corresponds to rated motor torque. This parameter has no effect if the optional tachometer or encoder feedback is enabled.

Torque Command PLC [Trq Cmd PLC]

Linear Number: 91
Default Value: 0.000
Minimum Value: -4.000
Maximum Value: 4.000
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the external torque command. The function of this parameter depends on the parameter *Torque Control Mode*. A value of 1.00 corresponds to rated motor torque. Note that motoring torque is positive for forward rotation and negative for reverse rotation.

Torque Control Mode Setting	Torque Command External Effect
Zero Torque	None
Speed Regulation	None
External Torque Command	Used as the External Torque Command
Speed Torque Positive	Sets Positive Torque Limit
Speed Torque Negative	Sets Negative Torque Limit
Speed Summation	Added to the Speed Regulator Output

Torque Control Mode [Trq Control Mode]

Linear Number: 90
Default Value: Speed Reg
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the different torque control modes in the drive. Depending on the parameter selection, the drive determines different torque command values. This parameter is used in conjunction with an external torque command *Trq Cmd PLC (91)*. This parameter is used for determining drive's torque output or torque limits. The parameter is defined as:

Value	Enum Text	Description
0	Zero Torque	The drive issues zero torque command
1	Speed Reg	The drive uses the speed regulator to determine the torque command
2	PLC Torq Cmd	The drive uses the external torque command and bypasses the speed regulator This mode is also referred to as "Slave" or "Torque follower" mode
3	Spd Trq Pos	The drive uses the speed regulator with an external motoring torque limit
4	Spd Trq Neg	The drive uses the speed regulator with an external braking torque limit
5	Spd Sum	The torque command is sum of speed regulator and the external torque command

Value	Enum Text	Description
6	Drv Torq Cmd	This torque control mode is not available. If this mode is selected, it will be automatically set to 'Speed Reg' mode.
7	App Control	The drive selects the source of the internal torque command based on the application for example for Marine 1 application the logic selects either the *Trq Cmd Drv (404)* or the output of the internal PI speed regulator based on a discrete input state from the Special XIO card. Currently required for Marine 1 application.
8	DCSL	This setting is only applicable to Follower drive in DCSL Master-Follower drive system. The torque command comes from the Master drive via DCSL.

Torque Limit Motoring [Trq Lmt Motoring]

Linear Number:	84
Default Value:	1.05
Minimum Value:	0.00
Maximum Value:	4.00
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the maximum value of the torque command when motoring. A value of 1.00 corresponds to rated motor torque.

Torque Limit Braking [Trq Lmt Braking]

Linear Number:	85
Default Value:	1.05
Minimum Value:	0.00
Maximum Value:	4.00
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the maximum value of the torque command when braking or regenerating. A value of 1.00 corresponds to rated motor torque.

Torque Limit Overload [Trq Lmt Overload]

Linear Number:	658
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	4.00
Access Level:	Advanced
Read/Write:	Read/Write

This parameter is used to prevent the drive from tripping on an overload fault. For a drive programmed with a *Trq Lmt Motoring (84)* greater than 1.00 (it may be needed for starting or other certain intermittent load conditions), when the drive reaches 90% of its maximum thermal capability, it will automatically limit the torque to the value specified in the parameter *Trq Lmt Overload (658)*. This may prevent the drive from tripping on overload and will keep the process running. Please note that this will result in the motor slowing down. This parameter should be set to 1.00 pu, and setting it to a value equal to or greater than *Torque Limit Motoring* would lead to a drive trip on overload.

Power Limit Motoring [Pwr Lmt Motoring]

Linear Number: 747
Default Value: 1.50
Minimum Value: 0.00
Maximum Value: 4.00
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the maximum motor power when motoring. The torque command will be reduced as required to keep the motor power from exceeding this limit. A value of 1.00 corresponds to rated motor power.

Power Limit Braking [Pwr Lmt Braking]

Linear Number: 748
Default Value: 1.50
Minimum Value: 0.00
Maximum Value: 4.00
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the maximum motor power when braking or regenerating. The torque command will be reduced as required to keep the motor power from exceeding this limit. A value of 1.00 corresponds to rated motor power.

Torque Regulator Kp [Trq Reg Kp]

Linear Number: 914
Default Value: 0.00
Minimum Value: 0.00
Maximum Value: 655.35
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the proportional gain for torque regulator. Please contact factory for availability.

Torque Regulator Ki [Trq Reg Ki]

Linear Number: 915
Default Value: 0.00
Minimum Value: 0.00
Maximum Value: 655.35
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral gain for torque regulator. Please contact factory for availability.

Torque Regulator LPF Frequency [TrqReg LPF Freq]

Linear Number: 916
Default Value: 100 Hz
Minimum Value: 0 Hz
Maximum Value: 20000 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the cut-off frequency for low pass filter used in torque regulator. Please contact factory for availability.

Torque Regulator Limit [TrqReg Limit]

Linear Number: 917
Default Value: 0.050
Minimum Value: 0.000
Maximum Value: 2.000
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the limit on PI torque regulator output. Please contact factory for availability.

Torque Command 0 Encoder [TrqCmd0 Encoder]

Linear Number: 641
Default Value: 0.00
Minimum Value: 0.00
Maximum Value: 4.00
Access Level: Service
Read/Write: Read/Write

This parameter specifies the initial torque when starting with an encoder/ tachometer. The default value allows the drive to start providing zero torque and ramp up to the required torque determined by the speed control loop. By setting this to a value above 0.00, drive provides more torque until the control loops can take over.

Torque Feedback Low-Pass Filter (LPF) Frequency [Trq Fbk LPF Freq]

Linear Number: 1128
Default Value: 300.0 Hz
Minimum Value: 0.1 Hz
Maximum Value: 1000.0 Hz
Access Level: Service
Read/Write: Read/Write

This parameter is reserved for future used.

Flux Control Parameters

Flux Reference [Flux Reference]

Linear Number:	305
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Advanced
Read/Write:	Read Only

This parameter specifies the rotor flux reference, which varies between a minimum value set by parameter *FlxCmd No Load (103)* and a maximum value set by parameter *FlxCmd RatedLoad (100)*. The flux reference varies directly with torque at all speeds, and decreases with speed above Base Speed. The flux reference is also automatically reduced if the current regulator approaches advance limit or retard limit, which can occur when running at high speed and high torque with low line voltage.

Flux Feedback [Flux Feedback]

Linear Number:	306
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Advanced
Read/Write:	Read Only

This parameter displays the value of flux feedback which can come from either *FlxFbk VoltModel (342)* or *FlxFbk CurModel (341)* or a combination of both. For *Sensorless* drives running below 3 Hz, flux from the Current Model is used to calculate Flux Feedback and above 3 Hz flux from the Voltage Model is used. For drives with *Pulse Encoder*, below 7.5 Hz flux from the Current Model is used while above 7.5 Hz flux from the Voltage Model is used to calculate Flux Feedback. See Motor Model on page 28.

Flux Error [Flux Error]

Linear Number:	307
Minimum Value:	-2.000 pu
Maximum Value:	2.000 pu
Access Level:	Advanced
Read/Write:	Read Only

This parameter displays the flux error obtained by subtracting the flux feedback from the flux reference.

Motor Flux Current Command [Mtr Flux CurCmd]

Linear Number: 310
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the magnetizing or D-axis stator current command, which is the sum of a feedforward term *FluxCur Feedfwd (308)* and the current from the flux regulator *FluxCurRegulator (309)*.

Flux Current Feedforward [FluxCur Feedfwd]

Linear Number: 308
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the feed-forward component of the magnetizing or D-axis stator current command. It is an estimate of the steady state D-axis current and is always positive. This value should represent the baseline magnetizing current of the motor, determined from the Magnetizing Inductance of the motor.

Flux Current Regulator [FluxCurRegulator]

Linear Number: 309
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the closed loop correction component of the magnetizing or D-axis stator current command. It is the output of the flux regulator and may be positive or negative. This is the correction to the magnetizing current based on the operating conditions of the motor.

Inverter Flux Current Command [Inv Flux CurCmd]

Linear Number: 312
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the magnetizing current command for the inverter obtained from *Mtr Flux CurCmd (310)* and a motor filter capacitor model. It is positive for lagging current and negative for leading current.

Alpha Inverter [Alpha Inverter]

Linear Number: 328
Minimum Value: -360.0 Deg
Maximum Value: 360.0 Deg
Access Level: Advanced
Read/Write: Read Only

This parameter displays the inverter firing angle relative to the measured motor flux. It is calculated from the torque component of the inverter output current *InvTorque CurCmd (294)* and the flux component of the inverter output current *Inv Flux CurCmd (312)*.

Field Current Command [Field CurCmd]

Linear Number: 314
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter specifies the current command for the synchronous motor field supply. For synchronous drives, this parameter must be assigned to one of the ACB analog outputs. An analog output of 10.0 V corresponds to 2 pu of field current. The maximum field current command is set by parameter *Max Field CurCmd (843)*, which should be somewhat higher than rated field current. The scaling of the field current command can be adjusted to match the scaling of the field supply current reference input using the associated analog output scaling parameter. For induction motors this parameter is always equal to zero.

Field Current(1) [Field Current]

Linear Number: 57
Minimum Value: -2.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the measured field current.

Flux Command Limit [Flux Cmd Limit]

Linear Number: 623
Minimum Value: 0.000 pu
Maximum Value: 1.500 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the maximum value of flux reference which the drive can use. It is a constantly changing value based on the operating speed of the motor and the input bridge voltage. For most applications in normal speed range, this value should be greater than *FluxCmd Rated Load (100)*. This parameter is used to prevent the current regulator from hitting advance limits.

(1) Contact factory for availability.

Flux Regulator Bandwidth [FlxReg Bandwidth]

Linear Number: 97
Default Value: 10.0 r/s
Minimum Value: 0.0 r/s
Maximum Value: 60.0 r/s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the small signal bandwidth of the flux control loop. It is used in the calculation of the flux regulator gain. The maximum bandwidth possible for stable flux control tends to decrease as motor size increases.

Flux Command Rated Load [FlxCmd RatedLoad]

Linear Number: 100
Default Value: 0.900 pu
Minimum Value: 0.000 pu
Maximum Value: 1.500 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of the flux command at rated load. The flux command will never be greater than this parameter, which can be set manually or by auto-tuning.

Flux Command No Load [FlxCmd No Load]

Linear Number: 103
Default Value: 0.700 pu
Minimum Value: 0.400 pu
Maximum Value: 1.500 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the value of the flux command at no load. The flux command will change linearly from *FlxCmd No Load (103)* to *FlxCmd Rated Load (100)* as *Torque Reference (291)* changes from 0.00 to 1.00. Reducing the motor flux improves efficiency when running for extended periods at less than full load. The maximum torque capability of the drive is reduced in proportion to the reduction in flux. If the load increases suddenly when the drive is running with reduced flux, there may be a large drop in speed until the flux can be restored to its normal level. If *FlxCmd No Load* is set higher than *FlxCmd Rated Load*, the flux command will not vary with load.

Motor Flux Time [Motor Flux Time]

Linear Number: 78
Default Value: 3.0 sec
Minimum Value: 0.0 sec
Maximum Value: 10.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time interval during which the motor is being magnetized. The purpose of the delay is to allow flux to be established in the motor before attempting to accelerate. If the torque required at starting is very low, then this parameter can be set to a small value such as 1 second, but should be set to a higher value if high starting torque is required. This parameter is active even when encoder/tach feedback is enabled.

Capacitor Current Command Gain [Icd Command Gain]

Linear Number:	107
Default Value:	0.0
Minimum Value:	0.0
Maximum Value:	1.0
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the gain of the capacitor current compensation for synchronous motors. When this parameter is set to its minimum value of 0.0, all the current for the motor filter capacitor is supplied by the drive, and the motor operates at approximately unity power factor. When this parameter is set to its maximum value of 1.0, the motor supplies all the current for the motor filter capacitor and operates at a lagging power factor with reduced field current. When this parameter is set to its default value of 0.5, approximately half the motor filter capacitor current is supplied by the drive and half by the motor. The motor power factor in this case is slightly lagging. This parameter is not used for induction motors.

Field Current Command Bandwidth [Field Bandwidth]

Linear Number:	106
Default Value:	1.0 r/s
Minimum Value:	0.1 r/s
Maximum Value:	100.0 r/s
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the bandwidth of the field current command for synchronous motors. It should be set to a value that is less than the bandwidth of both the flux regulator and the field current control.

Flux Regulator Kp(1) [FluxReg Kp]

Linear Number:	978
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.00
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the proportional gain for flux regulator.

(1) Contact factory for availability.

Flux Regulator Ki[1] [FluxReg Ki]

Linear Number: 979
Default Value: 1.00 /s
Minimum Value: 0.00 /s
Maximum Value: 655.00 /s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral gain for flux regulator.

Base Speed [Base Speed]

Linear Number: 98
Default Value: 60.0 Hz
Minimum Value: 25.0 Hz
Maximum Value: 100.0 Hz
Access Level: Service
Read/Write: Read/Write

This parameter specifies the frequency at which field weakening begins. Base Speed is normally set equal to the rated frequency of the motor. It can be set to a lower value only if the motor is specially designed to operate at a higher than normal flux level without saturating.

Flux Reference Step [Flux RefStep]

Linear Number: 102
Default Value: 0.000 pu
Minimum Value: 0.000 pu
Maximum Value: 0.100 pu
Access Level: Service
Read/Write: Read/Write

This parameter specifies the magnitude of the step that is added to the flux reference to demonstrate the step response of the flux loop. It is not saved and is initialized to zero at power-up. This parameter is also used during manual drive tuning.

Maximum Flux Current Start [Max FlxCur Start]

Linear Number: 842
Default Value: 0.500 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read/Write

This parameter specifies the maximum magnetizing current that can be used for starting of synchronous DC brushless motor.

(1) Contact factory for availability.

Maximum Field Current Command [Max Field CurCmd]

Linear Number: 843
Default Value: 1.000 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read/Write

This parameter specifies the maximum field current command that can be applied to the exciter in synchronous motors.

Minimum Field Current Command [Min Field CurCmd]

Linear Number: 1118
Default Value: 1.000 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

Alarm Config Parameters

Input Protection 1 Fault Class [InputProt1 Class]

Linear Number: 440
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of one of the possible protective devices installed to provide line protection. This is usually an overload or protective relay on the input isolation transformer or line reactor. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

Transformer/Line Reactor Over Temperature Fault Class [TxReacOvrTmpClss]

Linear Number: 441
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the isolation transformer or the line reactor protective signal. This is usually a thermal switch in the isolation transformer or AC line reactor winding. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

DC Link Over Temperature Fault Class [DCLnkOvrTmpClass]

Linear Number: 442
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the DC link protection scheme. This is usually a thermal switch in the DC link reactor or common-mode choke. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

Motor Protection Fault Class [Motor Prot Class]

Linear Number: 443
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the motor protective device. This is usually a protective relay on the motor. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

Input Protection 2 Fault Class [InputProt2 Class]

Linear Number: 444
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the second of the possible protective devices installed to provide line protection. This is usually an overload or protective relay on the input isolation transformer or line reactor, or from a source further upstream. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

Auxiliary Protection Class [Aux Prot Class]

Linear Number: 445
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of any other protective device that is used in the drive system. This essentially is a spare input for any customer-specific protective device. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

Standard XIO Fault Mask [Stnd XIOFlt Mask]

Linear Number: 435
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies if the alarm is set to trigger a Warning/Fault. A '1' represents enabled fault, a '0' represents disabled fault. The following faults are maskable:

Bit	Enum Text	Description
0	Input Protn1	Input Protection 1 fault
1	TxReacOvrTmp	Isolation Transformer/Line Reactor Over temperature fault
2	DCLinkOvrTmp	DC Link/Common-Mode Choke Over temperature fault
3	Motor Protn	Motor Protection fault
4	Input Protn2	Input Protection 2 fault
5	Aux Protn	Auxiliary Protection fault
6	Unused	
7	Unused	

External Fault Select [Ext Fault Selct]

Linear Number: 651
Default Value: 0000000000000000
Access Level: Basic
Read/Write: Read/Write

This parameter selects whether the external fault inputs are coming from the optional XIO card or the PLC. The parameter allows the user to choose whether the faults come from the XIO board, or from a PLC, or from a combination of the 2 sources. By setting the bit to a 1, the associated external fault comes from the PLC. Setting the bit to a zero allows the external fault to come from the XIO board.

Bit	Enum Text	Description
0	External1	External Fault 1
1	External2	External Fault 2
2	External3	External Fault 3
3	External4	External Fault 4
4	External5	External Fault 5

Bit	Enum Text	Description
5	External6	External Fault 6
6	External7	External Fault 7
7	External8	External Fault 8
8	External9	External Fault 9
9	External10	External Fault 10
10	External11	External Fault 11
11	External12	External Fault 12
12	External13	External Fault 13
13	External14	External Fault 14
14	External15	External Fault 15
15	External16	External Fault 16

External Fault 1 Class [ExtFault1 Class]

Linear Number: 200
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 1. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 2 Class [ExtFault2 Class]

Linear Number: 201
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 2. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 3 Class [ExtFault3 Class]

Linear Number: 202
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 3. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 4 Class [ExtFault4 Class]

Linear Number: 203
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 4. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 5 Class [ExtFault5 Class]

Linear Number: 204
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 5. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 6 Class [ExtFault6 Class]

Linear Number: 205
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 6. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 7 Class [ExtFault7 Class]

Linear Number: 206
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 7. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 8 Class [ExtFault8 Class]

Linear Number: 207
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 8. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 9 Class [ExtFault9 Class]

Linear Number: 410
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 9. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 10 Class [ExtFault10 Class]

Linear Number: 411
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 10. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 11 Class [ExtFault11 Class]

Linear Number: 412
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 11. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 12 Class [ExtFault12 Class]

Linear Number: 413
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 12. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 13 Class [ExtFault13 Class]

Linear Number: 414
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 13. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 14 Class [ExtFault14 Class]

Linear Number: 415
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 14. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 15 Class [ExtFault15 Class]

Linear Number: 416
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 15. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault 16 Class [ExtFault16 Class]

Linear Number: 417
Default Value: Class2 Fault
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the class of the external fault 16. This is applicable only if the optional XIO board is installed. The following options are available:

Value	Enum Text	Description
0	Disable	This disables the fault input
1	Class1 Fault	The drive will shut down immediately
2	Class2 Fault	The drive will perform a controlled shut down
3	Warning	The drive will not shut down but a warning will be displayed

External Fault Mask [Ext Fault Mask]

Linear Number: 564
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the external faults. A '1' represents enabled fault, a '0' represents disabled fault. There are 16 available faults, from External1 to External16. The user can modify the name of each external input.

Bit	Enum Text	Description
0	External1	External Fault Input 1
1	External2	External Fault Input 2
2	External3	External Fault Input 3
3	External4	External Fault Input 4
4	External5	External Fault Input 5
5	External6	External Fault Input 6

Bit	Enum Text	Description
6	External7	External Fault Input 7
7	External8	External Fault Input 8
8	External9	External Fault Input 9
9	External10	External Fault Input 10
10	External11	External Fault Input 11
11	External12	External Fault Input 12
12	External13	External Fault Input 13
13	External14	External Fault Input 14
14	External15	External Fault Input 15
15	External16	External Fault Input 16

DCSL Warning Mask [DCSL Wrn Mask]

Linear Number: 1096
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the DCSL Warning word. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	Duplct Mstr	Duplicate master warning
1	CRC Warning	CRC warning
2	Arbloss Wrn	Arbitration loss warning
3	MstrTxfr Wrn	Master transfer error warning
4	New Master	New master notification
5	Min Capacity	Minimum capacity warning
6	DCSL NotEnbl	DCSL feature not enabled warning
7	DCSL Conflct	DCSL feature conflict warning
8	DCSLWrnBit8	Reserved for future use
9	DCSLWrnBit9	Reserved for future use
10	DCSLWrnBit10	Reserved for future use
11	DCSLWrnBit11	Reserved for future use
12	DCSLWrnBit12	Reserved for future use
13	DCSLWrnBit13	Reserved for future use
14	DCSLWrnBit14	Reserved for future use
15	DCSLWrnBit15	Reserved for future use

Drive Fault Mask 1 [Drv Fault1 Mask]

Linear Number: 394
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the first fault word corresponding to drive protection. A ‘1’ represents an enabled fault; a ‘0’ represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	Line OvrCur	Line Over Current Fault
1	DCLnkOvrCur	DC Link Over Current Fault
2	Gnd OvrCur	Ground Over Current Fault
3	RNeut OvrCur	Neutral Resistor Over Current Fault
4	Line OvrVolt	Line Over Voltage Fault
5	RecOvrVoltHW	Hardware Rectifier Over Voltage Fault
6	LineNeuOvVol	Line Neutral Over Voltage Fault
7	LineHarmonic	Line Harmonic Fault
8	MstrVolUnBal	Master Bridge Voltage Unbalance Fault
9	Slv1VolUnBal	Slave1 Bridge Voltage Unbalance Fault
10	Slv2VolUnBal	Slave2 Bridge Voltage Unbalance Fault
11	MstrCurUnBal	Master Bridge Current Unbalance Fault
12	Slv1CurUnBal	Slave1 Bridge Current Unbalance Fault
13	Slv2CurUnBal	Slave2 Bridge Current Unbalance Fault
14	Slv1 Phasing	Slave1 Bridge Phasing Fault
15	Slv2 Phasing	Slave2 Bridge Phasing Fault

Drive Fault Mask 2 [Drv Fault2 Mask]

Linear Number: 395
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the second fault word corresponding to drive protection. A ‘1’ represents an enabled fault; a ‘0’ represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	RecAnaSlfTst	Rectifier Analog Self Test Fault
1	RecFbrOptCfg	Rectifier Fiber Optic Cable Configuration Fault
2	2UGatePS V F	Gate Driver board Power Supply level Fault
3	Rec A2D Conv	Rectifier Analog to Digital Converter Fault
4	InvHeartbeat	Inverter Heartbeat Fault
5	RecA2DSeqErr	Rectifier Analog to Digital Sequence Error Fault

Bit	Enum Text	Description
6	RecOvrVoltSW	Software Rectifier Over Voltage Fault
7	RecOVTimeOut	Rectifier Over Voltage Time Out Fault
8	LineCap Fail	Line Capacitor Failure Fault
9	DrvInp Short	Fault due to Drive Input Short (including Line capacitors and Rectifier devices)
10	LineCapOvVol	Line Capacitor Over Voltage Fault
11	2VGatePS V F	Gate Driver board Power Supply level Fault
12	2WGatePS V F	Gate Driver board Power Supply level Fault
13	InvGatePSV F	Gate Driver board Power Supply level Fault
14	Unused	
15	Unused	

Drive Fault Mask 3 [Drv Fault3 Mask]

Linear Number: 396
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the third fault word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	Drv OvrLoad	Drive Overload Fault
1	RNeutOvrLoad	Line Neutral to Ground Overvoltage Fault
2	RecHSnkOvTmp	Rectifier Heatsink Over Temperature Fault
3	RecHSnkLoTmp	Rectifier Heatsink Low Temperature Fault
4	RecHSnkFbrOp	Rectifier Heatsink Fiber Optic Cable Loss Fault
5	RecHSnk Sens	Rectifier Heatsink Sensor Loss Fault
6	RecChB OvTmp	Rectifier Channel B Over Temperature Fault
7	RecChB LoTmp	Rectifier Channel B Low Temperature Fault
8	RecChB FbrOp	Rectifier Heatsink Channel B Fiber Optic Cable disconnected Fault
9	RecChB Sens	Rectifier Channel B Sensor Loss Fault
10	Dvc AK/Snubb	Device anode-Cathode or Snubber Fault
11	Current Sens	Current Sensor Fault
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drive Fault Mask 4 [Drv Fault4 Mask]

Linear Number: 562
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the fourth fault word corresponding to drive protection. A ‘1’ represents an enabled fault; a ‘0’ represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	Inv OvrVolt	Inverter Over Voltage Fault
1	Drv Out Open	Drive Output Contactor Open Fault
2	SyncXferFail	Synchronous Transfer Failed
3	Encoder Loss	Encoder Loss Fault
4	MV Sys Test	Medium Voltage applied to drive in System Test Fault
5	MV Gate Test	Medium Voltage applied to drive in Gating Test Fault
6	InpCtctrOpen	Input Contactor Open Fault
7	OutCtctrOpen	Output Contactor Open Fault
8	BypCtctrOpen	Bypass Contactor Open Fault
9	No Out Ctctr	No Output Contactor Fault
10	Inp IsoOpen	Input Isolation Switch Open Fault
11	Out IsoOpen	Output Isolation Switch Open Fault
12	Byp IsoOpen	Bypass Isolation Switch Open Fault
13	Inp IsoClsd	Input Isolation Switch Closed Fault
14	Out IsoClsd	Output Isolation Switch Closed Fault
15	Byp IsoClsd	Bypass Isolation Switch Closed Fault

Drive Fault Mask 5 [Drv Fault5 Mask]

Linear Number: 563
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the fifth fault word corresponding to drive protection. A ‘1’ represents an enabled fault; a ‘0’ represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	Low AirPresF	Converter Airflow Pressure Fault. This is not applicable to Heatpipe drives
1	Iso AirPresF	Isolation Transformer Air Pressure Value Fault. This is not applicable to Heatpipe drives
2	InvHSnkOvTmp	Inverter Heat Sink Over Temperature Fault. This is not applicable to Heatpipe drives
3	InvHSnkLoTmp	Inverter Heat Sink Low Temperature Fault. This is not applicable to Heatpipe drives

Bit	Enum Text	Description
4	InvHSnkFbrOp	Inverter Heat Sink Fiber Optic Cable Fault. This is not applicable to Heatpipe drives
5	InvHSnk Sens	Inverter Heat Sink Sensor Fault. This is not applicable to Heatpipe drives
6	Amb OvTmp	Ambient Over Temperature Fault(1)
7	Amb LoTmp	Ambient Low Temperature Fault(1)
8	Amb FbrOp	Ambient Fiber Optic Cable Fault(1)
9	Amb Sens	Ambient Sensor Fault(1)
10	InvAnaSlfTst	Inverter Self Analog Test Fault
11	InvFbrOptCfg	Inverter Heatsink Fiber Optic Cable Fault
12	InvA2DSeqErr	Inverter A2D Sequence Error Fault
13	Inv A2D Conv	Inverter Analog to Digital Converter Fault
14	RecHeartbeat	Rectifier Heartbeat Fault
15	Idc HECS Con	DC Current HECS Connector Fault

(1) Contact factory for availability.

Drive Fault Mask 6 [Drv Fault6 Mask]

Linear Number: 8
Default Value: 1111111111111111
Access Level: Service
Read/Write: Read/Write

This parameter specifies the mask for the sixth fault word corresponding to drive protection. A ‘1’ represents an enabled fault; a ‘0’ represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	DAN Comm	Drive Area Network Communication Fault – Parallel Drive Application
1	Mstr Xfr Err	Master Transfer Error – Parallel Drive Application
2	PDCapcityLow	Parallel Drive capacity is low – Parallel Drive Application
3	Main VSB	Main voltage sensing board has not been plugged in to ACB
4	Sync VSB	Bypass voltage sensing board has not been plugged in to ACB
5	DC Neut VSB	DC and Neutral Sensing Board has not been plugged in to ACB
6	InpLock5min	Input contactor is locked out for 5 minute (line over current)
7	InpLockIndef	Input contactor is locked out indefinitely (line over current and PLL error)
8	ProcVarLossF	Process Variable from the customer process sensor is lost
9	Capab Limit	Motor current exceeded safe level determined by the Capability Curve
10	SpAppCrdLoss	Special Application Card Loss Fault
11	AirHiPresreF	Converter cabinet High Air Pressure Fault
12	InvOvrVoltSW	Software Inverter Over Voltage Fault

Bit	Enum Text	Description
13	SysCommLoss	System Communication Loss Fault
14	EncIDMsmatch	Encoder ID Mismatch Fault
15	Unused	

Drive Fault Mask 7 [Drv Fault7 Mask]

Linear Number: 862
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the seventh fault word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit(1)	Enum Text	Description
0	2U Over Temp	Rectifier heatsink 2U over temperature fault
1	2V Over Temp	Rectifier heatsink 2V over temperature fault
2	2W Over Temp	Rectifier heatsink 2W over temperature fault
3	InvHSOvrTemp	Inverter heatsink over temperature fault
4	2UAirflwLoss	Rectifier power stack 2U low airflow fault
5	2VAirflwLoss	Rectifier power stack 2V low airflow fault
6	2WAirflwLoss	Rectifier power stack 2W low airflow fault
7	InvAirflwLss	Inverter power stack low airflow fault
8	TFB2U FbkErr	Rectifier power stack 2U TFB feedback error fault. The drive ceased to receive data from the TFB.
9	TFB2V FbkErr	Rectifier power stack 2V TFB feedback error fault. The drive ceased to receive data from the TFB.
10	TFB2W FbkErr	Rectifier power stack 2W TFB feedback error fault. The drive ceased to receive data from the TFB.
11	InvTFBFbkErr	Inverter TFB feedback error fault. The drive ceased to receive data from the TFB.
12	2U Temp Sens	Rectifier power stack 2U Heat Sink Sensor Loss Fault
13	2V Temp Sens	Rectifier power stack 2V Heat Sink Sensor Loss Fault
14	2W Temp Sens	Rectifier power stack 2W Heat Sink Sensor Loss Fault
15	InvHSTempSen	Inverter power stack Heat Sink Sensor Loss Fault

(1) Bits 4…7 are not used in Firmware release 11.001.

Drive Fault Mask 8 [Drv Fault8 Mask]

Linear Number: 878
Default Value: 1111111111111111
Access Level: Service
Read/Write: Read/Write

This parameter specifies the mask for the eighth fault word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit(1)	Enum Text	Description
0	DB OvrTempF	Exhaust temperature in DB cabinet exceeded the fault threshold
1	DB High AmbF	Ambient temperature in DB cabinet exceeded the fault threshold
2	DB LowAirflwF	Airflow velocity in DB cabinet dropped below the fault threshold
3	DB TempSensF	Exhaust temperature sensor in DB cabinet is faulty
4	DB Amb LossF	Ambient temperature sensor in DB cabinet is faulty
5	DBAirflwSenF	Airflow sensor in DB cabinet is faulty
6	DB TFB LossF	Temperature Feedback Board in DB cabinet is faulty
7	DBR OvrloadF	DB resistor is overloaded due to consumption of braking energy without adequate cooling period and it passed the threshold of 15
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Drv AppF	Drive is not set properly for Marine 1 application

(1) Bits 2 and 5 are not used in Firmware 11.001.

Drive Fault 9 Mask [Drv Fault9 Mask]

Linear Number: 1098
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the ninth fault word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	DrvFlt9Bit0	Reserved for future use
1	DrvFlt9Bit1	Reserved for future use
2	DrvFlt9Bit2	Reserved for future use
3	DrvFlt9Bit3	Reserved for future use
4	DrvFlt9Bit4	Reserved for future use

Bit	Enum Text	Description
5	DrvFlt9Bit5	Reserved for future use
6	DrvFlt9Bit6	Reserved for future use
7	DrvFlt9Bit7	Reserved for future use
8	DrvFlt9Bit8	Reserved for future use
9	DrvFlt9Bit9	Reserved for future use
10	DrvFlt9Bit10	Reserved for future use
11	DrvFlt9Bit11	Reserved for future use
12	DrvFlt9Bit12	Reserved for future use
13	DrvFlt9Bit13	Reserved for future use
14	DrvFlt9Bit14	Reserved for future use
15	DrvFlt9Bit15	Reserved for future use

Motor Fault Mask 1 [Mtr Fault1 Mask]

Linear Number: 561
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the first fault word corresponding to motor protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	Mtr OvrCur	Motor Over Current Fault
1	Mtr OvrVolt	Motor Overvoltage Fault
2	MtrNeuOvrVol	Motor Neutral Over Voltage Fault
3	Mtr FlxUnbal	Motor Flux Unbalance Fault
4	Mtr CurUnbal	Motor Current Unbalance Fault
5	Mtr OvrLoad	Motor Overload Fault
6	Mtr OvrSpeed	Motor Over Speed Fault
7	Mtr Stall	Motor Stall Fault
8	Mtr LoadLoss	Motor Load Loss Fault
9	SynFieldLoss	Synchronous Field Loss Fault
10	MtrSlipRange	Motor Slip Out of Range Fault
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Heatpipe Fault Mask 1 [HeatpipeFlt1Mask]

Linear Number: 549
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the Heatpipe-dedicated first fault word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	LR DoubleFan	Failure of both of the Line Reactor Fans fault
1	CnvDoubleFan	Failure of two of the Converter Fans fault
2	CMCDoubleFan	Failure of both of the Common Mode Choke Fans fault
3	UVBlckInletF	Differential air pressure sensor located between Inverter power stacks U and V detects low air pressure. Possible cause could be inlet airflow blockage.
4	VWBlckInletF	Differential air pressure sensor located between Inverter power stacks V and W detects low air pressure. Possible cause could be inlet airflow blockage.
5	CMCBlckExhst	Differential air pressure sensor detects low air pressure. Possible cause could be exhaust airflow blockage.
6	UV BlckXhstF	Differential air pressure sensor located between Inverter power stacks U and V detects high air pressure. Possible causes could be exhaust airflow blockage or dirty heatsinks.
7	VW BlckXhstF	Differential air pressure sensor located between Inverter power stacks V and W detects high air pressure. Possible causes could be exhaust airflow blockage or dirty heatsinks.
8	CMCBlckInlet	Differential air pressure sensor detects high air pressure. Possible cause could be inlet airflow blockage.
9	LR Fan1Ctctr	Failure of the Line Reactor Fan fault. Applicable to drive without fan redundancy option.
10	CnvFan3Ctctr	Failure of the Converter Fan 3 fault. Applicable to drive without fan redundancy option.
11	CnvFan4Ctctr	Failure of the Converter Fan 4 fault. Applicable to drive without fan redundancy option.
12	CnvFan5Ctctr	Failure of the Converter Fan 5 fault. Applicable to drive without fan redundancy option.
13	CnvFan6Ctctr	Failure of the Converter Fan 6 fault. Applicable to drive without fan redundancy option.
14	CnvFan7Ctctr	Failure of the Converter Fan 7 fault. Applicable to drive without fan redundancy option.
15	CMCFan9Ctctr	Failure of the Common Mode Choke Fan 9 fault. Applicable to drive without fan redundancy option.

Heatpipe Fault Mask 2 [HeatpipeFlt2Mask]

Linear Number: 976
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the Heatpipe-dedicated second fault word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	LR BlckInltF	Differential air pressure sensor detects high air pressure in the line reactor section. Possible cause could be inlet airflow blockage.
1	LR BlckXhstF	Differential air pressure sensor detects low air pressure in the line reactor section. Possible cause could be exhaust airflow blockage.
2	Xtrnal LRFan	External line reactor cooling system power switch status low. Drive is not allowed to run without cooling fans
3	XtrnalCNVFan	External converter cooling system power switch status low. Drive is not allowed to run without cooling fans
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drive Warning Mask 1 [Drv Wrn1 Mask]

Linear Number: 397
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the first warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	Drv OvrLoad	Drive Overload warning
1	Mstr UndVolt	Master Bridge Under Voltage warning
2	Slv1 UndVolt	Slave1 Bridge Under Voltage warning
3	Slv2 UndVolt	Slave2 Bridge Under Voltage warning

Bit	Enum Text	Description
4	DCLnk OvrCur	DC Link Over Current warning
5	Rec OvrVolt	Rectifier Over Voltage Fault
6	Line Synch	Loss of line synchronization
7	InpCtctr Fbk	Drive Input Contactor Feedback Status Loss with MV present
8	Unused	
9	Line Loss	Loss of medium voltage or loss of medium voltage frequency
10	RecHSnkOvTmp	Rectifier Heatsink Over Temperature warning. Not applicable to Heatpipe drives.
11	RecChB OvTmp	Rectifier Channel B Over Temperature warning. Not applicable to Heatpipe drives.
12	BusTransient	Bus Transient warning
13	LineCapRange	Line Filter Capacitor pu value outside normal range
14	RAM Batt Low	RAM Battery Low
15	DCLink Range	DC Link pu value outside normal range

Drive Warning Mask 2 [Drv Wrn2 Mask]

Linear Number: 647
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the second warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	RecHSnk Sens	Rectifier Heat Sink Sensor Loss Warning. Not applicable to TFB3 and newer.
1	RecChB Sens	Rectifier Channel B Sensor Loss Warning. Not applicable to TFB3 and newer.
2	RecHSnkFbrOp	Rectifier Heat Sink Fiber Optic Loss Warning. Not applicable to TFB3 and newer.
3	RecChB FbrOp	Rectifier Channel B Fiber Optic Loss Warning. Not applicable to TFB3 and newer.
4	RecDCCurGain	Rectifier DC Current Gain Warning
5	Rec Gate Pwr	Rectifier Gate Power Warning
6	RecACCurGain	Rectifier AC Current Gain Warning
7	Stack Depth	Stack Depth Warning(1)
8	DataRecrdClr	Data Recorder NVRAM Cleared Warning
9	DB GatePwrS	Dynamic Breaking Gate Power Supply Warning
10	2UGatePS V W	Gate Driver board Power Supply level Warning
11	2VGatePS V W	Gate Driver board Power Supply level Warning
12	2WGatePS V W	Gate Driver board Power Supply level Warning

Bit	Enum Text	Description
13	InvGatePSV W	Gate Driver board Power Supply level Warning
14	Unused	
15	InpFilTuning	Input filter tuning warning

(1) Contact factory for availability.

Drive Warning Mask 3 [Drv Wrn3 Mask]

Linear Number: 423
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the third warning word corresponding to drive protection. A ‘1’ represents an enabled warning; a ‘0’ represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	InpCtctrOpen	Input Contactor Open warning
1	InpCtctrClsd	Input Contactor Closed warning
2	OutCtctrOpen	Output Contactor Open warning
3	OutCtctrClsd	Output Contactor Closed warning
4	BypCtctrOpen	Bypass Contactor Open warning
5	BypCtctrClsd	Bypass Contactor Closed warning
6	Inp IsoOpen	Drive Input Isolation Switch Open warning
7	Out IsoOpen	Drive Output Isolation Switch Open warning
8	Byp IsoOpen	Bypass Isolation Switch Open warning
9	Inp IsoClsd	Input Isolation Switch Closed warning
10	Out IsoClsd	Output Isolation Switch Closed warning
11	Byp IsoClsd	Bypass Isolation Switch Closed warning
12	No Out Ctctr	No Output contactor installed Warning
13	InpClose Dly	Input Contactor Close Delay
14	AnlgPwrLmLos	Analog Power Limit Loss Warning
15	AirHiPresreW	Converter cabinet High Air Pressure Warning

Drive Warning Mask 4 [Drv Wrn4 Mask]

Linear Number: 468
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the fourth warning word corresponding to drive protection. A ‘1’ represents an enabled warning; a ‘0’ represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	ConvFn1Ctctr	Converter Fan 1 Contactor Warning. Not applicable to Heatpipe drives.
1	ConvFn2Ctctr	Converter Fan 2 Contactor Warning. Not applicable to Heatpipe drives.
2	Iso Fn1Ctctr	Isolation Transformer Fan 2 Contactor Warning. Not applicable to Heatpipe drives.
3	Iso Fn2Ctctr	Isolation Transformer Fan 2 Contactor Warning. Not applicable to Heatpipe drives.
4	Low AirPresW	Converter Air Pressure Value Warning. Not applicable to Heatpipe drives.
5	Iso AirPresW	Isolation Transformer Air Pressure Value Warning
6	Conv FansOn	Converter Fans On Warning. Not applicable to Heatpipe drives.
7	IsoTxFans On	Isolation Transformer Fans On Warning
8	ConvFan1Loss	Converter Fan 1 Contactor Feedback Loss Warning. Not applicable to Heatpipe drives.
9	ConvFan2Loss	Converter Fan 2 Contactor Feedback Loss Warning. Not applicable to Heatpipe drives.
10	IsoFan1 Loss	Isolation Transformer Fan 1 Contactor Feedback Loss Warning
11	IsoFan2 Loss	Isolation Transformer Fan 2 Contactor Feedback Loss Warning
12	Drv Maintain	Drive Maintenance Warning(1)
13	Inv Gate Pwr	Inverter Gate Power Loss Warning
14	PFC Disabled	Power Factor Correction Disabled Warning
15	Cable Resis	Programmed value of cable resistance does not match the stator resistance value determined through autotune

(1) Contact factory for availability.

Drive Warning Mask 5 [Drv Wrn5 Mask]

Linear Number: 707
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the fifth warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	InvHSnkOvTmp	Inverter Heat Sink Over Temperature Warning
1	Amb OvTmp	Ambient Over Temperature Warning. Not applicable for Heatpipe drives.
2	InvHSnk Sens	Inverter Heat Sink Sensor Warning
3	Amb Sens	Ambient Sensor Warning. Not applicable for Heatpipe drives.
4	InvHSnkFbrOp	Inverter Heat Sink Fiber Optic Cable Warning
5	Amb FbrOp	Ambient Fiber Optic Warning. Not applicable for Heatpipe drives.
6	Inv OvrVolt	Inverter Over Voltage Warning
7	InvACCurGain	Inverter AC Current Gain Warning

Bit	Enum Text	Description
8	Unused	
9	Unused	
10	Unused	
11	PFC IdcLimit	Idc Limit has been reached while compensating for input power factor
12	PFC FlxLimit	Flux Limit has been reached while compensating for input power factor
13	ProcVarLossW	Process variable loss has been detected
14	Rec 5Pulse	Rectifier operating in 5 pulse mode
15	MaxDrvCapab	The motor current limited to the safe level of drive thermal protection

Drive Warning Mask 6 [Drv Wrn6 Mask]

Linear Number: 859
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the sixth warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	2U LowAirflw	Rectifier power stack 2U low airflow warning
1	2V LowAirflw	Rectifier power stack 2V low airflow warning
2	2W LowAirflw	Rectifier power stack 2W low airflow warning
3	InvLowAirflw	Inverter power stack low airflow warning
4	2UAirflwSens	Rectifier power stack 2U Airflow Sensor Loss warning
5	2VAirflwSens	Rectifier power stack 2V Airflow Sensor Loss warning
6	2WAirflwSens	Rectifier power stack 2W Airflow Sensor Loss warning
7	InvAirflwSen	Inverter power stack Airflow Sensor Loss warning
8	2U TempSensW	Rectifier power stack 2U Heat Sink Sensor Loss warning
9	2V TempSensW	Rectifier power stack 2V Heat Sink Sensor Loss warning
10	2W TempSensW	Rectifier power stack 2W Heat Sink Sensor Loss warning
11	InvTempSensW	Inverter Heat Sink Sensor Loss warning
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drive Warning Mask 7 [Drv Wrn7 Mask]

Linear Number: 860
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the seventh warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	2U High Amb	Rectifier power stack 2U high ambient temperature warning
1	2U Low Amb	Rectifier power stack 2U low ambient temperature warning
2	2V High Amb	Rectifier power stack 2V high ambient temperature warning
3	2V Low Amb	Rectifier power stack 2V low ambient temperature warning
4	2W High Amb	Rectifier power stack 2W high ambient temperature warning
5	2W Low Amb	Rectifier power stack 2W low ambient temperature warning
6	Inv High Amb	Inverter power stack high ambient temperature warning
7	Inv Low Amb	Inverter power stack low ambient temperature warning
8	2U Amb Loss	Rectifier power stack 2U Ambient Temperature Sensor Loss warning
9	2V Amb Loss	Rectifier power stack 2V Ambient Temperature Sensor Loss warning
10	2W Amb Loss	Rectifier power stack 2W Ambient Temperature Sensor Loss warning
11	Inv Amb Loss	Inverter power stack Ambient Temperature Sensor Loss warning
12	2U OvrTempW	Rectifier heatsink 2U over temperature warning
13	2V OvrTempW	Rectifier heatsink 2V over temperature warning
14	2W OvrTempW	Rectifier heatsink 2W over temperature warning
15	Inv OvrTempW	Inverter heatsink over temperature warning

Drive Warning Mask 8 [Drv Wrn8 Mask]

Linear Number: 861
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the eighth warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	LiqCool Leak	Coolant is leaking in the liquid cooled drive
1	DB Fan Ctctr	DB fan contactor status is OFF even though it's requested to turn on
2	DB Fan ON	DB fan is on even though it's not requested
3	DB High AmbW	Ambient temperature in DB cabinet exceeded the warning threshold

Bit	Enum Text	Description
4	DB DisabledW	DB related tests are requested but the DB system is disabled, DB system is changed to enable but DB resistor value is zero, or DB system is already enabled but DB resistor value is changed to zero
5	DB Amb Loss	Ambient temperature sensor in DB cabinet is faulty while drive is running
6	DB LowAirflw	Airflow velocity in DB cabinet is below the warning threshold
7	DBAirflwSens	Airflow sensor in DB cabinet is faulty while drive is running
8	DB OvrTempW	Exhaust temperature in DB cabinet exceeded the warning threshold
9	DB Temp Sens	Exhaust temperature sensor in DB cabinet is faulty while drive is running
10	DB TFBDataEr	The drive ceased to receive data from the TFB in DB cabinet
11	DBR Overload	DB resistor is overloaded due to consumption of braking energy without adequate cooling period and it passed the threshold of 12
12	InvOvrVoltSW	Software Inverter Over Voltage
13	RestrtXpired	Auto-restart interval expired
14	Unused	
15		The parameter *Speed Cmd Max* (P290) is clamped to 75 Hz due to the condition that the drive is set to speed mode and is having an overhauling load without output contactor

Drive Warning 9 Mask [Drv Wrn9 Mask]

Linear Number: 1097
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the ninth warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	HPTC Cfg Err	HPTC feature configuration error warning
1	HPTC Conflct	HPTC feature conflict warning
2	SpdBW Reduc	Speed bandwidth reduced warning
3	Reserved	Reserved for future use
4	Reserved	Reserved for future use
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Reserved	Reserved for future use
8	Reserved	Reserved for future use
9	Reserved	Reserved for future use
10	Reserved	Reserved for future use
11	Reserved	Reserved for future use
12	Reserved	Reserved for future use

Bit	Enum Text	Description
13	Reserved	Reserved for future use
14	Reserved	Reserved for future use
15	Reserved	Reserved for future use

Motor Warning Mask 1 [Mtr Wrn1 Mask]

Linear Number: 565
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the first warning word corresponding to motor protection. A ‘1’ represents an enabled warning; a ‘0’ represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	Mtr OvrLoad	Motor Overload Warning
1	Mtr CapRange	Motor Filter Capacitor pu value outside normal range
2	Mtr LoadLoss	Motor Load Loss Warning
3	Mtr OvrVolt	Motor Over Voltage Warning
4	MtrSlipRange	Motor Slip out of Range Warning
5	Byp OvrVolt	Bypass Over Voltage Warning
6	Byp UndrVolt	Bypass Under Voltage Warning
7	Byp Unbal	Bypass Voltage Unbalance Warning
8	Byp Phs Seq	Bypass Phase Sequence Warning
9	SyncXferFail	Synchronous Transfer Failed
10	Desync Delay	De-synchronization delay Warning
11	Encoder Loss	Encoder Loss Warning
12	Encoder Dir	Encoder Direction is latched to the one before encoder phase loss
13	EncdrPhALoss	Encoder Phase A Loss Warning
14	No Encoder	No Encoder Installed Warning
15	EncdrPhBLoss	Encoder Phase B Loss Warning

Motor Warning Mask 2 [Mtr Wrn2 Mask]

Linear Number: 957
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the mask for the first warning word corresponding to motor protection. A ‘1’ represents an enabled warning; a ‘0’ represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	Unused	
1	Unused	
2	Enc P Hz Loss	Encoder Phase Z Loss Warning
3	AbsEncPhLoss	Absolute Encoder Phase Loss Warning
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Control Power Fault Mask [Ctrl Pwr FltMask]

Linear Number: 104
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the fault masks for the various components used in protecting the control power system feeding the drive. The following faults are maskable:

Bit	Enum Text	Description
0	ACDC#1DCFail	Loss of 56V DC Power to DC/DC#1 Converter
1	ACDC#2DCFail	Loss of 56V DC Power to DC/DC#2 Converter
2	ACDC#3DCFail	Loss of 56V DC Power to DC/DC#3 Converter
3	ACDC#4DCFail	Loss of 56V DC Power to DC/DC#4 Converter
4	Ctrl56V Loss	Loss of 56V DC Control to DC/DC Converter
5	IGDPS56VLoss	Loss of 56V DC Control to IGDPS
6	Ctrl5V Loss	Loss of Non-Redundant 5V to DPM
7	Ctrl15V Loss	Loss of Non-Redundant 15V to ACB
8	HECS PwrLoss	Loss of control power to HECS Connectors
9	Ctrl PwrLoss	120V AC Control Power Loss
10	ACDC#1ACFail	Loss of 120V AC Power to AC/DC#1 Power Supply
11	ACDC#2ACFail	Loss of 120V AC Power to AC/DC#2 Power Supply
12	ACDC#3ACFail	Loss of 120V AC Power to AC/DC#3 Power Supply

Bit	Enum Text	Description
13	ACDC#4ACFail	Loss of 120V AC Power to AC/DC#4 Power Supply
14	UPS Fault	UPS Fault
15	Isol24V Loss	Loss of Isolated 24V power supply

Control Power Warning Mask [Ctrl Pwr WrnMask]

Linear Number: 105
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the warning masks for the various components used in protecting the control power system feeding the drive. The following warnings are maskable:

Bit	Enum Text	Description
0	ACDC#1 Redn	Redundant AC/DC#1 Supply Module failure Warning
1	ACDC#2 Redn	Redundant AC/DC#1 Supply Module failure Warning
2	ACDC#3 Redn	Redundant AC/DC#1 Supply Module failure Warning
3	ACDC#4 Redn	Redundant AC/DC#1 Supply Module failure Warning
4	ACDC#1ACFail	Loss of 120V AC Power to AC/DC#1 Power Supply
5	ACDC#2ACFail	Loss of 120V AC Power to AC/DC#2 Power Supply
6	ACDC#3ACFail	Loss of 120V AC Power to AC/DC#3 Power Supply
7	ACDC#4ACFail	Loss of 120V AC Power to AC/DC#4 Power Supply
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	UPS onBypass	UPS running on bypass
10	UPS on Batt	UPS running on battery
11	UPS Batt Low	UPS battery low
12	UPS Failed	UPS has an internal failure
13	XIO Pwr Loss	XIO power loss
14	Ctrl5V Redn	Loss of Redundant 5V
15	Unused	

Heatpipe Warning Mask 1 [HeatpipeWrn1Mask]

Linear Number: 545
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the first Heatpipe-dedicated warning word corresponding to drive protection. A ‘1’ represents an enabled warning; a ‘0’ represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	LR Fan1Ctctr	Line Reactor Fan 1 contactor status warning
1	LR Fan2Ctctr	Line Reactor Fan 2 contactor status warning
2	CnvFan3Ctctr	Converter Fan 3 contactor status warning
3	CnvFan4Ctctr	Converter Fan 4 contactor status warning
4	CnvFan5Ctctr	Converter Fan 5 contactor status warning
5	CnvFan6Ctctr	Converter Fan 6 contactor status warning
6	CnvFan7Ctctr	Converter Fan 7 contactor status warning
7	CnvFan8Ctctr	Converter Fan 8 contactor status warning
8	CMCFan9Ctctr	Common Mode Choke Fan 9 contactor status warning
9	CMCFn10Ctctr	Common Mode Choke Fan 10 contactor status warning
10	Fan Data Clr	Retentive Fan Data cleared warning
11	LR BlckInltW	Line Reactor blocked inlet
12	LR BlckXhstW	Line Reactor blocked exhaust
13	Unused	
14	Unused	
15	Unused	

Heatpipe Warning Mask 2 [HeatpipeWrn2Mask]

Linear Number: 546
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the second Heatpipe-dedicated warning word corresponding to drive protection. A ‘1’ represents an enabled warning; a ‘0’ represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	LR Fan1 Aux	Line Reactor Fan 1 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
1	LR Fan2 Aux	Line Reactor Fan 2 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
2	Cnv Fan3 Aux	Converter Fan 3 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
3	Cnv Fan4 Aux	Converter Fan 4 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
4	Cnv Fan5 Aux	Converter Fan 5 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
5	Cnv Fan6 Aux	Converter Fan 6 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
6	Cnv Fan7 Aux	Converter Fan 7 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
7	Cnv Fan8 Aux	Converter Fan 8 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
8	CMC Fan9 Aux	Common Mode Choke Fan 9 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.

Bit	Enum Text	Description
9	CMCFan10 Aux	Common Mode Choke Fan 10 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
10	UVBlckInletW	Inlet airflow blockage warning. Differential air pressure sensor located between Inverter power stacks U and V detects low air pressure.
11	VWBlckInletW	Inlet airflow blockage warning. Differential air pressure sensor located between Inverter power stacks V and W detects low air pressure.
12	CMCBlckInltW	Inlet airflow blockage warning. Differential air pressure sensor detects high air pressure.
13	CMCBlckXhstW	Exhaust airflow blockage warning. Differential air pressure sensor detects low air pressure.
14	UV BlckXhstW	Differential air pressure sensor located between Inverter power stacks U and V detects high air pressure. The possible cause could be exhaust airflow blockage or dirty heatsinks.
15	VW BlckXhstW	Differential air pressure sensor located between Inverter power stacks V and W detects high air pressure. The possible cause could be exhaust airflow blockage or dirty heatsinks.

Thermal Model Fault Mask [ThermalM FltMask]

Linear Number: 863
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the Thermal Model fault word corresponding to drive protection. A ‘1’ represents an enabled fault; a ‘0’ represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	JunctnTempF	Rectifier SGCT junction over temperature fault
1	Cnv Air Loss	Insufficient airflow in the converter section fault(1)
2	TFB Loss	Temperature Feedback Board feedback error fault. The drive ceased to receive data from the TFB.
3	HighAmbientF	Rectifier high ambient temperature fault
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

Thermal Model Warning Mask [ThermalM WrnMask]

Linear Number: 501
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for the Thermal Model warning word corresponding to drive protection. A '1' represents an enabled warning; a '0' represents a disabled warning. The bit assignment is:

Bit	Enum Text	Description
0	JunctnTempW	SGCT junction over temperature warning
1	Low AirFlow	Insufficient airflow in the converter section warning(1)
2	HighAmbientW	High ambient temperature in the converter section warning
3	TFB Data Err	Temperature Feedback Board feedback error fault. The drive ceased to receive data from the TFB.
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

DPI Loss Mask [DPI Loss Mask]

Linear Number: 175
Default Value: 0000000000000000
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the masks for detecting loss of individual DPI adapters. The default value for this parameter enables a Class 2 fault for an adapter loss. Changing the corresponding bit to 0 will change the drive response to a warning condition.

Bit	Enum Text	Description
0	Adapter1Loss	Loss of Adapter 1
1	Adapter2Loss	Loss of Adapter 2
2	Adapter3Loss	Loss of Adapter 3
3	Adapter4Loss	Loss of Adapter 4

Bit	Enum Text	Description
4	Adapter5Loss	Loss of Adapter 5
5	Adapter6Loss	Loss of Adapter 6
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Liquid Cooled Fault Mask [Liq Cool Mask]

Linear Number: 703
Default Value: 1111111111111111
Access Level: Basic
Read/Write: Read/Write

This parameter represents the faults that can be masked in the PowerFlex C-Frame drive. These are typically masked only in a sensor failure condition, as opposed to a true fault. The following faults are maskable:

Bit	Enum Text	Description
0	Unused	
1	ExtCool Loss	Loss of External Cooling (Heat Exchanger Failure)
2	CoolTemp Low	Coolant Temperature Low
3	CoolTempHigh	Coolant Temperature High
4	Unused	
5	CoolLevelLow	Coolant Level Low
6	CabTempHigh	Cabinet Temperature High
7	Pump/Fan Pwr	Pump and Fan Power Off
8	DC Link Flow	DC Link Flow
9	TempFbk Loss	Loss of Coolant Temperature Feedback
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Device Diagnostic Fault Mask [DvcDiag Flt Mask]

Linear Number: 420
Default Value: 1111111111111111
Access Level: Service
Read/Write: Read/Write

This parameter specifies the masks for the device diagnostic faults (SCR and SGCT). A '1' represents enabled fault, a '0' represents disabled fault. The bit definition is as follows:

Bit	Enum Text	Description
0	RecOffLnOpen	SCR Rectifier – Diagnostic, Open Circuit Detection (before running)
1	RecOffLnShrt	SCR Rectifier – Diagnostic, Short Circuit Detection (before running)
2	RecOnLnOpen	SCR Rectifier – Running, Open Circuit Detection
3	RecOnLnShrt	SCR Rectifier – Running, Short Circuit Detection
4	Rec Gating	PWM Rectifier – Diagnostic, Gate Fiber Optic Loss (before running)
5	Rec Diag Fbk	PWM Rectifier – Diagnostic, Feedback Fiber Optic Loss (before running)
6	Rec Offline	PWM Rectifier – Diagnostic, Gate-Cathode Short/Power Supply Loss (before running)
7	Rec Online	PWM Rectifier – Running Gate/Cathode Short, Power Supply Loss or Fiber Optic Loss
8	Inv Gating	Inverter – Diagnostic, Gate Fiber Optic Loss (before running)
9	Inv Diag Fbk	Inverter – Diagnostic, Feedback Fiber Optic Loss (before running)
10	Inv Offline	Inverter – Diagnostic, Gate-Cathode Short/Power Supply Loss (before running)
11	Inv Online	Inverter – Running Gate/Cathode Short, Power Supply Loss or Fiber Optic loss
12	DB Gating	Dynamic Braking – Diagnostic, Gate Fiber Optic Loss (before running)
13	DB Diag Fbk	Dynamic Braking – Diagnostic, Feedback Fiber Optic Loss (before running)
14	DB Offline	Dynamic Braking – Diagnostic, Gate-Cathode Short/Power Supply Loss (before running)
15	DB Online	Dynamic Braking – Running Gate/Cathode Short, Power Supply Loss or Fiber Optic Loss

Parallel Drive Warning Mask [PD Wrn Mask]

Linear Number: 759
Default Value: 1111111111111111
Access Level: Service
Read/Write: Read/Write

This parameter specifies the mask for the Parallel Drive Warning word corresponding to drive protection. A '1' represents an enabled fault; a '0' represents a disabled fault. The bit assignment is:

Bit	Enum Text	Description
0	Hub Comm Wrn	Hub (PLC) Communications Loss
1	Duplcte Mstr	Duplicate Master-master only
2	Dclnd Mstr	Slave Declined Master-slave only
3	Slv RfsdMstr	Slave Refused Master-master only
4	InvldMstrReq	Invalid Master Request-slave only
5	Xfer Disable	Transfer Disabled-master only
6	Unused	
7	Unused	
8	Slave 0 Comm	Slave 0 DAN Communications Loss-master only
9	Slave 1 Comm	Slave 1 DAN Communications Loss-master only
10	Slave 2 Comm	Slave 2 DAN Communications Loss-master only
11	Slave 3 Comm	Slave 3 DAN Communications Loss-master only
12	Slave 4 Comm	Slave 4 DAN Communications Loss-master only
13	Slave 5 Comm	Slave 5 DAN Communications Loss-master only
14	Slave 6 Comm	Slave 6 DAN Communications Loss-master only
15	Slave 7 Comm	Slave 7 DAN Communications Loss-master only

Alarms Parameters

Standard XIO Fault [Stnd XIO Fault]

Linear Number: 433
Access Level: Service
Read/Write: Read Only

This parameter displays those inputs on the standard XIO card, which have been configured as faults (Class 1 or Class 2). A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Input Protn1	Input Protection 1 fault
1	TxReacOvrTmp	Isolation Transformer/Line Reactor Overtemperature fault
2	DCLinkOvrTmp	DC Link/Common-Mode Choke Overtemperature fault
3	Motor Protn	Motor Protection fault
4	Input Protn2	Input Protection 2 fault
5	Aux Protn	Auxiliary Protection fault
6	Unused	
7	Unused	

Standard XIO Warning [Stnd XIO Warning]

Linear Number: 434
Access Level: Service
Read/Write: Read Only

This parameter displays those inputs on the standard XIO card, which have been configured as warnings. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	Input Protn1	Input Protection 1 warning
1	TxReacOvrTmp	Isolation Transformer/Line Reactor Overtemperature warning
2	DCLinkOvrTmp	DC Link/Common-Mode Choke Overtemperature warning
3	Motor Protn	Motor Protection warning
4	Input Protn2	Input Protection 2 warning
5	Aux Protn	Auxiliary Protection warning
6	Unused	
7	Unused	

External Fault XIO [External Fault]

Linear Number: 372
Access Level: Service
Read/Write: Read Only

This parameter displays those inputs on the optional XIO card, which have been configured as faults (Class1 or Class2). A '1' indicates an active fault on the card. There are a total of 16 external faults from External1 to External16. The user can modify the text associated with each fault.

Bit	Enum Text	Description
0	External1	External Fault 1
1	External2	External Fault 2
2	External3	External Fault 3
3	External4	External Fault 4
4	External5	External Fault 5
5	External6	External Fault 6
6	External7	External Fault 7
7	External8	External Fault 8
8	External9	External Fault 9
9	External10	External Fault 10
10	External11	External Fault 11
11	External12	External Fault 12
12	External13	External Fault 13
13	External14	External Fault 14
14	External15	External Fault 15
15	External16	External Fault 16

External Warning [External Warning]

Linear Number: 429
Access Level: Service
Read/Write: Read Only

This parameter displays those inputs on the optional XIO card, which have been configured as warnings. A '1' indicates an active warning on the card. There are a total of 16 external warnings from External1 to External16. The user can modify the text associated with each warning.

Bit	Enum Text	Description
0	External1	External Warning 1
1	External2	External Warning 2
2	External3	External Warning 3
3	External4	External Warning 4
4	External5	External Warning 5
5	External6	External Warning 6

Bit	Enum Text	Description
6	External7	External Warning 7
7	External8	External Warning 8
8	External9	External Warning 9
9	External10	External Warning 10
10	External11	External Warning 11
11	External12	External Warning 12
12	External13	External Warning 13
13	External14	External Warning 14
14	External15	External Warning 15
15	External16	External Warning 16

Drive Fault Word 1 [Drive Fault1]

Linear Number: 279
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the first fault word corresponding to drive protection. These faults can be either Class 1 or Class 2 faults. A ‘1’ represents an active fault as follows:

Bit	Enum Text	Description
0	Line OvrCur	Line Over Current
1	DCLnkOvrCur	DC Link Over Current Fault
2	Gnd OvrCur	Ground Fault Over Current Fault
3	RNeut OvrCur	Neutral Resistor Over Current Fault
4	Line OvrVolt	Line Over Voltage
5	RecOvrVoltHW	Hardware Rectifier Over Voltage Fault
6	LineNeuOvVol	Line to Neutral Over Voltage Fault
7	LineHarmonic	Line Harmonic Fault
8	MstrVolUnBal	Master Bridge Line Voltage Unbalance
9	Slv1VolUnBal	Slave1 Bridge Line Voltage Unbalance
10	Slv2VolUnBal	Slave2 Bridge Line Voltage Unbalance
11	MstrCurUnBal	Master Bridge Line Current Unbalance
12	Slv1CurUnBal	Slave1 Bridge Line Current Unbalance
13	Slv2CurUnBal	Slave2 Bridge Line Current Unbalance
14	Slv1 Phasing	Slave1 bridge phasing fault
15	Slv2 Phasing	Slave2 bridge phasing fault

Drive Fault Word 2 [Drive Fault2]

Linear Number: 280
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the second fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	RecAnaSlfTst	Rectifier Self analog Test Fail
1	RecFbrOptCfg	Rectifier Fiber Optic Cable Configuration Fault
2	2UGatePS V F	Gate Driver board Power Supply level Fault
3	Rec A2D Conv	Rectifier Analog to Digital Converter Fault
4	InvHeartbeat	Inverter Heartbeat Fault
5	RecA2DSeqErr	Rectifier Analog to Digital Sequence Error Fault
6	RecOvrVoltSW	Software Rectifier Over Voltage Fault
7	RecOVTimeOut	Rectifier Over Voltage Time Out Fault
8	LineCap Fail	Line Capacitor Failure Fault
9	DrvInp Short	Fault due to Drive Input Short (including Line capacitors and Rectifier devices)
10	LineCapOvVol	Line Capacitor Over Voltage Fault
11	2VGatePS V F	Gate Driver board Power Supply level Fault
12	2WGatePS V F	Gate Driver board Power Supply level Fault
13	InvGatePSV F	Gate Driver board Power Supply level Fault
14	Unused	
15	Unused	

Drive Fault Word 3 [Drive Fault3]

Linear Number: 281
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the third fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Drv OvrLoad	Drive Overload fault
1	RNeutOvrLoad	Line Neutral to Ground Overvoltage fault
2	RecHSnkOvTmp	Rectifier Heatsink Over Temperature Fault
3	RecHSnkLoTmp	Rectifier Heatsink Low Temperature Fault
4	RecHSnkFbrOp	Rectifier Heatsink Fiber Optic Cable
5	RecHSnk Sens	Rectifier Heatsink Sensor Disconnected Fault
6	RecChB OvTmp	Rectifier Channel B Over Temperature Fault

Bit	Enum Text	Description
7	RecChB LoTmp	Rectifier Channel B Low Temperature Fault
8	RecChB FbrOp	Rectifier Heatsink Channel B Fiber Optic Cable
9	RecChB Sens	Rectifier Channel B Sensor Disconnected Fault
10	Dvc AK/Snubb	Device Anode Cathode or Snubber Fault
11	Current Sens	Current Sensor Fault
12	Unused	
13	Unused	
14	Unused	
15	HPTC LnLss	HPTC Line Loss Fault

Drive Fault Word 4 [Drive Fault4]

Linear Number: 370
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the fourth fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Inv OvrVolt	Inverter Over Voltage Fault
1	Drv Out Open	Drive Output Open fault
2	SyncXferFail	Synchronous Transfer Fail Fault
3	Encoder Loss	Encoder Loss Fault
4	MV Sys Test	Medium Voltage System Test Fault
5	MV Gate Test	Medium Voltage Gate Test Fault
6	InpCtctrOpen	Input Contactor Open Fault
7	OutCtctrOpen	Output Contactor Open Fault
8	BypCtctrOpen	Bypass Contactor Open Fault
9	No Out Ctctr	No Output Contactor Fault
10	Inp IsoOpen	Input Isolation Switch Open Fault
11	Out IsoOpen	Output Isolation Switch Open Fault
12	Byp IsoOpen	Bypass Isolation Switch Open Fault
13	Inp IsoClsd	Input Isolation Switch Closed Fault
14	Out IsoClsd	Output Isolation Switch Closed Fault
15	Byp IsoClsd	Bypass Isolation Switch Closed Fault

Drive Fault Word 5 [Drive Fault5]

Linear Number: 371
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the fifth fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Low AirPresF	Converter Airflow Pressure Fault. This is not applicable to Heatpipe drives
1	Iso AirPresF	Isolation Transformer Air Pressure Value Fault. This is not applicable to Heatpipe drives
2	InvHSnkOvTmp	Inverter Heat Sink Over Temperature Fault. This is not applicable to Heatpipe drives
3	InvHSnkLoTmp	Inverter Heat Sink Low Temperature Fault. This is not applicable to Heatpipe drives
4	InvHSnkFbrOp	Inverter Heat Sink Fiber Optic Cable Fault. This is not applicable to Heatpipe drives
5	InvHSnk Sens	Inverter Heat Sink Sensor Fault. This is not applicable to Heatpipe drives
6	Amb OvTmp	Ambient Over Temperature Fault(1)
7	Amb LoTmp	Ambient Low Temperature Fault(1)
8	Amb FbrOp	Ambient Fiber Optic Cable Fault(1)
9	Amb Sens	Ambient Sensor Fault(1)
10	InvAnaSlfTst	Inverter Self Analog Test Fault
11	InvFbrOptCfg	Inverter Heatsink Fiber Optic Cable Fault
12	InvA2DSeqErr	Inverter A2D Sequence Error Fault
13	Inv A2D Conv	Inverter Analog to Digital Converter Fault
14	RecHeartbeat	Rectifier Heartbeat Fault
15	Idc HECS Con	DC Current HECS Connector Fault

(1) Contact factory for availability.

Drive Fault Word 6 [Drive Fault6]

Linear Number: 9
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the sixth fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	DAN Comm	Drive Area Network Communication Fault – Parallel Drive Application
1	Mstr Xfr Err	Master Transfer Error
2	PDCapcityLow	Parallel Drive capacity is low

Bit	Enum Text	Description
3	Main VSB	Main voltage sensing board has not been plugged in to ACB
4	Sync VSB	Bypass voltage sensing board has not been plugged in to ACB
5	DC Neut VSB	DC and Neutral Sensing Board has not been plugged in to ACB
6	InpLock5min	Input contactor is locked out for 5 minute (line over current in 18-pulse drives)
7	InpLockIndef	Input contactor is locked out indefinitely (line over current and PLL error in 18-pulse drives)
8	ProcVar Loss	Process Variable from the customer process sensor is lost
9	Capab Limit	Motor current exceeded safe level determined by the Capability Curve
10	SpAppCrdLoss	Special Application Card Loss Fault
11	AirHiPresreF	Converter cabinet High Air Pressure Fault
12	InvOvrVoltSW	Software Inverter Over Voltage Fault
13	SysCommLoss	System Communication Loss Fault
14	EncIDMsmatch	Encoder ID Mismatch Fault
15	OVH Ovrspeed	The motor speed feedback exceeds 80 Hz and the drive is having an overhauling load without an output contactor

Drive Fault Word 7 [Drive Fault7]

Linear Number: 858
Access Level: Service
Read/Write: Read Only

This fault word is dedicated to the third generation temperature feedback boards (TFBs). The older TFBs can only provide heatsink temperature measurement while the third generation boards are capable of measuring heatsink temperature, ambient temperature, airflow velocity, and gate power supply voltage. This parameter displays the bit assignment on the seventh fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	2U Over Temp	Rectifier heatsink 2U over temperature fault
1	2V Over Temp	Rectifier heatsink 2V over temperature fault
2	2W Over Temp	Rectifier heatsink 2W over temperature fault
3	InvHSOvrTemp	Inverter heatsink over temperature fault
4	2UAirflwLoss	Rectifier power stack 2U low airflow fault
5	2VAirflwLoss	Rectifier power stack 2V low airflow fault
6	2WAirflwLoss	Rectifier power stack 2W low airflow fault
7	InvAirflwLss	Inverter power stack low airflow fault
8	TFB2U FbkErr	Rectifier power stack 2U TFB feedback error fault. The drive ceased to receive data from the TFB.
9	TFB2V FbkErr	Rectifier power stack 2V TFB feedback error fault. The drive ceased to receive data from the TFB.
10	TFB2W FbkErr	Rectifier power stack 2W TFB feedback error fault. The drive ceased to receive data from the TFB.

Bit	Enum Text	Description
11	InvTFBFbkErr	Inverter TFB feedback error fault. The drive ceased to receive data from the TFB.
12	2U Temp Sens	Rectifier power stack 2U Heat Sink Sensor Loss Fault
13	2V Temp Sens	Rectifier power stack 2V Heat Sink Sensor Loss Fault
14	2W Temp Sens	Rectifier power stack 2W Heat Sink Sensor Loss Fault
15	InvHSTempSen	Inverter power stack Heat Sink Sensor Loss Fault

Drive Fault Word 8 [Drive Fault8]

Linear Number: 877
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the eighth fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	DB OvrTempF	Exhaust temperature in DB cabinet exceeded the fault threshold
1	DB High AmbF	Ambient temperature in DB cabinet exceeded the fault threshold
2	DB LowAirflwF	Airflow velocity in DB cabinet dropped below the fault threshold
3	DB TempSensF	Exhaust temperature sensor in DB cabinet is faulty
4	DB Amb LossF	Ambient temperature sensor in DB cabinet is faulty
5	DBAirflwSenF	Airflow sensor in DB cabinet is faulty
6	DB TFB LossF	Temperature Feedback Board in DB cabinet is faulty
7	DBR OvrloadF	DB resistor is overloaded due to consumption of braking energy without adequate cooling period and it passed the threshold of 15
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Drv AppF	Drive is not set properly for Marine 1 application

Drive Fault 9 [Drive Fault9]

Linear Number: 1100
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the ninth fault word corresponding to drive protection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	DrvFlt9Bit0	Reserved for future use
1	DrvFlt9Bit1	Reserved for future use
2	DrvFlt9Bit2	Reserved for future use
3	DrvFlt9Bit3	Reserved for future use
4	DrvFlt9Bit4	Reserved for future use
5	DrvFlt9Bit5	Reserved for future use
6	DrvFlt9Bit6	Reserved for future use
7	DrvFlt9Bit7	Reserved for future use
8	DrvFlt9Bit8	Reserved for future use
9	DrvFlt9Bit9	Reserved for future use
10	DrvFlt9Bit10	Reserved for future use
11	DrvFlt9Bit11	Reserved for future use
12	DrvFlt9Bit12	Reserved for future use
13	DrvFlt9Bit13	Reserved for future use
14	DrvFlt9Bit14	Reserved for future use
15	DrvFlt9Bit15	Reserved for future use

Motor Fault Word 1 [Motor Fault1]

Linear Number: 369
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the first fault word corresponding to motor side fault detection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Mtr OvrCur	Motor Over current fault
1	Mtr OvrVolt	Motor Overvoltage fault
2	MtrNeuOvrVol	Drive Output contactor fault
3	Mtr FlxUnbal	Motor Flux Unbalance Fault
4	Mtr CurUnbal	Motor Current Unbalance Fault
5	Mtr OvrLoad	Motor Over Load Fault
6	Mtr OvrSpeed	Motor Over Speed
7	Mtr Stall	Motor Stall fault

Bit	Enum Text	Description
8	Mtr LoadLoss	Motor Load Loss Fault
9	SynFieldLoss	Synchronous Field Loss Fault
10	MtrSlipRange	Motor Slip Out of Range Fault
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drive Warning Word 1 [Drive Warning1]

Linear Number: 282
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the first warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	Drv OvrLoad	Drive Overload warning
1	Mstr UndVolt	Master Bridge Under Voltage warning
2	Slv1 UndVolt	Slave1 Bridge Under Voltage warning
3	Slv2 UndVolt	Slave2 Bridge Under Voltage warning
4	DCLnk OvrCur	DC Link Over Current warning
5	Rec OvrVolt	Rectifier Over Voltage Warning
6	Line Synch	Line synchronization Warning
7	InpCtctr Fbk	Drive Input Contactor Feedback Status Loss with MV present
8	Unused	
9	Line Loss	Loss of medium voltage or loss of medium voltage frequency
10	RecHSnkOvTmp	Rectifier Heatsink Over Temperature warning. Not applicable to Heatpipe drives.
11	RecChB OvTmp	Rectifier Heatsink Low Temperature warning. Not applicable to Heatpipe drives.
12	BusTransient	Bus Transient Protection
13	LineCapRange	Line Filter Capacitor pu value outside normal range
14	RAM Batt Low	RAM Battery Low Warning
15	DCLink Range	DC Link pu value outside normal range

Drive Warning Word 2 [Drive Warning2]

Linear Number: 646
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the second warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	RecHSnk Sens	Rectifier Heat Sink Sensor Loss Warning. Not applicable to TFB3 and newer.
1	RecChB Sens	Rectifier Channel B Sensor Loss Warning. Not applicable to TFB3 and newer.
2	RecHSnkFbrOp	Rectifier Heat Sink Fiber Optic Loss Warning. Not applicable to TFB3 and newer.
3	RecChB FbrOp	Rectifier Channel B Fiber Optic Loss Warning. Not applicable to TFB3 and newer.
4	RecDCCurGain	Rectifier DC Current Gain Warning
5	Rec Gate Pwr	Rectifier Gate Power Warning
6	RecACCurGain	Rectifier AC Current Gain Warning
7	Stack Depth	Stack Depth Warning(1)
8	DataRecrdClr	Data Recorder NVRAM Cleared Warning
9	DB GatePwrS	Dynamic Breaking Gate Power Supply Warning
10	2UGatePS V W	Gate Driver board Power Supply level Warning
11	2VGatePS V W	Gate Driver board Power Supply level Warning
12	2WGatePS V W	Gate Driver board Power Supply level Warning
13	InvGatePSV W	Gate Driver board Power Supply level Warning
14	Unused	
15	InpFilTuning	Input filter tuning warning

(1) Contact factory for availability.

Drive Warning Word 3 [Drive Warning3]

Linear Number: 374
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the third warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	InpCtctrOpen	Input Contactor Open Warning
1	InpCtctrClsd	Input Contactor Closed Warning
2	OutCtctrOpen	Output Contactor Open Warning
3	OutCtctrClsd	Output Contactor Closed Warning
4	BypCtctrOpen	Bypass Contactor Open Warning

Bit	Enum Text	Description
5	BypCtctrClsd	Bypass Contactor Closed Warning
6	Inp IsoOpen	Input Isolation Switch Open Warning
7	Out IsoOpen	Output Isolation Switch Open Warning
8	Byp IsoOpen	Bypass Isolation Switch Open Warning
9	Inp IsoClsd	Input Isolation Switch Closed Warning
10	Out IsoClsd	Output Isolation Switch Closed Warning
11	Byp IsoClsd	Bypass Isolation Switch Closed Warning
12	No Out Ctctr	No Output Contactor Warning
13	InpClose Dly	Input Contactor Close Delay Warning
14	AnlgPwrLmLos	Analog Power Limit Loss Warning
15	AirHiPresreW	Converter cabinet High Air Pressure Warning

Drive Warning Word 4 [Drive Warning4]

Linear Number: 467
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the fourth warning word corresponding to drive fault detection. A ‘1’ represents an active warning as follows:

Bit	Enum Text	Description
0	ConvFn1Ctctr	Converter Fan 1 Contactor Warning. Not applicable to Heatpipe drives.
1	ConvFn2Ctctr	Converter Fan 2 Contactor Warning. Not applicable to Heatpipe drives.
2	Iso Fn1Ctctr	Isolation Transformer Fan 2 Contactor Warning. Not applicable to Heatpipe drives.
3	Iso Fn2Ctctr	Isolation Transformer Fan 2 Contactor Warning. Not applicable to Heatpipe drives.
4	Low AirPresW	Converter Air Pressure Value Warning. Not applicable to Heatpipe drives.
5	Iso AirPresW	Isolation Transformer Air Pressure Value Warning
6	Conv FansOn	Converter Fans On Warning. Not applicable to Heatpipe drives.
7	IsoTxFans On	Isolation Transformer Fans On Warning
8	ConvFan1Loss	Converter Fan 1 Contactor Feedback Loss Warning. Not applicable to Heatpipe drives.
9	ConvFan2Loss	Converter Fan 2 Contactor Feedback Loss Warning. Not applicable to Heatpipe drives.
10	IsoFan1 Loss	Isolation Transformer Fan 1 Contactor Feedback Loss Warning
11	IsoFan2 Loss	Isolation Transformer Fan 2 Contactor Feedback Loss Warning
12	Drv Maintain	Drive Maintenance Warning(1)
13	Inv Gate Pwr	Inverter Gate Power Loss Warning
14	PFC Disabled	Power Factor Correction Disabled Warning
15	Cable Resis	Programmed value of cable resistance does not match the stator resistance value determined through autotune

(1) Contact factory for availability.

Drive Warning Word 5 [Drive Warning5]

Linear Number: 706
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the fifth warning word corresponding to drive fault detection. A ‘1’ represents an active warning as follows:

Bit	Enum Text	Description
0	InvHSnkOvTmp	Inverter Heat Sink Over Temperature Warning
1	Amb OvTmp	Ambient Over Temperature Warning. Not applicable for Heatpipe drives.
2	InvHSnk Sens	Inverter Heat Sink Sensor Warning
3	Amb Sens	Ambient Sensor Warning. Not applicable for Heatpipe drives.
4	InvHSnkFbrOp	Inverter Heat Sink Fiber Optic Cable Warning
5	Amb FbrOp	Ambient Fiber Optic Warning. Not applicable for Heatpipe drives.
6	Inv OvrVolt	Inverter Over Voltage Warning
7	InvACCurGain	Inverter AC Current Gain Warning
8	AIn1 Cal Err	Contact factory for availability
9	AIn2 Cal Err	Contact factory for availability
10	AIn3 Cal Err	Contact factory for availability
11	PFC IdcLimit	Idc Limit has been reached while compensating for input power factor
12	PFC FlxLimit	Flux Limit has been reached while compensating for input power factor
13	ProcVar Loss	Process variable loss has been detected
14	Rec 5Pulse	Rectifier operating in 5 pulse mode
15	MaxDrvCapab	The motor current limited to the safe level of drive thermal protection

Drive Warning Word 6 [Drive Warning6]

Linear Number: 855
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the sixth warning word corresponding to drive fault detection. A ‘1’ represents an active warning as follows:

Bit(1)	Enum Text	Description
0	2U LowAirflw	Rectifier power stack 2U low airflow warning
1	2V LowAirflw	Rectifier power stack 2V low airflow warning
2	2W LowAirflw	Rectifier power stack 2W low airflow warning
3	InvLowAirflw	Inverter power stack low airflow warning
4	2UAirflwSens	Rectifier power stack 2U Airflow Sensor Loss warning
5	2VAirflwSens	Rectifier power stack 2V Airflow Sensor Loss warning

Bit[1]	Enum Text	Description
6	2WAirflwSens	Rectifier power stack 2W Airflow Sensor Loss warning
7	InvAirflwSen	Inverter power stack Airflow Sensor Loss warning
8	2U TempSensW	Rectifier power stack 2U Heat Sink Sensor Loss warning
9	2V TempSensW	Rectifier power stack 2V Heat Sink Sensor Loss warning
10	2W TempSensW	Rectifier power stack 2W Heat Sink Sensor Loss warning
11	InvTempSensW	Inverter Heat Sink Sensor Loss warning
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Bits 0…7 are not used in Firmware release 11.001.

Drive Warning Word 7 [Drive Warning7]

Linear Number: 856
Access Level: Service
Read/Write: Read Only

This warning word is associated with the new design TFB3 (3rd generation TFB) and is not applicable to the older TFB. This parameter displays the bit assignment on the seventh warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	2U High Amb	Rectifier power stack 2U high ambient temperature warning
1	2U Low Amb	Rectifier power stack 2U low ambient temperature warning
2	2V High Amb	Rectifier power stack 2V high ambient temperature warning
3	2V Low Amb	Rectifier power stack 2V low ambient temperature warning
4	2W High Amb	Rectifier power stack 2W high ambient temperature warning
5	2W Low Amb	Rectifier power stack 2W low ambient temperature warning
6	Inv High Amb	Inverter power stack high ambient temperature warning
7	Inv Low Amb	Inverter power stack low ambient temperature warning
8	2U Amb Loss	Rectifier power stack 2U Ambient Temperature Sensor Loss warning
9	2V Amb Loss	Rectifier power stack 2V Ambient Temperature Sensor Loss warning
10	2W Amb Loss	Rectifier power stack 2W Ambient Temperature Sensor Loss warning
11	Inv Amb Loss	Inverter power stack Ambient Temperature Sensor Loss warning
12	2U OvrTempW	Rectifier heatsink 2U over temperature warning
13	2V OvrTempW	Rectifier heatsink 2V over temperature warning
14	2W OvrTempW	Rectifier heatsink 2W over temperature warning
15	Inv OvrTempW	Inverter heatsink over temperature warning

Drive Warning Word 8 [Drive Warning8]

Linear Number: 857
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the eight warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit(1)	Enum Text	Description
0	LiqCool Leak	Coolant is leaking in the liquid cooled drive
1	DB Fan Ctctr	DB fan contactor status is OFF even though it's requested to turn on
2	DB Fan ON	DB fan is ON even though it's not requested
3	DB High AmbW	Ambient temperature in DB cabinet exceeded the warning threshold
4	DB DisabledW	DB related tests are requested but the DB system is disabled, DB system is changed to enable but DB resistor value is zero, or DB system is already enabled but DB resistor value is changed to zero.
5	DB Amb Loss	Ambient temperature sensor in DB cabinet is faulty while drive is running
6	DB LowAirflw	Airflow velocity in DB cabinet is below the warning threshold
7	DBAirflwSens	Airflow sensor in DB cabinet is faulty while drive is running
8	DB OvrTempW	Exhaust temperature in DB cabinet exceeded the warning threshold
9	DB Temp Sens	Exhaust temperature sensor in DB cabinet is faulty while drive is running
10	DB TFBDataEr	The drive ceased to receive data from the TFB in DB cabinet
11	DBR Overload	DB resistor is overloaded due to consumption of braking energy without adequate cooling period and it passed the threshold of 12
12	InvOvrVoltSW	Software Inverter Over Voltage
13	RestrtXpired	Auto-restart interval expired
14	Unused	
15		The parameter *Speed Cmd Max* (P290) is clamped to 75 Hz due to the condition that the drive is set to speed mode and is having an overhauling load without output contactor

(1) Bits 6 and 7 are not used in Firmware release 11.001.

Drive Warning 9 [Drive Warning9]

Linear Number: 1099
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the ninth warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	HPTC Cfg Err	High performance torque control (HPTC) feature configuration error warning
1	HPTC Conflct	HPTC feature conflict warning
2	SpdBW Reduc	Speed bandwidth reduced warning
3		Reserved for future use
4		Reserved for future use
5		Reserved for future use
6		Reserved for future use
7		
8		
9		
10		Reserved for future use
11		Reserved for future use
12		Reserved for future use
13		Reserved for future use
14		Reserved for future use
15		Reserved for future use

Motor Warning Word 1 [Motor Warning1]

Linear Number: 373
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the first warning word corresponding to motor side fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	Mtr OvrLoad	Motor Overload Warning
1	Mtr CapRange	Motor Capacitor Out of Range Warning
2	Mtr LoadLoss	Motor Load Loss Warning
3	Mtr OvrVolt	Motor Over Voltage Warning
4	MtrSlipRange	Motor Slip out of Range Warning
5	Byp OvrVolt	Bypass Contactor Over Voltage Warning
6	Byp UndrVolt	Bypass Contactor Under Voltage Warning
7	Byp Unbal	Bypass Contactor Unbalance Warning
8	Byp Phs Seq	Bypass Contactor Phase Sequence Warning
9	SyncXferFail	Synchronous Transfer Fail Warning
10	Desync Delay	De-synchronization delay Warning
11	Encoder Loss	Encoder Loss Warning
12	Encoder Dir	Encoder Direction is latched to the one before encoder phase loss

Bit	Enum Text	Description
13	EncdrPhALoss	Encoder Phase A Loss Warning
14	No Encoder	No Encoder Installed Warning
15	EncdrPhBLoss	Encoder Phase B Loss Warning

Motor Warning Word 2 [Motor Warning2]

Linear Number: 956
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the second warning word corresponding to motor side fault detection. A ‘1’ represents an active warning as follows:

Bit	Enum Text	Description
0	Unused	
1	Unused	
2	Enc P Hz Loss	Encoder Phase Z Loss Warning
3	AbsEncPhLoss	Absolute Encoder Phase Loss Warning
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Parallel Drive Warning Flag [PD Warning]

Linear Number: 758
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the *Parallel Drive Warning Flag*. A ‘1’ represents an active warning as follows:

Bit	Enum Text	Description
0	Hub Comm Wrn	Hub (PLC) Communications Loss
1	Duplcte Mstr	Duplicate Master-master only
2	Dclnd Mstr	Slave Declined Master-slave only
3	Slv RfsdMstr	Slave Refused Master-master only
4	InvldMstrReq	Invalid Master Request-slave only
5	Xfer Disable	Transfer Disabled-master only
6	Unused	
7	Unused	
8	Slave 0 Comm	Slave 0 DAN Communications Loss-master only

Bit	Enum Text	Description
9	Slave 1 Comm	Slave 1 DAN Communications Loss-master only
10	Slave 2 Comm	Slave 2 DAN Communications Loss-master only
11	Slave 3 Comm	Slave 3 DAN Communications Loss-master only
12	Slave 4 Comm	Slave 4 DAN Communications Loss-master only
13	Slave 5 Comm	Slave 5 DAN Communications Loss-master only
14	Slave 6 Comm	Slave 6 DAN Communications Loss-master only
15	Slave 7 Comm	Slave 7 DAN Communications Loss-master only

Control Power Fault [Ctrl Pwr Fault]

Linear Number: 287
Access Level: Service
Read/Write: Read Only

This parameter indicates which of the various components used in protecting the control power system feeding the drive have faulted. A ‘1’ indicates an active fault.

Bit	Enum Text	Description
0	ACDC#1DCFail	AC/DC#1 56V DC Output Loss Fault
1	ACDC#2DCFail	AC/DC#2 56V DC Output Loss Fault
2	ACDC#3DCFail	AC/DC#3 56V DC Output Loss Fault
3	ACDC#4DCFail	AC/DC#4 56V DC Output Loss Fault
4	Ctrl56V Loss	Control Power 56V Loss Fault
5	IGDPS56VLoss	IGDPS 56V Loss Fault
6	Ctrl5V Loss	Loss of Non-Redundant 5V to DPM
7	Ctrl15V Loss	Loss of Non-Redundant 15V to ACB
8	HECS PwrLoss	HECS Connector Power Loss
9	Ctrl PwrLoss	Loss of 120V AC Power to AC/DC
10	ACDC#1ACFail	AC/DC#1 120V AC Loss Fault
11	ACDC#2ACFail	AC/DC#2 120V AC Loss Fault
12	ACDC#3ACFail	AC/DC#3 120V AC Loss Fault
13	ACDC#4ACFail	AC/DC#4 120V AC Loss Fault
14	UPS Fault	UPS Faulted
15	Isol24V Loss	Isolator 24V Loss

Control Power Warning [Ctrl Pwr Warning]

Linear Number: 288
Access Level: Service
Read/Write: Read Only

This parameter indicates which of the various components used in protecting the control power system feeding the drive are issuing a warning. A '1' indicates an active warning.

Bit	Enum Text	Description
0	ACDC#1 Redn	Loss of AC/DC#1 Redundant Power Supply
1	ACDC#2 Redn	Loss of AC/DC#2 Redundant Power Supply
2	ACDC#3 Redn	Loss of AC/DC#3 Redundant Power Supply
3	ACDC#4 Redn	Loss of AC/DC#4 Redundant Power Supply
4	ACDC#1ACFail	Loss of 120V AC to AC/DC#1 Power Supply
5	ACDC#2ACFail	Loss of 120V AC to AC/DC#2 Power Supply
6	ACDC#3ACFail	Loss of 120V AC to AC/DC#3 Power Supply
7	ACDC#4ACFail	Loss of 120V AC to AC/DC#4 Power Supply
8	CtrlPwr Loss	Loss of 120V AC Control Power to AC/DC Power Supply
9	UPS onBypass	UPS running on bypass
10	UPS on Batt	UPS running on battery
11	UPS Batt Low	UPS battery low
12	UPS Failed	UPS has an internal failure
13	XIO Pwr Loss	XIO power loss
14	Ctrl5V Redn	Loss of Redundant 5V to DPM
15	Unused	

DPI Loss Fault [DPI Loss Fault]

Linear Number: 93
Access Level: Service
Read/Write: Read Only

This parameter specifies the DPI adapter loss fault. DPI is a Change of State communication network and if that link is lost due to a message not being received in the allotted time, the associated fault will occur. A '1' represents an active fault.

Bit	Enum Text	Description
0	Adapter 1	Adapter 1 Loss Fault
1	Adapter 2	Adapter 2 Loss Fault
2	Adapter 3	Adapter 3 Loss Fault
3	Adapter 4	Adapter 4 Loss Fault
4	Adapter 5	Adapter 5 Loss Fault
5	Adapter 6	Adapter 6 Loss Fault
6	Ref CmdLossF	Reference Command Loss Fault

Bit	Enum Text	Description
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Adapter Loss Warning [DPI Loss Warning]

Linear Number: 148
Access Level: Service
Read/Write: Read Only

This parameter specifies the DPI adapter loss warning. DPI is a Change of State communication network and if that link is lost due to a message not being received in the allotted time the associated warning will occur. A '1' represents an active warning.

Bit	Enum Text	Description
0	Adapter1Loss	Adapter 1 Loss Warning
1	Adapter2Loss	Adapter 2 Loss Warning
2	Adapter3Loss	Adapter 3 Loss Warning
3	Adapter4Loss	Adapter 4 Loss Warning
4	Adapter5Loss	Adapter 5 Loss Warning
5	Adapter6Loss	Adapter 6 Loss Warning
6	Ref CmdLossW	Reference Command Loss Warning
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

XIO Adapter Loss [XIO Adaptr Loss]

Linear Number: 596
Access Level: Service
Read/Write: Read Only

This parameter indicates the XIO adapter loss. There are 6 possible XIO slots, from Slot 1 to Slot 6. '1' means the adapter is lost, '0' means the adapter is still active if installed in the drive.

Bit	Enum Text	Description
0	XIO Card #1	Loss of XIO Board connected to Slot #1
1	XIO Card #2	Loss of XIO Board connected to Slot #2
2	XIO Card #3	Loss of XIO Board connected to Slot #3
3	XIO Card #4	Loss of XIO Board connected to Slot #4
4	XIO Card #5	Loss of XIO Board connected to Slot #5
5	XIO Card #6	Loss of XIO Board connected to Slot #6
6	Unused	
7	Unused	

Heatpipe Warning Word 1 [HeatpipeWarning1]

Linear Number: 492
Access Level: Service
Read/Write: Read Only

This alarm word is dedicated to Heatpipe drives. This parameter displays the bit assignment on the *Heatpipe Warning Word 1*. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	LR Fan1Ctctr	Line Reactor Fan 1 contactor status warning
1	LR Fan2Ctctr	Line Reactor Fan 2 contactor status warning
2	CnvFan3Ctctr	Converter Fan 3 contactor status warning
3	CnvFan4Ctctr	Converter Fan 4 contactor status warning
4	CnvFan5Ctctr	Converter Fan 5 contactor status warning
5	CnvFan6Ctctr	Converter Fan 6 contactor status warning
6	CnvFan7Ctctr	Converter Fan 7 contactor status warning
7	CnvFan8Ctctr	Converter Fan 8 contactor status warning
8	CMCFan9Ctctr	Common Mode Choke Fan 9 contactor status warning
9	CMCFn10Ctctr	Common Mode Choke Fan 10 contactor status warning
10	Fan Data Clr	Retentive Fan Data cleared warning
11	LR BlckInltW	Line Reactor blocked inlet
12	LR BlckXhstW	Line Reactor blocked exhaust
13	Unused	
14	Unused	
15	Unused	

Heatpipe Warning Word 2 [HeatpipeWarning2]

Linear Number: 495
Access Level: Service
Read/Write: Read Only

This alarm word is dedicated to Heatpipe drives. This parameter displays the bit assignment on the *Heatpipe Warning Word 2*. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	LR Fan1 Aux	Line Reactor Fan 1 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
1	LR Fan2 Aux	Line Reactor Fan 2 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
2	Cnv Fan3 Aux	Converter Fan 3 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
3	Cnv Fan4 Aux	Converter Fan 4 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
4	Cnv Fan5 Aux	Converter Fan 5 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
5	Cnv Fan6 Aux	Converter Fan 6 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
6	Cnv Fan7 Aux	Converter Fan 7 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
7	Cnv Fan8 Aux	Converter Fan 8 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
8	CMC Fan9 Aux	Common Mode Choke Fan 9 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
9	CMCFan10 Aux	Common Mode Choke Fan 10 contactor auxiliary warning. Fan contactor status closed even though fan is not commanded to run.
10	UVBlckInletW	Differential air pressure sensor located between Inverter power stacks U and V detects low air pressure. Possible cause could be inlet airflow blockage.
11	VWBlckInletW	Differential air pressure sensor located between Inverter power stacks V and W detects low air pressure. Possible cause could be inlet airflow blockage.
12	CMCBlckInltW	Differential air pressure sensor detects high air pressure. Possible cause could be inlet airflow blockage.
13	CMCBlckXhstW	Differential air pressure sensor detects low air pressure. Possible cause could be exhaust airflow blockage.
14	UV BlckXhstW	Differential air pressure sensor located between Inverter power stacks U and V detects high air pressure. Possible causes could be exhaust airflow blockage or dirty heatsinks.
15	VW BlckXhstW	Differential air pressure sensor located between Inverter power stacks V and W detects high air pressure. Possible causes could be exhaust airflow blockage or dirty heatsinks.

Heatpipe Fault Word 1 [Heatpipe Fault1]

Linear Number: 498
Access Level: Service
Read/Write: Read Only

This fault word is dedicated to Heatpipe drives. This parameter displays the bit assignment on the *Heatpipe Fault Word 1*. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	LR DoubleFan	Failure of both of the Line Reactor Fans fault
1	CnvDoubleFan	Failure of two of the Converter Fans fault
2	CMCDoubleFan	Failure of both of the Common Mode Choke Fans fault
3	UVBlckInletF	Differential air pressure sensor located between Inverter power stacks U and V detects low air pressure. Possible cause could be inlet airflow blockage.
4	VWBlckInletF	Differential air pressure sensor located between Inverter power stacks V and W detects low air pressure. Possible cause could be inlet airflow blockage.
5	CMCBlckExhst	Differential air pressure sensor detects low air pressure. Possible cause could be exhaust airflow blockage.
6	UV BlckXhstF	Differential air pressure sensor located between Inverter power stacks U and V detects high air pressure. Possible causes could be exhaust airflow blockage or dirty heatsinks.
7	VW BlckXhstF	Differential air pressure sensor located between Inverter power stacks V and W detects high air pressure. Possible causes could be exhaust airflow blockage or dirty heatsinks.
8	CMCBlckInlet	Differential air pressure sensor detects high air pressure. Possible cause could be inlet airflow blockage.
9	LR Fan1Ctctr	Failure of the Line Reactor Fan fault. Applicable to drive without fan redundancy option.
10	CnvFan3Ctctr	Failure of the Converter Fan 3 fault. Applicable to drive without fan redundancy option.
11	CnvFan4Ctctr	Failure of the Converter Fan 4 fault. Applicable to drive without fan redundancy option.
12	CnvFan5Ctctr	Failure of the Converter Fan 5 fault. Applicable to drive without fan redundancy option.
13	CnvFan6Ctctr	Failure of the Converter Fan 6 fault. Applicable to drive without fan redundancy option.
14	CnvFan7Ctctr	Failure of the Converter Fan 7 fault. Applicable to drive without fan redundancy option.
15	CMCFan9Ctctr	Failure of the Common Mode Choke Fan 9 fault. Applicable to drive without fan redundancy option.

Thermal Model Fault Word [ThermalModel Flt]

Linear Number: 527
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the *Thermal Model Fault Word* corresponding to drive fault detection. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	JunctnTempF	Rectifier SGCT junction over temperature fault
1	Cnv Air Loss	Insufficient airflow in the converter section fault(1)
2	TFB Loss	Temperature Feedback Board feedback error fault. The drive ceased to receive data from the TFB.
3	HighAmbientF	Rectifier high ambient temperature fault
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

Thermal Model Warning [ThermalModel Wrn]

Linear Number: 528
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the Thermal Model warn word corresponding to drive fault detection. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	JunctnTempW	SGCT junction over temperature warning
1	Low AirFlow	Insufficient airflow in the converter section warning(1)
2	HighAmbientW	High ambient temperature in the converter section warning
3	TFB Data Err	Temperature Feedback Board feedback error warning. The drive ceased to receive data from the TFB
4	Unused	
5	Unused	

Bit	Enum Text	Description
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

Heatpipe Fault Word 2 [Heatpipe Fault2]

Linear Number: 975
Access Level: Service
Read/Write: Read Only

This fault word is dedicated to Heatpipe drives. This parameter displays the bit assignment on the *Heatpipe Fault Word 2*. These faults can be either Class 1 or Class 2. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	LR BlckInltF	Differential air pressure sensor detects high air pressure in the line reactor section. Possible cause could be inlet airflow blockage.
1	LR BlckXhstF	Differential air pressure sensor detects low air pressure in the line reactor section. Possible cause could be exhaust airflow blockage.
2	Xtrnal LRFan	External line reactor cooling system power switch status low. Drive is not allowed to run without cooling fans.
3	XtrnalCNVFan	External converter cooling system power switch status low. Drive is not allowed to run without cooling fans.
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

DCSL Fault [DCSL Fault]

Linear Number: 1094
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the DCSL Fault word corresponding to drive protection. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Mstr Comm	Master communication loss fault
1	CRC Fault	CRC fault
2	Arbloss	Arbitration loss fault
3	DuplctNode F	Duplicate node fault
4	Login Dclnd	Login declined fault
5	Low Capacity	Low capacity fault
6	Self Test	Self test error fault
7	RMPExcdHiLmt	Motor rpm exceeding high limit fault
8	RMPExcdLoLmt	Motor rpm exceeding low limit fault
9	OpModeCnflct	Operating mode conflict fault
10	DCSLFltBit10	Reserved for future use
11	DCSLFltBit11	Reserved for future use
12	DCSLFltBit12	Reserved for future use
13	DCSLFltBit13	Reserved for future use
14	DCSLFltBit14	Reserved for future use
15	DCSLFltBit15	Reserved for future use

DCSL Warning [DCSL Warning]

Linear Number: 1095
Access Level: Service
Read/Write: Read Only

This parameter displays the bit assignment on the DCSL Warning word corresponding to drive fault detection. A '1' represents an active warning as follows:

Bit	Enum Text	Description
0	Duplct Mstr	Duplicate master warning
1	CRC Warning	CRC warning
2	Arbloss Wrn	Arbitration loss warning
3	MstrTxfr Wrn	Master transfer error warning
4	New Master	New master notification
5	Min Capacity	Minimum capacity warning
6	DCSL NotEnbl	DCSL feature not enabled warning
7	DCSL Conflct	DCSL feature conflict warning
8	DCSLWrnBit8	Reserved for future use

Bit	Enum Text	Description
9	DCSLWrnBit9	Reserved for future use
10	DCSLWrnBit10	Reserved for future use
11	DCSLWrnBit11	Reserved for future use
12	DCSLWrnBit12	Reserved for future use
13	DCSLWrnBit13	Reserved for future use
14	DCSLWrnBit14	Reserved for future use
15	DCSLWrnBit15	Reserved for future use

External Fault PLC [Ext Fault PLC]

Linear Number: 650
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter specifies the external inputs coming from the PLC. The parameter *External Fault Select* allows the user to choose whether the faults come from the XIO board, or from a PLC, or from a combination of the 2 sources. These have been configured as faults (Class1 or Class2). A '1' indicates an active fault on the card or PLC. There are a total of 16 external faults from External1 to External16. The user can modify the text associated with each fault.

Bit	Enum Text	Description
0	External1	External Fault 1
1	External2	External Fault 2
2	External3	External Fault 3
3	External4	External Fault 4
4	External5	External Fault 5
5	External6	External Fault 6
6	External7	External Fault 7
7	External8	External Fault 8
8	External9	External Fault 9
9	External10	External Fault 10
10	External11	External Fault 11
11	External12	External Fault 12
12	External13	External Fault 13
13	External14	External Fault 14
14	External15	External Fault 15
15	External16	External Fault 16

Liquid Cooling System Fault [Liquid Cool Flt]

Linear Number: 358
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter indicates the faults associated with liquid cooling system in 'C Frame' drives. A '1' represents an active liquid cooling system fault. The following faults are displayed:

Bit	Enum Text	Description
0	PressureLoss	Loss of System Pressure (not maskable)
1	ExtCool Loss	Loss of External Cooling (Heat Exchanger Issue)
2	CoolTemp Low	Coolant Temperature Low
3	CoolTempHigh	Coolant Temperature High
4	Conduct Hi	High Conductivity in the Coolant (not maskable)
5	CoolLevelLow	Coolant Level Low
6	CabTempHigh	Cabinet Temperature High
7	Pump/Fan Pwr	Pump and Fan Power Off
8	DC Link Flow	DC Link Flow
9	TempFbk Loss	Loss of Coolant Temperature Feedback
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Liquid Cooling System Warning [Liquid Cool Wrn]

Linear Number: 359
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter indicates the warnings associated with liquid cooling system in 'C Frame' drives. A '1' represents an active liquid cooling system warning. The following warnings are displayed:

Bit	Enum Text	Description
0	Pump Failed	Pump Failure
1	HxFan Failed	Heat Exchanger Fan Fail
2	CoolTemp Low	Coolant Temperature Low Warning
3	CoolTempHigh	Coolant Temperature High Warning
4	ConductHigh	High Conductivity in the Coolant (not maskable)
5	CoolLevelLow	Coolant Level Low Warning
6	Unused	
7	Unused	
8	Unused	
9	TempFbk Loss	Coolant Temperature Feedback Loss
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drive Protection Parameters

DC Link Over Current Trip [DCLnk OvrCur Trp]

Linear Number: 169
Default Value: 1.75 pu
Minimum Value: 0.00 pu
Maximum Value: 4.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the DC link current must exceed before a DC link over current fault is indicated.

DC Link Over Current Delay [DCLnk OvrCur Dly]

Linear Number: 170
Default Value: 10 msec
Minimum Value: 0 msec
Maximum Value: 100 msec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the DC link current must remain above the trip level before a DC link over current fault is indicated.

Line Over Current Trip [Line OvrCur Trp]

Linear Number: 161
Default Value: 1.75 pu
Minimum Value: 0.00 pu
Maximum Value: 4.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the line current must exceed before a line over current fault is indicated. For 18-pulse drives, a line over current trip will prevent the input contactor from closing for five minutes. Depending on the severity of line over current trip, the contactor may be locked out indefinitely. This is being done to prevent damages to the input transformer.

Line Over Current Delay [Line OvrCur Dly]

Linear Number: 162
Default Value: 10 msec
Minimum Value: 0 msec
Maximum Value: 100 msec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the line current must remain above the trip level before a line over current fault is indicated.

Line Over Voltage Trip [Line OvrVolt Trp]

Linear Number: 165
Default Value: 1.20 pu
Minimum Value: 0.00 pu
Maximum Value: 2.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the line voltage must exceed before a line over voltage fault is indicated.

Line Over Voltage Delay [Line OvrVolt Dly]

Linear Number: 166
Default Value: 250 msec
Minimum Value: 0 msec
Maximum Value: 1500 msec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the line voltage must remain above the trip level before a line over voltage fault is indicated.

Rectifier Over Voltage Trip [Rec OvrVolt Trp]

Linear Number: 173
Default Value: 1.50 pu
Minimum Value: 0.00 pu
Maximum Value: 2.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the Rectifier input voltage must exceed before a Rectifier over voltage fault is indicated. The protection scheme has been realized in hardware on ACB.

Rectifier Over Voltage Delay [Rec OvrVolt Dly]

Linear Number: 174
Default Value: 10 msec
Minimum Value: 0 msec
Maximum Value: 100 msec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the Rectifier voltage must remain above the trip level before a Rectifier over voltage fault is indicated.

Inverter Over Voltage Trip [Inv OvrVolt Trp]

Linear Number:	193
Default Value:	1.50 pu
Minimum Value:	0.00 pu
Maximum Value:	2.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level the inverter output voltage must exceed before an inverter over voltage fault is indicated. The protection scheme has been realized in hardware on ACB.

Inverter Over Voltage Delay [Inv OvrVolt Dly]

Linear Number:	194
Default Value:	10 msec
Minimum Value:	0 msec
Maximum Value:	100 msec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the Inverter voltage must remain above the trip level before an inverter over voltage fault is indicated.

Line Voltage Unbalance Trip [LineVoltUnbalTrp]

Linear Number:	271
Default Value:	0.05 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level of the unbalance in the line voltage which will cause a line voltage unbalance fault to be indicated.

Line Voltage Unbalance Delay [LineVoltUnbalDly]

Linear Number:	272
Default Value:	1.0 sec
Minimum Value:	0.0 sec
Maximum Value:	10.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the line voltage unbalance must remain above trip level before a line voltage unbalance fault is indicated.

Line Current Unbalance Trip [Line CurUnbalTrp]

Linear Number:	108
Default Value:	0.05 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level of the unbalance in the line current which will cause a line current unbalance fault.

Line Current Unbalance Delay [Line CurUnbalDly]

Linear Number:	109
Default Value:	1.0 sec
Minimum Value:	0.0 sec
Maximum Value:	10.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the line current unbalance must remain above trip level before a line current unbalance fault is indicated.

Line Under voltage Trip [Line UndVolt Lvl]

Linear Number:	167
Default Value:	0.85 pu
Minimum Value:	0.40 pu
Maximum Value:	1.50 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level the line voltage must fall below before a Master UV or a Line Loss warning is indicated.

Line Under Voltage Delay [Line UndVolt Dly]

Linear Number:	168
Default Value:	17 msec
Minimum Value:	0 msec
Maximum Value:	100 msec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the line voltage must remain below the trip level before a line under voltage condition is detected.

Drive Overload Warning [Drv OvrLoad Wrn]

Linear Number:	270
Default Value:	0.50
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies when the drive will issue an overload warning.

Drive Thermal Cycle [Drv Thermal Cyc]

Linear Number:	772
Default Value:	600.0 sec
Minimum Value:	0.0 sec
Maximum Value:	6000.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the overload duty cycle for the drive. It is defined as the time interval after which the drive could be subjected to its maximum overload capacity without exceeding the thermal ratings. The default value is 600 seconds (10 minutes) which means that the drive is designed to handle 1 minute of overload every 10 minutes. However for Banbury mixers and other heavy duty applications, the overload cycle could be less than 10 minutes.

Drive Overload Trip [Drv OvrLoad Trp]

Linear Number:	163
Default Value:	1.03 pu
Minimum Value:	0.00 pu
Maximum Value:	4.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter can only be used with heavy-duty drives. If the drive uses Firmware 9.003 or earlier, it specifies the overload threshold which may cause the drive to trip on an overload fault after the time interval specified by parameter *Drv OvrLoad Dly (164)*.

If the drive uses Firmware 9.004 or later, the overload feature limits the drive current and torque, but does not trip the drive. For example, in hoist applications, a trip or stop command must be issued by the PLC if it detects an increase in parameter *Drive Overload (551).*

Drive Overload Delay [Drv OvrLoad Dly]

Linear Number:	164
Default Value:	60.0 sec
Minimum Value:	0.0 sec
Maximum Value:	600.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the drive will operate at the overload trip level *Drv OvrLoad Trp (163)* before an overload fault is indicated.

Drive Overload Minimum [Drv OvrLoad Min]

Linear Number:	269
Default Value:	0.95 pu
Minimum Value:	0.00 pu
Maximum Value:	4.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the minimum per unit value of the DC link current which is regarded as an overload condition. When the drive runs with a value less than the parameter setting, the overload algorithm is not activated.

Line Neutral Voltage Trip [LineNeutVoltTrp]

Linear Number:	587
Default Value:	0.20 pu
Minimum Value:	0.00 pu
Maximum Value:	1.50 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level the line neutral to ground voltage must exceed before a line neutral over voltage fault is indicated.

Line Neutral Voltage Delay [LineNeutVoltDly]

Linear Number:	588
Default Value:	1.0 sec
Minimum Value:	0.0 sec
Maximum Value:	10.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the line neutral to ground voltage must remain above the trip level before a line neutral over voltage fault is indicated.

Ground Fault Over Current Trip [Gnd OvrCur Trp]

Linear Number:	171
Default Value:	0.50 A
Minimum Value:	0.05 A
Maximum Value:	10.00 A
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level the ground fault current signal must exceed before a ground fault over current is indicated.

Ground Fault Over Current Delay [Gnd OvrCur Dly]

Linear Number:	172
Default Value:	0.1 sec
Minimum Value:	0.0 sec
Maximum Value:	10.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the ground fault current signal must remain above the trip level before a ground fault over current is indicated.

Harmonic Voltage Trip [Harmonic VoltTrp]

Linear Number:	675
Default Value:	0.15 pu
Minimum Value:	0.00 pu
Maximum Value:	10.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter sets the trip level for the Harmonic voltage fault. This is typically used during commissioning to detect whether there is such an amount of resonance on the system with the 5^{th} harmonic that the voltage distortion can affect drive operation. This parameter should not be changed from the default value, and if this fault occurs, the system harmonics need to be addressed and/or the drive may need to be retuned.

Harmonic Voltage Delay [Harmonic VoltDly]

Linear Number:	676
Default Value:	1.0 sec
Minimum Value:	0.0 sec
Maximum Value:	100.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter sets the delay for the *Harmonic Voltage Trip*.

Neutral Resistor Overload Trip [RNeut OvrLoadTrp]

Linear Number:	774
Default Value:	5.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Service
Read/Write:	Read/Write

This parameter in conjunction with *Neutral Resistor Overload Delay (775)* is used to define the internal heating constant which is used to decide *Neutral Resistor* Overload Level.

TIP Do not change from the default values without consulting the MV Technical Support.

Neutral Resistor Overload Delay [RNeut OvrLoadDly]

Linear Number: 775
Default Value: 2.50 sec
Minimum Value: 0.00 sec
Maximum Value: 655.35 sec
Access Level: Service
Read/Write: Read/Write

This parameter in conjunction with *Neutral Resistor Overload Trip (774)* is used to define the internal heating constant which is used to decide Neutral Resistor Overload Level.

TIP Do not change from the default values without consulting the MV Technical Support.

Neutral Resistor Over Current Trip [RNeut OvrCurTrp]

Linear Number: 776
Default Value: 10.00
Minimum Value: 0.00
Maximum Value: 655.35
Access Level: Service
Read/Write: Read/Write

This specifies the neutral resistor current trip level above which the drive will trigger an over current fault.

TIP Do not change from the default values without consulting the MV Technical Support.

R Neutral Over Current Trip Delay [RNeut OvrCurDly]

Linear Number: 777
Default Value: 0.010 sec
Minimum Value: 0.000 sec
Maximum Value: 65.535 sec
Access Level: Service
Read/Write: Read/Write

This specifies the time interval during which the Neutral resistor current stays above the trip to trigger an over current fault.

TIP Do not change from the default values without consulting the MV Technical Support.

Bus Transient Trip Factor [BusTransTrpFac]

Linear Number: 673
Default Value: 2.75 pu
Minimum Value: 0.00 pu
Maximum Value: 100.00 pu
Access Level: Service
Read/Write: Read/Write

This parameter enables and sets the Bus Transient Feature in the PowerFlex 7000 drive. A value of 2.75 is the default value to enable and detect bus transients for most sites. Set this parameter to the maximum value to turn off this feature.

Bus Transient Delay [BusTransient Dly]

Linear Number:	674
Default Value:	2
Minimum Value:	0
Maximum Value:	100
Access Level:	Service
Read/Write:	Read/Write

This value defines the delay in the bus transient algorithm. This parameter's units are a function of the sampling rate of 4 k Hz, or 250 μsec per unit. Normally is not changed from the default value of 2.

Bus Transient Minimum Trip [BusTrans MinTrp]

Linear Number:	677
Default Value:	0.30 pu
Minimum Value:	0.00 pu
Maximum Value:	10.00 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the minimum value for the Bus Transient feature to be enabled.

Bus Transient DC Current Factor [BusTrans IdcFac]

Linear Number:	678
Default Value:	0.50 pu
Minimum Value:	0.00 pu
Maximum Value:	10.00 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter defines the bus transient DC Current factor in the transient protection algorithm. This should normally not be changed from the default value of 0.5.

Minimum Freewheel Time [Min Freewhl Time]

Linear Number:	679
Default Value:	0.016 sec
Minimum Value:	0.000 sec
Maximum Value:	1.000 sec
Access Level:	Service
Read/Write:	Read/Write

This is the minimum amount of time the drive will freewheel before the control starts to look for the end of the transients. This has been set to 1 cycle

at 60 Hz (16 ms) which should be sufficient for most transients related to capacitive switching to dampen.

Transient Idc Peak [Trans IdcPeak]

Linear Number:	930
Default Value:	1.40 pu
Minimum Value:	0.50 pu
Maximum Value:	4.00 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter defines the peak of the DC link current during a line transient when Bus Transient Protection is not engaged. The default value is 1.4 pu. By setting this parameter to a value other than 1 pu, drive will automatically calculate *BusTrans MinTrp (677)* based on the drive rating, rectifier device ratings, number of these devices and redundancy setting. Set this parameter to 1 pu to be able to manually adjust *BusTrans MinTrp (677)*.

Line Loss Trip [Line Loss Trip]

Linear Number:	698
Default Value:	8.0 Hz
Minimum Value:	0.0 Hz
Maximum Value:	40.0 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the maximum deviation in the instantaneous input frequency from the average frequency, which can be considered as a line loss condition. For determining a line loss condition, the drive looks for a sudden change in the measured line frequency in conjunction with loss of voltage magnitude. When the difference between the *Line Frequency (657)* and the *Master Line Freq (334)* is greater than this parameter, the drive detects a Line Loss and shuts down.

Rectifier Device Diagnostic Delay [Rec Dvc Diag Dly]

Linear Number:	266
Default Value:	2
Minimum Value:	0
Maximum Value:	6
Access Level:	Service
Read/Write:	Read/Write

This parameter is added to help avoid nuisance tripping on Rectifier Device diagnostic faults. The delay allows the drive to ignore a detected fault for the number of line cycles (SCR rectifiers) or the number of consecutive bridge firings (PWM rectifiers) set by this parameter. The default setting for this parameter is 2, and should not be changed unless directed to increase it by the factory.

Inverter Device Diagnostic Delay [Inv Dvc Diag Dly]

Linear Number:	268
Default Value:	2
Minimum Value:	0
Maximum Value:	6
Access Level:	Service
Read/Write:	Read/Write

This parameter is a feature added to help avoid nuisance tripping on Inverter Device diagnostic faults. The delay allows the drive to ignore a detected fault for the number of consecutive bridge firings set by this parameter. The default setting for this parameter is 2, and should not be changed unless directed to increase it by the factory.

Rectifier Heatsink Temperature Warning [RecHSink TempWrn]

Linear Number:	112
Default Value:	53 C
Minimum Value:	0 C
Maximum Value:	100 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level at which the drive will issue a rectifier heat sink over temperature warning. This is not applicable to Heatpipe drives. For Heatpipe drives, refer to variable *HeatSinkTemp Wrn (892)*.

Rectifier Heatsink Temperature Trip [RecHSink TempTrp]

Linear Number:	111
Default Value:	55 C
Minimum Value:	0 C
Maximum Value:	100 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level at which the drive will trip on a rectifier heat sink over temperature fault. This is not applicable to Heatpipe drives. For Heatpipe drives, refer to variable *HeatSinkTemp Trp (893)*.

Inverter Heatsink Temperature Warning [InvHSink TempWrn]

Linear Number:	316
Default Value:	61 C
Minimum Value:	0 C
Maximum Value:	100 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level at which the drive will issue an inverter heat sink over temperature warning. This is not applicable to Heatpipe drives.

Inverter Heatsink Temperature Trip [InvHSink TempTrp]

Linear Number:	315
Default Value:	64 C
Minimum Value:	0 C
Maximum Value:	100 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level at which the drive will trip on an inverter heat sink over temperature fault. This is not applicable to Heatpipe drives.

Isolation Transformer Air Pressure Nominal Value [IsoTxPressureNom]

Linear Number:	656
Default Value:	3.6 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the nominal (operating) voltage level for the air pressure sensor in the Isolation Transformer section. This parameter operates with the same functionality as that of the converter pressure sensor. This feature is available when bit 0 of *HardwareOptions2 (274)* is set.

Isolation Transformer Air Pressure Warning [IsoTxPressureWrn]

Linear Number:	655
Default Value:	3.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the warning level for the air pressure sensor in the Isolation Transformer section. This feature is available when bit 0 of *HardwareOptions2 (274)* is set.

Isolation Transformer Air Pressure Trip [IsoTxPressureTrp]

Linear Number:	654
Default Value:	2.5 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the trip level for the air pressure sensor in the Isolation Transformer section. This feature is available when bit 0 of *HardwareOptions2 (274)* is set.

Converter Section Air Pressure Nominal Value [Air Pressure Nom]

Linear Number: 317
Default Value: 3.6 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This parameter specifies the nominal value of the converter pressure sensor and indicates normal airflow in the drive.

Converter Low Air Pressure Warning [AirLoPresure Wrn]

Linear Number: 320
Default Value: 3.0 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level to which the converter pressure value must decrease before a warning is indicated. Loss of pressure is typically associated with reduced airflow due to blocking of the air filter.

Converter Low Air Pressure Trip [AirLoPresure Trp]

Linear Number: 319
Default Value: 2.5 V
Minimum Value: 1.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level to which the converter pressure value must decrease before a fault is indicated. Such a condition indicates either a blocked air filter or a loss of fan operation.

Gate Power Supply Trip [SGCT PwrSup Trip]

Linear Number: 406
Default Value: 17.5 V
Minimum Value: 10.0 V
Maximum Value: 30.0 V
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level the gate power supply voltage must fall below before a *GatePwrSup V Low* fault is indicated.

Gate Power Supply Warning [SGCT PwrSup Warn]

Linear Number:	407
Default Value:	19.0 V
Minimum Value:	10.0 V
Maximum Value:	30.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level the gate power supply voltage must fall below before a *GatePwrSup V Low* warning is indicated.

Converter Airflow Trip [Conv Airflow Trp]

Linear Number:	840
Default Value:	450 ft/m
Minimum Value:	0 ft/m
Maximum Value:	2000 ft/m
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level the converter airflow velocity (ft/m) must fall below before a *Cnv Airflow Loss* fault is indicated.

Converter Airflow Warning [Conv Airflow Wrn]

Linear Number:	841
Default Value:	525 ft/m
Minimum Value:	0 ft/m
Maximum Value:	2000 ft/m
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level the converter airflow velocity (ft/m) must fall below before a *Low Cnv Airflow* warning is indicated.

Line Current Unbalance Level [LineCurUnbal Lvl]

Linear Number:	868
Default Value:	0.03 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level which the measured line current unbalance given by *Line Cur Unbal (894)* must exceed before a line capacitor failure fault is indicated.

Unbalance Ratio[1] [Unbalance Ratio]

Linear Number: 951
Default Value: 1.3
Minimum Value: 0.0
Maximum Value: 50.0
Access Level: Service
Read/Write: Read/Write

This parameter defines the trip level for the ratio between line side neutral voltage and neutral current. This parameter is not in use in 9.001 firmware.

Capacitor Neutral Voltage Level [CapNeutVolt Lvl]

Linear Number: 871
Default Value: 0.10 pu
Minimum Value: 0.00 pu
Maximum Value: 1.50 pu
Access Level: Service
Read/Write: Read/Write

This parameter specifies the trip level for capacitor neutral voltage fault. It is currently not being used.

Capacitor Trip Delay [Cap Trip Dly]

Linear Number: 869
Default Value: 200 msec
Minimum Value: 200 msec
Maximum Value: 5000 msec
Access Level: Service
Read/Write: Read/Write

This parameter defines the time delay for which the conditions indicating a capacitor failure have to be met before the drive trips and locks out on a capacitor failure.

Ground Current Level Cap Protection [GndCurLvlCapProt]

Linear Number: 872
Default Value: 10.0 A
Minimum Value: 0.0 A
Maximum Value: 100.0 A
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level, which the ground current at line side given by parameter *GndFault Current (367)*, must exceed before a drive input short fault is indicated.

(1) Contact factory for availability.

Neutral Voltage Trip Delay [NeutVolt TripDly]

Linear Number:	583
Default Value:	100 msec
Minimum Value:	0 msec
Maximum Value:	1000 msec
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the time delay to trip on fundamental component of neutral voltage used in the line filter capacitor protection. It is currently not being used.

Neutral Voltage Trip Level [NeutVolt TripLvl]

Linear Number:	622
Default Value:	0.10 pu
Minimum Value:	0.00 pu
Maximum Value:	1.50 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the trip level of the fundamental component detected in the line neutral voltage feedback given by *NeutralFund Volt (896)* and is used in line filter capacitor protection.

Neutral Current Trip Delay [NeutCur TripDly]

Linear Number:	870
Default Value:	100 msec
Minimum Value:	0 msec
Maximum Value:	1000 msec
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the time delay to trip on fundamental component of neutral current used in the line filter capacitor protection. It is currently not being used.

Neutral Current Trip Level [NeutCur TripLvl]

Linear Number:	891
Default Value:	0.10 pu
Minimum Value:	0.00 pu
Maximum Value:	1.50 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the trip level of the fundamental component detected in the neutral current given by *NeutralFund Cur (895)* and is used in the line filter capacitor protection. This parameter is active when the drive has a neutral CT installed in the capacitor bank (*CapNeutralCT* bit in *HardwareOptions2 [274]*).

Line Capacitor Step Voltage [LineCapStepVolt]

Linear Number: 986
Default Value: 0.30
Minimum Value: 0.00
Maximum Value: 1.50
Access Level: Service
Read/Write: Read/Write

This parameter defines the trip level for drop of phase to ground and phase to neutral voltages at the input capacitor. At default value of 0.3 pu, drive announces input short and cap failure when these voltage are below this 0.3 pu threshold.

Negative Sequence Trip Level [Neg Seq Trip Lvl]

Linear Number: 984
Default Value: 2.0 A
Minimum Value: 0.0 A
Maximum Value: 200.0 A
Access Level: Service
Read/Write: Read/Write

This parameter defines the trip threshold for negative sequence current level at the input of the drive.

Negative Sequence Trip Delay [Neg Seq Trip Dly]

Linear Number: 990
Default Value: 200 msec
Minimum Value: 25 msec
Maximum Value: 5000 msec
Access Level: Service
Read/Write: Read/Write

This parameter defines the delay before drive announces Cap failure when *LineCur Neg Seq* exceeds *Neg Seq Trip Lvl*.

Air High-Presure Trip [AirHiPresure Trp]

Linear Number: 925
Default Value: 9.5 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level the converter air pressure (Volts) must exceed before a *High AirPressure* fault is indicated.

Air High-Pressure Warning [AirHiPresure Wrn]

Linear Number:	926
Default Value:	9.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level the converter air pressure (Volts) must exceed before a *Air HighPressure* warning is indicated.

SCR Power Supply Trip [SCR PwrSup Trip]

Linear Number:	988
Default Value:	8.0 V
Minimum Value:	5.0 V
Maximum Value:	30.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level the SCR gate power supply voltage must fall below before a *GatePwrSup V Low* fault is indicated.

SCR Power Supply Warn [SCR PwrSup Warn]

Linear Number:	989
Default Value:	15.0 V
Minimum Value:	10.0 V
Maximum Value:	30.0 V
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the level the SCR gate power supply voltage must fall below before a *GatePwrSup V Low* warning is indicated.

Drive Overload Acceleration Adjustment [DrvOL AcelAdjust]

Linear Number:	865
Default Value:	0.000
Minimum Value:	-32.767
Maximum Value:	32.767
Access Level:	Service
Read/Write:	Read/Write

The parameter specifies the adjustment to the Driver Overload calculation during non-steady state operation, namely during motor acceleration. Consult the factory before changing the parameter value.

Drive Overload Adjustment [DrvOvrLoadAdjust]

Linear Number: 866
Default Value: 0.0
Minimum Value: -3276.7
Maximum Value: 3276.7
Access Level: Service
Read/Write: Read/Write

The parameter provides the means for manual adjustment to the Driver Overload calculation. A positive values programmed raises the Drive Capability Curves, which means allowing the drive more margins for operating in overload condition. The value is divided by 1000 to get value in pu (per unit). For example, 100 will raise the Drive Capability Curves by 0.1 pu (100/1000=0.1pu). Consult the factory before changing the parameter value.

Motor Protection Parameters

Motor Over current Trip [Mtr OvrCur Trp]

Linear Number: 177
Default Value: 1.75 pu
Minimum Value: 0.00 pu
Maximum Value: 4.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the motor current must exceed before a motor over current fault is indicated.

Motor Over current Delay [Mtr OvrCur Dly]

Linear Number: 178
Default Value: 100 msec
Minimum Value: 0 msec
Maximum Value: 500 msec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the motor current must remain above the trip level before a motor over current fault is indicated.

Motor Over voltage Trip [Mtr OvrVolt Trp]

Linear Number: 181
Default Value: 1.20 pu
Minimum Value: 0.00 pu
Maximum Value: 2.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the motor voltage must exceed before a motor over voltage fault is indicated.

Motor Over voltage Delay [Mtr OvrVolt Dly]

Linear Number: 182
Default Value: 0.5 sec
Minimum Value: 0.0 sec
Maximum Value: 10.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the motor voltage must remain above the trip level before a motor over voltage fault is indicated.

Motor Neutral Over voltage Trip [Mtr NeutVolt Trp]

Linear Number: 189
Default Value: 0.20 pu
Minimum Value: 0.00 pu
Maximum Value: 1.50 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the motor neutral to ground voltage must exceed before a motor neutral over voltage fault is indicated. For line reactor drives, you may find the default setting is too low and may have to be increased to 0.80 pu for normal operation.

Motor Neutral Over voltage Delay [Mtr NeutVolt Dly]

Linear Number: 190
Default Value: 1.0 sec
Minimum Value: 0.0 sec
Maximum Value: 10.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time the motor neutral to ground voltage must remain above the trip level before a motor neutral over voltage fault is indicated.

Motor Over speed Trip [Mtr OvrSpeed Trp]

Linear Number: 185
Default Value: 66.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 120.0 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the level the motor speed must exceed before a motor over speed fault is indicated. If the drive is running over 66 Hz, this parameter must be adjusted. If you want to run the drive over 75 Hz, special capacitors are needed.

Motor Over speed Delay [Mtr OvrSpeed Dly]

Linear Number: 186
Default Value: 0.5 sec
Minimum Value: 0.0 sec
Maximum Value: 2.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time interval for which the motor speed must exceed the trip level before a motor over speed fault is indicated.

Motor Overload Trip [Mtr OvrLoad Trp]

Linear Number:	179
Default Value:	1.15 pu
Minimum Value:	0.00 pu
Maximum Value:	4.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the maximum motor current which will cause the drive to trip on a motor overload fault after a time interval specified by parameter *Mtr OvrLoad Dly (180)*.

Motor Overload Delay [Mtr OvrLoad Dly]

Linear Number:	180
Default Value:	60.0 sec
Minimum Value:	0.0 sec
Maximum Value:	600.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the motor will operate at the overload trip level *Mtr OvrLoad Trp (179)* before a motor overload fault is indicated.

Motor Overload Minimum [Mtr OvrLoad Min]

Linear Number:	350
Default Value:	1.05 pu
Minimum Value:	0.00 pu
Maximum Value:	4.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the minimum per unit value of the motor current which is regarded as an overload condition. When the motor runs with a current less than the parameter setting, the overload algorithm is not activated.

Motor Overload Warning [Mtr OvrLoad Wrn]

Linear Number:	351
Default Value:	0.50
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level the motor overload (based on integrating of motor current over time) must exceed before a Motor overload warning is indicated.

Motor Thermal Cycle [Mtr Thermal Cyc]

Linear Number:	771
Default Value:	600.0 sec
Minimum Value:	0.0 sec
Maximum Value:	6000.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the overload duty cycle for the motor. It is defined as the time interval after which the motor could be subjected to its maximum overload capacity without exceeding the thermal ratings. The default value is 10 minutes which means that the motor can handle 1 minute of overload every 10 minutes. However for Banbury mixers and other heavy duty applications, the overload cycle could be less than 10 minutes.

Motor Stall Delay [Mtr Stall Dly]

Linear Number:	191
Default Value:	2.0 sec
Minimum Value:	0.0 sec
Maximum Value:	10.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the motor must be in a stall condition before a motor stall fault is indicated. If the encoder/tachometer option is enabled, the motor is considered to be stalled if the drive is in torque limit at any speed less than 1 Hz. If the encoder/tachometer option is not enabled, the motor is considered to be stalled if the drive is at commanded speed and the motor flux is 20% of the rated flux. Also drive should not be running in torque mode. A stall cannot be detected until the drive reaches the commanded speed because the motor may already be rotating when the drive is started. In this case, if the motor speed is above the commanded speed, or the motor is rotating in opposite direction, a stall fault will occur.

Motor Flux Unbalance Trip [Mtr FluxUnbalTrp]

Linear Number:	585
Default Value:	0.05 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level of the unbalance in the motor flux that will cause a motor unbalance fault.

Motor Flux Unbalance Delay [Mtr FluxUnbalDly]

Linear Number:	586
Default Value:	1.0 sec
Minimum Value:	0.0 sec
Maximum Value:	10.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the motor flux unbalance value must remain above trip level before a flux unbalance fault is indicated.

Motor Current Unbalance Trip [Mtr CurUnbal Trp]

Linear Number:	208
Default Value:	0.05 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the level of motor current unbalance that will cause the drive to trip.

Motor Current Unbalance Delay [Mtr CurUnbal Dly]

Linear Number:	214
Default Value:	1.0 sec
Minimum Value:	0.0 sec
Maximum Value:	5.0 sec
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the time the motor current unbalance value must remain above trip level before a current unbalance fault is indicated.

Motor Load Loss Level [Mtr LoadLoss Lvl]

Linear Number:	246
Default Value:	0.25 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the minimum percent of rated load at which the drive will assume that there is a loss of load. If the load drops lower than this parameter, and the speed is greater than *Mtr LoadLoss Spd (259)*, the drive will initiate the fault after the *Mtr LoadLoss Dly (231)* expires. The control uses the parameter *Torque Reference (291)* as the load reference.

Motor Load Loss Speed [Mtr LoadLoss Spd]

Linear Number: 259
Default Value: 30.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 100.0 Hz
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the minimum speed at which the loss of load condition will be detected. Generally there is lesser load at lower speeds, so this parameter helps avoid nuisance trips during operation at lower speeds.

Motor Load Loss Delay [Mtr LoadLoss Dly]

Linear Number: 231
Default Value: 1.0 sec
Minimum Value: 0.0 sec
Maximum Value: 30.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time delay between the detection of the load loss condition and the actual fault initiation.

Field Current Loss Delay [Field Loss Dly]

Linear Number: 559
Default Value: 30 sec
Minimum Value: 0 sec
Maximum Value: 60 sec
Access Level: Service
Read/Write: Read/Write

This parameter is used to specify the time interval during which the flux regulator is in limit, before the drive trips on a field loss. Field Current is not directly measured in the control; therefore the drive uses the flux regulator which will go into a limit on loss of field current.

Encoder Loss Trip [EncoderLossTrip]

Linear Number: 235
Default Value: 2.0 Hz
Minimum Value: 0.0 Hz
Maximum Value: 10.0 Hz
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level that the encoder error must exceed before an encoder loss fault is indicated.

Encoder Loss Delay [EncoderLossDelay]

Linear Number:	236
Default Value:	0.1 sec
Minimum Value:	0.0 sec
Maximum Value:	1.0 sec
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the time that the encoder error must be greater than the trip level before an encoder loss fault is indicated.

Sync Xfer Option Parameters

Synchronizing Regulator Output [Sync Reg Output]

Linear Number: 298
Minimum Value: -10.00 Hz
Maximum Value: 10.00 Hz
Access Level: Advanced
Read/Write: Read Only

This parameter is the synchronizing regulator output, which is added to the speed regulator error during a synchronous transfer from drive to bypass.

Synchronizing Regulator Error [Sync Reg Error]

Linear Number: 297
Minimum Value: -180.0 Deg
Maximum Value: 180.0 Deg
Access Level: Advanced
Read/Write: Read Only

This parameter is the synchronizing regulator error, which is the phase angle between the measured bypass voltage and the motor voltage during a synchronous transfer from drive to bypass.

Bypass Voltage [Bypass Voltage]

Linear Number: 117
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read Only

This displays the voltage on the line-side of the Bypass Contactor, and is scaled in per unit with respect to the Rated Motor Voltage.

Bypass Frequency [Bypass Frequency]

Linear Number: 159
Minimum Value: -100.0 Hz
Maximum Value: 100.0 Hz
Access Level: Advanced
Read/Write: Read Only

This parameter displays the frequency of the voltage on the line-side of the Bypass Contactor.

Synchronizing Error Maximum [Sync Error Max]

Linear Number: 228
Default Value: 0 Deg
Minimum Value: 0 Deg
Maximum Value: 30 Deg
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the maximum allowable synchronizing phase error. The bypass contactor will be requested to close when the synchronizing phase error has remained below this maximum value for the time specified by *Sync Time (229)*.

Synchronous Transfer Lead Angle [Sync Lead Angle]

Linear Number: 226
Default Value: 0 Deg
Minimum Value: -90 Deg
Maximum Value: 90 Deg
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the angle by which the motor voltage leads the drive input voltage when the motor is assumed to be synchronized. The purpose of this parameter is to compensate for any phase difference between the drive input voltage and the bypass contactor supply voltage.

Synchronous Transfer Off Delay [Sync Off Delay]

Linear Number: 227
Default Value: 0.100 sec
Minimum Value: 0.000 sec
Maximum Value: 0.500 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time delay between the bypass contactor being requested to close and the drive shutting off. It is normally set to slightly less than the bypass contactor closing time, with a minimum of 1½ – 2 cycles desirable.

Synchronizing Regulator Gain [Sync Reg Gain]

Linear Number: 225
Default Value: 1.0
Minimum Value: 0.0
Maximum Value: 5.0
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the gain of the synchronizing regulator.

Synchronizing Time [Sync Time]

Linear Number: 229
Default Value: 10.0 sec
Minimum Value: 0.0 sec
Maximum Value: 10.0 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time that the synchronizing phase error must be less than *Sync Error Max (228)* before the bypass contactor is requested to close.

Synchronous Transfer Time [Sync Xfer Time]

Linear Number: 230
Default Value: 1.0 min
Minimum Value: 0.1 min
Maximum Value: 57.0 min
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the time allowed for completion of a synchronous transfer. If transfer is not complete within this time, the drive will stop with a *SyncXfer Failure* fault. If the *SyncXfer Failure* fault is disabled, the transfer request will be cancelled and the drive will continue to run at the commanded speed. A *SyncXfer Failure* warning will be displayed.

De-synchronizing Start Delay [DeSync Start Dly]

Linear Number: 763
Default Value: 1 sec
Minimum Value: 1 sec
Maximum Value: 10 sec
Access Level: Service
Read/Write: Read/Write

This parameter in *Sync Xfer Option* group is used to control the motor filter capacitor charging interval when a drive is commanded to transfer the motor from bypass to drive. The minimum and the default value is 1 second i.e. upon starting the drive it will take 1 second to begin the transfer from the bypass to the drive. Using this parameter, the delay can be increased up to a maximum of 10 seconds and will be useful for drives with an output transformer requiring more than 1 second for charging the motor filter capacitor.

Sync Drift Angle [Sync Drift Angle]

Linear Number:	900
Default Value:	2 Deg
Minimum Value:	-15 Deg
Maximum Value:	15 Deg
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the synchronous transfer drift angle. When a drive is commanded to transfer the motor from bypass to drive, measured phase angle difference between bypass and motor voltage needs to be less than this parameter value in order to continue the transfer process.

Encoder Option Parameters

Motor Position [Rotor Position]

Linear Number: 844
Minimum Value: 0.00 deg
Maximum Value: 360.00 deg
Access Level: Advanced
Read/Write: Read Only

This parameter displays the electrical angle of the motor rotor position relative to the Phase A winding of the motor.

Encoder Feedback [Encoder Feedback]

Linear Number: 349
Minimum Value: -120.00 Hz
Maximum Value: 120.00 Hz
Access Level: Service
Read/Write: Read Only

This parameter displays the encoder/tachometer feedback speed indication. This reading is the signed indication of the electrical speed measured from the encoder/tachometer.

Encoder Type [Encoder Type]

Linear Number: 233
Default Value: None
Access Level: Basic
Read/Write: Read/Write when Stopped

This parameter specifies the type of tachometer or encoder installed.

WARNING: If encoder type is set to Single, the drive cannot determine the direction of rotation when the motor is coasting. If the direction of rotation is not the same as the commanded direction, a flying start will not be successful.

The following types are available:

Value	Enum Text	Description
0	None	No encoder installed
1	Single Ch	Single output (non-directional)
2	Quad Diff	Quadrature outputs (directional)
3	Absolute Enc	Absolute encoder (1)
4	Sine-Cos Inc	Not active
5	Sine-Cos Z	Not active
6	Sine-Cos SSI	Not active
7	Quad Snglend	Quadrature Single Ended encoder

(1) Contact factory for availability.

Encoder Pulses per Revolution [Encoder PPR]

Linear Number:	234
Default Value:	1024 PPR
Minimum Value:	120 PPR
Maximum Value:	16384 PPR
Access Level:	Basic
Read/Write:	Read/Write when Stopped

This parameter specifies the number of pulses produced by the encoder in one revolution. This parameter is not used for absolute encoders.

Encoder Offset [Encoder Offset]

Linear Number:	644
Default Value:	0.00 Deg
Minimum Value:	0.00 Deg
Maximum Value:	360.00 Deg
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the offset of the absolute encoder. This parameter is required for motor rotor position estimation using absolute encoder. This parameter can be set manually or by auto-tuning.

Control Masks Parameters

Direction Command Mask [Direction Mask]

Linear Number: 244
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the forward/reverse command. A '1' represents the adapter that can issue the direction command, a '0' represents an adapter that cannot issue the direction command. There are 8 adapters available, from Adapter0 to Adapter7. Adapter 0 is the XIO board, Adapter 7 is the programming terminal, and Adapter 1 to Adapter 6 are the DPI adapters.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Jog Command Mask [Jog Mask]

Linear Number: 245
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the jog command. A '1' represents the adapter that can issue the jog command, a '0' represents an adapter that cannot issue the jog command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Local Command Mask [Local Mask]

Linear Number: 242
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the local command. A '1' represents the adapter that can issue the local command, a '0' represents an adapter that cannot issue the local command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Logic Command Mask [Logic Mask]

Linear Number: 241
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the logic command. A '1' represents the adapter that can issue the logic command, a '0' represents an adapter that cannot issue the logic command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Reference Command Mask [Ref Cmd Mask]

Linear Number: 248
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the reference command. A '1' represents the adapter that can issue the reference command, a '0' represents an adapter that cannot issue the reference command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	Programming Terminal

Fault Reset Command Mask [Reset Mask]

Linear Number: 247
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the reset command. A '1' represents the adapter that can issue the reset command, a '0' represents an adapter that cannot issue the reset command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	Programming Terminal

Start Command Mask [Start Mask]

Linear Number: 243
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the start command. A ‘1’ represents the adapter that can issue the start command, a ‘0’ represents an adapter that cannot issue the start command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Synchronous Transfer Command Mask [Sync Xfer Mask]

Linear Number: 249
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the synchronous transfer command. A ‘1’ represents the adapter that can issue the synchronous transfer command, a ‘0’ represents an adapter that cannot issue the synchronous transfer command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Forced Fault Mask [Forced Flt Mask]

Linear Number: 638
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue a forced fault. A ‘1’ represents the adapter that can issue the forced fault, a ‘0’ represents an adapter that cannot issue the forced fault. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Profile Mask [Profile Mask]

Linear Number: 36
Default Value: 11111111
Access Level: Basic
Read/Write: Read/Write

This parameter specifies which adapters can issue the Acceleration/ Deceleration Profile command. The adapter can select either Ramp or S-Curve profiles. A ‘1’ represents an adapter that has control over the Profile, and a ‘0’ represents an adapter that does not have control over the Profile. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Owners Parameters

Direction Command Owner [Direction Owner]

Linear Number: 388
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the direction command. A '1' represents the adapter that is issuing the direction command, a '0' represents an adapter that is not issuing the direction command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Jog Command Owner [Jog Owner]

Linear Number: 389
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the jog command. A '1' represents the adapter that is issuing the jog command, a '0' represents an adapter that is not issuing the jog command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Local Command Owner [Local Owner]

Linear Number: 386
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the local command. A ‘1’ represents the adapter that is issuing the local command, a ‘0’ represents an adapter that is not issuing the local command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Reference Command Owner [Ref Cmd Owner]

Linear Number: 392
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the reference command. A ‘1’ represents the adapter that is issuing the reference command, a ‘0’ represents an adapter that is not issuing the reference command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Fault Reset Command Owner [Reset Owner]

Linear Number: 391
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the reset command. A '1' represents the adapter that is issuing the reset command, a '0' represents an adapter that is not issuing the reset command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	Marine 1
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Start Command Owner [Start Owner]

Linear Number: 387
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the start command. A '1' represents the adapter that is issuing the start command, a '0' represents an adapter that is not issuing the start command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Stop Command Owner [Stop Owner]

Linear Number: 385
Access Level: Monitor
Read/Write: Read Only

This parameter specifies which adapters are issuing the stop command. A '1' represents the adapter that is issuing the stop command, a '0' represents an adapter that is not issuing the stop command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	Netserver
7	Adapter 7	(Currently unused)

Synchronous Transfer Command Owner [Sync Xfer Owner]

Linear Number: 393
Access Level: Monitor
Read/Write: Read Only

This parameter indicates which adapters are issuing the synchronous transfer command. A '1' represents the adapter that is issuing the synchronous transfer command, a '0' represents an adapter that is not issuing the synchronous transfer command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Forced Fault Owner [Forced Flt Owner]

Linear Number: 639
Access Level: Monitor
Read/Write: Read Only

This parameter indicates which adapters are issuing the forced fault. A '1' represents the adapter that is issuing the forced fault, a '0' represents an adapter that is not issuing the forced fault. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Profile Owner [Profile Owner]

Linear Number: 37
Access Level: Monitor
Read/Write: Read Only

This parameter indicates which adapters are issuing the Acceleration/Deceleration Profile command. A '1' represents the adapter that has control over the Acceleration/Deceleration Profile, and a '0' represents the adapters not having control over the Profile. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Logic Owner [Logic Owner]

Linear Number: 94
Access Level: Monitor
Read/Write: Read Only

This parameter indicates which adapters are issuing the Logic command. A '1' represents the adapter that is issuing the Logic command, and a '0' represents the adapters that are not issuing the Logic command. There are 8 adapters available, from Adapter0 to Adapter7.

Bit	Enum Text	Description
0	Adapter 0	Host
1	Adapter 1	
2	Adapter 2	
3	Adapter 3	(Currently unused)
4	Adapter 4	(Currently unused)
5	Adapter 5	
6	Adapter 6	(Currently unused)
7	Adapter 7	(Currently unused)

Datalinks Parameters

PLC Error Flags [PLC Error Flags]

Linear Number: 376
Access Level: Basic
Read/Write: Read Only

This parameter displays the PLC Remote I/O error flags. A ‘0’ represents no error, a ‘1’ represents an error.

A link range will be indicated when the corresponding parameter is out of range. A link error will be indicated if the corresponding cannot be made, or if an attempt is made to modify a parameter that is read only, or cannot be modified while the drive is running.

Bit	Enum Text	Description
0	LinkA1 Range	LinkA1 Range
1	LinkA2 Range	LinkA2 Range
2	LinkB1 Range	LinkB1 Range
3	LinkB2 Range	LinkB2 Range
4	LinkC1 Range	LinkC1 Range
5	LinkC2 Range	LinkC2 Range
6	LinkD1 Range	LinkD1 Range
7	LinkD2 Range	LinkD2 Range
8	LinkA1 Error	LinkA1 Error
9	LinkA2 Error	LinkA2 Error
10	LinkB1 Error	LinkB1 Error
11	LinkB2 Error	LinkB2 Error
12	LinkC1 Error	LinkC1 Error
13	LinkC2 Error	LinkC2 Error
14	LinkD1 Error	LinkD1 Error
15	LinkD2 Error	LinkD2 Error

PLC Input Links are those data links that will write drive parameter data to a DPI peripheral on a change of state or within a predetermined time if no change of state happens.

PLC Input Link A1 [PLC Inp Link A1]

Linear Number: 529
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link A1.

PLC Input Link A2 [PLC Inp Link A2]

Linear Number: 530
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link A2.

PLC Input Link B1 [PLC Inp Link B1]

Linear Number: 531
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear num6er of the parameter associated with PLC input link B1.

PLC Input Link B2 [PLC Inp Link B2]

Linear Number: 532
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link B2.

PLC Input Link C1 [PLC Inp Link C1]

Linear Number:	533
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link C1.

PLC Input Link C2 [PLC Inp Link C2]

Linear Number:	534
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link C2.

PLC Input Link D1 [PLC Inp Link D1]

Linear Number:	535
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link D1.

PLC Input Link D2 [PLC Inp Link D2]

Linear Number:	536
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC input link D2.

PLC Output Links are those data links that will receive DPI peripheral data to the drive on a change of state or within a predetermined time if no change of state happens.

PLC Output Link A1 [PLC Out Link A1]

Linear Number: 537
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link A1.

PLC Output Link A2 [PLC Out Link A2]

Linear Number: 538
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link A2.

PLC Output Link B1 [PLC Out Link B1]

Linear Number: 539
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link B1.

PLC Output Link B2 [PLC Out Link B2]

Linear Number: 540
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link B2.

PLC Output Link C1 [PLC Out Link C1]

Linear Number:	541
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link C1.

PLC Output Link C2 [PLC Out Link C2]

Linear Number:	542
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link C2.

PLC Output Link D1 [PLC Out Link D1]

Linear Number:	543
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link D1.

PLC Output Link D2 [PLC Out Link D2]

Linear Number:	544
Default Value:	0
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with PLC output link D2.

Analog Inputs Parameters

Analog Input Configuration [Anlg Inp Config]

Linear Number: 652
Default Value: 0000000000000001
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter configures the hardware circuitry used on the ACB for sensing the three analog inputs. The inputs can be configured to either accept 0-10V (Voltage) input or 4-20mA (Current) input. The default value configures Analog Input 1 as a 4-20mA input.

Bit	Enum Text	Description
0	An1 0:V 1:mA	Analog Input 1 enter – 0 for Voltage; 1 for Current
1	An2 0:V 1:mA	Analog Input 2 enter – 0 for Voltage; 1 for Current
2	An3 0:V 1:mA	Analog Input 3 enter – 0 for Voltage; 1 for Current
3	Unused	
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Speed Pot Minimum Voltage [Speed Pot Vmin]

Linear Number: 630
Default Value: 0.00 V
Minimum Value: -10.00 V
Maximum Value: 10.00 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the minimum output voltage from the speed potentiometer and is used for calibrating the speed command.

Speed Pot Maximum Voltage [Speed Pot Vmax]

Linear Number:	631
Default Value:	10.00 V
Minimum Value:	-10.00 V
Maximum Value:	10.00 V
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the maximum output voltage from the speed potentiometer and is used for calibrating the speed command.

Analog Input1 Minimum Voltage [Anlg Inp1 Vmin]

Linear Number:	632
Default Value:	0.00 V
Minimum Value:	-10.00 V
Maximum Value:	10.00 V
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the minimum voltage which can be used on Analog Input 1 and is used for calibrating the speed command.

Analog Input1 Maximum Voltage [Anlg Inp1 Vmax]

Linear Number:	633
Default Value:	10.00 V
Minimum Value:	-10.00 V
Maximum Value:	10.00 V
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the maximum voltage which can be used on Analog Input 1 and is used for calibrating the speed command.

Analog Input2 Minimum Voltage [Anlg Inp2 Vmin]

Linear Number:	634
Default Value:	0.00 V
Minimum Value:	-10.00 V
Maximum Value:	10.00 V
Access Level:	Service
Read/Write:	Read/Write when Stopped

This parameter specifies the minimum voltage which can be used on Analog Input 2 and is used for calibrating the speed command.

Analog Input2 Maximum Voltage [Angl Inp2 Vmax]

Linear Number: 635
Default Value: 10.00 V
Minimum Value: -10.00 V
Maximum Value: 10.00 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the maximum voltage which can be used on Analog Input 2 and is used for calibrating the speed command.

Analog Input3 Minimum Voltage [Anlg Inp3 Vmin]

Linear Number: 636
Default Value: 0.00 V
Minimum Value: -10.00 V
Maximum Value: 10.00 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the minimum voltage which can be used on Analog Input 3 and is used for calibrating the speed command.

Analog Input3 Maximum Voltage [Anlg Inp3 Vmax]

Linear Number: 637
Default Value: 10.00 V
Minimum Value: -10.00 V
Maximum Value: 10.00 V
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the maximum voltage which can be used on Analog Input 3 and is used for calibrating the speed command.

Analog Outputs Parameters

Analog Output 1 [Anlg Output1]

Linear Number: 513
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog port 1 on the Analog Control Board (ACB). The output is scalable using *Anlg Out1 Scale (183)*. This is a non-isolated 0-10V output.

Analog Output 2 [Anlg Output2]

Linear Number: 514
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog port 2 on the Analog Control Board (ACB). The output is scalable using *Anlg Out2 Scale (184)*. This is a non-isolated 0-10V output.

Analog Output 3 [Anlg Output3]

Linear Number: 515
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog port 3 on the Analog Control Board (ACB). The output is scalable using *Anlg Out3 Scale (187)*. This is a non-isolated 0-10V output.

Analog Output 4 [Anlg Output4]

Linear Number: 508
Default Value: 0
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog port 4 on the Analog Control Board (ACB). The output is scalable using *Anlg Out4 Scale (123)*. This is a non-isolated 0-10V output.

Analog Meter 1 [Anlg Output5]

Linear Number: 517
Default Value: 361
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog meter 1 on the Analog Control Board (ACB). The meter output is scalable using *AnlgMeter1 Scale (521)*. This is a non-isolated 0-10V output. The default value of 361 corresponds to the *Motor Current* parameter.

Analog Meter 2 [Anlg Output6]

Linear Number: 518
Default Value: 362
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog meter 2 on the Analog Control Board (ACB). The meter output is scalable using *AnlgMeter2 Scale (522)*. This is a non-isolated 0-10V output. The default value of 362 corresponds to the *Motor Voltage* parameter.

Analog Meter 3 [Anlg Output7]

Linear Number: 519
Default Value: 363
Minimum Value: 0
Maximum Value: 1160
Access Level: Basic
Read/Write: Read/Write

This parameter specifies the linear number of the parameter associated with analog meter 3 on the Analog Control Board (ACB). The meter output is scalable using *AnlgMeter3 Scale (523)*. This is a non-isolated 0-10V output. The default value of 363 corresponds to the *Motor Speed RPM* parameter.

Analog Meter 4 [Anlg Output8]

Linear Number:	520
Default Value:	364
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog meter 4 on the Analog Control Board (ACB). The meter output is scalable using *AnlgMeter4 Scale (524).* This is a non-isolated 0-10V output. The default value of 364 corresponds to the *Motor Power* parameter.

Analog 4-20 mA Output [Anlg 4-20mAOut]

Linear Number:	516
Default Value:	337
Minimum Value:	0
Maximum Value:	1160
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog current loop transmitter on the Analog Control Board (ACB). This is an isolated 4-20mA (programmable) output. The default value of 337 corresponds to *Rotor Frequency* which is the absolute value of the measured motor speed in Hz given by *Speed Feedback (289)*.

Analog Output 1 Scale [Anlg Out1 Scale]

Linear Number:	183
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for ACB Port 1 parameter.

Analog Output 2 Scale [Anlg Out2 Scale]

Linear Number:	184
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for ACB Port 2 parameter.

Analog Output 3 Scale [Anlg Out3 Scale]

Linear Number:	187
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for ACB Port 3 parameter.

Analog Output 4 Scale [Anlg Out4 Scale]

Linear Number:	123
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for ACB Port 3 parameter.

Analog Meter 1 Scale [Anlg Out5 Scale]

Linear Number:	521
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for *Analog Meter 1* parameter.

Analog Meter 2 Scale [Anlg Out6 Scale]

Linear Number:	522
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for *Analog Meter 2* parameter.

Analog Meter 3 Scale [Anlg Out7 Scale]

Linear Number:	523
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for *Analog Meter 3* parameter.

Analog Meter 4 Scale [Anlg Out8 Scale]

Linear Number:	524
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for *Analog Meter 4* parameter.

Analog 4-20 mA Current Scale [Anlg4-20mA Scale]

Linear Number:	188
Default Value:	2.00
Minimum Value:	0.00
Maximum Value:	655.35
Access Level:	Basic
Read/Write:	Read/Write

This parameter specifies the scale to be used for Analog 4-20mA Current Loop parameter.

Analog Rectifier Test Point 1 [Anlg RecTstPt1]

Linear Number:	509
Default Value:	321
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point RTP1 on the Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Rectifier Test Point 2 [Anlg RecTstPt2]

Linear Number:	510
Default Value:	322
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point RTP2 on the Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Rectifier Test Point 3 [Anlg RecTstPt3]

Linear Number:	124
Default Value:	326
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point 3 (DAC_TP3) on the rectifier side Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Rectifier Test Point 4 [Anlg RecTstPt4]

Linear Number:	125
Default Value:	700
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point 4 (DAC_TP4) on the rectifier side Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Inverter Test Point 1 [Anlg InvTstPt1]

Linear Number:	511
Default Value:	490
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point ITP1 on the Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Inverter Test Point 2 [Anlg InvTstPt2]

Linear Number:	512
Default Value:	289
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point ITP2 on the Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Inverter Test Point 3 [Anlg InvTstPt3]

Linear Number:	126
Default Value:	291
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point 3 (DAC_TP3) on the inverter side Drive Processor Module (DPM). This is a non-isolated 0-10V output.

Analog Inverter Test Point 4 [Anlg InvTstPt4]

Linear Number:	127
Default Value:	306
Minimum Value:	0
Maximum Value:	1160
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the linear number of the parameter associated with analog test point 4 (DAC_TP4) on the inverter side Drive Processor Module (DPM). This is a non-isolated 0-10V output.

XIO Parameters

Run Time Input [RunTime Input]

Linear Number: 421
Access Level: Advanced
Read/Write: Read Only

This parameter displays the status of the raw data on the general XIO input before processing. A ‘1’ represents a true condition into the drive.

Bit	Enum Text	Description
0	Not Stop	Stop is not requested
1	Start	Start the drive
2	Forward	Run the drive in forward direction
3	Reverse	Run the drive in reverse direction
4	Jog	JOG command to the drive
5	Local	Drive is in LOCAL control mode
6	Drive Reset	Reset the drive
7	Synch	Synchronize the motor to line (Bypass)
8	DeSynch	Bring the motor from bypass to the drive
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Standard XIO Outputs [StndXIO Output]

Linear Number: 422
Access Level: Advanced
Read/Write: Read Only

This parameter shows the state of the outputs on the standard XIO card. A ‘1’ indicates an active output. By using 120V wiring, this output can drive a pilot light or a control relay. The first eight outputs have a fixed assignment and cannot be changed. The remaining eight outputs are configurable and can be programmed as required by the customer. Refer to parameters *StndXIO ConfigX (X=1…8)* for details.

Bit	Enum Text	Description
0	Ready	Drive is in Ready mode
1	Running	Drive is in Running mode
2	Forward	Drive is running the motor in Forward direction
3	Fault	Drive is currently in Fault state

Bit	Enum Text	Description
4	Warning	Drive is currently in Warning state
5	Local	Drive control is in Local mode
6	ConvFn1Ctctr	Turn Cooling Fan 1 on
7	ConvFn2Ctctr	Turn Redundant Cooling Fan 2 on
8	Config1	User Configurable Output 1
9	Config2	User Configurable Output 2
10	Config3	User Configurable Output 3
11	Config4	User Configurable Output 4
12	Config5	User Configurable Output 5
13	Config6	User Configurable Output 6
14	Config7	User Configurable Output 7
15	Config8	User Configurable Output 8

Standard XIO Fault Input [StndXIO FltInput]

Linear Number: 431
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the fault inputs on the standard XIO card. It should be noted that the faults have a fixed assignment and cannot be changed. If there is a fault, the corresponding bit in this parameter will go from one to zero, indicating a loss of the 120V signal to the XIO card. This parameter is further processed by the drive control according to the corresponding class parameter in *Alarm Config* group. The final result is updated in either parameter *Stnd XIO Fault* or *Stnd XIO Warning* depending on the fault configuration. If a particular input is not used, it should be masked or tied high. There are a total of 6 fixed fault inputs. The text accompanying the fault cannot be changed. The *ConvFan Fbk* is not processed as an XIO Fault and is treated differently by the drive control software.

Bit	Enum Text	Description
0	Input Protn1	Input Protection 1 fault
1	TxReacOvrTmp	Isolation Transformer/Line Reactor Over temperature fault
2	DCLinkOvrTmp	DC Link/Common-Mode Choke Over temperature fault
3	Motor Protn	Motor Protection fault
4	Input Protn2	Input Protection 2 fault
5	AuxTrp/TxFan	Auxiliary Trip/Isolation Transformer Fan Fault
6	ConvFan Fbk	Main Cooling Fan Status Feedback
7	Unused	

External Fault XIO [Ext Fault XIO]

Linear Number: 232
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the external fault inputs on the optional XIO card. There are 16 external fault inputs available, from External1 to External16. If there is a fault, the corresponding bit in this parameter will go to zero, indicating a loss of the 120V signal to the XIO card. This parameter is further processed by the drive control according to the corresponding class parameter in *Alarm Config* group. The final result is updated in either parameter *External Fault* or *External Warning* depending of the fault configuration. If an external fault input is not used it should be masked or tied high. The text accompanying the fault can be changed and adapted to the customer's requirement.

Bit	Enum Text	Description
0	External1	External Fault Input 1
1	External2	External Fault Input 2
2	External3	External Fault Input 3
3	External4	External Fault Input 4
4	External5	External Fault Input 5
5	External6	External Fault Input 6
6	External7	External Fault Input 7
7	External8	External Fault Input 8
8	External9	External Fault Input 9
9	External10	External Fault Input 10
10	External11	External Fault Input 11
11	External12	External Fault Input 12
12	External13	External Fault Input 13
13	External14	External Fault Input 14
14	External15	External Fault Input 15
15	External16	External Fault Input 16

Optional XIO Outputs(1) [OptXIO Output]

Linear Number: 427
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the outputs on the optional XIO card. There are 16 outputs available. They are currently not assigned and reserved for future use only.

Bit	Enum Text	Description
0	Outbit 0	
1	Outbit 1	
2	Outbit 2	
3	Outbit 3	
4	Outbit 4	
5	Outbit 5	

(1) Contact factory for availability.

Bit	Enum Text	Description
6	Outbit 6	
7	Outbit 7	
8	Outbit 8	
9	Outbit 9	
10	Outbit 10	
11	Outbit 11	
12	Outbit 12	
13	Outbit 13	
14	Outbit 14	
15	Outbit 15	

Liquid Inputs [Liquid Inputs]

Linear Number: 52
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the inputs on the XIO card assigned for the Liquid Cooling System. There are 16 inputs available, from External 1 to External 16. A '1' indicates that the specific input of the card is active, and a '0' means that specific input is missing.

Bit	Enum Text	Description
0	Pump Aux 1	Pump 1 Control Relay Auxiliary
1	Pump Aux 2	Pump 2 Control Relay Auxiliary
2	Fan Aux 1	Fan 1 Control Relay Auxiliary
3	Fan Aux 2	Fan 2 Control Relay Auxiliary
4	Fan Aux 3	Fan 3 Control Relay Auxiliary
5	Fan Aux 4	Fan 4 Control Relay Auxiliary
6	Unused	
7	DC Link Flow	DC Link Flow Measurement Switch Feedback
8	DisconnectSw	The Cooling System Disconnect switch feedback
9	Low Pressure	Cooling System Low Pressure Indication
10	Low Level	Cooling System Low Level Warning Indication
11	Level Trip	Cooling System Low Level Fault Indication
12	Cond High	Cooling System Conductivity Warning Indication
13	Cond Trip	Cooling System Conductivity Fault Indication
14	Pmp Select#1	Pump #1 has been selected as the active Pump
15	Pmp Select#2	Pump #2 has been selected as the active Pump

Liquid Outputs [Liquid Outputs]

Linear Number: 14
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the outputs on the XIO card assigned for the Liquid Cooling System. There are 16 outputs available, from External 1 to External 16. A '1' indicates that the specific output of the card is closed.

Bit	Enum Text	Description
0	Pump Ctctr 1	Pump Contactor 1 output is active
1	Pump Ctctr 2	Pump Contactor 2 output is active
2	Fan Ctctr 1	Fan Contactor 1 output is active
3	Fan Ctctr 2	Fan Contactor 2 output is active
4	Fan Ctctr 3	Fan Contactor 3 output is active
5	Fan Ctctr 4	Fan Contactor 4 output is active
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Logix Inputs [Logix Inputs]

Linear Number: 687
Access Level: Service
Read/Write: Read Only

This parameter represents the inputs on the optional Logix IO XIO board.

Bit	Enum Text	Description
0	Input #1	Input #1
1	Input #2	Input #2
2	Input #3	Input #3
3	Input #4	Input #4
4	Input #5	Input #5
5	Input #6	Input #6
6	Input #7	Input #7
7	Input #8	Input #8
8	Input #9	Input #9
9	Input #10	Input #10

Bit	Enum Text	Description
10	Input #11	Input #11
11	Input #12	Input #12
12	Input #13	Input #13
13	Input #14	Input #14
14	Input #15	Input #15
15	Input #16	Input #16

Logix Outputs [Logix Outputs]

Linear Number: 688
Access Level: Service
Read/Write: Read Only

This parameter represents the outputs on the optional Logix IO XIO board.

Bit	Enum Text	Description
0	Output#1	Output#1
1	Output#2	Output#2
2	Output#3	Output#3
3	Output#4	Output#4
4	Output#5	Output#5
5	Output#6	Output#6
6	Output#7	Output#7
7	Output#8	Output#8
8	Output#9	Output#9
9	Output#10	Output#10
10	Output#11	Output#11
11	Output#12	Output#12
12	Output#13	Output#13
13	Output#14	Output#14
14	Output#15	Output#15
15	Output#16	Output#16

Heatpipe Inputs [Heatpipe Inputs]

Linear Number: 782
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the inputs on the XIO card assigned for the Heatpipe Drive Fan Control System. There are 16 inputs available. A ‘1’ indicates that the specific input of the card is active, and a ‘0’ means that specific input is missing.

Bit	Enum Text	Description
0	LR Fan1 Aux	Line Reactor Fan 1 Control Relay Auxiliary
1	LR Fan2 Aux	Line Reactor Fan 2 Control Relay Auxiliary
2	Cnv Fan3 Aux	Converter Fan 3 Control Relay Auxiliary
3	Cnv Fan4 Aux	Converter Fan 4 Control Relay Auxiliary
4	Cnv Fan5 Aux	Converter Fan 5 Control Relay Auxiliary
5	Cnv Fan6 Aux	Converter Fan 6 Control Relay Auxiliary
6	Cnv Fan7 Aux	Converter Fan 7 Control Relay Auxiliary
7	Cnv Fan8 Aux	Converter Fan 8 Control Relay Auxiliary
8	CMC Fan9 Aux	Common Mode Choke Fan 9 Control Relay Auxiliary
9	CMCFan10 Aux	Common Mode Choke Fan 9 Control Relay Auxiliary
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Heatpipe Outputs [Heatpipe Outputs]

Linear Number: 783
Access Level: Advanced
Read/Write: Read Only

This parameter displays the state of the outputs on the XIO card assigned for the Heatpipe Drive Fan Control System. There are 16 outputs available. A ‘1’ indicates that the specific output of the card is closed.

Bit	Enum Text	Description
0	LRFan1 Ctctr	Line Reactor Fan 1 Contactor output is active
1	LRFan2 Ctctr	Line Reactor Fan 2 Contactor output is active
2	CnvFan3Ctctr	Converter Fan 3 Contactor output is active
3	CnvFan4Ctctr	Converter Fan 4 Contactor output is active
4	CnvFan5Ctctr	Converter Fan 5 Contactor output is active
5	CnvFan6Ctctr	Converter Fan 6 Contactor output is active
6	CnvFan7Ctctr	Converter Fan 7 Contactor output is active

Bit	Enum Text	Description
7	CnvFan8Ctctr	Converter Fan 8 Contactor output is active
8	CMCFan9Ctctr	Common Mode Choke Fan 9 Contactor output is active
9	CMCFn10Ctctr	Common Mode Choke Fan 10 Contactor output is active
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Special Application Inputs [SpecApp Inputs]

Linear Number: 835
Access Level: Advanced
Read/Write: Read Only

This parameter displays the input to the optional XIO card required by Special application like Marine 1.

Bit	Enum Text	Description
0	Input #1	This input is defined based on the application
1	Input #2	This input is defined based on the application
2	Input #3	This input is defined based on the application
3	Input #4	This input is defined based on the application
4	Input #5	This input is defined based on the application
5	Input #6	This input is defined based on the application
6	Input #7	This input is defined based on the application
7	Input #8	This input is defined based on the application
8	Input #9	This input is defined based on the application
9	Input #10	This input is defined based on the application
10	Input #11	This input is defined based on the application
11	Input #12	This input is defined based on the application
12	Input #13	This input is defined based on the application
13	Input #14	This input is defined based on the application
14	Input #15	This input is defined based on the application
15	Input #16	This input is defined based on the application

If *Drv Application (751)* is set to Marine 1, then the following table defines *Special Application Input (835)*:

Input	Function	Value	Description
0	FAULT OVRID	0 = No Fault Override 1 = Override Faults	Drive starts to override certain faults. These faults will be enunciated as warnings.
1	SPEED/TRQ MODE	0 = Speed Control 1 = Torque Control	To select between operating the drive in either Speed or Torque control modes.
2	MT/DP	0 = Manual Thrust 1 = Dynamic Positioning	To select between Manual Thrust (AIN1 as reference) and Dynamic Positioning system control (AIN2 as reference) in AUTO mode.
3	LEAK DETECT	0 = Leak detected 1 = No Leak detected	To indicate leakage in the liquid cooled cabinets (fail safe).
4	DB FAN STATUS	0 = Fan Off 1= Fan On	To indicate the status of the DB fan.
5	MANUAL REQ	0 = Auto Mode 1 = Operator is requesting Manual Mode	This input reflects the state of the AUTO/MAN selector switch. It will not cause the drive to transition from AUTO to MANUAL mode until the MAN SPD RELEASE input is energized.
6	SPEED RELEASE	0 = Speed is frozen to output of speed regulator 1 = Release speed and use the front panel POT	This input is only active if the AUTO/MAN mode is in the Manual Position. When pressed, it completes the transition of Auto to Manual mode.
7	Not Used		
8	Not Used		
9	Not Used		
10	Not Used		
11	Not Used		
12	Not Used		
13	Not Used		
14	Not Used		
15	CARD LOSS	0 = Card is lost 1 = Card Healthy	To indicate the health of the Special Application card. It is wired fail safe so a loss of control power or XIO adapter will cause the drive to take the appropriate action.

Special Application Outputs [SpecApp Outputs]

Linear Number: 836
Access Level: Advanced
Read/Write: Read Only

This parameter displays the output of the optional XIO card required by Special application like Marine 1.

Bit	Enum Text	Description
0	Output#1	This output is defined based on the application
1	Output#2	This output is defined based on the application
2	Output#3	This output is defined based on the application
3	Output#4	This output is defined based on the application
4	Output#5	This output is defined based on the application

Bit	Enum Text	Description
5	Output#6	This output is defined based on the application
6	Output#7	This output is defined based on the application
7	Output#8	This output is defined based on the application
8	Output#9	This output is defined based on the application
9	Output#10	This output is defined based on the application
10	Output#11	This output is defined based on the application
11	Output#12	This output is defined based on the application
12	Output#13	This output is defined based on the application
13	Output#14	This output is defined based on the application
14	Output#15	This output is defined based on the application
15	Output#16	This output is defined based on the application

If *Drv Application (751)* is set to Marine 1, then the following table defines *Special Application Outputs (836)*:

Input	Function	Value	Description
0	FAULT OVRID	0 = Fault Override Inactive 1 = Fault Override Active	To indicate the state of the Fault Override mode in the drive.
1	ACTIVE FAULT OVRID	0 = No Faults Overridden 1 = Drive Faults Overridden	To indicate if any drive faults occurred and are overridden.
2	LOSS 4-20	0 = No Loss of 4-20mA 1 = Loss of 4-20mA	To indicate the loss of the 4-20mA analog input being used as the source of the command reference. This can be either speed or torque depending on the control mode.
3	DB ACTIVE	0 = Drive Not Braking 1 = Drive Braking	Output to indicate when the dynamic braking is active and the drive is braking.
4	SPEED/TRQMODE	0 = Speed Mode 1 = Torque Mode	Output to indicate and acknowledge to the system of a change in operating modes from Speed to Torque. This output does not indicate that the drive has actually changed modes. (See spec for more details)
5	MANUAL MODE	0 = Drive is in AUTO Mode 1 = Drive is in MANUAL mode	Output to indicate the current operation mode of the drive.
6	Not used		
7	Not used		
8	SPEED RELEASE	OFF = Drive is operating with AUTO reference FLASH = Speed Ref Frozen ON = Speed Ref has been released and is using the front panel speed POT.	This is an output to a pilot light to indicate the status of a requested change from AUTO to Manual Mode. It will be either OFF, FLASHING or ON based on the state of the transition.
9	Not used		
10	Not used		
11	DB Fan CNTCTR	0 = DB Fan Contactor Open 1 = DB Fan Contactor Close	Output to control the DB fan contactor.
12	READY	0 = Drive Not Ready 1 = Drive Ready	Output indicating when the drive is ready to run. This output is fed to the Manual Propulsion System.

Input	Function	Value	Description
13	FAULT	0 = Fault 1 = Not Fault	This output indicates to the Dynamic Positioning System that the drive has faulted. It is wired and configured fail safe in the case of a loss of the XIO card.
14	FAULT	0 = Fault 1 = Not Fault	This output indicates to the Manual Propulsion System that the drive has faulted. It is wired and configured fail safe in the case of a loss of the XIO card.
15	FAULT	0 = Fault 1 = Not Fault	This output indicates to the Automation System that the drive has faulted. It is wired and configured fail safe in the case of a loss of the XIO card.

XIO Configuration Errors [XIO Config Errs]

Linear Number: 594
Access Level: Advanced
Read/Write: Read Only

This parameter indicates the error in the XIO configuration. A '1' represents an indicated error, a '0' represents no error. The error results from the same slot being assigned to two or more XIO boards, or when the board is not installed in the assigned slot. The following error messages are displayed:

Bit	Enum Text	Description
0	Stnd IO Cnfg	Standard XIO configuration error
1	Stnd IO Cnft	Standard XIO conflict error
2	Ext Flt Cnfg	External/Optional XIO configuration error
3	Ext Flt Cnft	External/Optional XIO conflict error
4	Liqd IO Cnfg	Liquid-Cooled XIO configuration error
5	Liqd IO Cnft	Liquid-Cooled XIO conflict error
6	LogixIO Cnfg	Logix XIO configuration error
7	LogixIO Cnft	Logix XIO conflict error
8	HPipeIO Cnfg	Heatpipe drive XIO configuration error
9	HPipeIO Cnft	Heatpipe drive XIO conflict error
10	SpecApp Cnfg	Special Application XIO configuration error
11	SpecApp Cnft	Special Application XIO conflict error
12	Unused	
13	Unused	
14	Unused	
15	Unused	

XIO Standard Input/Output [XIO Standard IO]

Linear Number: 592
Default Value: Card # 1
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the XIO slot number for the Standard Input Output XIO. Standard Input Output XIO board comes as part of the standard drive package. Typical value of this parameter is Slot 1. Following options are available:

Value	Enum Text	Description
0	Unassigned	—
1	Card # 1	Card Slot # 1
2	Card # 2	Card Slot # 2
3	Card # 3	Card Slot # 3
4	Card # 4	Card Slot # 4
5	Card # 5	Card Slot # 5
6	Card # 6	Card Slot # 6

XIO External Faults [XIO Ext Faults]

Linear Number: 593
Default Value: Unassigned
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the XIO slot number for the External Faults XIO. External Faults XIO board does not come as part of the standard drive package. Following options are available:

Value	Enum Text	Description
0	Unassigned	—
1	Card # 1	Card Slot # 1
2	Card # 2	Card Slot # 2
3	Card # 3	Card Slot # 3
4	Card # 4	Card Slot # 4
5	Card # 5	Card Slot # 5
6	Card # 6	Card Slot # 6

XIO Liquid Cooling Inputs [XIO Liquid Cool]

Linear Number: 64
Default Value: Unassigned
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the XIO slot number for the Liquid Cooling System XIO board. Liquid Cooling System XIO board does not come as part of the standard drive package. Following options are available:

Value	Enum Text	Description
0	Unassigned	—
1	Card # 1	Card Slot # 1
2	Card # 2	Card Slot # 2
3	Card # 3	Card Slot # 3
4	Card # 4	Card Slot # 4
5	Card # 5	Card Slot # 5
6	Card # 6	Card Slot # 6

XIO Logix Inputs/Outputs [XIO Logix IO]

Linear Number: 686
Default Value: Unassigned
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the XIO slot number for the Logix IO XIO. This is an option available where the drive can be programmed with basic customer-specific Logical I/O functionality using the 16 isolated inputs and 16 isolated outputs of the XIO board. The following options are available:

Value	Enum Text	Description
0	Unassigned	—
1	Card # 1	Card Slot # 1
2	Card # 2	Card Slot # 2
3	Card # 3	Card Slot # 3
4	Card # 4	Card Slot # 4
5	Card # 5	Card Slot # 5
6	Card # 6	Card Slot # 6

XIO Heatpipe [XIO Heatpipe]

Linear Number: 781
Default Value: Unassigned
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the XIO slot number for the Heatpipe Input/Output card. A Heatpipe XIO board does not come as part of the standard drive package. Following options are available:

Value	Enum Text	Description
0	Unassigned	—
1	Card # 1	Card Slot # 1
2	Card # 2	Card Slot # 2
3	Card # 3	Card Slot # 3
4	Card # 4	Card Slot # 4
5	Card # 5	Card Slot # 5
6	Card # 6	Card Slot # 6

XIO Special Application [XIO Special App]

Linear Number: 833
Default Value: Unassigned
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the XIO slot number for the Special Applications Input/Output card. A Special Applications XIO board does not come as part of the standard drive package. Following options are available:

Value	Enum Text	Description
0	Unassigned	—
1	Card # 1	Card Slot # 1
2	Card # 2	Card Slot # 2
3	Card # 3	Card Slot # 3
4	Card # 4	Card Slot # 4
5	Card # 5	Card Slot # 5
6	Card # 6	Card Slot # 6

XIO Special Application Type [XIO SpecApp Type]

Linear Number: 834
Default Value: Marine 1
Access Level: Advanced
Read/Write: Read/Write

When a Special Applications XIO card is assigned to a drive, the predetermined layout of the XIO card I/O must be defined by this parameter. At the time of release, only 1 Special Application has been defined. As more applications are developed, additional layouts will be defined by this parameter. Four additional applications have been reserved for future expansion.

Value	Enum Text	Description
0	Marine 1	Marine 1
1	RefIn Select	Reserved
2	Application3	Reserved
3	Application4	Reserved
4	Application5	Reserved

Standard XIO Configurable Output 1 [StndXIO Config1]

Linear Number: 439
Default Value: Reverse
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 1 on the XIO board from a list of 28 available options. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running

Value	Enum Text	Description
24	Custom 1	Custom 1 Output(1)
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 2 [StndXIO Config2]

Linear Number: 458
Default Value: Jog
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 2 on the XIO board from a list of 28 available options. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 3 [StndXIO Config3]

Linear Number: 459
Default Value: Remote
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 3 on the Standard XIO board from a list of 28 available options. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 4 [StndXIO Config4]

Linear Number: 460
Default Value: Test Mode
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 4 on the XIO board from a list of 28 available options. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 5 [StndXIO Config5]

Linear Number: 461
Default Value: At Speed
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 5 on the Standard XIO board from a list of 28 available options. A '1' represents that the condition is true. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 6 [StndXIO Config6]

Linear Number: 462
Default Value: Thermal Alrm
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 6 on the Standard XIO board from a list of 28 available options. A '1' represents that the condition is true. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 7 [StndXIO Config7]

Linear Number: 463
Default Value: Sync Xfer
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 7 on the Standard XIO board from a list of 28 available options. A '1' represents that the condition is true. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Standard XIO Configurable Output 8 [StndXIO Config8]

Linear Number: 464
Default Value: In Trq Limit
Access Level: Advanced
Read/Write: Read/Write

This parameter allows the user to select/configure output 8 on the Standard XIO board from a list of 28 available options. A '1' represents that the condition in the drive is true. The list is as follows:

Value	Enum Text	Description
0	Unassigned	The output is unassigned
1	Reverse	Drive is running in Reverse direction
2	Drv Stopping	Drive is Stopping
3	Auto Restart	Drive is in Auto Restart mode
4	Drv Overload	Drive is running in an overload condition
5	Mtr Overload	Motor is running in an overload condition
6	Thermal Alrm	Drive has issued an alarm pertaining to its thermal performance e.g. Loss of converter airflow in air cooled drives or loss of coolant level in liquid cool drives.
7	Line Loss	Loss of line input voltage
8	CtrlPwr Loss	Loss of 120V AC Control Power
9	Test Mode	Drive is in Test Mode
10	At Speed	Drive is at commanded Speed
11	Sync Xfer	Synchronous transfer is enabled
12	On Bypass	Drive is running on Bypass
13	In Trq Limit	Drive is in Torque Limit
14	Drive Accel	Drive is accelerating
15	Drive Decel	Drive is decelerating
16	Jog	Drive is in Jog Mode
17	Remote	Drive is in Remote Mode
18	IsoFan1Ctctr	Turn Cooling Fan 1 in the Isolation Transformer cabinet
19	IsoFan2Ctctr	Turn Cooling Fan 2 in the Isolation Transformer cabinet
20	Field Enable	Field Current regulator is enabled (Synchronous motor only)
21	Field Start	Start command to the field regulator (Synchronous motor only)
22	Spd Cmd Loss	Speed Command Loss
23	Drv Running	Drive is running
24	Custom 1	Custom 1 Output(1)

Value	Enum Text	Description
25	Custom 2	Custom 2 Output(1)
26	Custom 3	Custom 3 Output(1)
27	Custom 4	Custom 4 Output(1)

(1) Contact factory for availability.

Logix XIO Register A [Logix Register A]

Linear Number: 714
Default Value: 0
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read/Write

This parameter is reserved for future use only, and represents a register within the drive that will have the ability to be written to remotely. There is no code in the firmware utilizing this register.

Logix XIO Register B [Logix Register B]

Linear Number: 715
Default Value: 0
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read/Write

This parameter is reserved for future use only, and represents a register within the drive that will have the ability to be written to remotely. There is no code in the firmware utilizing this register.

Metering Parameters

Motor Speed Hz [Motor Speed Hz]

Linear Number: 487
Minimum Value: -120.0 Hz
Maximum Value: 120.0 Hz
Access Level: Basic
Read/Write: Read Only

This parameter displays the measured motor speed in Hz.

Motor Speed in RPM [Motor Speed RPM]

Linear Number: 363
Minimum Value: -6000 rpm
Maximum Value: 6000 rpm
Access Level: Basic
Read/Write: Read Only

This parameter is the measured rotor speed in rpm. It is used by the programming terminal and can also be assigned to analog output to drive an optional analog meter.

Motor Current [Motor Current]

Linear Number: 361
Minimum Value: 0 A
Maximum Value: 1500 A
Access Level: Basic
Read/Write: Read Only

This parameter is the measured RMS value of the motor current. It is used by the programming terminal and can also be assigned to analog output to drive an optional analog meter.

Motor Voltage [Motor Voltage]

Linear Number: 362
Minimum Value: 0 V
Maximum Value: 8000 V
Access Level: Basic
Read/Write: Read Only

This parameter is the measured RMS motor terminal voltage (line-to-line). It is used by the programming terminal and can also be assigned to analog output to drive an optional analog meter.

Motor Power [Motor Power]

Linear Number:	364
Minimum Value:	-15000 kW
Maximum Value:	15000 kW
Access Level:	Basic
Read/Write:	Read Only

For firmware revision 8.001 and earlier, or if *SpecialFeatures2 (507)*, bit 6 is not set, this parameter displays the estimated motor air-gap power in kW. For firmware revision 8.002 and higher, if *SpecialFeatures2*, bit 6 is set, this parameter displays the estimated drive output power in kW. The parameter is used by the programming terminal and can also be assigned to analog output to drive an optional analog meter.

Line Current [Line Current]

Linear Number:	500
Minimum Value:	0 A
Maximum Value:	999 A
Access Level:	Basic
Read/Write:	Read Only

This parameter displays the measured input line current in Amperes.

Line Voltage [Line Voltage]

Linear Number:	324
Minimum Value:	0 V
Maximum Value:	8000 V
Access Level:	Basic
Read/Write:	Read Only

This parameter displays the line voltage in engineering unit. For firmware revision 8.001 and older, it displays the estimated voltage at the PCC (point of common coupling). For firmware revision 8.002 and newer, if *SpecialFeatures2 (507)*, bit 7 is not set, this parameter displays the estimated voltage at the drive input voltage (before the Line Reactor). If *SpecialFeatures2*, bit 7 is set, this parameter displays the estimated voltage at the PCC.

Line Frequency [Line Frequency]

Linear Number:	657
Minimum Value:	-100.0 Hz
Maximum Value:	100.0 Hz
Access Level:	Basic
Read/Write:	Read Only

This parameter displays the frequency of the line voltage. This parameter is a filtered version of *Master Line Freq (334)* in the Feedback group.

DC Link Current [DC Link Current]

Linear Number: 116
Minimum Value: 0 A
Maximum Value: 999 A
Access Level: Basic
Read/Write: Read Only

This parameter displays the measured DC Link current in Amperes.

Ground Fault Current [GndFault Current]

Linear Number: 367
Minimum Value: 0.0 A
Maximum Value: 10.0 A
Access Level: Basic
Read/Write: Read Only

This parameter is the RMS value of the ground fault current measured from the optional ground fault Current Transformer (CT). The ground fault CT is used only for drives without an input isolation transformer and measures the zero sequence current flowing in the drive input.

Line Power Factor[1] [Line PowerFactor]

Linear Number: 303
Minimum Value: -1.00
Maximum Value: 1.00
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured power factor at the input of the drive. It is calculated as the ratio of the real power (kW) to total power (kVA).

Control AC#1 RMS [Control AC#1 RMS]

Linear Number: 118
Minimum Value: 0.0 V
Maximum Value: 300.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured RMS value of the control voltage applied to AC/DC Power Supply#1.

Control AC#2 RMS [Control AC#2 RMS]

Linear Number: 77
Minimum Value: 0.0 V
Maximum Value: 300.0 V
Access Level: Advanced
Read/Write: Read Only

(1) Contact factory for availability.

This parameter displays the measured RMS value of the control voltage applied to AC/DC Power Supply#2 in a multi power supply system.

Control AC#3 RMS [Control AC#3 RMS]

Linear Number: 79
Minimum Value: 0.0 V
Maximum Value: 300.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured RMS value of the control voltage applied to AC/DC Power Supply#3 in a multi power supply system.

Control AC#4 RMS [Control AC#4 RMS]

Linear Number: 92
Minimum Value: 0.0 V
Maximum Value: 300.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured RMS value of the control voltage applied to AC/DC Power Supply#4 in a multi power supply system.

Control Power 56V [Control 56V]

Linear Number: 121
Minimum Value: 0.0 V
Maximum Value: 72.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured value of the 56V output from the AC/DC power supply feeding the DC/DC converter.

Control Power 5V [Control 5V]

Linear Number: 139
Minimum Value: 0.0 V
Maximum Value: 8.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured value of the 5V output from the DC/DC converter to the Drive Processor Module (DPM).

Control Power 15V [Control 15V]

Linear Number: 142
Minimum Value: 0.0 V
Maximum Value: 24.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the 15V DC output from the DC/DC converter to the Analog Control Board (ACB).

Control Power 24V Hall Effect Current Sensor [Control HECS]

Linear Number: 156
Minimum Value: 0.0 V
Maximum Value: 36.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured value of 24V output from the DC/DC converter to the Current sensors (HECS).

Control Power Redundant 5V [Control 5V Redn]

Linear Number: 237
Minimum Value: 0.0 V
Maximum Value: 8.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured value of the redundant 5V output from the DC/DC converter.

IGDPS 56V [IGDPS 56V]

Linear Number: 101
Minimum Value: 0.0 V
Maximum Value: 72.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured value of the 56V output from the AC/DC power supply to the Isolated Gate Driver Power Supply (IGDPS). When an UPS is not installed in the drive, this parameter is same as control voltage indicated by *Control 56V (121)*.

Control Power 24V XIO [Control XIO]

Linear Number: 196
Minimum Value: 0.0 V
Maximum Value: 36.0 V
Access Level: Advanced
Read/Write: Read Only

This parameter displays the measured value of the 24V output from the DC/DC converter to the XIO board.

Elapsed MWh[1] [Elapsed MWh]

Linear Number: 987
Minimum Value: 0 MWh
Maximum Value: 65535 MWh
Access Level: Advanced
Read/Write: Read Only

This variable displays the total Mega-Watt-Hours consumed by the drive. This variable is reserved for future use.

Common-Mode Current [ComMode Current]

Linear Number:	697
Minimum Value:	0.00 A
Maximum Value:	655.35 A
Access Level:	Service
Read/Write:	Read Only

This parameter is for Direct-to-Drives only and displays measured RMS current in the Neutral Resistor. It is calculated by measuring the difference in voltage between the neutral of both the line and motor filter capacitors and dividing it by the programmed *Neutral Resistor (680)* value.

Input Power [Input Power]

Linear Number:	753
Minimum Value:	-15000 kW
Maximum Value:	15000 kW
Access Level:	Service
Read/Write:	Read Only

This parameter in the *Metering* group displays the real power consumption by the drive. The measurement includes the line-reactor or transformer losses.

(1) Contact factory for availability.

PWM Parameters

Rectifier Pulse Number [Rec Pulse Number]

Linear Number: 95
Minimum Value: 0
Maximum Value: 36
Access Level: Service
Read/Write: Read Only

This parameter indicates the number of pulses per cycle in the switching pattern for the rectifier on PWM Rectifier drives.

Inverter Pulse Number [Inv Pulse Number]

Linear Number: 295
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter indicates the number of pulses per cycle in the switching pattern for the inverter.

Inverter Pulse-Width Modulation Pattern [Inv PWM Pattern]

Linear Number: 378
Access Level: Service
Read/Write: Read Only

This parameter displays the PWM firing pattern that is being used by the inverter power semiconductor devices. Depending on the stator frequency and the switching frequency, the inverter will be firing in one of the three different PWM patterns:

Value	Enum Text	Description
0	Synch Mod	Synchronous Modulation
1	SHE	Selective Harmonic Elimination
2	Asynch Mod	Asynchronous Modulation
3	Pattern 3	Not Currently Used
4	Pattern 4	Not Currently Used
5	Pattern 5	Not Currently Used

The following table illustrates typically at what speeds each pattern is utilized:

Synchronous Modulation	(Medium speed)
Selective Harmonic Elimination	(High speed)
Asynchronous Modulation	(Low Speed)

PWM Modulation Index [PWM Mod Index]

Linear Number: 311
Minimum Value: 0.00
Maximum Value: 1.50
Access Level: Service
Read/Write: Read Only

This parameter displays the value of modulation index at which the inverter is operating. The value can change from 0.2 to 0.98 when drive is operating with Space Vector Modulation technique and is set to 1.03 when the drive uses Selective Harmonic Elimination technique.

DC Current Reference 5 pulse to 3 pulse [Idc 3 Pulse]

Linear Number: 756
Minimum Value: 0.000 pu
Maximum Value: 10.000 pu
Access Level: Service
Read/Write: Read Only

This parameter indicates the DC link current value in per unit at which a PWM rectifier will switch from 5-pulse firing to 3-pulse firing. If the DC link current is more than the parameter value and the DC link voltage reference (*Vdc Reference*) is below *Vdc Ref 5p to 3p (379)*, the drive will switch from 5-pulse to 3-pulse. This value is calculated from the rated motor current, rectifier device current rating and the *Idc Fac 5p to 3p (560)*.

DC Current Reference 7 pulse to 5 pulse [Idc 5 Pulse]

Linear Number: 757
Minimum Value: 0.000 pu
Maximum Value: 10.000 pu
Access Level: Service
Read/Write: Read Only

This parameter indicates the DC link current value in per unit at which a PWM rectifier will switch from 7-pulse firing to 5-pulse firing. If the DC link current is more than the parameter value and the DC link voltage reference (*Vdc Reference*) is below *Vdc Ref 7p to 5p (465)*, the drive will switch from 7-pulse to 5-pulse. This value is calculated from the rated motor current, rectifier device current rating and the *Idc Fac 7p to 5p (640)*.

DC Voltage Reference 5 pulse to 3 pulse [Vdc Ref 5p to 3p]

Linear Number: 379
Default Value: 0.10 pu
Minimum Value: 0.00 pu
Maximum Value: 1.50 pu
Access Level: Service
Read/Write: Read/Write

This parameter specifies the point at which a PWM rectifier will switch from 5-pulse firing to 3-pulse firing. If the DC link voltage reference (*Vdc Reference*) drops below the programmed value and the DC link current is more than *Idc 3 Pulse (756)*, the drive will switch from 5-pulse to 3-pulse. The purpose of this parameter is to reduce the amount of losses and heating in the rectifier by reducing the switching pulse number.

DC Voltage Reference 7 pulse to 5 pulse [Vdc Ref 7p to 5p]

Linear Number:	465
Default Value:	0.50 pu
Minimum Value:	0.00 pu
Maximum Value:	1.50 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the point at which a PWM rectifier will switch from 7-pulse firing to 5-pulse firing. If the DC link voltage reference (*Vdc Reference*) drops below the programmed value and the DC link current is more than *Idc 5 Pulse (757)*, the drive will switch from 7-pulse to 5-pulse. The purpose of this parameter is to reduce the amount of losses and heating in the rectifier by reducing the switching pulse number.

DC Current Factor 5 pulse to 3 pulse [Idc Fac 3p to 5p]

Linear Number:	560
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	2.00
Access Level:	Service
Read/Write:	Read/Write

This parameter is used to modify the default level of DC current reference at which the rectifier will switch from 5 pulse to 3 pulse operation. For normal drive operation, this parameter does not need to be changed from the default of 1.00 pu because most drives can run in 7-pulse mode for the entire DC current range. The purpose of this parameter is to reduce the amount of losses and heating in the rectifier by reducing the switching pulse number.

DC Current Factor 7 pulse to 5 pulse [Idc Fac 7p to 5p]

Linear Number:	640
Default Value:	1.00
Minimum Value:	0.00
Maximum Value:	2.00
Access Level:	Service
Read/Write:	Read/Write

This parameter is used to modify the default level of DC current reference at which the rectifier will switch from 7 pulse to 5 pulse operation. For normal drive operation, this parameter does not need to be changed from the default of 1.00 pu because most drives can run in 7-pulse mode for the entire DC current range. The purpose of this parameter is to reduce the amount of losses and heating in the rectifier by reducing the switching pulse number.

Rectifier PWM Max Frequency [Rec PWM Max Freq]

Linear Number:	155
Default Value:	440 Hz
Minimum Value:	100 Hz
Maximum Value:	1000 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter is valid for PWM rectifier drives only and specifies the maximum switching frequency of the power semiconductor devices.

Inverter PWM Max Frequency [Inv PWM Max Freq]

Linear Number:	154
Default Value:	440 Hz
Minimum Value:	100 Hz
Maximum Value:	1000 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the maximum switching frequency of the power semiconductor devices used in the inverter.

Rectifier Device Gating Sequence A [Rec DvcGat SeqnA]

Linear Number:	620
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read Only

This parameter displays the device firing sequence on Fiber Optic Interface Board A on the rectifier side.

Rectifier Device Gating Sequence B [Rec DvcGat SeqnB]

Linear Number:	621
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read Only

This parameter displays the device firing sequence on Fiber Optic Interface Board B on the rectifier side.

Rectifier Device Gating Sequence C [Rec DvcGat SeqnC]

Linear Number: 626
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the device firing sequence on Fiber Optic Interface Board C on the rectifier side.

Rectifier Device Diagnostic Feedback A [Rec DvcDiag FbkA]

Linear Number: 627
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board A on the rectifier side.

Rectifier Device Diagnostic Feedback B [Rec DvcDiag FbkB]

Linear Number: 628
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board B on the rectifier side.

Rectifier Device Diagnostic Feedback C [Rec DvcDiag FbkC]

Linear Number: 629
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board C on the rectifier side.

Inverter Device Gating Sequence [Inv DvcGat Seqn]

Linear Number: 584
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the device firing sequence on the inverter side. For a drive with more than one series device, the same firing sequence is applied to all the fiber optic boards.

Inverter Device Diagnostic Feedback A [Inv DvcDiag FbkA]

Linear Number:	608
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board A on the inverter side.

Inverter Device Diagnostic Feedback B [Inv DvcDiag FbkB]

Linear Number:	609
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board B on the inverter side.

Inverter Device Diagnostic Feedback C [Inv DvcDiag FbkC]

Linear Number:	618
Minimum Value:	0
Maximum Value:	65535
Access Level:	Service
Read/Write:	Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board C on the inverter side.

Liquid Cooling Parameters

Coolant Temperature C [Coolant Temp C]

Linear Number: 380
Minimum Value: 0 C
Maximum Value: 65535 C
Access Level: Service
Read/Write: Read Only

This parameter specifies the coolant temperature in Degree Celsius on a PowerFlex 7000 Liquid-Cooled drive.

Coolant Temperature F [Coolant Temp F]

Linear Number: 381
Minimum Value: 0 F
Maximum Value: 65535 F
Access Level: Service
Read/Write: Read Only

This parameter specifies the coolant temperature in Fahrenheit on a PowerFlex 7000 Liquid-Cooled drive.

Fan Configuration for Liquid-Cooled Drive Heat Exchangers [Fan Config]

Linear Number: 477
Default Value: 3 In-line
Access Level: Service
Read/Write: Read/Write

This parameter specifies the fan configuration for the heat exchanger used on PowerFlex Liquid-Cooled drives. This parameter lets the drive know how many fans are installed, and their configuration. The control can then properly turn the fans on and cool the system. The following are the available configurations:

Value	Enum Text	Description
0	3 In-line	3 fans across the heat exchanger in series
1	4 Block	4 fans in a square configuration
2	4 Redundant	4 fans in a square configuration, with 4 redundant fans
3	No Fans	No fans (Liquid-to-Liquid heat exchanger)
4	Style #5	Reserved for Future Use

Coolant Temperature Warning [Coolant Temp Wrn]

Linear Number: 478
Default Value: 49 C
Minimum Value: 35 C
Maximum Value: 85 C
Access Level: Service
Read/Write: Read/Write

This parameter specifies the value of coolant temperature that will initiate a Coolant Temperature warning. The temperature is measured from a thermistor in the cooling system.

The warning setpoint also controls where the two fan groups turn on. Fan Group1 is 11 degrees below the warning setpoint. Fan Group 2 turns on at 5 degrees below the warning setpoint.

Coolant Temperature Trip [Coolant Temp Trp]

Linear Number: 483
Default Value: 54 C
Minimum Value: 35 C
Maximum Value: 85 C
Access Level: Service
Read/Write: Read/Write

This parameter specifies the minimum value of coolant temperature that will initiate a Coolant Temperature fault. The temperature is measured from a thermistor in the cooling system.

Pump Duty Cycle [Pump Duty Cycle]

Linear Number: 432
Default Value: 8 hr
Minimum Value: 1 hr
Maximum Value: 720 hr
Access Level: Service
Read/Write: Read/Write

This parameter specifies the duty cycle for the pumps which circulate the liquid coolant. The duty cycle is designed to periodically run each pump. After a pump has been run continually for the set period of time, it will stop and the other pump will take over for a similar continuous period of time before switching back to the first pump.

Fan Duty Cycle [Fan Duty Cycle]

Linear Number: 449
Default Value: 8 hr
Minimum Value: 1 hr
Maximum Value: 720 hr
Access Level: Service
Read/Write: Read/Write

This parameter specifies the duty cycle for the liquid cooled Heat exchanger fans. The duty cycle is designed to periodically run each fan. After a fan group has been run continually for the set period of time, it will stop and another fan group will take over for a similar continuous period of time.

Thermal Manager Parameters

Rectifier Device Junction Temperature [RecDvcJunctnTemp]

Linear Number: 566
Minimum Value: -40.0 C
Maximum Value: 1000.0 C
Access Level: Service
Read/Write: Read Only

This variable displays the estimated SGCT junction temperature calculated by the Thermal Manager.

Inverter Device Junction Temperature [InvDvcJunctnTemp]

Linear Number: 884
Minimum Value: -40.0 C
Maximum Value: 1000.0 C
Access Level: Service
Read/Write: Read Only

For future use.

Calculated Rectifier Device Loss [Calc RecDvc Loss]

Linear Number: 578
Minimum Value: 0 Watt
Maximum Value: 4000 Watt
Access Level: Service
Read/Write: Read Only

This variable displays the estimated SGCT loss in rectifier calculated by the Thermal Manager.

Calculated Inverter Device Loss [Calc InvDvc Loss]

Linear Number: 882
Minimum Value: 0 Watt
Maximum Value: 4000 Watt
Access Level: Service
Read/Write: Read Only

For future use.

Rectifier Heatsink R_θ [Rec HSink RTheta]

Linear Number: 582
Minimum Value: 0.00000 C/W
Maximum Value: 0.65535 C/W
Access Level: Service
Read/Write: Read Only

This variable displays the estimated heatsink R_Θ calculated by the Thermal Manager.

Inverter Heatsink R_θ [Inv HSink RTheta]

Linear Number: 881
Minimum Value: 0.00000 C/W
Maximum Value: 0.65535 C/W
Access Level: Service
Read/Write: Read Only

For future use.

SGCT Junction Temperature Trip [JunctionTemp Trp]

Linear Number: 574
Default Value: 120.0 C
Minimum Value: -40.0 C
Maximum Value: 200.0 C
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level, in Celsius, which *RecDvcJunctnTemp (566)* in the Thermal Model must exceed before a *Junction OvrTemp* fault is indicated.

SGCT Junction Temperature Warning [JunctionTemp Wrn]

Linear Number: 577
Default Value: 112.5 C
Minimum Value: -40.0 C
Maximum Value: 150.0 C
Access Level: Service
Read/Write: Read/Write

This parameter specifies the level, in Celsius, which *RecDvcJunctnTemp (566)* in the Thermal Model must exceed before a *Junction OvrTemp* warning is indicated.

Model Airflow Nominal [Model AirFlw Nom]

Linear Number: 780
Default Value: 1040 ft/m
Minimum Value: 0 ft/m
Maximum Value: 2000 ft/m
Access Level: Service
Read/Write: Read/Write

This parameter specifies the nominal airflow velocity in the drive. This is usually set during commissioning of the drive by using the measurements from the TFB3 airflow sensors and indicates normal airflow in the converter cabinet. On Heatpipe drives, if any of the airflow speed monitored on the rectifier power stacks is lower than this threshold, the Thermal Manager shall apply a thermal correction due to low airflow. For every 104 ft/m drop in airflow speed, 1 °C is added to the estimated SGCT junction temperature, *RecDvcJunctnTemp (566)*.

Elevation [Elevation]

Linear Number: 573
Default Value: 1000
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the elevation level of the drive location.

Value	Enum Text	Description
0	1000	0 to 1000 meter
1	2000	1000 to 2000 meter
2	3000	2000 to 3000 meter
3	4000	3000 to 4000 meter
4	5000	4000 to 5000 meter
5	6000	5000 to 6000 meter

Thermal Protection Parameters

Channel A [Channel A]

Linear Number: 496
Access Level: Monitor
Read/Write: Read Only

Displays the location of the temperature feedback board (TFB) connected via channel A.

Value	Enum Text	Description
0	NotAvailable	No TFB declared
1	RectHSink 2U	TFB on Rectifier heatsink 2U declared
2	RectHSink 2V	TFB on Rectifier heatsink 2V declared
3	RectHSink 2W	TFB on Rectifier heatsink 2W declared
4	Inv Heatsink	TFB on Inverter heatsink declared
5	DB Cabinet	TFB on Dynamic Braking cabinet declared
6	Other	Not Used Bit

Channel B [Channel B]

Linear Number: 547
Access Level: Monitor
Read/Write: Read Only

Displays the location of the temperature feedback board (TFB) connected via channel B.

Value	Enum Text	Description
0	NotAvailable	No TFB declared
1	RectHSink 2U	TFB on Rectifier heatsink 2U declared
2	RectHSink 2V	TFB on Rectifier heatsink 2V declared
3	RectHSink 2W	TFB on Rectifier heatsink 2W declared
4	Inv Heatsink	TFB on Inverter heatsink declared
5	DB Cabinet	TFB on Dynamic Braking cabinet declared
6	Other	Not Used Bit

Channel C [Channel C]

Linear Number: 497
Access Level: Monitor
Read/Write: Read Only

Displays the location of the temperature feedback board (TFB) connected via channel C.

Value	Enum Text	Description
0	NotAvailable	No TFB declared
1	RectHSink 2U	TFB on Rectifier heatsink 2U declared
2	RectHSink 2V	TFB on Rectifier heatsink 2V declared
3	RectHSink 2W	TFB on Rectifier heatsink 2W declared
4	Inv Heatsink	TFB on Inverter heatsink declared
5	DB Cabinet	TFB on Dynamic Braking cabinet declared
6	Other	Not Used Bit

ChA Heatsink Temperature [ChA HeatsinkTemp]

Linear Number: 499
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Monitor
Read/Write: Read Only

This variable displays the heatsink temperature measured by the temperature feedback board via channel A. Refer to variable *Channel A (496)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChA Ambient Temperature [ChA Ambient Temp]

Linear Number: 558
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Monitor
Read/Write: Read Only

This variable displays the ambient temperature measured by the temperature feedback board via channel A. Refer to variable *Channel A (496)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChA Airflow [ChA Airflow]

Linear Number: 788
Minimum Value: -2000 ft/m
Maximum Value: 2000 ft/m
Access Level: Monitor
Read/Write: Read Only

This variable displays the airflow velocity measured by the temperature feedback board via channel A. Refer to variable *Channel A (496)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChB Heatsink Temperature [ChB HeatsinkTemp]

Linear Number: 808
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Monitor
Read/Write: Read Only

This variable displays the heatsink temperature measured by the temperature feedback board via channel B. Refer to variable *Channel B (547)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChB Ambient Temperature [ChB Ambient Temp]

Linear Number: 809
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Monitor
Read/Write: Read Only

This variable displays the ambient temperature measured by the temperature feedback board via channel B. Refer to variable *Channel B (547)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChB Airflow [ChB Airflow]

Linear Number: 810
Minimum Value: -2000 ft/m
Maximum Value: 2000 ft/m
Access Level: Monitor
Read/Write: Read Only

This variable displays the airflow velocity measured by the temperature feedback board via channel B. Refer to variable *Channel B (547)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChC Heatsink Temperature [ChC HeatsinkTemp]

Linear Number: 793
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Monitor
Read/Write: Read Only

This variable displays the heatsink temperature measured by the temperature feedback board via channel C. Refer to variable *Channel C (497)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChC Ambient Temperature [ChC Ambient Temp]

Linear Number: 794
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Monitor
Read/Write: Read Only

This variable displays the ambient temperature measured by the temperature feedback board via channel C. Refer to variable *Channel C (497)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChC Airflow [ChC Airflow]

Linear Number: 795
Minimum Value: -2000 ft/m
Maximum Value: 2000 ft/m
Access Level: Monitor
Read/Write: Read Only

This variable displays the airflow velocity measured by the temperature feedback board via channel C. Refer to variable *Channel C (497)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChA Gate Power Supply [ChA GatePowerSup]

Linear Number: 807
Minimum Value: 0.0 V
Maximum Value: 30.0 V
Access Level: Advanced
Read/Write: Read Only

This variable displays the gate power supply level measured by the temperature feedback board via channel A. Refer to variable *Channel A (496)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChB Gate Power Supply [ChB GatePowerSup]

Linear Number: 805
Minimum Value: 0.0 V
Maximum Value: 30.0 V
Access Level: Advanced
Read/Write: Read Only

This variable displays the gate power supply level measured by the temperature feedback board via channel B. Refer to variable *Channel B (547)* to see the location of the temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

ChC Gate Power Supply [ChC GatePowerSup]

Linear Number:	796
Minimum Value:	0.0 V
Maximum Value:	30.0 V
Access Level:	Advanced
Read/Write:	Read Only

This variable displays the gate power supply level measured by the temperature feedback board via channel C. Refer to variable *Channel C (497)* to see the location of temperature feedback board. This feature is only available on newer temperature feedback boards (TFB 3rd generation and newer).

Heatsink Temperature Warning [HeatSinkTemp Wrn]

Linear Number:	892
Minimum Value:	0 C
Maximum Value:	200 C
Access Level:	Service
Read/Write:	Read Only

This is a Heatpipe drive dedicated variable. It displays the temperature level, in Celsius, to which the heatsink temperature must exceed before an over temperature warning is indicated. This warning level is dynamically calculated by the drive and is a function of ambient temperature.

Heatsink Temperature Trip [HeatSinkTemp Trp]

Linear Number:	893
Minimum Value:	0 C
Maximum Value:	200 C
Access Level:	Service
Read/Write:	Read Only

This is a Heatpipe drive dedicated variable. It displays the temperature level, in Celsius, to which the heatsink temperature must exceed before an over temperature fault is indicated. This trip level is dynamically calculated by the drive and is a function of ambient temperature.

Heatpipe Parameters

Active Fan Set [Active Fan Set]

Linear Number: 815
Access Level: Monitor
Read/Write: Read Only

This is a Heatpipe drive dedicated variable. It displays the set of fans selected by the drive based on the fan duty-cycle and the fan status. These are the fans to be turned ON when the drive is started. The number displayed is a Hexadecimal number.

Example, *Active Fan Set* with value of 0x013E means:
- LR Fan2 is active
- CNV Fan3 is active
- CNV Fan4 is active
- CNV Fan5 is active
- CNV Fan6 is active
- CMC Fan9 is active

In binary Hexadecimal 0x013E is translated to 0001 0011 1110.

0	1	0	0	1	1	1	1	1	0
CMC10	CMC9	CNV8	CNV7	CNV6	CNV5	CNV4	CNV3	LR2	LR1

Bit	Enum Text	Description
0	LR1 Runtime	Line Reactor Fan 1 active
1	LR2 Runtime	Line Reactor Fan 2 active
2	Cnv3 Runtime	Converter Fan 3 active
3	Cnv4 Runtime	Converter Fan 4 active
4	Cnv5 Runtime	Converter Fan 5 active
5	Cnv6 Runtime	Converter Fan 6 active
6	Cnv7 Runtime	Converter Fan 7 active
7	Cnv8 Runtime	Converter Fan 8 active
8	CMC9 Runtime	Common Mode Choke Fan 9 active
9	CMC10Runtime	Common Mode Choke Fan 10 active
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Line Reactor Air Pressure [LR AirPressure]

Linear Number: 958
Minimum Value: -10.0 V
Maximum Value: 10.0 V
Access Level: Basic
Read/Write: Read Only

This parameter displays the output of the line reactor air pressure sensor in volts. It is an indication of the airflow in the drive. A drop in pressure value indicates either a blocked air filter or a loss of cooling fan operation. This parameter along with *LR AirExhst Wrn (960)*, *LR AirInlet Wrn (961)*, *LR EirExhst Trp (962)*, and *LR AirInlet Trp (963)* are used for protection.

TIP This reading is valid if all of these conditions are true:

1 *Drive Model (176)*: *Heatpipe*

2 *Line Reactor (624)* > 0 mH

3 *Heatpipe Option (816)* bit 2, *InvUVPresure* is not selected (set to 0)

By selecting bit 2, the user declares that the air pressure sensor is not installed in the default Line Reactor section but instead, in the Converter section, between the Inverter U and V power stack.

Inverter UV Airflow [InvUV AirPresure]

Linear Number: 799
Minimum Value: -10.0 V
Maximum Value: 10.0 V
Access Level: Basic
Read/Write: Read Only

This is a Heatpipe drive dedicated variable. It displays the air pressure level (in Volts) measured in the converter section, between the Inverter power stack U and V.

Inverter VW Airflow [InvVW AirPresure]

Linear Number: 800
Minimum Value: -10.0 V
Maximum Value: 10.0 V
Access Level: Basic
Read/Write: Read Only

This is a Heatpipe drive dedicated variable. It displays the air pressure level (in Volts) measured in the converter section, between the Inverter power stack V and W.

Common Mode Choke Airflow [CMC AirPresure]

Linear Number: 801
Minimum Value: -10.0 V
Maximum Value: 10.0 V
Access Level: Basic
Read/Write: Read Only

This is a Heatpipe drive dedicated variable. It displays the air pressure level (in Volts) measured in the Common Mode Choke cabinet.

Fan Runtime [FanRuntime]

Linear Number: 790
Minimum Value: 0 hr
Maximum Value: 65535 hr
Access Level: Basic
Read/Write: Read Only

This parameter displays the total runtime of the specific fan in a heat-pipe drive selected by the parameter *FanRuntime Select (789)*.

Fan Runtime Select [FanRuntimeSelect]

Linear Number: 789
Default Value: LR1 Runtime
Access Level: Basic
Read/Write: Read/Write

This is a heat-pipe drive dedicated parameter. It allows the user to select the fan in a specific section of the drive and display its total runtime in the variable *FanRuntime (790)*.

Value	Enum Text	Description
0	LR1 Runtime	Select to display Line Reactor Fan 1 runtime
1	LR2 Runtime	Select to display Line Reactor Fan 2 runtime
2	Cnv3 Runtime	Select to display Converter Fan 3 runtime
3	Cnv4 Runtime	Select to display Converter Fan 4 runtime
4	Cnv5 Runtime	Select to display Converter Fan 5 runtime
5	Cnv6 Runtime	Select to display Converter Fan 6 runtime
6	Cnv7 Runtime	Select to display Converter Fan 7 runtime
7	Cnv8 Runtime	Select to display Converter Fan 8 runtime
8	CMC9 Runtime	Select to display Common Mode Choke Fan 9 runtime
9	CMC10Runtime	Select to display Common Mode Choke Fan 10 runtime

CMC Airflow Nominal [CMCAirPresureNom]

Linear Number:	806
Default Value:	3.8 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the nominal value of the air pressure sensor installed in the Common Mode Choke cabinet.

CMC Air Exhaust Warning [CMC AirExhst Wrn]

Linear Number:	811
Default Value:	2.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the air pressure value in the common mode choke cabinet must decrease before a warning is indicated. Low air pressure typically associated with blockage of exhaust airflow.

CMC Air Inlet Warning [CMC AirInlet Wrn]

Linear Number:	812
Default Value:	5.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the air pressure value in the Common Mode Choke cabinet must exceed before a warning is indicated. High air pressure typically associated with blockage of inlet airflow.

CMC Air Exhaust Trip [CMC AirExhst Trp]

Linear Number:	813
Default Value:	1.5 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the Common Mode Choke air pressure value must drop below before a fault is indicated. Low air pressure typically associated with blockage of exhaust airflow.

CMC Air Inlet Trip [CMC AirInlet Trp]

Linear Number: 814
Default Value: 5.5 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the Common Mode Choke air pressure value must exceed before a fault is indicated. High air pressure typically associated with blockage of inlet airflow.

Fan Rotate Cycle [Fan Rotate Cycle]

Linear Number: 787
Default Value: 720 hr
Minimum Value: 1 hr
Maximum Value: 14400 hr
Access Level: Service
Read/Write: Read/Write

This parameter specifies the converter fan duty cycle for Heatpipe drives. During System Test, the specified time is treated as minutes.

Line Reactor Air Pressure Nominal [LRAirPressureNom]

Linear Number: 959
Default Value: 3.8 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This parameter specifies the nominal value of the Line Reactor air pressure sensor and indicates normal airflow in the drive.

Line Reactor Air Exhaust Warn [LR AirExhst Wrn]

Linear Number: 960
Default Value: 2.0 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the air pressure value in the Line Reactor cabinet must decrease before a warning is indicated. Low air pressure typically associated with blockage of exhaust airflow.

Line Reactor Air Inlet Warn [LR AirInlet Wrn]

Linear Number: 961
Default Value: 5.0 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the air pressure value in the Line Reactor cabinet must exceed before a warning is indicated. High air pressure typically associated with blockage of inlet airflow.

Line Reactor Air Exhaust Trip [LR AirExhst Trp]

Linear Number: 962
Default Value: 1.5 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the Line Reactor air pressure value must drop below before a fault is indicated. Low air pressure typically associated with blockage of exhaust airflow.

Line Reactor Air Inlet Trip [LR AirInlet Trp]

Linear Number: 963
Default Value: 5.5 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This is a Heatpipe drive dedicated parameter. It specifies the level to which the Line Reactor air pressure value must exceed before a fault is indicated. High air pressure typically associated with blockage of inlet airflow.

Line Reactor Fan Speed [LR Fan Speed]

Linear Number: 964
Default Value: 7.0 V
Minimum Value: 0.0 V
Maximum Value: 10.0 V
Access Level: Service
Read/Write: Read/Write

This is a Heatpipe drive dedicated parameter. It specifies a voltage level, which corresponds to a specific fan speed to be used with the ECBlue fans located in the Line Reactor section.

Converter Fan Speed 1 [CNV Fan Speed 1]

Linear Number:	965
Default Value:	7.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies a voltage level, which corresponds to a specific fan speed to be used with the ECBlue fans locating in the Converter fan-section 1.

Converter Fan Speed 2 [CNV Fan Speed 2]

Linear Number:	966
Default Value:	7.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies a voltage level, which corresponds to a specific fan speed to be used with the ECBlue fans locating in the Converter fan-section 2.

Common Mode Choke Fan Speed [CMC Fan Speed]

Linear Number:	967
Default Value:	7.0 V
Minimum Value:	0.0 V
Maximum Value:	10.0 V
Access Level:	Service
Read/Write:	Read/Write

This is a Heatpipe drive dedicated parameter. It specifies a voltage level, which corresponds to a specific fan speed to be used with the ECBlue fans locating in the Common Mode Choke section.

Dynamic Braking Parameters

DB Power [DB Power]

Linear Number: 784
Minimum Value: 0.0%
Maximum Value: 200.0%
Access Level: Advanced
Read/Write: Read Only

This parameter displays the amount of dissipated power in the DB resistor during Dynamic Braking. The unit is percentage based on kW rating of the DB resistor.

DB Power kW [DB Power kW]

Linear Number: 785
Minimum Value: 0 kW
Maximum Value: 5000 kW
Access Level: Advanced
Read/Write: Read Only

This parameter displays the amount of dissipated kW power in the DB resistor during Dynamic Braking.

DB Energy [DB Energy]

Linear Number: 786
Minimum Value: 0.0%
Maximum Value: 200.0%
Access Level: Advanced
Read/Write: Read Only

This parameter displays the amount of dissipated energy in the DB resistor during Dynamic Braking. The unit is percentage based on energy rating of the DB resistor.

DBR Temperature Feedback [DB Exhaust Temp]

Linear Number: 830
Minimum Value: 0.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Advanced
Read/Write: Read Only

This parameter displays the exhaust temperature in DB cabinet. This is an indicator of the resistor temperature in DB cabinet.

Dynamic Braking Air Speed [DB Air Speed]

Linear Number: 927
Minimum Value: -2000 ft/m
Maximum Value: 2000 ft/m
Access Level: Advanced
Read/Write: Read Only

This variable displays the air-flow speed inside the DB cabinet.

Dynamic Braking Ambient Temperature [DB Ambient Temp]

Linear Number: 928
Minimum Value: -40.0 Deg
Maximum Value: 1000.0 Deg
Access Level: Advanced
Read/Write: Read Only

This variable displays the ambient temperature around the power cage inside the DB cabinet.

Dynamic Braking Temperature Feedback Board Power Supply Voltage [DB TFB PS Volt]

Linear Number: 929
Minimum Value: 0.0 V
Maximum Value: 30.0 V
Access Level: Advanced
Read/Write: Read Only

This variable displays the supply voltage of the TFB board inside the DB cabinet.

DBR Overload [DBR Load]

Linear Number: 792
Minimum Value: 0.00
Maximum Value: 2.00
Access Level: Advanced
Read/Write: Read Only

This parameter displays the ratio between the amount of dissipated energy in DB resistor with respect to its rated energy and the cooling period. When it's one pu, it means rated DB resistor energy has been dissipated in the resistor.

DBR Resistance pu [DBRResistance pu]

Linear Number: 819
Minimum Value: 0.0 pu
Maximum Value: 10.0 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the per unit value of the DBR resistance based on the drive and motor ratings.

DB Device Gating Sequence [DB DvcGat Seqn]

Linear Number: 831
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the device firing sequence on Fiber Optic Interface Board for DB circuit.

DB Device Gating Feedback [DB DvcGat Fbk]

Linear Number: 832
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This parameter displays the diagnostic feedback from Fiber Optic Interface Board for DB circuit.

Minimum DB Power Limit [Min DB Pwr Limit]

Linear Number: 853
Default Value: 0.010 pu
Minimum Value: 0.000 pu
Maximum Value: 1.000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the minimum threshold of estimated regenerative power at present motor speed and torque reference. This parameter is useful to avoid cyclic DB profile when there is not much regenerative power to be dissipated in DBR. The lower the value the more sensitive DB function would be to any regenerative condition in motor.

DB Regulator Kp [DB Regulator Kp]

Linear Number: 847
Default Value: 0.100
Minimum Value: 0.000
Maximum Value: 65.535
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the proportional gain for DC link current regulator during DB.

DB Regulator Ki [DB Regulator Ki]

Linear Number: 848
Default Value: 0.300
Minimum Value: 0.000
Maximum Value: 65.535
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral gain for DC link current regulator during DB.

Leakage Detection Delay [LeakagDetectDly]

Linear Number: 888
Default Value: 500 msec
Minimum Value: 0 msec
Maximum Value: 20000 msec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the delay from the time that leakage sensor in the drive cabinets triggers to the time that drive annunciates the warning.

Power Limit DB [Pwr Lmt DB]

Linear Number: 913
Default Value: 0.30 pu
Minimum Value: 0.00 pu
Maximum Value: 4.00 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the maximum average power to be dissipated in DB resistor during braking.

DBR Power Rating [DBR Power Rating]

Linear Number: 817
Default Value: 300 kW
Minimum Value: 3 kW
Maximum Value: 5000 kW
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the average power rating of the DB resistor.

DBR Resistance [DBR Resistance]

Linear Number: 818
Default Value: 0.0 ohms
Minimum Value: 0.0 ohms
Maximum Value: 6553.5 ohms
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the resistance of the DB resistor.

DBR Inductance [DBR Inductance]

Linear Number: 820
Default Value: 50 uH
Minimum Value: 0 uH
Maximum Value: 2000 uH
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the stray series inductance of the DB resistor.

Series DB Device [Series DBDvc]

Linear Number: 821
Default Value: 2
Minimum Value: 1
Maximum Value: 4
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the number of series devices used in the power cage for DB circuit/cabinet.

DB SVM LPF Frequency [DB SVM LPF Freq]

Linear Number: 852
Default Value: 75.0 Hz
Minimum Value: 0.1 Hz
Maximum Value: 1000.0 Hz
Access Level: Service
Read/Write: Read/Write

This parameter specifies the cut-off frequency for Low Pass filter used for filtering the calculated modulation index of inverter switching pattern (SVM) during DB.

DB Vdc LPF Frequency [DB Vdc LPF Freq]

Linear Number: 849
Default Value: 5.00 Hz
Minimum Value: 0.01 Hz
Maximum Value: 655.35 Hz
Access Level: Service
Read/Write: Read/Write

This parameter specifies the cut-off frequency of Low Pass filter used for filtering the calculated feed-forward term of inverter DC voltage (used in DC current regulator).

DBR Temperature Coefficient [DBR Temp Coeff]

Linear Number:	822
Default Value:	600 μO/C
Minimum Value:	0 μO/C
Maximum Value:	65535 μO/C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the temperature coefficient of the DB resistor to estimate the ohmic fluctuation of the resistor at different temperature (not used in firmware revision 8001 release).

DBR Energy Rating [DBR EnergyRating]

Linear Number:	823
Default Value:	3.0 MJ
Minimum Value:	0.1 MJ
Maximum Value:	60.0 MJ
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the average energy rating of the DB resistor.

DBR Temperature Limit [DBR Temp Limit]

Linear Number:	824
Default Value:	250.0 C
Minimum Value:	0.0 C
Maximum Value:	1000.0 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the maximum operating temperature that DB resistor has been designed for (not used in firmware revision 8001 release).

DBR Cycle Time [DBR Cycle Time]

Linear Number:	825
Default Value:	1800 sec
Minimum Value:	10 sec
Maximum Value:	65535 sec
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the time period required to cool down the DB resistor between braking intervals.

DBR Temperature Warning [DBR Temp Wrn]

Linear Number:	827
Default Value:	150.0 C
Minimum Value:	0.0 C
Maximum Value:	250.0 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the warning threshold for DB cabinet exhaust temperature.

DBR Temperature Trip [DBR Temp Trip]

Linear Number:	828
Default Value:	180.0 C
Minimum Value:	0.0 C
Maximum Value:	250.0 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the fault threshold for DB cabinet exhaust temperature.

DB Airflow Nominal [DB Airflow Nom]

Linear Number:	408
Default Value:	90 ft/m
Minimum Value:	0 ft/m
Maximum Value:	2000 ft/m
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the nominal value for DB cabinet airflow velocity under normal condition (used for commissioning, not used in firmware revision 8001).

DB Airflow Trip [DB Airflow Trip]

Linear Number:	409
Default Value:	10 ft/m
Minimum Value:	0 ft/m
Maximum Value:	2000 ft/m
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the fault threshold for DB cabinet airflow velocity.

DB Airflow Warning [DB Airflow Warn]

Linear Number:	837
Default Value:	40 ft/m
Minimum Value:	0 ft/m
Maximum Value:	2000 ft/m
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the warning threshold for DB cabinet airflow velocity.

DB Ambient Temperature Trip [DBAmbientTempTrp]

Linear Number:	798
Default Value:	80.0 C
Minimum Value:	0.0 C
Maximum Value:	100.0 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the fault threshold for DB cabinet ambient temperature.

DB Ambient Temperature Warning [DBAmbientTempWrn]

Linear Number:	838
Default Value:	60.0 C
Minimum Value:	0.0 C
Maximum Value:	100.0 C
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the warning threshold for DB cabinet ambient temperature.

DB Device Diagnostic Delay [DB DvcDiag Delay]

Linear Number:	839
Default Value:	2
Minimum Value:	0
Maximum Value:	6
Access Level:	Service
Read/Write:	Read/Write

This parameter is a feature added to help avoid nuisance tripping on DB Device diagnostic faults. The delay allows the drive to ignore a detected fault for the number of consecutive DB bridge firings set by this parameter. The default setting for this parameter is 2, and should not be changed unless directed to increase it by the factory.

Idc Reference Limit DB [IdcRefLmt DB]

Linear Number: 887
Default Value: 2.000 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read/Write

This parameter specifies the maximum DC link current that can be switched by DB circuit during Dynamic Braking. The upper limit for this parameter is dictated by DB device current and voltage rating, number of devices and leakage inductance of the DB resistor.

DB SVM Kp [DB SVM Kp]

Linear Number: 890
Default Value: 0.100
Minimum Value: 0.000
Maximum Value: 65.535
Access Level: Service
Read/Write: Read/Write

This parameter specifies the proportional gain for PI regulator used in calculating the modulation index for inverter switching pattern during DB.

DB SVM Ki [DB SVM Ki]

Linear Number: 889
Default Value: 0.200
Minimum Value: 0.000
Maximum Value: 65.535
Access Level: Service
Read/Write: Read/Write

This parameter specifies the integral gain for PI regulator used in calculating the modulation index for inverter switching pattern during DB.

PF Compensation Parameters

Drive Leading Limit(1) [Drv LeadingLimit]

Linear Number: 845
Minimum Value: 0.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the minimum line-side leading VAR can be achieved at current operating point.

Drive Lagging Limit(2) [Drv LaggingLimit]

Linear Number: 846
Minimum Value: 0.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the minimum line-side lagging VAR can be achieved at current operating point.

PFC Flux Command [PFC Flux Command]

Linear Number: 304
Minimum Value: -1.500 pu
Maximum Value: 1.500 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the flux command from the PFC controller needed to optimize the input power factor of induction motor drive. The final flux command will be sum of the flux command without power factor compensation and the flux command from the PFC controller. This parameter can have a negative value.

PFC Modulation Index Gain [PFC ModIndexGain]

Linear Number: 803
Default Value: 1.0
Minimum Value: 0.0
Maximum Value: 50.0
Access Level: Advanced
Read/Write: Read/Write

The parameter specifies the gain of the modulation index regulator used for power factor compensation. The value of the modulation index is given by *PWM Mod Index (311)*.

(1) Contact factory for availability.

(2) Contact factory for availability.

PFC Flux Regulator Gain [PFC FluxReg Gain]

Linear Number: 802
Default Value: 1.0
Minimum Value: 0.0
Maximum Value: 50.0
Access Level: Advanced
Read/Write: Read/Write

The parameter specifies the gain of the regulator used in adjusting the flux reference to provide power factor compensation. The output of the regulator is given by *PFC Flux Command (304)*.

PFC Isd Regulator Gain [PFC Isd Reg Gain]

Linear Number: 952
Default Value: 1.0
Minimum Value: 0.0
Maximum Value: 50.0
Access Level: Advanced
Read/Write: Read/Write

The parameter specifies the gain of the motor magnetizing current regulator for power factor compensation in synchronous motors.

Line Vars [Line VAR pu]

Linear Number: 331
Minimum Value: -1.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read Only

This parameter displays the calculated reactive power at the drive input. It is positive for leading power factor and negative for lagging power factor. This value is used by the power factor controller in either adjusting the modulation index or the flux command.

Line Power pu [Line Power pu]

Linear Number: 902
Minimum Value: -4.00 pu
Maximum Value: 4.00 pu
Access Level: Service
Read/Write: Read Only

The parameter displays the per unit value of the real power measured at the input of the drive.

PFC Motor Isd Command [PFC Mtr Isd Cmd]

Linear Number:	953
Minimum Value:	-2.000 pu
Maximum Value:	2.000 pu
Access Level:	Service
Read/Write:	Read Only

This parameter displays the magnetizing current command from the PFC controller needed to optimize the drive input power factor for synchronous motors. The final magnetizing current command will be sum of the original motor magnetizing current command without power factor compensation and the magnetizing current command from the PFC controller.

VAR Leading Limit [VAR LeadingLimit]

Linear Number:	301
Default Value:	0.20 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter refers to the allowable leading VARs to be drawn by the drive and not have the drive compensate for the power factor. The default value on power up is set to 0.20 pu. This means that the drive will compensate for the power factor only when the measured Line VARs are bigger than 0.20 pu.

VAR Lagging Limit [VAR LaggingLimit]

Linear Number:	302
Default Value:	1.00 pu
Minimum Value:	0.00 pu
Maximum Value:	1.00 pu
Access Level:	Service
Read/Write:	Read/Write

This parameter refers to the allowable lagging VARs to be drawn by the drive and not have the drive compensate for the power factor. The default value on power up is set to 1.00 pu. With this setting the drive will not compensate any lagging VAR.

PF Leading Limit [PF LeadingLimit]

Linear Number:	850
Default Value:	0.95
Minimum Value:	0.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read/Write

The parameter is only effective when the bit *PF RefSelct (bit 4)* is set in *SpecialFeatures3 (920)* for power factor compensation. The parameter specifies the minimum leading power factor at the line side. The drive will compensate

the line-side power factor up to this value if the power factor is leading and lower than this value.

PF Lagging Limit [PF LaggingLimit]

Linear Number: 851
Default Value: 0.00
Minimum Value: 0.00
Maximum Value: 1.00
Access Level: Service
Read/Write: Read/Write

The parameter is only effective when the bit *PF RefSelct (bit 4)* is set in *SpecialFeatures3 (920)* for power factor compensation. The parameter specifies the minimum lagging power factor at the line side. The drive will compensate the line-side power factor up to this value if the power factor is lagging and lower than this value.

PFC Access Code [PFC Access Code]

Linear Number: 299
Default Value: 0
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read/Write

This access code allows the user to enable Power Factor compensation feature in the drive. Please contact Product Marketing for the access code.

Power Factor Compensation Method [PowerFactor Comp]

Linear Number: 300
Default Value: Disable
Access Level: Service
Read/Write: Read/Write

This parameter selects the type of power factor compensation modes available in the drive. Following options are available:

Value	Enum Text	Description
0	Disable	Disable power factor compensation
1	Standard	Leading power factor compensation only
2	Custom	Optimal power factor compensation

Standard will compensate the line power factor only when the drive is drawing leading VARs. *Custom* technique will compensate for both lagging and leading VARs.

VAR Set Point [VAR SetPoint]

Linear Number:	918
Default Value:	0.00 pu
Minimum Value:	-1.00 pu
Maximum Value:	1.00 pu
Access Level:	Service
Read/Write:	Read/Write

The parameter specifies the reference VAR value when the drive is configured to control the line-side VAR at a set point. To configure the set-point control, the parameter *PowerFactor Comp (300)* should be in CUSTOM mode, and both *VAR LeadingLimit (301)* and *VAR LaggingLimit (302)* set to zero.

PF Set Point [PF SetPoint]

Linear Number:	919
Default Value:	0.00
Minimum Value:	-1.00
Maximum Value:	1.00
Access Level:	Service
Read/Write:	Read/Write

The parameter is only effective when the bit *PF RefSelct (bit 4)* is set in *SpecialFeatures3 (920)* for power factor compensation. The parameter specifies the reference power factor value when the drive is configured to control the line-side power factor at a set point. To configure the set-point control, the parameter *PowerFactor Comp (300)* should be in *CUSTOM* mode, and both *PF LeadingLimit (850)* and *PF LaggingLimit (851)* set to zero.

Security Parameters

Port Mask Act [Port Mask Act]

Linear Number: 708
Access Level: Advanced
Read/Write: Read Only

This read-only parameter provides access to the current value of the Port Mask Active attribute for diagnostic purposes. There is a bit for each port on the host, indicating whether the port is enabled or disabled. When bit 15 is set, it indicates that FactoryTalk® Security or some other Advanced Security tool has set the Port Mask Active attribute.

Bit	Enum Text	Description
0	Host	
1	DPI Port1	
2	DPI Port2	
3	DPI Port3	
4	DPI Port4	
5	DPI Port5	
6	DPI Port6	
7	Reserved	
8	Reserved	
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	
13	Reserved	
14	Reserved	
15	Reserved	

Port Logic Mask [Port Logic Mask]

Linear Number: 709
Default Value: 0000000001111111
Access Level: Advanced
Read/Write: Read/Write

The parameter is used to configure the value of the Logic Mask Active attribute unless the "Advanced" bit is set in the attribute. If the "Advanced" bit is already set in the Logic Mask Active attribute, the value last written to the attribute is used until a new value is written directly to the attribute. If the bit for a port is set to '0', the port will have no control functions of the drive except for stop.

Bit	Enum Text	Description
0	Host	
1	DPI Port1	
2	DPI Port2	
3	DPI Port3	
4	DPI Port4	
5	DPI Port5	
6	DPI Port6	
7	Reserved	
8	Reserved	
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	
13	Reserved	
14	Reserved	
15	Reserved	

Logic Mask Act [Logic Mask Act]

Linear Number: 710
Access Level: Advanced
Read/Write: Read Only

This parameter provides read-only access to the current value of the Logic Mask Active attribute for diagnostic purposes. When bit 15 is set, it indicates that FactoryTalk Security or some other Advanced Security tool has set the Logic Mask Active attribute. If the bit for a port is set to '0', the port will have no control functions of the drive except for stop.

Bit	Enum Text	Description
0	Host	
1	DPI Port1	
2	DPI Port2	
3	DPI Port3	
4	DPI Port4	
5	DPI Port5	
6	DPI Port6	
7	Reserved	
8	Reserved	
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	

Bit	Enum Text	Description
13	Reserved	
14	Reserved	
15	Advanced	

Write Mask Cfg [Write Mask Cfg]

Linear Number: 711
Default Value: 0000000001111111
Access Level: Advanced
Read/Write: Read/Write

The parameter is used to program the Write Mask Active attribute when power is cycled to the drive. Each bit in the parameter controls whether the device attached to the DPI port can write to parameters or links.

Bit	Enum Text	Description
0	Host	
1	DPI Port1	
2	DPI Port2	
3	DPI Port3	
4	DPI Port4	
5	DPI Port5	
6	DPI Port6	
7	Reserved	
8	Reserved	
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	
13	Reserved	
14	Reserved	
15	Reserved	

Write Mask Act [Write Mask Act]

Linear Number: 712
Access Level: Advanced
Read/Write: Read Only

This parameter provides read-only access to the current value of the write Mask Active attribute for diagnostic purposes. When bit 15 is set, it indicates that FactoryTalk security or some other Advanced Security tool has set the Write Mask Active attribute. Each bit in the parameter controls whether the device attached to the DPI port can write to parameters or links.

Bit	Enum Text	Description
0	Host	
1	DPI Port1	
2	DPI Port2	
3	DPI Port3	
4	DPI Port4	
5	DPI Port5	
6	DPI Port6	
7	Reserved	
8	Reserved	
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	
13	Reserved	
14	Reserved	
15	Advanced	

Parallel Drive Parameters

Drive ID [Drive ID]

Linear Number: 716
Default Value: 0
Minimum Value: 0
Maximum Value: 7
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the identity of an individual drive in a parallel drive system. All drives in a system should have unique ID numbers. If two drives are programmed with the same ID number, the first drive to be powered up will take ownership of the ID number and the other drive will be dropped off the Drive Area Network. Drive ID numbers do not have to be consecutive, there can be gaps in the sequence (e.g. 0, 1, 3). Usually, Drive ID numbers cannot be freely assigned but are predetermined by the node addresses of the system controller (PLC).

Power Up Configuration [Powerup Config]

Linear Number: 717
Default Value: Single Drive
Access Level: Advanced
Read/Write: Read/Write

This parameter defines the role that the drive will assume when the control is powered up.

Value	Enum Text	Description
0	Single Drive	Drive not part of a parallel drive system-default
1	Master	Master drive in a parallel drive system
2	Slave	Slave drive in a parallel drive system

If more than one drive in a parallel drive system is programmed as Master, the first drive to be powered up will become the master and the other drives will become slaves.

Master Mask [Master Mask]

Linear Number: 718
Default Value: 11111111
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies which drives in a parallel drive system are allowed to become master. A value of '1' indicates that the corresponding drive can become master if required. A value of '0' indicates that the corresponding drive will refuse to take on the role of master.

Eight bits are defined:

Bit	Enum Text	Description
0	Drive 0	Drive 0 is selected to become master if required
1	Drive 1	Drive 1 is selected to become master if required
2	Drive 2	Drive 2 is selected to become master if required
3	Drive 3	Drive 3 is selected to become master if required
4	Drive 4	Drive 4 is selected to become master if required
5	Drive 5	Drive 5 is selected to become master if required
6	Drive 6	Drive 6 is selected to become master if required
7	Drive 7	Drive 7 is selected to become master if required

Acting Master ID [Acting Master ID]

Linear Number: 719
Default Value: 0
Minimum Value: 0
Maximum Value: 8
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the Drive ID of the drive that is currently acting as master or has been requested to become the master. For a master drive, this parameter will normally be the same as the Drive ID for that drive. Setting this parameter to the ID of another drive in the system will cause the master to attempt to transfer control to the specified drive. For a slave drive, this parameter will have a value of 8, which is an invalid value for Drive ID.

Parallel Drive Fault Word [PD Fault Word]

Linear Number: 720
Access Level: Advanced
Read/Write: Read Only

This parameter displays the bit assignment on the Parallel Drive Fault word corresponding to drive protection. These faults can be either Class 1 or Class 2 faults. A '1' represents an active fault as follows:

Bit	Enum Text	Description
0	Comm Timeout	Drive has lost communications with the master
1	Mstr Xfer Er	Master Transfer Error
2	Unused	
3	Unused	
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Slave 0 Comm	Master has lost communication with Drive 0

Bit	Enum Text	Description
9	Slave 1 Comm	Master has lost communication with Drive 1
10	Slave 2 Comm	Master has lost communication with Drive 2
11	Slave 3 Comm	Master has lost communication with Drive 3
12	Slave 4 Comm	Master has lost communication with Drive 4
13	Slave 5 Comm	Master has lost communication with Drive 5
14	Slave 6 Comm	Master has lost communication with Drive 6
15	Slave 7 Comm	Master has lost communication with Drive 7

Parallel Drive Warning Word [PD Warning Word]

Linear Number: 721
Access Level: Advanced
Read/Write: Read Only

This parameter displays the bit assignment on the Parallel Drive warning word corresponding to drive fault detection. A ‘1’ represents an active warning as follows:

Bit	Enum Text	Description
0	Duplcte Mstr	Duplicate Master-master only
1	Dclnd Mstr	Slave Declined Master- slave only
2	Slv RfsdMstr	Slave Refused Master- master only
3	Invld Mstr R	Invalid Master Request- slave only
4	Xfer Disable	Transfer Disabled- master only
5	Unused	
6	Unused	
7	Unused	
8	Slave 0 OffL	Slave 0 Offline- master only
9	Slave 1 OffL	Slave 1 Offline- master only
10	Slave 2 OffL	Slave 2 Offline- master only
11	Slave 3 OffL	Slave 3 Offline- master only
12	Slave 4 OffL	Slave 4 Offline- master only
13	Slave 5 OffL	Slave 5 Offline- master only
14	Slave 6 OffL	Slave 6 Offline- master only
15	Slave 7 OffL	Slave 7 Offline- master only

Drive0 Status [Drive0 Status]

Linear Number: 724
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive1 Status [Drive1 Status]

Linear Number: 725
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	

Bit	Enum Text	Description
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive2 Status [Drive2 Status]

Linear Number: 726
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive3 Status [Drive3 Status]

Linear Number: 727
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition

Bit	Enum Text	Description
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive4 Status [Drive4 Status]

Linear Number: 728
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive5 Status [Drive5 Status]

Linear Number: 729
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive6 Status [Drive6 Status]

Linear Number: 730
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed

Bit	Enum Text	Description
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Drive7 Status [Drive7 Status]

Linear Number: 731
Access Level: Advanced
Read/Write: Read Only

These eight variables display the status of all the drives in a parallel drive system. They are valid in the master drive only, and will have a value of zero in all slave drives. The definition is the same as *PD Status*.

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Status Valid	Status word is valid

Parallel Drive Status [PD Status]

Linear Number: 723
Access Level: Service
Read/Write: Read Only

This variable displays the status of this drive in a parallel drive system. It is sent to the master drive where it is displayed as Drive *n* Status, where *n* is the drive ID. Eight bits are defined:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Faulted	Drive has a fault condition
3	Class1 Fault	Drive has a class 1 fault
4	Class2 Fault	Drive has a class 2 fault
5	Hub Comm OK	Communications between the drive and the hub PLC is functional
6	Input Clsed	Drive input contactor is closed
7	Output Clsed	Drive output contactor is closed
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Master Flux Reference [Master Flux Ref]

Linear Number: 732
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the flux reference from the master to all slave drives in a parallel drive system. It is raw data, not in engineering units.

Master Torque Reference [Master Torq Ref]

Linear Number: 733
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the torque reference from the master to all slave drives in a parallel drive system. It is raw data, not in engineering units.

Master Magnetizing Current Command [Master Isd Cmd]

Linear Number: 734
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the magnetizing current command from the master to all slave drives in a parallel drive system. It is raw data, not in engineering units.

Master Capacity [Master Capacity]

Linear Number: 737
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the capacity factor from the master to all slave drives in a parallel drive system. It is raw data, not in engineering units.

Master Command [Master Command]

Linear Number: 735
Access Level: Service
Read/Write: Read Only

This variable is the command word from the master to all slave drives in a parallel drive system. Four bits are defined:

Bit	Enum Text	Description
0	Stop	Stop command from master to all slave drives
1	Start	Start command from master to all slave drives
2	Reset	Reset command from master to all slave drives
3	Cmd Reverse	Reverse command from master to all slave drives
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Specific Slave ID [Sp Slave ID]

Linear Number: 736
Minimum Value: 0
Maximum Value: 8
Access Level: Service
Read/Write: Read Only

This variable identifies the slave drive (0-7) to which the specific commands *Sp Capacity (738)* and *Sp Command (739)* are directed. A value of 8 indicates that no slave drive is selected. It is valid in the master drive only, and always has a value of 8 in slave drives.

Specific Command [Sp Command]

Linear Number: 739
Access Level: Service
Read/Write: Read Only

This variable is the command word from the master to the slave drive identified by *Sp Slave ID (736)*. It has the same definition as *Master Command (735)*.

Bit	Enum Text	Description
0	Stop	Stop command from master to all slave drives
1	Start	Start command from master to all slave drives
2	Reset	Reset command from master to all slave drives
3	Cmd Reverse	Reverse command from master to all slave drives
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Specific Capacity [Sp Capacity]

Linear Number: 738
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the capacity factor from the master to the slave drive identified by *Sp Slave ID (736)*. It is raw data, not in engineering units.

Parallel Drive Flux Reference [PD Flux Ref]

Linear Number: 740
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the flux reference received from the master. It is raw data, not in engineering units.

Parallel Drive Torque Reference [PD Torq Ref]

Linear Number: 741
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the torque reference received from the master. It is raw data, not in engineering units.

Parallel Drive Magnetizing Current Command [PD Isd Cmd]

Linear Number: 742
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the magnetizing current command received from the master. It is raw data, not in engineering units.

Parallel Drive Capacity [PD Capacity]

Linear Number: 746
Minimum Value: 0
Maximum Value: 32767
Access Level: Service
Read/Write: Read Only

This variable is the capacity factor of this drive. It is raw data, not in engineering units.

Parallel Drive Command [PD Command]

Linear Number: 743
Access Level: Service
Read/Write: Read Only

This variable is the command word received from the master. It has the same definition as *Master Command (735)*.

Bit	Enum Text	Description
0	Stop	Stop command from master to all slave drives
1	Start	Start command from master to all slave drives
2	Reset	Reset command from master to all slave drives
3	Cmd Reverse	Reverse command from master to all slave drives
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Parallel Drive Line VAR [PD Line VAR pu]

Linear Number: 941
Default Value: 0.00 pu
Minimum Value: -1.00 pu
Maximum Value: 1.00 pu
Access Level: Service
Read/Write: Read/Write

This variable is the line VAR value received from the slave. It is raw data, not converted to engineering units.

Hub Command Loss [Hub Command Loss]

Linear Number: 940
Default Value: Warning
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the action taken by the drive when a loss of communication between a supervisor control (typically PLC) and drive is sensed by the drive.

Value	Enum Text	Description
0	Warning	The drive will run with a warning
1	Fault	The drive will shutdown on a fault

Drives in System [Drives in System]

Linear Number: 745
Default Value: 1
Minimum Value: 1
Maximum Value: 4
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the total number of drives in a parallel drive system. This information cannot be obtained by counting the number of drives on the Drive Area Network, because some drives in the system may not be communicating. It is important that this parameter has the correct value because it is used in calculating the rated current of the drive.

$$1.0\ \textit{per unit drive current} = \frac{\textit{Rated motor amps} \times \mathrm{Servicefactor}}{\textit{Drives in system}}$$

Reduced Capacity [Reduced Capacity]

Linear Number: 765
Default Value: Enable
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies whether a parallel drive system is allowed to run with reduced capacity.

Value	Enum Text	Description
0	Disable	System will run only if all drives are available
1	Enable	System will run if at least half the total number of drives are available

Parallel Drive Flags [PD Flags]

Linear Number: 722
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter displays the bit assignment on the Parallel Drive Flags. A ‘1’ represents an active warning as follows:

Bit	Enum Text	Description
0	Node Reset	Node Reset, set to clear parallel drives faults and warnings, and reset automatically after faults cleared
1	Active Mstr	Active Master- this drive is the current master
2	Pass Mastr	Pass Master- this drive is attempting to pass mastership
3	Pass Mstr En	Pass Master Enabled- Pass Master is allowed for this drive
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Drv Application Parameters

Surface Voltage [ESP Surface Volt]

Linear Number: 760
Minimum Value: 0 V
Maximum Value: 8000 V
Access Level: Basic
Read/Write: Read Only

This variable is used to indicate the motor filter capacitor voltage in Volts. For long cable applications e.g. ESP, this voltage will be greater than the Motor Voltage due to the drop in the cable.

Cable Resistance [ESP Cable Resis]

Linear Number: 750
Default Value: 0.000 ohms
Minimum Value: 0.000 ohms
Maximum Value: 65.535 ohms
Access Level: Service
Read/Write: Read/Write

If the value of *Autotune Rs* is greater than 2.5%, a long cable application is assumed e.g. drive running in an ESP application. In addition an ESP application can be specified by this parameter if the cable data is known. Please note that the value is in ohms. If the cable data sheet specifies the resistance/ unit length, then multiply it by the cable length and enter in this parameter.

Drive Application(1) [Drv Application]

Linear Number: 751
Default Value: ID Fan
Access Level: Basic
Read/Write: Read/Write when Stopped

This parameter specifies the application in which the drive is being used and is intended for future use only.

Value	Enum Text	Description
0	ID Fan	Drive is running Induced Draft Fan application
1	Pump 1	Drive is running Pump type 1 application
2	Pump 2	Drive is running Pump type 2 application
3	Conveyor	Drive is running a conveyor application
4	Compressor	Drive is running a compressor application
5	BanburyMixer	Drive is running a Banbury Mixer application
6	Application1	Future use
7	Application2	Future use
8	Application3	Future use

(1) Contact factory for availability.

Value	Enum Text	Description
9	Application4	Future use
10	Multi Motor	Drive is running more than one motor
11	Marine 1	Drive is designed for Marine 1 application
12	TestBay Dyn1	Drive under test is using Dyne 1
13	TestBay Dyn2	Drive under test is using Dyne 2
14	TestBay Dyn3	Drive under test is using Dyne 3
15	TestBay Dyn4	Drive under test is using Dyne 4

Motors on Drive(1) [Motors on Drive]

Linear Number: 867
Default Value: 1
Minimum Value: 0
Maximum Value: 10
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter specifies the number of identical motors connected to the drive.

(1) Contact factory for availability.

Process Control Parameters

PID Output(1) [PID Output]

Linear Number: 356
Minimum Value: -2.0000 pu
Maximum Value: 2.0000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the final output of the PID controller in per unit. This is the sum of proportional, integral, derivative and previous value of the PID Output. This value corresponds to the Speed Command PID to drive.

Process Variable(2) [Process Variable]

Linear Number: 357
Minimum Value: -2.0000 pu
Maximum Value: 2.0000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter represents the feedback from process. This value is compared with *Process Setpoint (360)* to calculate the error.

Process Variable Eng(3) [Process Var Eng]

Linear Number: 366
Minimum Value: -3276.7
Maximum Value: 3276.7
Access Level: Advanced
Read/Write: Read Only

This parameter displays the feedback from the process in engineering units according to the application.

PID Gain(4) [PID Gain]

Linear Number: 353
Default Value: 1.00
Minimum Value: 0.00
Maximum Value: 655.35
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the proportional gain in the PID controller when *Indpndt Gain* option in *PID Command (313)* is chosen. If not, this parameter represents controller gain. The proportional gain works only on the proportional term while the controller gain works for all three terms,

(1) Contact factory for availability.

(2) Contact factory for availability.

(3) Contact factory for availability.

(4) Contact factory for availability.

proportional, integral and derivative, at the same time. Refer to the formula in the Manual to understand the difference between the independent gain and the dependent gain.

PID Integral Time[1] [PID Intgral Time]

Linear Number: 354
Default Value: 1.00 sec
Minimum Value: 0.00 sec
Maximum Value: 655.35 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral time constant in seconds. This parameter represent the time for the integral term to repeat the action of the proportional term in response to a step change in error. A larger value of this parameter causes a slower integral response.

PID Derivative Time[2] [PID Deriv Time]

Linear Number: 355
Default Value: 0.00 sec
Minimum Value: 0.00 sec
Maximum Value: 655.35 sec
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the derivative time constant in seconds. A larger value of this parameter causes a faster derivative response. If this value is set to 0, the derivative term in the PID controller is disabled.

Process Setpoint[3] [Process Setpoint]

Linear Number: 360
Default Value: 0.5000 pu
Minimum Value: -2.0000 pu
Maximum Value: 2.0000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the process setpoint value.

Process Gain[4] [Process Gain]

Linear Number: 398
Default Value: 1.0
Minimum Value: 0.0
Maximum Value: 6553.5
Access Level: Advanced
Read/Write: Read/Write

(1) Contact factory for availability.

(2) Contact factory for availability.

(3) Contact factory for availability.

This parameter specifies the conversion rate from the customer's process sensor value to process engineering unit. This parameter is used to calculate the process feedback in engineering value *Process Var Eng (366)* for the display. For example, if 1 volt from sensor represents the 3000 psi, this value should be 3000.

PID Minimum Limit[1] [PID Min Limit]

Linear Number:	336
Default Value:	-1.0000 pu
Minimum Value:	-2.0000 pu
Maximum Value:	2.0000 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter sets the lower limit of the *PID Output (356)*.

PID Maximum Limit[2] [PID Max Limit]

Linear Number:	318
Default Value:	1.0000 pu
Minimum Value:	-2.0000 pu
Maximum Value:	2.0000 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter sets the upper limit of the *PID Output (356)*.

PID Manual Input[3] [PID Manual Input]

Linear Number:	348
Default Value:	0.0000 pu
Minimum Value:	0.0000 pu
Maximum Value:	2.0000 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the manual input to the *PID Output (356)* when *Manual* option in *PID Command (313)* is selected.

PID Dead Bandwidth[4] [PID Dead Band]

Linear Number:	352
Default Value:	0.0000 pu
Minimum Value:	0.0000 pu
Maximum Value:	2.0000 pu
Access Level:	Advanced
Read/Write:	Read/Write

(4) Contact factory for availability.

(1) Contact factory for availability.

(2) Contact factory for availability.

(3) Contact factory for availability.

(4) Contact factory for availability.

This parameter specifies the band to restrict the corrective action of PID Controller for small deviation in the error. If the error is smaller than this value, all the proportional, integral and derivative terms are kept to zero, and *PID Output (356)* stays in the previous value.

PID Preload[1] [PID Preload]

Linear Number:	365
Default Value:	0.0000 pu
Minimum Value:	0.0000 pu
Maximum Value:	2.0000 pu
Access Level:	Advanced
Read/Write:	Read/Write

This parameter specifies the preset value of *PID Output (356)*.

PID Filter[2] [PID Filter]

Linear Number:	390
Default Value:	0.0 r/s
Minimum Value:	0.0 r/s
Maximum Value:	6000.0 r/s
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the cutoff frequency of the low pass filter used for the error between the *Process Setpoint (360)* and the *Process Variable (357)*.

(1) Contact factory for availability.

(2) Contact factory for availability.

PID Command[1] [PID Command]

Linear Number: 313
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter specifies the options for PID controller action. ‘1’ in the corresponding bit location indicates that option is selected, and ‘0’ indicates that the option is not selected. When no option is selected, PID controller works with the default setting, which is dependent gain with the derivative term on the error. The following are descriptions of the individual bits:

Bit	Enum Text	Description
0	Indpndt Gain	PID gain is applied only to the proportional term
1	DerivProcess	Derivative term acts on the process variable, not on the error
2	Manual	PID Output is manually decided
3	Direct	PID Output increases when the Process variable is larger than the PID Setpoint
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

(1) Contact factory for availability.

Commissioning Parameters

Master Bridge Phasing[1] [Master Phasing]

Linear Number: 663
Access Level: Service
Read/Write: Read Only

This parameter specifies the results obtained from phasing check for the Master rectifier bridge.

Bit	Enum Text	Description
0	Required-ABC	
1	Required-ACB	
2	Required-BAC	
3	Required-BCA	
4	Required-CBA	
5	Required-CAB	
6	Unused	
7	Unused	
8	Actual-ABC	
9	Actual-ACB	
10	Actual-BAC	
11	Actual-BCA	
12	Actual-CBA	
13	Actual-CAB	
14	Unused	
15	Unused	

Slave 1 Bridge Phasing[2] [Slave1 Phasing]

Linear Number: 664
Access Level: Service
Read/Write: Read Only

This parameter specifies the results obtained from phasing check for the Slave1 rectifier bridge on 18-pulse drives.

Bit	Enum Text	Description
0	Required-ABC	
1	Required-ACB	
2	Required-BAC	
3	Required-BCA	
4	Required-CBA	
5	Required-CAB	

(1) Contact factory for availability.

(2) Contact factory for availability.

Bit	Enum Text	Description
6	Unused	
7	Unused	
8	Actual-ABC	
9	Actual-ACB	
10	Actual-BAC	
11	Actual-BCA	
12	Actual-CBA	
13	Actual-CAB	
14	Unused	
15	Unused	

Slave 2 Bridge Phasing(1) [Slave2 Phasing]

Linear Number: 665
Access Level: Service
Read/Write: Read Only

This parameter specifies the results obtained from phasing check for the Slave2 rectifier bridge on 18-pulse drives.

Bit	Enum Text	Description
0	Required-ABC	
1	Required-ACB	
2	Required-BAC	
3	Required-BCA	
4	Required-CBA	
5	Required-CAB	
6	Unused	
7	Unused	
8	Actual-ABC	
9	Actual-ACB	
10	Actual-BAC	
11	Actual-BCA	
12	Actual-CBA	
13	Actual-CAB	
14	Unused	
15	Unused	

Commission Status(2) [CommissionStatus]

Linear Number: 667
Access Level: Service
Read/Write: Read Only

(1) Contact factory for availability.

(2) Contact factory for availability.

This parameter displays the commissioning status.

Bit	Enum Text	Description
0	DIM Valid	DIM validated
1	Drv Isolated	Drive is Isolated
2	MV Present	Medium voltage is present
3	PhasingDone	Phasing check has been done
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Commission Flags(1) [CommissionFlags]

Linear Number: 668
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter displays the command for the drive during commissioning.

Bit	Enum Text	Description
0	Unused	
1	Unused	
2	Unused	
3	DoPhasingChk	Perform Phasing Check
4	Unused	
5	Unused	
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	

(1) Contact factory for availability.

Bit	Enum Text	Description
13	Unused	
14	Unused	
15	Unused	

Zero Scale Reference(1) [Scale Zero Ref]

Linear Number: 659
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter is used for calibration of analog inputs in the drive and prompts the user to enter the zero scale reference value for the particular input.

Bit	Enum Text	Description
0	Speed Pot	Scaling for Speed Pot
1	Anlg Input1	Scaling for Analog Input 1
2	Anlg Input2	Scaling for Analog Input 2
3	Anlg Input3	Scaling for Analog Input 3
4	Conv AirPressure	Scaling for Converter Air Pressure meter
5	IsoTxAirPressure	Scaling for Isolation Transformer Air Pressure meter
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Full Scale Reference(2) [Scale Full Ref]

Linear Number: 660
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter is used for calibration of analog inputs in the drive and prompts the user to enter the full scale reference value for the particular input.

(1) Contact factory for availability.

(2) Contact factory for availability.

Bit	Enum Text	Description
0	Speed Pot	Scaling for Speed Pot
1	Anlg Input1	Scaling for Analog Input 1
2	Anlg Input2	Scaling for Analog Input 2
3	Anlg Input3	Scaling for Analog Input 3
4	Conv AirPressure	Scaling for Converter Air Pressure meter
5	IsoTxAirPressure	Scaling for Isolation Transformer Air Pressure meter
6	Unused	
7	Unused	
8	Unused	
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Provide Zero Reference(1) [Provide Zero Ref]

Linear Number: 661
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter is used for calibration of analog outputs in the drive and prompts the drive to output the zero scale reference value for the particular output.

Bit	Enum Text	Description
0	Anlg Meter1	Zero reference for Analog Output 5
1	Anlg Meter2	Zero reference for Analog Output 6
2	Anlg Meter3	Zero reference for Analog Output 7
3	Anlg Meter4	Zero reference for Analog Output 8
4	Anlg Output1	Zero reference for Analog Output 1
5	Anlg Output2	Zero reference for Analog Output 2
6	Anlg Output3	Zero reference for Analog Output 3
7	Anlg Output4	Zero reference for Analog Output 4
8	Anlg 4-20mA	Zero reference for Analog 4-20mA
9	Unused	
10	Unused	
11	Unused	
12	Unused	

(1) Contact factory for availability.

Bit	Enum Text	Description
13	Unused	
14	Unused	
15	Unused	

Provide Full Scale Reference(1) [Provide Full Ref]

Linear Number: 662
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter is used for calibration of analog outputs in the drive and prompts the drive to output the full scale reference value for the particular output.

Bit	Enum Text	Description
0	Anlg Meter1	Scaling for Analog Output 5
1	Anlg Meter2	Scaling for Analog Output 6
2	Anlg Meter3	Scaling for Analog Output 7
3	Anlg Meter4	Scaling for Analog Output 8
4	Anlg Output1	Scaling for Analog Output 1
5	Anlg Output2	Scaling for Analog Output 2
6	Anlg Output3	Scaling for Analog Output 3
7	Anlg Output4	Scaling for Analog Output 4
8	Anlg 4-20mA	Scaling for Analog 4-20mA
9	Unused	
10	Unused	
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Setup Wizard [Setup Wizard]

Linear Number: 13
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

This parameter specifies the progress of the Setup Wizard. A ‘1’ indicates that the step has been completed by the setup wizard. Until all the steps are completed, you will always be prompted to continue with the process each time control power is cycled. The following steps are displayed:

(1) Contact factory for availability.

Bit	Enum Text	Description
0	Path Picked	For Internal use only
1	Gating Test	Perform gating checks on the drive
2	Motor Data	Enter motor nameplate data
3	Features	Enter Feature Select parameters
4	Speed Ref	Enter Speed Profile parameters
5	Analog Calib	Calibrate analog system
6	Ext Faults	Configure the External Faults
7	System Test	Perform System Test
8	Phasing Chck	Performed phasing check for an 18-pulse drive
9	Autotuning	Autotune drive and motor parameters
10	DC Test	Run the drive in DC Current Test Mode
11	Unused	
12	Unused	
13	Unused	
14	Unused	
15	Unused	

Setup Wizard 2[(1)] [Setup Wizard 2]

Linear Number:	666
Default Value:	0000 Hex
Minimum Value:	0000 Hex
Maximum Value:	FFFF Hex
Access Level:	Service
Read/Write:	Read/Write

This parameter is reserved for future use and will be used for *Setup Wizard*.

(1) Contact factory for availability.

HPTC Parameters

Load Observer Torque Estimation [Load Obs Trq Est]

Linear Number: 1091
Minimum Value: -4.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the estimated torque reference generated by the load observer. The estimated value of the load observer can be adjusted by the load observer gain and the filters of load observer control scheme. The load observer's output signal will add to motor torque reference. The output of this parameter will be zero if the load observer feature is not enabled or the load observer gain is set to zero. This parameter is used only when the high performance torque control feature is enabled.

Speed Feedback for High Performance Torque control (HPTC) [Speed Fbk HPTC]

Linear Number: 1129
Minimum Value: -120.00 Hz
Maximum Value: 120.00 Hz
Access Level: Advanced
Read/Write: Read Only

This parameter is the calculated speed feedback after filtering. The speed feedback is positive for forward rotation and negative for reverse rotation. This parameter is same as parameter (P289) but with higher resolution.

Inertia (J) Compensation Torque [JComp Trq]

Linear Number: 1143
Minimum Value: -4.000 pu
Maximum Value: 4.000 pu
Access Level: Advanced
Read/Write: Read Only

This parameter displays the estimated torque reference generated by the inertia compensator. The estimated value of the inertia compensator can be adjusted by the inertia compensator gains and the filter of inertia compensator control scheme. The inertia compensator's output signal will add to the motor torque reference. Inertia compensation provides a torque feed forward signal during changes in motor speed reference. This parameter is used only when the high performance torque control feature is enabled.

HPTC Warning Code [HPTC WrnCode]

Linear Number: 1144
Access Level: Service
Read/Write: Read Only

This variable displays the bit assignment on the HPTC Warning Code. It indicates the possible reasons to why HPTC feature could not be enabled.

Bit	Enum Text	Description
0	Not RPWM	The drive is not active front end (the rectifier is not PWM type)
1	Max 2 Drives	The drive is programmed to have more than two parallel drives.
2	PFC Enabled	The power factor compensation feature is enabled
3	DB Enabled	The dynamic breaking feature is enabled
4	Not HPTC Drive	The HPTC enable parameter is not enabled
5	Not Ind Mtr	The motor type is not Induction motor
6	No Encoder	The drive is configured as sensorless
7	Low Enc PPR	The encoder Pulse Per Revolution (PPR) is low
8	Invalid Enc	Invalid encoder type
9	Not used	
10	Not used	
11	Not used	
12	Not used	
13	Not used	
14	Not used	
15	Not used	

Tr Adaptation Reference [Tr Adapt Ref]

Linear Number: 1135
Minimum Value: -3.2767 pu
Maximum Value: 3.2767 pu
Access Level: Service
Read/Write: Read Only

Reserved for future use.

Tr Adaptation Feedback [Tr Adapt Fbk]

Linear Number: 1136
Minimum Value: -3.2767 pu
Maximum Value: 3.2767 pu
Access Level: Service
Read/Write: Read Only

Reserved for future use.

Tr Adaptation Output [Tr Adapt Output]

Linear Number:	1137
Minimum Value:	-3.2767 pu
Maximum Value:	3.2767 pu
Access Level:	Service
Read/Write:	Read Only

Reserved for future use.

Load Observer Speed Filter Bandwidth [Load Obs Spd BW]

Linear Number:	939
Default Value:	100.0 r/s
Minimum Value:	1.0 r/s
Maximum Value:	500.0 r/s
Access Level:	Advanced
Read/Write:	Read/Write

The Load Observer control scheme has two filters, one used to filter the speed feedback signal and the other is to filter the motor torque reference signal. This parameter sets speed feedback filter bandwidth of the load observer. This filter bandwidth value in conjunction with the torque reference filter bandwidth and the gain value of the load observer should be tuned properly to achieve better load disturbance rejection for all operating speed. The default value of this filter is 100 rad/sec. Depending on the application, increasing the bandwidth of this filter may cause some noise in the output torque and speed signals. This parameter is used only when the high performance torque control feature is enabled.

Load Observer Torque Filter Bandwidth [Load Obs Trq BW]

Linear Number:	942
Default Value:	40.0 r/s
Minimum Value:	1.0 r/s
Maximum Value:	500.0 r/s
Access Level:	Advanced
Read/Write:	Read/Write

The Load Observer control scheme has two filters, one used to filter the speed feedback signal and the other is to filter the motor torque reference signal. This parameter sets the torque reference filter bandwidth of the load observer. This filter bandwidth value in conjunction with the speed feedback filter bandwidth and the gain value of the load observer should be tuned properly to achieve better load disturbance rejection for all operating speed. The default value of this filter is 40 rad/sec. Depending on the application, increasing the bandwidth of this filter may allow some noise to pass to the output torque and speed signals. This parameter is used only when the high performance torque control feature is enabled.

Load Observer Gain [Load Obs Gain]

Linear Number: 1047
Default Value: 0.00
Minimum Value: 0.00
Maximum Value: 1.00
Access Level: Advanced
Read/Write: Read/Write

This parameter sets the load observer gain. The typical range of this parameter is between zero and 0.5 with default value of zero (disabled). The tuning of this parameter should be started with low values until you get stable and better load disturbance rejection for all speed range. This parameter is used only when the high performance torque control feature is enabled.

Inertia (J) Compensation Acceleration Gain [JComp Acc Gain]

Linear Number: 1000
Default Value: 1.00
Minimum Value: 0.00
Maximum Value: 5.00
Access Level: Advanced
Read/Write: Read/Write

This parameter sets the inertia (J) compensation acceleration gain. A value of 1 produces 100% compensation. This parameter is used only when the high performance torque control feature is enabled.

Inertia (J) Compensation Deceleration Gain [JComp Dec Gain]

Linear Number: 1001
Default Value: 1.00
Minimum Value: 0.00
Maximum Value: 5.00
Access Level: Advanced
Read/Write: Read/Write

This parameter sets the inertia (J) compensation deceleration gain. A value of 1 produces 100% compensation. This parameter is used only when the high performance torque control feature is enabled.

Inertia (J) Compensation Filter Bandwidth [JComp Fil BW]

Linear Number: 1002
Default Value: 100.0 r/s
Minimum Value: 1.0 r/s
Maximum Value: 500.0 r/s
Access Level: Advanced
Read/Write: Read/Write

This parameter sets the bandwidth of the low pass filter of the inertia (J) compensation function. The output of this filter supplies *P1143 [JComp Trq]*. This parameter is used only when the high performance torque control feature is enabled.

Isq Regulator Kp [IsqReg Kp]

Linear Number: 1004
Default Value: 0.05
Minimum Value: 0.00
Maximum Value: 655.30
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the proportional gain used in Q-axis or torque producing component of the stator current regulator in HPTC mode.

Isq Regulator Ki [IsqReg Ki]

Linear Number: 1005
Default Value: 1.00 /s
Minimum Value: 0.00 /s
Maximum Value: 655.30 /s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral gain used in Q-axis or torque producing component of the stator current regulator in HPTC mode.

Isd Regulator Kp [IsdReg Kp]

Linear Number: 1006
Default Value: 0.05
Minimum Value: 0.00
Maximum Value: 655.30
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the proportional gain used in D-axis or magnetizing component of the stator current regulator in HPTC mode.

Isd Regulator Ki [IsdReg Ki]

Linear Number: 1007
Default Value: 1.00 /s
Minimum Value: 0.00 /s
Maximum Value: 655.30 /s
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the integral gain used in D-axis or magnetizing component of the stator current regulator in HPTC mode.

Isq Regulator Limit [IsqReg Limit]

Linear Number: 1008
Default Value: 0.100 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the maximum absolute value of Q-axis or torque producing component of the stator current regulator output in HPTC mode.

Isd Regulator Limit [IsdReg Limit]

Linear Number: 1009
Default Value: 0.100 pu
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Advanced
Read/Write: Read/Write

This parameter specifies the maximum absolute value of D-axis or magnetizing component of the stator current regulator output in HPTC mode.

Stator (Current) Regulator Bandwidth [StatorReg BW]

Linear Number: 1015
Default Value: 10.0 r/s
Minimum Value: 0.1 r/s
Maximum Value: 200.0 r/s
Access Level: Advanced
Read/Write: Read/Write

Reserved for future use

Stator (Current) Regulator Alpha [StatorReg Alpha]

Linear Number: 1131
Default Value: 1.00
Minimum Value: 0.01
Maximum Value: 100.00
Access Level: Advanced
Read/Write: Read/Write

Reserved for future use

Isd Regulator Kd [IsdReg Kd]

Linear Number: 1133
Default Value: 0.00 sec
Minimum Value: 0.00 sec
Maximum Value: 655.30 sec
Access Level: Advanced
Read/Write: Read/Write

Reserved for future use

Isq Regulator Kd [IsqReg Kd]

Linear Number:	1134
Default Value:	0.00 sec
Minimum Value:	0.00 sec
Maximum Value:	655.30 sec
Access Level:	Advanced
Read/Write:	Read/Write

Reserved for future use

Encoder Feedback Filter Bandwidth for High Performance Torque Control (HPTC) [EncFbk BW HPTC]

Linear Number:	999
Default Value:	150.0 r/s
Minimum Value:	1.0 r/s
Maximum Value:	300.0 r/s
Access Level:	Service
Read/Write:	Read/Write

This parameter sets the corner frequency (bandwidth) of the 2nd order filter of encoder feedback signal for the high performance torque control feature. The default value of this parameter is 150 rad/sec.

Feedforward Motor Filter High Performance Torque Control [FFwd M Fil HPTC]

Linear Number:	1013
Default Value:	30.0 Hz
Minimum Value:	0.1 Hz
Maximum Value:	100.0 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the corner frequency of the filter used in calculating the inverter side DC link voltage from the measured stator voltage in HPTC mode. This value is used in the calculation of feed-forward term in the current regulator to determine the firing angle for the line side converter.

Feedforward Line Filter High Performance Torque Control [FFwd L Fil HPTC]

Linear Number:	1014
Default Value:	20.0 Hz
Minimum Value:	0.1 Hz
Maximum Value:	100.0 Hz
Access Level:	Service
Read/Write:	Read/Write

This parameter specifies the corner frequency of the digital filter for line side capacitor voltage measurement in HPTC mode. This value is used in the calculation of feed-forward term in the DC current regulator to determine the firing angle for the line side converter.

Tr Adaptation Kp [Tr Adapt Kp]

Linear Number:	1138
Default Value:	0.000
Minimum Value:	0.000
Maximum Value:	65.530
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

Tr Adaptation Ki [Tr Adapt Ki]

Linear Number:	1139
Default Value:	0.000 /s
Minimum Value:	0.000 /s
Maximum Value:	65.530 /s
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

Tr Adaptation Limit [Tr Adapt Limit]

Linear Number:	1140
Default Value:	1.0000 pu
Minimum Value:	0.0000 pu
Maximum Value:	6.5530 pu
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

Tr Adaptation Torque Level [Tr Adapt TrqLvl]

Linear Number:	1141
Default Value:	0.050 pu
Minimum Value:	0.000 pu
Maximum Value:	2.000 pu
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

Tr Adaptation Rate Limit [Tr Adapt RateLmt]

Linear Number:	1142
Default Value:	0.0000 pu
Minimum Value:	0.0000 pu
Maximum Value:	6.5530 pu
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

Encoder Recovery Delay [Enc Recovery Dly]

Linear Number: 1145
Default Value: 10.0 sec
Minimum Value: 0.0 sec
Maximum Value: 60.0 sec
Access Level: Service
Read/Write: Read/Write

This parameter is reserved for future use.

Hardware Encoder Loss Delay [HardwrEncLossDly]

Linear Number: 1159
Default Value: 5 msec
Minimum Value: 0 msec
Maximum Value: 1000 msec
Access Level: Service
Read/Write: Read/Write

This parameter specifies the time delay before an encoder loss fault is indicated. This parameter is used only when the high performance torque control feature is enabled.

HPTC Integer 1 [HPTC Integer 1]

Linear Number: 1149
Default Value: 0
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

HPTC Integer 2 [HPTC Integer 2]

Linear Number: 1150
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

Reserved for future use.

HPTC Integer 3 [HPTC Integer 3]

Linear Number: 1151
Default Value: 0
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

HPTC Integer 4 [HPTC Integer 4]

Linear Number:	1152
Default Value:	0
Minimum Value:	-32767
Maximum Value:	32767
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

HPTC Integer 5 [HPTC Integer 5]

Linear Number:	1153
Default Value:	0
Minimum Value:	-32767
Maximum Value:	32767
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

HPTC Float 1 [HPTC Float 1]

Linear Number:	1154
Default Value:	0.000
Minimum Value:	-32.767
Maximum Value:	32.767
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

HPTC Float 2 [HPTC Float 2]

Linear Number:	1155
Default Value:	0.000
Minimum Value:	-32.767
Maximum Value:	32.767
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

Disable Speed Regulator Torque [Disbl SpdReg Trq]

Linear Number:	1156
Default Value:	0.000
Minimum Value:	0.00
Maximum Value:	0.05
Access Level:	Service
Read/Write:	Read/Write

Bit ZeroSpd_RegEn in SpecialFeatures4 must be set to enable the functionality associated with this parameter. For zero speed operation, if the torque reference issued by the speed regulator is less than what is set in P1156, the speed regulator is disabled and it issues 0.00 pu torque reference instead. If this parameter is set to zero, the speed regulator is enabled for all torque values.

HPTC Float 4 [HPTC Float 4]

Linear Number:	1157
Default Value:	0.0
Minimum Value:	-3276.7
Maximum Value:	3276.7
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

HPTC Float 5 [HPTC Float 5]

Linear Number:	1158
Default Value:	0.0
Minimum Value:	-3276.7
Maximum Value:	3276.7
Access Level:	Service
Read/Write:	Read/Write

Reserved for future use.

AHM Parameters

AHM Status Flags [AHM Status Flags]

Linear Number: 1020
Access Level: Service
Read/Write: Read Only

Reserved for future use.

5th Harmonic Magnitude [Harmonic 5th Mag]

Linear Number: 1033
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

Reserved for future use.

5th Harmonic Angle [Harmonic 5th Ang]

Linear Number: 1034
Minimum Value: 0.0 Deg
Maximum Value: 360.0 Deg
Access Level: Service
Read/Write: Read Only

Reserved for future use.

7th Harmonic Magnitude [Harmonic 7th Mag]

Linear Number: 1035
Minimum Value: 0.000 pu
Maximum Value: 2.000 pu
Access Level: Service
Read/Write: Read Only

Reserved for future use.

7th Harmonic Angle [Harmonic 7th Ang]

Linear Number: 1036
Minimum Value: 0.0 Deg
Maximum Value: 360.0 Deg
Access Level: Service
Read/Write: Read Only

Reserved for future use.

Active Harmonics Mitigation (AHM) Mode [AHM Mode]

Linear Number: 1018
Default Value: AHM Disable
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

AHM Controls [AHM Controls]

Linear Number: 1019
Default Value: 0000000000000000
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

Tuning Cycle [Tuning Cycle]

Linear Number: 1023
Default Value: 5 Min
Minimum Value: 0 Min
Maximum Value: 1500 Min
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

AHM Access Code [AHM Access Code]

Linear Number: 1028
Default Value: 0
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read/Write

Reserved for future use.

DCSL Parameters

DCSL Node ID [DCSL Node ID]

Linear Number: 935
Default Value: 0
Minimum Value: 0
Maximum Value: 7
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the identity of an individual drive in a DCSL Master-Follower drive system. All drives in a system should have unique ID numbers. Every drive in the DCSL Master-Followers system must have a unique and distinct ID. Drive ID numbers do not have to be consecutive, there can be gaps in the sequence (e.g. 0, 1, 3).

DCSL Config [DCSL Config]

Linear Number: 955
Default Value: 00000000
Access Level: Advanced
Read/Write: Read/Write

This parameter is used to configure the drive in DCSL Master-Follower system. The parameter setting is processed following drive control power up or following an active Master's Link Reset command.

Bit	Enum Text	Description
0	Enable	Enable the DCSL
1	Master	Operate drive as the DCSL Master
2	Txfr Enable	Enable the transfers of Mastership
3	Ld Factor 0	Defines the load factor capacity the Master-Follower system can run. See Load Factor Capacity below for explanation.
4	Ld Factor 1	Defines the load factor capacity the Master-Follower system can run. See Load Factor Capacity below for explanation.
5	DCSLCfg Bit5	Reserved for future use
6	DCSLCfg Bit6	Reserved for future use
7	DCSLCfg Bit7	Reserved for future use

Load Factor Capacity

Ld Factor 0 and Ld Factor 1 are combined to produce a numeric value that is subtracted from the number of drives in the system (P936, Number of Nodes) to determine the minimum number of drives the system require to run.

Ld Factor 1	Ld Factor 0	Maximum reduced margin	
0	0	0	Minimum number of drives required = Number of Nodes – Maximum reduced margin
0	1	1	
1	0	2	
1	1	3	

Number of Nodes [Number of Nodes]

Linear Number: 936
Default Value: 2
Minimum Value: 2
Maximum Value: 8
Access Level: Advanced
Read/Write: Read/Write when Stopped

This parameter specifies the maximum number of drives that will be operating over DCSL. The setting is also used to determine the reduced capacity limit.

DCSL Master Identification [DCSL Master ID]

Linear Number: 937
Minimum Value: 0
Maximum Value: 8
Access Level: Advanced
Read/Write: Read Only

This variable displays the ID of the drive that is operating as the DCSL Master.

Active Nodes [Active Nodes]

Linear Number: 1048
Access Level: Advanced
Read/Write: Read Only

This is a bitwise variable that displays which drives are actively online on the DCSL.

Bit	Enum Text	Description
0	Drive 0	Drive 0 is online
1	Drive 1	Drive 1 is online
2	Drive 2	Drive 2 is online
3	Drive 3	Drive 3 is online
4	Drive 4	Drive 4 is online
5	Drive 5	Drive 5 is online
6	Drive 6	Drive 6 is online
7	Drive 7	Drive 7 is online

DCSL Node Loss [DCSL Node Loss]

Linear Number: 1089
Access Level: Advanced
Read/Write: Read Only

This variable indicates that the Master lost communications with a Node that was previously communicating over DCSL.

Bit	Enum Text	Description
0	Drive 0 Comm	Master drive has lost communication with Drive 0
1	Drive 1 Comm	Master drive has lost communication with Drive 1
2	Drive 2 Comm	Master drive has lost communication with Drive 2
3	Drive 3 Comm	Master drive has lost communication with Drive 3
4	Drive 4 Comm	Master drive has lost communication with Drive 4
5	Drive 5 Comm	Master drive has lost communication with Drive 5
6	Drive 6 Comm	Master drive has lost communication with Drive 6
7	Drive 7 Comm	Master drive has lost communication with Drive 7

Drive Status [Drive Status]

Linear Number: 945
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the drive's own status. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Drv StatBt15	Reserved for future use

Master Status [Master Status]

Linear Number: 954
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the acting master drive. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class1 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Drv StatBt15	Reserved for future use

DCSL Master Command [DCSL Master Cmd]

Linear Number: 944
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the command word sent from the Master drive to Follower drive. The bit definitions are as follows:

Bit	Enum Text	Description
0	Not Stop	Drive is ready to Run
1	Start	Start the Drive
2	Cmd Reverse	Command direction: 0 for forward, 1 for reverse
3	DIC Command	Reserved for future use
4	DOC Command	Reserved for future use
5	Alarm Reset	Reset the drive
6	Link Reset	Reset the DCSL
7	Reserved	Reserved for future use

DCSL Drive 0 Status [DCSL Drv0 Status]

Linear Number: 1081
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 0. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 1 Status [DCSL Drv1 Status]

Linear Number: 1082
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 1. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault

Bit	Enum Text	Description
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 2 Status [DCSL Drv2 Status]

Linear Number: 1083
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 2. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 3 Status [DCSL Drv3 Status]

Linear Number: 1084
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 3. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 4 Status [DCSL Drv4 Status]

Linear Number: 1085
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 4. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use

Bit	Enum Text	Description
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 5 Status [DCSL Drv5 Status]

Linear Number: 1086
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 5. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 6 Status [DCSL Drv6 Status]

Linear Number: 1087
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 6. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.

Bit	Enum Text	Description
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Drive 7 Status [DCSL Drv7 Status]

Linear Number: 1088
Access Level: Advanced
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable displays the status of the drive with node ID: 7. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready	Drive is ready
1	Running	Drive is running
2	Cmd Directn	Command direction: 0 for forward, 1 for reverse
3	Rotn Directn	Direction of rotation: 0 for forward, 1 for reverse
4	At Speed	The drive has reached commanded speed.
5	Input Clsed	Drive input contactor is closed
6	Output Clsed	Drive output contactor is closed
7	Mastr Accept	Drive can accept mastership
8	Class1 Fault	Drive faulted on Class1 Fault
9	Class2 Fault	Drive faulted on Class2 Fault
10	Normal Mode	Drive is in Normal Mode
11	System Test	Drive is in System Test Mode
12	Drv StatBt12	Reserved for future use
13	Drv StatBt13	Reserved for future use
14	Drv StatBt14	Reserved for future use
15	Status Valid	Status word is valid. Bit toggles to indicate communication online

DCSL Status [DCSL Status]

Linear Number: 1046
Access Level: Advanced
Read/Write: Read Only

This variables displays the DCSL Master-Follower drive system status. The bit definitions are as follows:

Bit	Enum Text	Description
0	Ready Full	System is ready with full capacity
1	Ready Redcd	System is ready with reduced capacity
2	Initializing	DCSL is initializing
3	Fault	DCSL fault exist
4	Warning	DCSL warning exist
5	ActiveMaster	Drive is the active master
6	Online	Drive is online
7	LdFactor Dis	Load factor is disabled
8	DCSL Lock	DCSL is locked. The number of nodes online have reached the specified max number of nodes allow (*P936, Number of Nodes*)
9	Bit9	Reserved for future use
10	Bit10	Reserved for future use
11	Bit11	Reserved for future use
12	Bit12	Reserved for future use
13	Bit13	Reserved for future use
14	Bit14	Reserved for future use
15	Bit15	Reserved for future use

DCSL Master Transfer Acceptance [Master Accept]

Linear Number: 1045
Access Level: Advanced
Read/Write: Read Only

This bitwise variable indicates which drives can accept transfer of master by either the Master itself or Follower requesting the role.

Bit	Enum Text	Description
0	Drive 0	Drive with ID 0 can take on mastership
1	Drive 1	Drive with ID 1 can take on mastership
2	Drive 2	Drive with ID 2 can take on mastership
3	Drive 3	Drive with ID 3 can take on mastership
4	Drive 4	Drive with ID 4 can take on mastership
5	Drive 5	Drive with ID 5 can take on mastership
6	Drive 6	Drive with ID 6 can take on mastership
7	Drive 7	Drive with ID 7 can take on mastership

DCSL Master Torque Reference [DCSL MstrTorqRef]

Linear Number: 931
Minimum Value: 0
Maximum Value: 65535
Access Level: Service
Read/Write: Read Only

This variable is the torque reference from the Master drive to all Follower drives in a DCSL Master-Follower drive system. It is raw data, not in engineering units. The resulting torque reference used by the Follower drive is the product of this Master Torque reference (converted to pu) and value programmed in *P933, Torque Ref Scale*.

Master Revolutions-per-Minute Reference [Master RPM Ref]

Linear Number: 932
Minimum Value: -6000 rpm
Maximum Value: 6000 rpm
Access Level: Service
Read/Write: Read Only

This variable is the speed (rpm) reference from the Master drive to all Follower drives in a DCSL Master-Follower drive system. The bidirectional speed reference, together with values programmed in *P934, Gear Ratio*, *P938, Spd Window High*, and *P1090, Spd Window Low*, are used for the speed window protection.

DCSL Fault Flags [DCSL Fault Flags]

Linear Number: 1050
Access Level: Service
Read/Write: Read Only

In a DCSL Master-Follower drive system, this variable indicates the faults in the Link Controller or Tx/Rx processes encountered. It is cleared on any of these commands: Drive Reset, Node Reset, or Link Reset. The bit definitions are as follows:

Bit	Enum Text	Description
0	Mstr Comm	A Follower drive has detected loss of communications with the Master drive
1	CRC Fault	The Link Controller has detected a number of CRC faults that equals or has exceed the maximum allowable CRC faults
2	Arbloss	The Link Controller has detected a number of Arbitration Loss faults that equals or exceeds the maximum allowable Arbitration Loss faults
3	Duplct Node	A Follower drive has detected another node with the same ID
4	Login DcInd	Set by a Follower drive when the Master drive refused the Login Event
5	Low Capacity	The system has dropped below the Minimum Capacity that the system can run
6	Self Test	The Link Controller failed the power-on internal loopback self test
7	DCSLFltBit7	Reserved for future use

DCSL Warning Flags [DCSL Warn Flags]

Linear Number: 1051
Access Level: Service
Read/Write: Read Only

In DCSL Master-Follower drive system, this variable indicates the warnings the Link Controller or Tx/Rx processes encountered. It is cleared on any of these commands: Drive Reset, Node Reset, or Link Reset. The bit definition is as follows:

Bit	Enum Text	Description
0	Duplct Mstr	A Master drive detected another Master on DCSL and has reverted to the role of Follower
1	CRC Warning	The Link Controller has detected a number of CRC faults that equals or has exceed the maximum allowable CRC warning but are less than the CRC fault level
2	Arbloss Wrn	The Link Controller has detected a number of Arbitration Loss faults that equals or exceeds the maximum allowable Arbitration Loss warning but are less than the Arbitration Loss fault level
3	MstrTxfr Wrn	A transfer of mastership has failed and the old Master is still the Active Master. Can be caused by the drive not being allowed to accept mastership transfer or the Master refused to transfer the role to a requesting Follower
4	New Master	A new Master has been detected by all drives
5	Min Capacity	The system is at the lowest possible capacity that the system can run.
6	DCSLWrnBit06	Reserved for future use
7	DCSLWrnBit07	Reserved for future use

Follower Maximum Running Delay [FlwrMaxRuningDly]

Linear Number: 1092
Default Value: 3000 msec
Minimum Value: 0 msec
Maximum Value: 10000 msec
Access Level: Advanced
Read/Write: Read/Write

In a DCSL Master-Follower drive system, the Master drive sends out the torque reference to the Follower drive. This parameter specifies the maximum delay time delay the Master drive will wait until sending out the torque reference to the Follower drive(s).

DCSL Test Profile [DCSL TestProfile]

Linear Number: 943
Default Value: Disabled
Access Level: Advanced
Read/Write: Read/Write when Stopped

In a DCSL Master-Follower drive system, while in System Test, parameter DCSL TestProfile can be used to enable/select a specific torque reference test profile the Master drive sends to the Follower drive(s).

Bit	Enum Text	Description
0	Disabled	No test profile selected
1	TestProfile1	Test profile 1: Sawtooth torque reference selected
2	TestProfile2	Reserved for future use

Speed Window Low [Spd Window Low]

Linear Number: 1090
Default Value: 400 rpm
Minimum Value: 0 rpm
Maximum Value: 20000 rpm
Access Level: Advanced
Read/Write: Read/Write

Setting of this parameter is used for speed window protection. The parameter specifies the lower limit margin, in motor rpm, the Follower drive's motor speed can run below the reference speed. The reference speed is the product of *P932, Master RPM Ref* and values programmed in *P934, Gear Ratio*.

Speed Window High [Spd Window High]

Linear Number: 938
Default Value: 400 rpm
Minimum Value: 0 rpm
Maximum Value: 20000 rpm
Access Level: Advanced
Read/Write: Read/Write

Setting of this parameter is used for speed window protection. The parameter specifies the upper limit margin, in motor rpm, the Follower drive's motor speed can run above the reference speed. The reference speed is the product of *P932, Master RPM Ref* and values programmed in *P934, Gear Ratio*.

DCSL Command [DCSL Command]

Linear Number: 1049
Default Value: 00000000
Access Level: Service
Read/Write: Read/Write when Stopped

This parameter will allow DCSL specific commands to be executed by the DCSL Driver. The bit definition is as follows:

Bit	Enum Text	Description
0	Txfr Next	Reserved for future use
1	Take Master	Reserved for future use
2	MstrTxfr Dis	Disable Mastership transfer
3	Node Reset	Reset the node to its DCSK programmed values
4	Link Reset	Commands a Master to transmit a Link Reset command to all drives, thereby resetting the entire DCSL link. Ignored on Follower drives.

Bit	Enum Text	Description
5	DCSLCmdBit5	Reserved for future use
6	DCSLCmdBit6	Reserved for future use
7	DCSLCmdBit7	Reserved for future use

Torque Reference Scaling Factor [Torque Ref Scale]

Linear Number: 933
Default Value: 1.00
Minimum Value: 0.10
Maximum Value: 655.35
Access Level: Service
Read/Write: Read/Write

On individual Follower drive in the DCSL Master-Follower drive system, this parameter is used to specify the scaling factor to be applied to the torque reference received from the Master drive. The resulting torque reference used by the Follower drive is the product of this *Torque Ref Scale* and *P931, DCSL Master Torque* reference (converted to pu).

Gear Ratio [Gear Ratio]

Linear Number: 934
Default Value: 1.00 x:1
Minimum Value: 0.10 x:1
Maximum Value: 655.35 x:1
Access Level: Service
Read/Write: Read/Write

On individual Follower drive in the DCSL Master-Follower drive system, this parameter is used to specify the gear ratio factor to be applied to the motor speed reference received from the Master drive. The speed reference used by the Follower drive for speed protection is the product of this *Gear Ratio* and *P932, Master RPM Ref*.

Functional Safety Parameters

Safe Torque Off (STO) Status [STO Status]

Linear Number: 1054
Access Level: Monitor
Read/Write: Read Only

This parameter indicates the STO status. The bit definition is as follows:

Bit	Enum Text	Description
0	RecSTOReq	Rectifier STO Requested: Received a STO request from Rectifier OIBBs
1	RecOIB2Ready	Rectifier OIB2 Ready: All OIB2 on Rectifier OIBBs are ready.
2	RecOIBBComOK	Rectifier OIBBs Communication OK: There is a successful communication with Rectifier OIBBs.
3	–	Reserved for future use
4	InvSTOReq	Inverter STO Requested: Received a STO request from Inverter OIBBs
5	InvOIB2Ready	Inverter OIB2 Ready: All OIB2 on Inverter OIBBs are ready.
6	InvOIBBComOK	Inverter OIBBs Communication OK: There is a successful communication with Inverter OIBBs.
7	–	Reserved for future use
8	–	Reserved for future use
9	–	Reserved for future use
10	–	Reserved for future use
11	–	Reserved for future use
12	–	Reserved for future use
13	–	Reserved for future use
14	Rec PWR OK	Rectifier Power On Reset OK: This bit indicates the inverter OIBBs diagnostic microcontroller has powered up correctly.
15	Inv PWR OK	Inverter Power On Reset OK: This bit indicates the rectifier OIBBs diagnostic microcontroller has powered up correctly.

Rectifier OIBBS Status 1 [RecOIBBS Status1]

Linear Number: 1057
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the status of the rectifier OIBBs for diagnostic purpose. The bit definition is as follows:

Bit	Enum Text	Description
0	PWR SPL OK	Power Supply OK: This bit indicates that the measured voltages on all monitored power supplies are within the specified limits.
1	Diag OK	Diagnostic OK: This bit indicates that no faults have been detected in software controlled diagnostic functions.
2	PSD OK	Power Structure Diagnostic OK: This bit indicates that no Power Structure Diagnostic faults have been detected.
3	InpCtctrOpen	Input Contactor Open: The feedback signal of the status of MV contactor or upstream isolating device, indicating the device is open.

Bit	Enum Text	Description
4	Reset Assrtd	Reset Asserted: This bit indicates a validated fault reset from the S4 input is in progress. The S4 input is the hardware reset input to the OIBBS. The bit stays on for 0.25 s.
5	Reserved	Reserved for future use
6	Not Pending	STO not Pending: This bit indicates that a demand for the safety function is not pending.
7	STO Active	STO Active: This bit indicates that Safety Relay time out has completed and the drive has been placed in the safe state.
8	OIB2 Ready	OIB2 Ready: This bit indicates that all installed Rectifier OIB2s are ready to accept gating commands.
9	Gate Active	Gating Active: This bit indicates that the non-safety related drive control has determined gating is active based on the 'Gating Inactive/Reset' signal.
10	Reserved	Reserved for future use
11	Reserved	Reserved for future use
12	OIB A Dtctd	OIB A Detected: This bit indicates that an OIB has been detected on location A.
13	OIB2 A Dtctd	OIB2 A Detected: This bit indicates that an OIB2 has been detected on location A.
14	Ready A	Ready A: This bit indicates that the board in location A is 'Ready'
15	Reserved	Reserved for future use

Rectifier OIBBS Status 2 [RecOIBBS Status2]

Linear Number: 1058
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the status of the rectifier OIBBs for diagnostic purpose. The bit definition is as follows:

Bit	Enum Text	Description
0	OIB B Dtctd	OIB B Detected: This bit indicates that an OIB has been detected in location B.
1	OIB2 B Dtctd	OIB2 B Detected: This bit indicates that an OIB2 has been detected on location B.
2	Ready B	Ready B: This bit indicates that the board in location B is 'Ready'
3	Reserved	Reserved for future use
4	OIB C Dtctd	OIB C Detected: This bit indicates that an OIB has been detected in location C.
5	OIB2 C Dtctd	OIB2 C Detected: This bit indicates that an OIB2 has been detected on location C.
6	Ready C	Ready C: This bit indicates that the board in location C is 'Ready'
7	Reserved	Reserved for future use
8	SPS	SPS: This bit indicates that the Self-Power-SGCT jumper is detected.
9	Reserved	Reserved for future use
10	Reserved	Reserved for future use
11	Reserved	Reserved for future use
12	Reserved	Reserved for future use
13	Reserved	Reserved for future use
14	Reserved	Reserved for future use
15	Reserved	Reserved for future use

Inverter OIBBS Status 1 [InvOIBBS Status1]

Linear Number: 1069
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the status of the inverter OIBBs for diagnostic purpose. The bit definition is as follows:

Bit	Enum Text	Description
0	PWR SPL OK	Power Supply OK: This bit indicates that the measured voltages on all monitored power supplies are within the specified limits.
1	Diag OK	Diagnostic OK: This bit indicates that no faults have been detected in software controlled diagnostic functions.
2	PSD OK	Power Structure Diagnostic OK: This bit indicates that no Power Structure Diagnostic faults have been detected.
3	InpCtctrOpen	Input Contactor Open: The feedback signal of the status of MV contactor or upstream isolating device, indicating the device is open.
4	Reset Assrtd	Reset Asserted: This bit indicates a validated fault reset from the S4 input is in progress. The S4 input is the hardware reset input to the OIBBS. The bit stays on for 0.25 s.
5	Reserved	Reserved for future use
6	Not Pending	STO not Pending: This bit indicates that a demand for the safety function is not pending.
7	STO Active	STO Active: This bit indicates that Safety Relay time out has completed and the drive has been placed in the safe state.
8	OIB2 Ready	OIB2 Ready: This bit indicates that all installed Inverter OIB2s are ready to accept gating commands.
9	Gate Active	Gating Active: This bit indicates that the non-safety related drive control has determined gating is active based on the 'Gating Inactive/Reset' signal.
10	Reserved	Reserved for future use
11	Reserved	Reserved for future use
12	OIB A Dtctd	OIB A Detected: This bit indicates that an OIB has been detected in location A.
13	OIB2 A Dtctd	OIB2 A Detected: This bit indicates that an OIB2 has been detected in location A.
14	Ready A	Ready A: This bit indicates the board in location A is 'Ready'
15	Reserved	Reserved for future use

Inverter OIBBS Status 2 [InvOIBBS Status2]

Linear Number: 1070
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the diagnostic faults performed on various components in the safety control system on inverter side. The bit definition is as follows:

Bit	Enum Text	Description
0	OIB B Dtctd	OIB B Detected: This bit indicates that an OIB has been detected in location B.
1	OIB2 B Dtctd	OIB2 B Detected: This bit indicates that an OIB2 has been detected in location B.
2	Ready B	Ready B: This bit indicates that the board in location B is 'Ready'

Bit	Enum Text	Description
3	Reserved	Reserved for future use
4	OIB C Dtctd	OIB C Detected: This bit indicates that an OIB has been detected in location C.
5	OIB2 C Dtctd	OIB2 C Detected: This bit indicates that an OIB2 has been detected in location C.
6	Ready C	Ready C: This bit indicates that the board in location C is 'Ready'
7	Reserved	Reserved for future use
8	SPS	SPS: This bit indicates that the Self-Power-SGCT jumper is detected.
9	Reserved	Reserved for future use
10	Reserved	Reserved for future use
11	Reserved	Reserved for future use
12	Reserved	Reserved for future use
13	Reserved	Reserved for future use
14	Reserved	Reserved for future use
15	Reserved	Reserved for future use

Rectifier OIBBS Fault 1 [Rec OIBBS Fault1]

Linear Number: 1066
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the diagnostic faults performed on various components in the safety control system on rectifier side. These are all Class 1 faults. The bit definition is as follows:

Bit	Enum Text	Description
0	Reserved	Reserved for future use
1	WtchDg T Out	**Rectifier Watch Dog Timeout:** A failure of the OIBBs diagnostic subsystem was detected. A power on reset is required to recover, however, replacing the OIBBS is recommended.
2	PwrSup Rng	**Rectifier Power Supply out of Range:** The OIBBs diagnostic subsystem has detected an out of range power supply voltage (this is for protected 5V or diagnostic 3.3V supplies).
3	Temp Rng	**Rectifier Temperature out of Range:** The OIBBs diagnostic subsystem has detected an out of range temperature.
4	NSR PS Rng	**Rectifier Non Safety Related Power Supply out of Range:** The OIBBs diagnostic subsystem has detected an out of range power supply voltage (this is for the 24Vdc supply).
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Gen Fault	**Rectifier General Fault:** This fault indicates a diagnostic of the PSD test failed, a diagnostic of the power supply monitoring failed, or the input contactor power on timer has failed.
8	S1 Stuck	**Rectifier S1 Stuck:** The OIBBs diagnostic subsystem has detected a fault.
9	S2 Stuck	**Rectifier S2 Stuck:** The OIBBs diagnostic subsystem has detected a fault.
10	Reserved	Reserved for future use
11	STOInpInvld	**Rectifier Safety Input Invalid:** The OIBBs diagnostic subsystem has detected an invalid control input state. S1 and S2 inputs to the OIBBS are invalid.

Bit	Enum Text	Description
12	S3 Timeout	**STO Active Timeout:** The OIBBs diagnostic subsystem has detected a fault. A problem of timing function on the OIBBs has been detected.
13	A1 Fault	**Rectifier A1 Fault:** The OIBBs diagnostic subsystem has detected that the A1 diagnostic test failed.
14	A1 PwrSupply	**Rectifier A1 Power Supply out of Range:** The OIBBs diagnostic subsystem has detected a fault. A1 Boost converter output voltage is out of range.
15	A2GateBufFlt	**Rectifier A2 Gate Buffer Fault:** The OIBBs diagnostic subsystem has detected a fault. A2, the gate buffer has detected a fault.

Rectifier OIBBS Fault 2 [Rec OIBBS Fault2]

Linear Number: 1067
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the diagnostic faults performed on various components in the safety control system on rectifier side. These are all Class 1 Faults. The bit definition is as follows:

Bit	Enum Text	Description
0	A3 Fault	**Rectifier A3 Fault:** A3 diagnostic test failed on the OIBBS.
1	A4 Fault	**Rectifier A4 Fault:** A4 diagnostic test failed on the OIBBS.
2	A5 Fault	**Rectifier A5 Fault:** A5 diagnostic test failed on the OIBBS.
3	Reserved	Reserved for future use
4	Reserved	Reserved for future use
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Reserved	Reserved for future use
8	OIB Detected	**Rectifier OIB Detected:** The Safety Control System has detected incompatible hardware. One or more Optical Interface Board(s) have been detected.
9	InpCtctrClsd	**Rectifier Input Contactor Closed:** The Safety Control System has detected a fault in the Drive Input Contactor control system. The input device was closed when it was commanded to open by the OIBBS.
10	PSD Fault	**Rectifier Power Structure Diagnostic Fault:** The Safety Control System has detected a fault in one or more SGCTs. Incorrect SGCT unit feedback was detected.
11	GateActvFlt	**Rectifier Gate Active Fault:** The Safety Control System has detected a failure in the non safety related drive control system to perform an orderly shutdown in preparation for activation of the safety function. The safety function has been executed independent of the non-safety related control system.
12	Reserved	Reserved for future use
13	Reserved	Reserved for future use
14	Reserved	Reserved for future use
15	Reserved	Reserved for future use

Inverter OIBBS Fault 1 [Inv OIBBS Fault1]

Linear Number: 1078
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the diagnostic faults performed on various components in the safety control system on inverter side. These are all Class 1 Faults. The bit definition is as follows:

Bit	Enum Text	Description
0	Reserved	Reserved for future use
1	WtchDg T Out	**Inverter Watch Dog Timeout:** A failure of the OIBBs diagnostic subsystem was detected. A power on reset is required to recover, however, replacing the OIBBS is recommended.
2	PwrSup Rng	**Inverter Power Supply out of Range:** The OIBBs diagnostic subsystem has detected an out of range power supply voltage (this is for protected 5V or diagnostic 3.3V supplies).
3	Temp Rng	**Inverter Temperature out of Range:** The OIBBs diagnostic subsystem has detected an out of range temperature.
4	NSR PS Rng	**Inverter Non Safety Related Power Supply out of Range:** The OIBBs diagnostic subsystem has detected an out of range power supply voltage (this is for the 24Vdc supply).
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Gen Fault	**Inverter General Fault:** This fault indicates a diagnostic of the PSD test failed, a diagnostic of the power supply monitoring failed, or the input contactor power on timer has failed.
8	S1 Stuck	**Inverter S1 Stuck:** The OIBBs diagnostic subsystem has detected a fault.
9	S2 Stuck	**Inverter S2 Stuck:** The OIBBs diagnostic subsystem has detected a fault.
10	Reserved	Reserved for future use
11	STOInpInvld	**Inverter Safety Input Invalid:** The OIBBs diagnostic subsystem has detected an invalid control input state. S1 and S2 inputs to the OIBBS are invalid.
12	S3 Timeout	**STO Active Timeout:** The OIBBs diagnostic subsystem has detected a fault. A problem of timing function on the OIBBs has been detected.
13	A1 Fault	**Inverter A1 Fault:** The OIBBs diagnostic subsystem has detected that the A1 diagnostic test failed.
14	A1 PwrSupply	**Inverter A1 Power Supply out of Range:** The OIBBs diagnostic subsystem has detected a fault. A1 Boost converter output voltage is out of range.
15	A2GateBufFlt	**Inverter A2 Gate Buffer Fault:** The OIBBs diagnostic subsystem has detected a fault. A2, the gate buffer has detected a fault.

Inverter OIBBS Fault 2 [Inv OIBBS Fault2]

Linear Number: 1079
Access Level: Monitor
Read/Write: Read Only

This parameter indicates some of the diagnostic faults performed on various components in the safety control system on inverter side. These are all Class 1 Faults. The bit definition is as follows:

Bit	Enum Text	Description
0	A3 Fault	**Inverter A3 Fault:** A3 diagnostic test failed on the OIBBS.
1	A4 Fault	**Inverter A4 Fault:** A4 diagnostic test failed on the OIBBS.
2	A5 Fault	**Inverter A5 Fault:** A5 diagnostic test failed on the OIBBS.
3	Reserved	Reserved for future use
4	Reserved	Reserved for future use
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Reserved	Reserved for future use
8	OIB Detected	**Inverter OIB Detected:** The Safety Control System has detected incompatible hardware. One or more Optical Interface Board(s) have been detected.
9	InpCtctrClsd	**Inverter Input Contactor Closed:** The Safety Control System has detected a fault in the Drive Input Contactor control system. The input device was closed when it was commanded to open by the OIBBS.
10	PSD Fault	**Inverter Power Structure Diagnostic Fault:** The Safety Control System has detected a fault in one or more SGCTs. Incorrect SGCT unit feedback was detected.
11	GateActvFlt	**Inverter Gate Active Fault:** The Safety Control System has detected a failure in the non safety related drive control system to perform an orderly shutdown in preparation for activation of the safety function. The safety function has been executed independent of the non-safety related control system.
12	Reserved	Reserved for future use
13	Reserved	Reserved for future use
14	Reserved	Reserved for future use
15	Reserved	Reserved for future use

Rectifier OIBBS Hardware Revision [Rec STO HW Rev]

Linear Number: 1063
Minimum Value: 0
Maximum Value: 255
Access Level: Monitor
Read/Write: Read Only

This parameter is an unsigned value which indicates the revision of the rectifier OIBBs hardware.

Rectifier OIBBS Firmware Revision [Rec STO FW Rev]

Linear Number: 1064
Minimum Value: 0.000
Maximum Value: 65.535
Access Level: Monitor
Read/Write: Read Only

This parameter indicates the major and minor software revision of diagnostic microcontroller on rectifier OIBBs. The format is X.YYY, where X is the major revision and YYY is the minor revision.

Rectifier OIBBS Software Build [Rec STO Build]

Linear Number: 1065
Minimum Value: 0
Maximum Value: 255
Access Level: Monitor
Read/Write: Read Only

This parameter indicates the software build of rectifier diagnostic microcontroller.

Inverter OIBBS Hardware Revision [Inv STO HW Rev]

Linear Number: 1075
Minimum Value: 0
Maximum Value: 255
Access Level: Monitor
Read/Write: Read Only

This parameter is an unsigned value which indicates the revision of the inverter OIBBs hardware.

Inverter OIBBS Firmware Revision [Inv STO FW Rev]

Linear Number: 1076
Minimum Value: 0.000
Maximum Value: 65.535
Access Level: Monitor
Read/Write: Read Only

This parameter indicates the major and minor software revision of diagnostic microcontroller on inverter OIBBs. The format is X.YYY, where X is the major revision and YYY is the minor revision.

Inverter OIBBS Software Build [Inv STO Build]

Linear Number: 1077
Minimum Value: 0
Maximum Value: 255
Access Level: Monitor
Read/Write: Read Only

This parameter indicates the software build of inverter diagnostic microcontroller.

STO Event Register [STO Event Reg]

Linear Number: 1119
Access Level: Monitor
Read/Write: Read Only

This is the STO event status register that will be logged in the event data. The bit definition is as follows:

Bit	Enum Text	Description
0	STOActivated	STO Activated: This bit would be set if Safe Torque Off has been activated. Both STO activation and deactivation events would be logged in the event data.
1	OIBBSPwrUpOK	OIBBs power up OK: This bit indicates the power up status of the rectifier and inverter OIBBs. It is set based on the logic AND function of rectifier OIBBs power up status and inverter OIBBs power up status.
2	Reserved	Reserved for future use
3	Reserved	Reserved for future use
4	Reserved	Reserved for future use
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Reserved	Reserved for future use

STO Fault [STO Fault]

Linear Number: 1055
Access Level: Service
Read/Write: Read Only

This parameter indicates the fault status of Safe Torque Off. These are all Class 1 Faults. The bit definition is as follows:

Bit	Enum Text	Description
0	ConfigFlt1	**Configuration Fault 1:** This bit indicates that a configuration conflict has been detected. The Safe Torque Off function is incompatible with the following features: N+1, Parallel Drives, 18-Pulse.
1	ConfigFlt2	**Configuration Fault 2:** This bit indicates that a configuration conflict has been detected. The Safe Torque Off function is incompatible with drives utilizing a bypass contactor (i.e., synchronous transfer) and SPS jumper not configured correctly.
2	STOReqFlt	**STO Request Fault:** The demand for the Safe Torque Off function was not consistent across all channels. There is a mismatch among four channels.
3	ShortSTOReq	**Short STO request fault:** The demand for the Safe Torque Off function was not consistent across all channels. One or more of the STO request signals get de-asserted within 1 second after being asserted.
4	STOGatingFlt	**STO Gating Fault:** The drive was unable to perform a controlled shutdown in the allotted time.
5		Reserved for future use
6		Reserved for future use
7		Reserved for future use
8	RecOIBBCom	**Rectifier OIBBs Communication fault:** Communication failed to the OIBBs. The communication from rectifier OIBBs is lost.

Bit	Enum Text	Description
9	ConfigFltRec	**Rectifier configuration fault:** Functional safety hardware / configuration mismatch detected. There is a hardware configuration fault on the rectifier side.
10		Reserved for future use
11		Reserved for future use
12	InvOIBBCom	**Inverter OIBBs Communication fault:** Communication failed to the OIBBs. The communication from inverter OIBBs is lost.
13	ConfigFltInv	**Inverter configuration fault:** Functional safety hardware / configuration mismatch detected. There is a hardware configuration fault on the inverter side.
14	Reserved	Reserved for future use
15	Reserved	Reserved for future use

Rectifier Voltage of Non-Safety Related (NSR) Supply [Rec NSRSupply]

Linear Number: 1059
Minimum Value: -10.00 Vdc
Maximum Value: 35.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of the supplied +24V non safety related supply voltage on the rectifier OIBBs.

Rectifier Voltage of Protected Supply [Rec Prot Supply]

Linear Number: 1060
Minimum Value: -10.00 Vdc
Maximum Value: 10.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of the protected +5V supply on the rectifier OIBBs.

Rectifier Voltage of Diagnostic Supply [Rec Diag Supply]

Linear Number: 1061
Minimum Value: -10.00 Vdc
Maximum Value: 10.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of +3.3V diagnostic supply on the rectifier OIBBs.

Rectifier Voltage of Safe Supply [Rec Safe Supply]

Linear Number: 1062
Minimum Value: -10.00 Vdc
Maximum Value: 10.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of the safe +5V supply on the rectifier OIBBs.

Inverter Voltage of Non-Safety Related (NSR) Supply [Inv NSRSupply]

Linear Number: 1071
Minimum Value: -10.00 Vdc
Maximum Value: 35.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of the supplied +24V non safety related supply voltage on the inverter OIBBs.

Inverter Voltage of Protected Supply [Inv Prot Supply]

Linear Number: 1072
Minimum Value: -10.00 Vdc
Maximum Value: 10.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of the protected +5V supply on the inverter OIBBs.

Inverter Voltage of Diagnostic Supply [Inv Diag Supply]

Linear Number: 1073
Minimum Value: -10.00 Vdc
Maximum Value: 10.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of +3.3V diagnostic supply on the inverter OIBBs.

Inverter Voltage of Safe Supply [Inv Safe Supply]

Linear Number: 1074
Minimum Value: -10.00 Vdc
Maximum Value: 10.00 Vdc
Access Level: Service
Read/Write: Read Only

This parameter indicates the voltage of the safe +5V supply on the inverter OIBBs.

Functional Safety Mode [Func Safety Mode]

Linear Number: 1052
Default Value: 00000000
Access Level: Advanced
Read/Write: Read/Write when Stopped

This is a functional safety parameter in the Functional Safety group which is used to enable functions supporting the operation of the Safe Torque Off feature. This parameter can only be changed when the drive is not running and if the access level is set to advanced or above. If this parameter is set after either

N+1, parallel drives or synchronous transfer, a fault is generated and the drive is not allowed to run. After setting this parameter, if the drive is configured for either N+1, parallel drives or synchronous transfer, a fault is generated and the drive is not allowed to run. The bit definition is as follows:

Bit	Enum Text	Description
0	Safe TrqOff	Safe Torque Off: This bit indicates whether the Safe Torque Off feature is enabled.
1	Reserved	Reserved for future use
2	Reserved	Reserved for future use
3	Reserved	Reserved for future use
4	Reserved	Reserved for future use
5	Reserved	Reserved for future use
6	Reserved	Reserved for future use
7	Reserved	Reserved for future use

STO Idc Offset Level [STO Idc OffLevel]

Linear Number: 1056
Minimum Value: 0.000 pu
Maximum Value: 1.000 pu
Access Level: Monitor
Read/Write: Read Only

This parameter indicates the maximum value of Idc threshold at which the drive can be shut off safely without any hardware damage.

Parameters Listed by Group

Feedback Parameters

No.	Name	Min	Max	Default	Units	Read Only	Access
135	Line Voltage pu	0.000	2.000	-	pu	Y	Service
696	Rec Input Volt	0.000	2.000	-	pu	Y	Service
645	Rec DCLink Volt	-2.000	2.000	-	pu	Y	Service
643	Inv DCLink Volt	-2.000	2.000	-	pu	Y	Service
761	Inv Output Volt	0.000	2.000	-	pu	Y	Service
554	Motor Voltage pu	0.000	2.000	-	pu	Y	Service
122	Line Current pu	0.000	4.000	-	pu	Y	Service
555	Motor Current pu	0.000	4.000	-	pu	Y	Service
254	Rec HSink Temp C	-40.0	100.0	-	C	Y	Monitor
255	Rec HSink Temp F	-40.0	212.0	-	F	Y	Monitor
252	Inv HSink Temp C	-40.0	100.0	-	C	Y	Monitor
253	Inv HSink Temp F	-40.0	212.0	-	F	Y	Monitor
567	Air Filter Block	0.0	100.0	-	%	Y	Basic
568	Air Filter Allow	0.0	100.0	-	%	Y	Basic
447	Conv AirPressure	-1.0	10.0	-	V	Y	Basic
653	IsoTxAirPressure	-10.0	10.0	-	V	Y	Basic
589	LineNeutral Volt	-2.000	2.000	-	pu	Y	Basic
347	Mtr Neutral Volt	-2.000	2.000	-	pu	Y	Basic
136	Master Line Volt	0.000	2.000	-	pu	Y	Service
137	Slave1 Line Volt	0.000	2.000	-	pu	Y	Service
138	Slave2 Line Volt	0.000	2.000	-	pu	Y	Service
382	Master Line Cur	0.000	4.000	-	pu	Y	Service
383	Slave1 Line Cur	0.000	4.000	-	pu	Y	Service
384	Slave2 Line Cur	0.000	4.000	-	pu	Y	Service
334	Master Line Freq	-100.0	100.0	-	Hz	Y	Service
335	Slave1 Line Freq	-100.0	100.0	-	Hz	Y	Service
239	Slave2 Line Freq	-100.0	100.0	-	Hz	Y	Service
616	Slave1 Angle	-360.0	360.0	-	Deg	Y	Service
617	Slave2 Angle	-360.0	360.0	-	Deg	Y	Service
683	Harmonic Voltage	0.000	32.767	-	pu	Y	Service
779	ComModeCur Peak	0.00	655.35	-	A	Y	Service
778	TransientVoltMax	0.000	2.000	-	pu	Y	Service
684	BusTransient Trp	0.000	32.767	-	pu	Y	Service
767	BusTransient Lvl	0.000	32.767	-	pu	Y	Service
897	Cap Neutral Volt	-2.000	2.000	-	pu	Y	Service
1115	Instant Volt Max	0.000	2.000	-	pu	Y	Service

Diagnostics Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
257	Logic Command	-	-	-	Hex	Y	Monitor
258	Logic Status	-	-	-	Hex	Y	Monitor
262	Drive Not Ready1	-	-	-	Hex	Y	Monitor
699	Drive Not Ready2	-	-	-	Hex	Y	Monitor
569	DrvStatus Flag1	-	-	-	Hex	Y	Service
238	DrvStatus Flag2	-	-	-	Hex	Y	Service
484	DrvStatus Flag3	-	-	-	Hex	Y	Service
505	Contactor Cmd	-	-	-	Hex	Y	Service
506	Contactor Status	-	-	-	Hex	Y	Service
264	RecControl Flag1	-	-	-	Hex	Y	Service
160	RecControl Flag2	-	-	-	Hex	Y	Service
368	RecControl Flag3	-	-	-	Hex	Y	Service
471	RecControl Flag4	-	-	-	Hex	Y	Service
476	RecControl Flag5	-	-	-	Hex	Y	Service
1111	RecControl Flag6	-	-	-	Hex	Y	Service
1112	RecControl Flag7	-	-	-	Hex	Y	Service
265	InvControl Flag1	-	-	-	Hex	Y	Service
642	InvControl Flag2	-	-	-	Hex	Y	Service
446	InvControl Flag3	-	-	-	Hex	Y	Service
469	InvControl Flag4	-	-	-	Hex	Y	Service
470	InvControl Flag5	-	-	-	Hex	Y	Service
1053	InvControl Flag6	-	-	-	Hex	Y	Service
1113	InvControl Flag7	-	-	-	Hex	Y	Service
96	InvAnlg SelfTst1	-	-	-	Hex	Y	Service
251	InvAnlg SelfTst2	-	-	-	Hex	Y	Service
473	RecAnlg SelfTst1	-	-	-	Hex	Y	Service
474	RecAnlg SelfTst2	-	-	-	Hex	Y	Service
494	RecAnlg SelfTst3	-	-	-	Hex	Y	Service
764	Cur Sens FltCode	-	-	-	Hex	Y	Service
551	Drive Overload	0.00	1.00	-		Y	Service
550	Motor Overload	0.00	1.00	-		Y	Service
682	RNeutral OvrLoad	0.00	1.00	-		Y	Service
428	Bypass VoltUnbal	0.00	1.00	-		Y	Service
610	Master VoltUnbal	0.00	1.00	-		Y	Service
611	Slave1 VoltUnbal	0.00	1.00	-		Y	Service
612	Slave2 VoltUnbal	0.00	1.00	-		Y	Service
613	Master Cur Unbal	0.00	1.00	-		Y	Service
614	Slave1 Cur Unbal	0.00	1.00	-		Y	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
615	Slave2 Cur Unbal	0.00	1.00	-		Y	Service
263	Motor Cur Unbal	0.00	1.00	-		Y	Service
619	Motor Flux Unbal	0.00	1.00	-		Y	Service
490	Fault Output	0	1	-		Y	Service
700	Warning Output	0	1	-		Y	Service
689	Scope Trigger	0	1	-		Y	Service
894	Line Cur Unbal	0.00	1.00	-		Y	Service
895	NeutralFund Cur	0.00	1.00	-	pu	Y	Service
896	NeutralFund Volt	0.00	1.00	-	pu	Y	Service
982	LineCur Neg Seq	-200.0	200.0	-	A	Y	Service
983	LineVolt Neg Seq	0.000	2.000	-	pu	Y	Service
597	Parameter Error	0	65535	-		Y	Basic

Feature Select Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
4	Operating Mode	-	-	Normal		N	Monitor
7	Speed Ref Select	-	-	Local		N	Monitor
401	TorqueRef Select	-	-	None		N	Monitor
749	Ref Command Loss	-	-	Fault		N	Basic
60	Coast Speed	0.1	100.0	2.0	Hz	N	Basic
3	Auto Restart Dly	0.0	10.0	0.0	sec	N	Basic
1	Input Ctctr Cfg	-	-	All Faults		N	Basic
1160	Overhauling Load	-	-	Off		N	Basic
5	Output Ctctr Cfg	-	-	Not Running		N	Basic
10	InpCtctr OpenDly	0.0	60.0	0.0	min	N	Advanced
99	SpecialFeatures1	-	-	1000000000000000	Hex	N	Advanced
507	SpecialFeatures2	-	-	0000000000000000	Hex	N	Advanced
920	SpecialFeatures3	-	-	0000000000000000	Hex	N	Advanced
996	SpecialFeatures4	-	-	0000000000000000	Hex	N	Advanced
199	Load Loss Detect	-	-	Disabled		N	Advanced
879	NetSrvr FltAct'n	-	-	Fault		N	Advanced
981	NetSrvr MPntCntl	-	-	Enabled All		N	Advanced
590	Rec Gating Test	-	-	Off		N	Service
591	Inv Gating Test	-	-	Off		N	Service
13	Setup Wizard	-	-	0000000000000000	Hex	N	Service
702	Extended Trend	-	-	Enabled		N	Service
491	Fan1 Run Time	0.1	60.0	30.0	Days	N	Service
493	Fan2 Run Time	0.1	60.0	0.1	Days	N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
403	Ref Switch Delay	0	1000	300	msec	N	Service
921	Fault Lock Clear	0	65535	0		N	Service
11	Passcode 0	0	65535	-		Y	Monitor
12	Passcode 1	0	65535	-		Y	Monitor
38	Passcode 2	0	65535	-		Y	Monitor
39	Passcode 3	0	65535	-		Y	Monitor

Drive Hardware Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
114	DCLnk Induct pu	0.00	10.00	-	pu	Y	Service
625	Line Reactor pu	0.00	1.00	-	pu	Y	Service
133	Line Filter Cap	0.00	2.00	-	pu	Y	Service
128	Motor Filter Cap	0.00	2.00	-	pu	Y	Service
648	Drive VSB Gain	0.0	6553.5	-	V/V	Y	Service
649	Drive VSB Tap	-	-	-		Y	Service
192	InpFilCutOffFreq	0.0	100.0	-	pu	Y	Service
176	Drive Model	-	-	B Frame		N	Service
19	Rated Drive Amps	10	1750	159	A	N	Service
17	Rated Line Freq	50	60	60	Hz	N	Service
18	Rated Line Volts	100	7200	4160	V	N	Service
153	Rectifier Type	-	-	6 PWM		N	Service
32	Line Cap Freq	50	60	60	Hz	N	Service
15	Line Cap kVAR	1	7500	300	kVAR	N	Service
16	Line Cap Volts	100	10000	4160	V	N	Service
985	Smallest CapkVAR	0	1000	300	kVAR	N	Service
624	Line Reactor	0.00	50.00	0.00	mH	N	Service
27	DCLnk Inductance	1.0	500.0	24.0	mH	N	Service
28	Motor Cap Freq	50	90	60	Hz	N	Service
20	Motor Cap kVAR	1	7500	400	kVAR	N	Service
21	Motor Cap Volts	100	10000	4160	V	N	Service
158	CT Burden Gndflt	10	10000	1000	ohms	N	Service
157	CT Ratio Gndflt	10	10000	2000		N	Service
151	CT Brden Line	1.0	100.0	5.0	ohms	N	Service
149	CT Ratio Line	10	10000	1000		N	Service
285	HECS Brden DCLnk	1.0	100.0	50.0	ohms	N	Service
284	HECS Ratio DCLnk	10	10000	4000		N	Service
152	HECS Brden Motor	1.0	100.0	50.0	ohms	N	Service
150	HECS Ratio Motor	10	10000	4000		N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
144	RecDvc CurRating	0	3500	800	A	N	Service
143	InvDvc CurRating	0	3500	800	A	N	Service
145	Series RecDvc	1	6	2		N	Service
146	Series InvDvc	1	6	2		N	Service
680	Neutral Resistor	0.0	6553.5	0.0	ohms	N	Service
681	RNeut Pwr Rating	0	65535	1500	W	N	Service
198	CTRatio CapNeut	10	10000	1000		N	Service
197	CTBurden CapNeut	1.0	100.0	25.0	ohms	N	Service
141	HardwareOptions1	-	-	0000000010000000	Hex	N	Service
274	HardwareOptions2	-	-	0000000000000110	Hex	N	Service
575	Number PwrSup	1	4	1		N	Service
399	RecHeatsink Type	-	-	MM Aluminum		N	Service
864	UPS Type	-	-	None		N	Service
880	InvHeatsink Type	-	-	MM Aluminum		N	Service
922	DC Link Type	-	-	Normal Duty		N	Service

Motor Ratings Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
23	Rated Motor Amps	10	1500	159	A	N	Basic
29	Rated Motor Freq	25	90	60	Hz	N	Basic
25	Rated Motor HP	10	20000	1250	hp	N	Basic
24	Rated Motor kW	10	15000	933	kW	N	Basic
26	Rated Motor RPM	0.0	5400.0	1192.0	RPM	N	Basic
22	Rated Motor Volt	100	8000	4000	V	N	Basic
31	Service Factor	0.75	1.25	1.00		N	Basic
402	DualWndng Phase	0	90	0	Deg	N	Basic
912	Motor Efficiency	75.0	100.0	96.0	%	N	Basic
30	Motor Type	-	-	Induction		N	Service

Autotuning Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
377	Autotune Warn1	-	-	-	Hex	Y	Advanced
419	Autotune Warn2	-	-	-	Hex	Y	Advanced
875	Autotune WrnCode	-	-	-	Hex	Y	Service
209	Autotune Select	-	-	Off		N	Advanced
217	Autotune L Input	0.00	1.00	0.00	pu	N	Advanced

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
218	Autotune T DCLnk	0.000	0.300	0.000	sec	N	Advanced
219	Autotune RStator	0.00	0.50	0.00	pu	N	Advanced
220	Autotune LLeakge	0.00	0.50	0.00	pu	N	Advanced
221	Autotune L Magn	0.00	15.00	0.00	pu	N	Advanced
222	Autotune T Rotor	0.00	10.00	0.00	sec	N	Advanced
223	Autotune Inertia	0.00	100.00	0.00	sec	N	Advanced
224	Autotune Lmd	0.00	10.00	0.00	pu	N	Advanced
325	Autotune Lmq	0.00	10.00	0.00	pu	N	Advanced
212	Autotune Idc BW	10.0	100.0	50.0	r/s	N	Advanced
210	Autotune Idc Cmd	0.100	0.900	0.500	pu	N	Advanced
211	Autotune Idc Stp	0.000	0.500	0.250	pu	N	Advanced
216	Autotune Isd Stp	0.010	0.200	0.100	pu	N	Advanced
213	Autotune Spd Cmd	0.0	60.0	30.0	Hz	N	Advanced
215	Autotune Trq Stp	0.050	0.500	0.100	pu	N	Advanced
946	Autotune Mtr Cur	0.100	2.000	0.500	pu	N	Advanced
947	Autotune EncFreq	0.01	60.00	0.10	Hz	N	Advanced
948	Autotune If Cmd	0.10	2.00	0.80	pu	N	Advanced
949	Autotune EncOfst	0.00	360.00	0.00	Deg	N	Advanced
950	RtrStop Dly Time	0.0	120.0	10.0	sec	N	Advanced
977	AT PM MagFlux pu	0.000	2.000	0.000	pu	N	Advanced
998	Autotune M Cap	-.100	0.100	0.000	pu	N	Advanced
375	AutotuneComplete	-	-	0000000000000000	Hex	N	Service
6	Autotune Manual	-	-	Off		N	Service

Motor Model Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
340	Stator Current	0.000	4.000	-	pu	Y	Monitor
344	Stator Voltage	0.000	2.000	-	pu	Y	Monitor
448	Stator Frequency	0.00	120.00	-	Hz	Y	Service
337	Rotor Frequency	0.00	120.00	-	Hz	Y	Monitor
343	Slip Frequency	-2.00	2.00	-	Hz	Y	Monitor
346	Mtr AirGap Power	-4.000	4.000	-	pu	Y	Monitor
345	Mtr AirGap Trq	-4.000	4.000	-	pu	Y	Monitor
692	Mtr Power Factor	0.00	1.00	-		Y	Service
339	MtrTrq Current	-4.000	4.000	-	pu	Y	Service
338	MtrFlux Current	-4.000	4.000	-	pu	Y	Service
485	StatFrqVoltModel	0.0	100.0	-	Hz	Y	Service
486	StatFrqCurModel	0.0	100.0	-	Hz	Y	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
342	FlxFbk VoltModel	0.000	2.000	-	pu	Y	Service
341	FlxFbk CurModel	0.000	2.000	-	pu	Y	Service
701	Lm Predicted	0.00	15.00	-	pu	Y	Service
134	Lm Measured	0.00	15.00	-	pu	Y	Service
1120	Tr Adaptation	0.100	10.000	-	sec	Y	Service
1121	MtrVoltage DAxis	0.000	2.000	-	pu	Y	Service
1122	MtrVoltage QAxis	0.000	2.000	-	pu	Y	Service
131	Lm Rated	1.00	15.00	3.50	pu	N	Advanced
693	Lm Regen	0.50	2.00	1.00		N	Service
694	Lm Noload FlxMin	0.50	2.00	1.00		N	Service
695	Lm Noload FlxMax	0.50	2.00	1.00		N	Service
129	R Stator	0.0000	0.5000	0.0000	pu	N	Advanced
130	L Total Leakage	0.00	0.75	0.25	pu	N	Advanced
132	T Rotor	0.10	10.00	1.50	sec	N	Advanced
418	Lmd	0.10	10.00	1.00	pu	N	Advanced
296	Lmq	0.10	10.00	1.00	pu	N	Advanced
969	PM MagFlux pu	0.000	2.000	0.800	pu	N	Advanced
995	Motor Cap Comp	-.100	0.100	0.000	pu	N	Advanced
970	Lmd Min	0.01	10.00	1.00		N	Service
971	Lmd Max	0.01	10.00	1.00		N	Service
972	Lmq Min	0.01	10.00	1.00		N	Service
973	Lmq Max	0.01	10.00	1.00		N	Service

Speed Command Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
277	Speed Command	-120.0	120.0	-	Hz	Y	Basic
276	Speed Command In	-120.0	120.0	-	Hz	Y	Basic
275	Control Refernce	0.0	6553.5	-	Hz	Y	Basic
273	Control Feedback	0.0	6553.5	-	Hz	Y	Basic
47	SpdCmd Pot	-120.0	120.0	-	Hz	Y	Basic
48	SpdCmd Anlg Inp1	-120.0	120.0	-	Hz	Y	Basic
56	SpdCmd Anlg Inp2	-120.0	120.0	-	Hz	Y	Basic
58	SpdCmd DPI	-120.0	120.0	-	Hz	Y	Basic
59	SpdCmd PID	-120.0	120.0	-	Hz	Y	Basic
293	Speed Cmd Min	0.0	120.0	6.0	Hz	N	Basic
290	Speed Cmd Max	0.0	120.0	60.0	Hz	N	Basic
41	RefCmd Pot Min	-120.0	120.0	6.0	Hz	N	Basic
42	RefCmd Pot Max	0.0	120.0	60.0	Hz	N	Basic

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
43	RefCmdAnlgInpMin	-120.0	120.0	6.0	Hz	N	Basic
44	RefCmdAnlgInpMax	0.0	120.0	60.0	Hz	N	Basic
45	RefCmd DPI Min	0.0	120.0	6.0	Hz	N	Basic
46	RefCmd DPI Max	0.0	120.0	60.0	Hz	N	Basic
40	Preset Jog Speed	1.0	60.0	6.0	Hz	N	Basic
33	Preset Speed 1	0.5	75.0	30.0	Hz	N	Advanced
34	Preset Speed 2	0.5	75.0	35.0	Hz	N	Advanced
35	Preset Speed 3	0.5	75.0	40.0	Hz	N	Advanced

Speed Control Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
278	Speed Reference	-120.0	120.0	-	Hz	Y	Monitor
289	Speed Feedback	-120.0	120.0	-	Hz	Y	Monitor
472	Speed Error	-10.00	10.00	-	Hz	Y	Advanced
292	MtrTorque CurCmd	-4.000	4.000	-	pu	Y	Advanced
294	InvTorque CurCmd	-4.000	4.000	-	pu	Y	Advanced
994	Actual SpdReg BW	0.0	60.0	-	r/s	Y	Advanced
1124	PI Trq Cmd	-4.000	4.000	-	pu	Y	Advanced
61	Total Accel Time	0.0	1200.0	32.0	sec	N	Monitor
62	Total Decel Time	0.0	1200.0	32.0	sec	N	Monitor
63	Inertia Type	-	-	Low		N	Basic
82	Total Inertia	0.10	50.00	1.00	sec	N	Advanced
89	Speed Fbk Mode	-	-	Sensorless		N	Advanced
81	SpdReg Bandwidth	0.0	60.0	1.0	r/s	N	Advanced
873	SpdReg Kp	0.00	655.00	1.00		N	Advanced
874	SpdReg Ki	0.0	6553.0	1.0	/s	N	Advanced
1123	Spd Reg Damp	0.50	5.00	3.00		N	Advanced
88	Speed Ref Step	0.0	2.0	0.0	Hz	N	Service
1012	EncFbk BW STD	1.0	200.0	100.0	r/s	N	Service

Speed Profile Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
65	Accel Time 1	0.0	1200.0	5.0	sec	N	Advanced
66	Accel Time 2	0.0	1200.0	3.0	sec	N	Advanced
67	Accel Time 3	0.0	1200.0	14.0	sec	N	Advanced
68	Accel Time 4	0.0	1200.0	10.0	sec	N	Advanced

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
69	Decel Time 1	0.0	1200.0	5.0	sec	N	Advanced
70	Decel Time 2	0.0	1200.0	3.0	sec	N	Advanced
71	Decel Time 3	0.0	1200.0	14.0	sec	N	Advanced
72	Decel Time 4	0.0	1200.0	10.0	sec	N	Advanced
73	Ramp Speed 1	5.0	100.0	5.0	Hz	N	Advanced
74	Ramp Speed 2	5.0	100.0	12.0	Hz	N	Advanced
75	Ramp Speed 3	5.0	100.0	54.0	Hz	N	Advanced
76	Ramp Speed 4	5.0	100.0	60.0	Hz	N	Advanced
475	S Curve Percent	0	100	0	%	N	Advanced
481	S Curve Accel 1	0.0	1200.0	20.0	sec	N	Advanced
482	S Curve Accel 2	0.0	1200.0	20.0	sec	N	Advanced
479	S Curve Decel 1	0.0	1200.0	20.0	sec	N	Advanced
480	S Curve Decel 2	0.0	1200.0	20.0	sec	N	Advanced
53	Skip Speed Band1	0.0	5.0	0.0	Hz	N	Advanced
54	Skip Speed Band2	0.0	5.0	0.0	Hz	N	Advanced
55	Skip Speed Band3	0.0	5.0	0.0	Hz	N	Advanced
49	Skip Speed 1	1.0	90.0	90.0	Hz	N	Advanced
50	Skip Speed 2	1.0	90.0	90.0	Hz	N	Advanced
51	Skip Speed 3	1.0	90.0	90.0	Hz	N	Advanced
80	Ramp Test Step	0.0	30.0	0.0	Hz	N	Service

Current Control Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
321	Idc Reference	0.000	4.000	-	pu	Y	Advanced
322	Idc Feedback	-2.000	4.000	-	pu	Y	Advanced
323	Idc Error	-1.000	1.000	-	pu	Y	Advanced
326	Vdc Reference	-1.000	1.000	-		Y	Advanced
327	Alpha Rectifier	0.0	180.0	-	Deg	Y	Advanced
1011	SourceDeltaAngle	-90.0	90.0	-	Deg	Y	Service
773	IdcRefLmt Motor	0.000	4.000	-	pu	Y	Service
260	IdcRefLmt DCTest	0.000	4.000	-	pu	Y	Service
261	IdcRefLmt Autotn	0.000	4.000	-	pu	Y	Service
993	Vdc Ref Limit	-1.500	1.500	-		Y	Service
113	CurReg Bandwidth	50.0	6500.0	200.0	r/s	N	Advanced
119	Idc Test Command	0.000	1.500	0.000	pu	N	Advanced
120	Idc Ref Step	0.000	1.000	0.000	pu	N	Advanced
115	T DC Link	0.015	0.150	0.040	sec	N	Advanced
1107	IdcReg Kp	0.000	65.500	1.000		N	Advanced

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1108	IdcReg Ki	0.00	655.00	1.00	/s	N	Advanced
140	Input Impedance	0.0000	1.0000	0.0500	pu	N	Service
502	Feedforward Fil	0.1	100.0	2.0	Hz	N	Service
1010	Feedfwd L Fil	0.1	100.0	0.2	Hz	N	Service

Torque Control Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
291	Torque Reference	-4.000	4.000	-		Y	Advanced
147	Active Trq Limit	-4.000	4.000	-		Y	Advanced
405	Power Limit	0.00	4.00	-		Y	Advanced
404	Trq Cmd Drive	-4.000	4.000	-		Y	Advanced
1127	Torque Fbk Fil	-4.000	4.000	-		Y	Service
86	TrqCmd0 SensrLss	0.00	4.00	0.40		N	Advanced
87	TrqCmd1 SensrLss	0.00	4.00	0.40		N	Advanced
91	Trq Cmd PLC	-4.000	4.000	0.000		N	Advanced
90	Trq Control Mode	-	-	Speed Reg		N	Advanced
84	Trq Lmt Motoring	0.00	4.00	1.05		N	Advanced
85	Trq Lmt Braking	0.00	4.00	1.05		N	Advanced
658	Trq Lmt Overload	0.00	4.00	1.00		N	Advanced
747	Pwr Lmt Motoring	0.00	4.00	1.50		N	Advanced
748	Pwr Lmt Braking	0.00	4.00	1.50		N	Advanced
914	Trq Reg Kp	0.00	655.35	0.00		N	Advanced
915	Trq Reg Ki	0.00	655.35	0.00		N	Advanced
916	TrqReg LPF Freq	0	20000	100	Hz	N	Advanced
917	TrqReg Limit	0.000	2.000	0.050		N	Advanced
641	TrqCmd0 Encoder	0.00	4.00	0.00		N	Service
1128	Trq Fbk LPF Freq	0.1	1000.0	300.0	Hz	N	Service

Flux Control Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
305	Flux Reference	0.000	2.000	-	pu	Y	Advanced
306	Flux Feedback	0.000	2.000	-	pu	Y	Advanced
307	Flux Error	-2.000	2.000	-	pu	Y	Advanced
310	Mtr Flux CurCmd	-2.000	2.000	-	pu	Y	Advanced
308	FluxCur Feedfwd	-2.000	2.000	-	pu	Y	Advanced
309	FluxCurRegulator	-2.000	2.000	-	pu	Y	Advanced

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
312	Inv Flux CurCmd	-2.000	2.000	-	pu	Y	Advanced
328	Alpha Inverter	-360.0	360.0	-	Deg	Y	Advanced
314	Field CurCmd	0.000	2.000	-	pu	Y	Advanced
57	Field Current	-2.000	2.000	-	pu	Y	Service
623	Flux Cmd Limit	0.000	1.500	-	pu	Y	Service
97	FlxReg Bandwidth	0.0	60.0	10.0	r/s	N	Advanced
100	FlxCmd RatedLoad	0.000	1.500	0.900	pu	N	Advanced
103	FlxCmd No Load	0.400	1.500	0.700	pu	N	Advanced
78	Motor Flux Time	0.0	10.0	3.0	sec	N	Advanced
107	Icd Command Gain	0.0	1.0	0.0		N	Advanced
106	Field Bandwidth	0.1	100.0	1.0	r/s	N	Advanced
978	FluxReg Kp	0.00	655.00	1.00		N	Advanced
979	FluxReg Ki	0.00	655.00	1.00	/s	N	Advanced
98	Base Speed	25.0	100.0	60.0	Hz	N	Service
102	Flux RefStep	0.000	0.100	0.000	pu	N	Service
842	Max FlxCur Start	0.000	2.000	0.500	pu	N	Service
843	Max Field CurCmd	0.000	2.000	1.000	pu	N	Service
1118	Min Field CurCmd	0.000	2.000	1.000	pu	N	Service

Alarm Config Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
440	InputProt1 Class	-	-	Class2 Fault		N	Basic
441	TxReacOvrTmpClss	-	-	Class2 Fault		N	Basic
442	DCLnkOvrTmpClass	-	-	Class2 Fault		N	Basic
443	Motor Prot Class	-	-	Class2 Fault		N	Basic
444	InputProt2 Class	-	-	Class2 Fault		N	Basic
445	Aux Prot Class	-	-	Class2 Fault		N	Basic
435	Stnd XIOFlt Mask	-	-	11111111	Hex	N	Basic
651	Ext Fault Selct	-	-	0000000000000000	Hex	N	Basic
200	ExtFault1 Class	-	-	Class2 Fault		N	Basic
201	ExtFault2 Class	-	-	Class2 Fault		N	Basic
202	ExtFault3 Class	-	-	Class2 Fault		N	Basic
203	ExtFault4 Class	-	-	Class2 Fault		N	Basic
204	ExtFault5 Class	-	-	Class2 Fault		N	Basic
205	ExtFault6 Class	-	-	Class2 Fault		N	Basic
206	ExtFault7 Class	-	-	Class2 Fault		N	Basic
207	ExtFault8 Class	-	-	Class2 Fault		N	Basic
410	ExtFault9 Class	-	-	Class2 Fault		N	Basic

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
411	ExtFault10 Class	-	-	Class2 Fault		N	Basic
412	ExtFault11 Class	-	-	Class2 Fault		N	Basic
413	ExtFault12 Class	-	-	Class2 Fault		N	Basic
414	ExtFault13 Class	-	-	Class2 Fault		N	Basic
415	ExtFault14 Class	-	-	Class2 Fault		N	Basic
416	ExtFault15 Class	-	-	Class2 Fault		N	Basic
417	ExtFault16 Class	-	-	Class2 Fault		N	Basic
564	Ext Fault Mask	-	-	1111111111111111	Hex	N	Basic
1096	DCSL Wrn Mask	-	-	1111111111111111	Hex	N	Basic
394	Drv Fault1 Mask	-	-	1111111111111111	Hex	N	Basic
395	Drv Fault2 Mask	-	-	1111111111111111	Hex	N	Basic
396	Drv Fault3 Mask	-	-	1111111111111111	Hex	N	Basic
562	Drv Fault4 Mask	-	-	1111111111111111	Hex	N	Basic
563	Drv Fault5 Mask	-	-	1111111111111111	Hex	N	Basic
8	Drv Fault6 Mask	-	-	1111111111111111	Hex	N	Service
862	Drv Fault7 Mask	-	-	1111111111111111	Hex	N	Basic
878	Drv Fault8 Mask	-	-	1111111111111111	Hex	N	Service
1098	Drv Fault9 Mask	-	-	1111111111111111	Hex	N	Basic
561	Mtr Fault1 Mask	-	-	1111111111111111	Hex	N	Basic
549	HeatpipeFlt1Mask	-	-	1111111111111111	Hex	N	Basic
976	HeatpipeFlt2Mask	-	-	1111111111111111	Hex	N	Basic
397	Drv Wrn1 Mask	-	-	1111111111111111	Hex	N	Basic
647	Drv Wrn2 Mask	-	-	1111111111111111	Hex	N	Basic
423	Drv Wrn3 Mask	-	-	1111111111111111	Hex	N	Basic
468	Drv Wrn4 Mask	-	-	1111111111111111	Hex	N	Basic
707	Drv Wrn5 Mask	-	-	1111111111111111	Hex	N	Basic
859	Drv Wrn6 Mask	-	-	1111111111111111	Hex	N	Basic
860	Drv Wrn7 Mask	-	-	1111111111111111	Hex	N	Basic
861	Drv Wrn8 Mask	-	-	1111111111111111	Hex	N	Basic
1097	Drv Wrn9 Mask	-	-	1111111111111111	Hex	N	Basic
565	Mtr Wrn1 Mask	-	-	1111111111111111	Hex	N	Basic
957	Mtr Wrn2 Mask	-	-	1111111111111111	Hex	N	Basic
104	Ctrl Pwr FltMask	-	-	1111111111111111	Hex	N	Basic
105	Ctrl Pwr WrnMask	-	-	1111111111111111	Hex	N	Basic
545	HeatpipeWrn1Mask	-	-	1111111111111111	Hex	N	Basic
546	HeatpipeWrn2Mask	-	-	1111111111111111	Hex	N	Basic
863	ThermalM FltMask	-	-	1111111111111111	Hex	N	Basic
501	ThermalM WrnMask	-	-	1111111111111111	Hex	N	Basic
175	DPI Loss Mask	-	-	0000000000000000	Hex	N	Basic

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
703	Liq Cool Mask	-	-	111111111111111	Hex	N	Basic
420	DvcDiag Flt Mask	-	-	111111111111111	Hex	N	Service
759	PD Wrn Mask	-	-	111111111111111	Hex	N	Service

Alarms Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
433	Stnd XIO Fault	-	-	-	Hex	Y	Service
434	Stnd XIO Warning	-	-	-	Hex	Y	Service
372	External Fault	-	-	-	Hex	Y	Service
429	External Warning	-	-	-	Hex	Y	Service
279	Drive Fault1	-	-	-	Hex	Y	Service
280	Drive Fault2	-	-	-	Hex	Y	Service
281	Drive Fault3	-	-	-	Hex	Y	Service
370	Drive Fault4	-	-	-	Hex	Y	Service
371	Drive Fault5	-	-	-	Hex	Y	Service
9	Drive Fault6	-	-	-	Hex	Y	Service
858	Drive Fault7	-	-	-	Hex	Y	Service
877	Drive Fault8	-	-	-	Hex	Y	Service
1100	Drive Fault9	-	-	-	Hex	Y	Service
369	Motor Fault1	-	-	-	Hex	Y	Service
282	Drive Warning1	-	-	-	Hex	Y	Service
646	Drive Warning2	-	-	-	Hex	Y	Service
374	Drive Warning3	-	-	-	Hex	Y	Service
467	Drive Warning4	-	-	-	Hex	Y	Service
706	Drive Warning5	-	-	-	Hex	Y	Service
855	Drive Warning6	-	-	-	Hex	Y	Service
856	Drive Warning7	-	-	-	Hex	Y	Service
857	Drive Warning8	-	-	-	Hex	Y	Service
1099	Drive Warning9	-	-	-	Hex	Y	Service
373	Motor Warning1	-	-	-	Hex	Y	Service
956	Motor Warning2	-	-	-	Hex	Y	Service
758	PD Warning	-	-	-	Hex	Y	Service
287	Ctrl Pwr Fault	-	-	-	Hex	Y	Service
288	Ctrl Pwr Warning	-	-	-	Hex	Y	Service
93	DPI Loss Fault	-	-	-	Hex	Y	Service
148	DPI Loss Warning	-	-	-	Hex	Y	Service
596	XIO Adaptr Loss	-	-	-	Hex	Y	Service
492	HeatpipeWarning1	-	-	-	Hex	Y	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
495	HeatpipeWarning2	-	-	-	Hex	Y	Service
498	Heatpipe Fault1	-	-	-	Hex	Y	Service
527	ThermalModel Flt	-	-	-	Hex	Y	Service
528	ThermalModel Wrn	-	-	-	Hex	Y	Service
975	Heatpipe Fault2	-	-	-	Hex	Y	Service
1094	DCSL Fault	-	-	-	Hex	Y	Service
1095	DCSL Warning	-	-	-	Hex	Y	Service
650	Ext Fault PLC	-	-	0000000000000000	Hex	N	Service
358	Liquid Cool Flt	-	-	0000000000000000	Hex	N	Service
359	Liquid Cool Wrn	-	-	0000000000000000	Hex	N	Service

Drive Protection Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
169	DCLnk OvrCur Trp	0.00	4.00	1.75	pu	N	Advanced
170	DCLnk OvrCur Dly	0	100	10	msec	N	Advanced
161	Line OvrCur Trp	0.00	4.00	1.75	pu	N	Advanced
162	Line OvrCur Dly	0	100	10	msec	N	Advanced
165	Line OvrVolt Trp	0.00	2.00	1.20	pu	N	Advanced
166	Line OvrVolt Dly	0	1500	250	msec	N	Advanced
173	Rec OvrVolt Trp	0.00	2.00	1.50	pu	N	Advanced
174	Rec OvrVolt Dly	0	100	10	msec	N	Advanced
193	Inv OvrVolt Trp	0.00	2.00	1.50	pu	N	Advanced
194	Inv OvrVolt Dly	0	100	10	msec	N	Advanced
271	LineVoltUnbalTrp	0.00	1.00	0.05	pu	N	Advanced
272	LineVoltUnbalDly	0.0	10.0	1.0	sec	N	Advanced
108	Line CurUnbalTrp	0.00	1.00	0.05	pu	N	Advanced
109	Line CurUnbalDly	0.0	10.0	1.0	sec	N	Advanced
167	Line UndVolt Lvl	0.40	1.50	0.85	pu	N	Advanced
168	Line UndVolt Dly	0	100	17	msec	N	Advanced
270	Drv OvrLoad Wrn	0.00	1.00	0.50		N	Advanced
772	Drv Thermal Cyc	0.0	6000.0	600.0	sec	N	Advanced
163	Drv OvrLoad Trp	0.00	4.00	1.03	pu	N	Advanced
164	Drv OvrLoad Dly	0.0	600.0	60.0	sec	N	Advanced
269	Drv OvrLoad Min	0.00	4.00	0.95	pu	N	Advanced
587	LineNeutVoltTrp	0.00	1.50	0.20	pu	N	Advanced
588	LineNeutVoltDly	0.0	10.0	1.0	sec	N	Advanced

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
171	Gnd OvrCur Trp	0.05	10.00	0.50	A	N	Advanced
172	Gnd OvrCur Dly	0.0	10.0	0.1	sec	N	Advanced
675	Harmonic VoltTrp	0.00	10.00	0.15	pu	N	Advanced
676	Harmonic VoltDly	0.0	100.0	1.0	sec	N	Advanced
774	RNeut OvrLoadTrp	0.00	655.35	5.00		N	Service
775	RNeut OvrLoadDly	0.00	655.35	2.50	sec	N	Service
776	RNeut OvrCurTrp	0.00	655.35	10.00		N	Service
777	RNeut OvrCurDly	0.000	65.535	0.010	sec	N	Service
673	BusTransTrpFac	0.00	100.00	2.75	pu	N	Service
674	BusTransient Dly	0	100	2		N	Service
677	BusTrans MinTrp	0.00	10.00	0.30	pu	N	Service
678	BusTrans IdcFac	0.00	10.00	0.50	pu	N	Service
679	Min Freewhl Time	0.000	1.000	0.016	sec	N	Service
930	Trans IdcPeak	0.50	4.00	1.40	pu	N	Service
698	Line Loss Trip	0.0	40.0	8.0	Hz	N	Service
266	Rec Dvc Diag Dly	0	6	2		N	Service
268	Inv Dvc Diag Dly	0	6	2		N	Service
112	RecHSink TempWrn	0	100	53	C	N	Service
111	RecHSink TempTrp	0	100	55	C	N	Service
316	InvHSink TempWrn	0	100	61	C	N	Service
315	InvHSink TempTrp	0	100	64	C	N	Service
656	IsoTxPressureNom	0.0	10.0	3.6	V	N	Service
655	IsoTxPressureWrn	0.0	10.0	3.0	V	N	Service
654	IsoTxPressureTrp	0.0	10.0	2.5	V	N	Service
317	Air Pressure Nom	0.0	10.0	3.6	V	N	Service
320	AirLoPresure Wrn	0.0	10.0	3.0	V	N	Service
319	AirLoPresure Trp	1.0	10.0	2.5	V	N	Service
406	SGCT PwrSup Trip	10.0	30.0	17.5	V	N	Service
407	SGCT PwrSup Warn	10.0	30.0	19.0	V	N	Service
840	Conv Airflow Trp	0	2000	450	ft/m	N	Service
841	Conv Airflow Wrn	0	2000	525	ft/m	N	Service
868	LineCurUnbal Lvl	0.00	1.00	0.03	pu	N	Service
951	Unbalance Ratio	0.0	50.0	1.3		N	Service
871	CapNeutVolt Lvl	0.00	1.50	0.10	pu	N	Service
869	Cap Trip Dly	200	5000	200	msec	N	Service
872	GndCurLvlCapProt	0.0	100.0	10.0	A	N	Service
583	NeutVolt TripDly	0	1000	100	msec	N	Service
622	NeutVolt TripLvl	0.00	1.50	0.10	pu	N	Service
870	NeutCur TripDly	0	1000	100	msec	N	Service
891	NeutCur TripLvl	0.00	1.50	0.10	pu	N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
986	LineCapStepVolt	0.00	1.50	0.30		N	Service
984	Neg Seq Trip Lvl	0.0	200.0	2.0	A	N	Service
990	Neg Seq Trip Dly	25	5000	200	msec	N	Service
925	AirHiPresure Trp	0.0	10.0	9.5	V	N	Service
926	AirHiPresure Wrn	0.0	10.0	9.0	V	N	Service
988	SCR PwrSup Trip	5.0	30.0	8.0	V	N	Service
989	SCR PwrSup Warn	10.0	30.0	15.0	V	N	Service
865	DrvOL AcelAdjust	-32.767	32.767	0.000		N	Service
866	DrvOvrLoadAdjust	-3276.7	3276.7	0.0		N	Service

Motor Protection Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
177	Mtr OvrCur Trp	0.00	4.00	1.75	pu	N	Advanced
178	Mtr OvrCur Dly	0	500	100	msec	N	Advanced
181	Mtr OvrVolt Trp	0.00	2.00	1.20	pu	N	Advanced
182	Mtr OvrVolt Dly	0.0	10.0	0.5	sec	N	Advanced
189	Mtr NeutVolt Trp	0.00	1.50	0.20	pu	N	Advanced
190	Mtr NeutVolt Dly	0.0	10.0	1.0	sec	N	Advanced
185	Mtr OvrSpeed Trp	0.0	120.0	66.0	Hz	N	Advanced
186	Mtr OvrSpeed Dly	0.0	2.0	0.5	sec	N	Advanced
179	Mtr OvrLoad Trp	0.00	4.00	1.15	pu	N	Advanced
180	Mtr OvrLoad Dly	0.0	600.0	60.0	sec	N	Advanced
350	Mtr OvrLoad Min	0.00	4.00	1.05	pu	N	Advanced
351	Mtr OvrLoad Wrn	0.00	1.00	0.50		N	Advanced
771	Mtr Thermal Cyc	0.0	6000.0	600.0	sec	N	Advanced
191	Mtr Stall Dly	0.0	10.0	2.0	sec	N	Advanced
585	Mtr FluxUnbalTrp	0.00	1.00	0.05	pu	N	Advanced
586	Mtr FluxUnbalDly	0.0	10.0	1.0	sec	N	Advanced
208	Mtr CurUnbal Trp	0.00	1.00	0.05	pu	N	Advanced
214	Mtr CurUnbal Dly	0.0	5.0	1.0	sec	N	Advanced
246	Mtr LoadLoss Lvl	0.00	1.00	0.25	pu	N	Advanced
259	Mtr LoadLoss Spd	0.0	100.0	30.0	Hz	N	Advanced
231	Mtr LoadLoss Dly	0.0	30.0	1.0	sec	N	Advanced
559	Field Loss Dly	0	60	30	sec	N	Service
235	EncoderLossTrip	0.0	10.0	2.0	Hz	N	Service
236	EncoderLossDelay	0.0	1.0	0.1	sec	N	Service

Sync Xfer Option Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
298	Sync Reg Output	-10.00	10.00	-	Hz	Y	Advanced
297	Sync Reg Error	-180.0	180.0	-	Deg	Y	Advanced
117	Bypass Voltage	0.000	2.000	-	pu	Y	Advanced
159	Bypass Frequency	-100.0	100.0	-	Hz	Y	Advanced
228	Sync Error Max	0	30	0	Deg	N	Advanced
226	Sync Lead Angle	-90	90	0	Deg	N	Advanced
227	Sync Off Delay	0.000	0.500	0.100	sec	N	Advanced
225	Sync Reg Gain	0.0	5.0	1.0		N	Advanced
229	Sync Time	0.0	10.0	10.0	sec	N	Advanced
230	Sync Xfer Time	0.1	57.0	1.0	min	N	Advanced
763	DeSync Start Dly	1	10	1	sec	N	Service
900	Sync Drift Angle	-15	15	2	Deg	N	Service

Encoder Option Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
844	Rotor Position	0.00	360.00	-	Deg	Y	Advanced
349	Encoder Feedback	-120.00	120.00	-	Hz	Y	Service
233	Encoder Type	-	-	None		N	Basic
234	Encoder PPR	120	16384	1024	PPR	N	Basic
644	Encoder Offset	0.00	360.00	0.00	Deg	N	Advanced

Control Masks Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
244	Direction Mask	-	-	11111111	Hex	N	Basic
245	Jog Mask	-	-	11111111	Hex	N	Basic
242	Local Mask	-	-	11111111	Hex	N	Basic
241	Logic Mask	-	-	11111111	Hex	N	Basic
248	Ref Cmd Mask	-	-	11111111	Hex	N	Basic
247	Reset Mask	-	-	11111111	Hex	N	Basic
243	Start Mask	-	-	11111111	Hex	N	Basic
249	Sync Xfer Mask	-	-	11111111	Hex	N	Basic
638	Forced Flt Mask	-	-	11111111	Hex	N	Basic
36	Profile Mask	-	-	11111111	Hex	N	Basic

Owners Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
388	Direction Owner	-	-	-	Hex	Y	Monitor
389	Jog Owner	-	-	-	Hex	Y	Monitor
386	Local Owner	-	-	-	Hex	Y	Monitor
392	Ref Cmd Owner	-	-	-	Hex	Y	Monitor
391	Reset Owner	-	-	-	Hex	Y	Monitor
387	Start Owner	-	-	-	Hex	Y	Monitor
385	Stop Owner	-	-	-	Hex	Y	Monitor
393	Sync Xfer Owner	-	-	-	Hex	Y	Monitor
639	Forced Flt Owner	-	-	-	Hex	Y	Monitor
37	Profile Owner	-	-	-	Hex	Y	Monitor
94	Logic Owner	-	-	-	Hex	Y	Monitor

Datalinks Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
376	PLC Error Flags	-	-	-	Hex	Y	Basic
529	PLC Inp Link A1	0	1160	0		N	Basic
530	PLC Inp Link A2	0	1160	0		N	Basic
531	PLC Inp Link B1	0	1160	0		N	Basic
532	PLC Inp Link B2	0	1160	0		N	Basic
533	PLC Inp Link C1	0	1160	0		N	Basic
534	PLC Inp Link C2	0	1160	0		N	Basic
535	PLC Inp Link D1	0	1160	0		N	Basic
536	PLC Inp Link D2	0	1160	0		N	Basic
537	PLC Out Link A1	0	1160	0		N	Basic
538	PLC Out Link A2	0	1160	0		N	Basic
539	PLC Out Link B1	0	1160	0		N	Basic
540	PLC Out Link B2	0	1160	0		N	Basic
541	PLC Out Link C1	0	1160	0		N	Basic
542	PLC Out Link C2	0	1160	0		N	Basic
543	PLC Out Link D1	0	1160	0		N	Basic
544	PLC Out Link D2	0	1160	0		N	Basic

Analog Inputs Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
652	Anlg Inp Config	-	-	0000000000000001	Hex	N	Service
630	Speed Pot Vmin	-10.00	10.00	0.00	V	N	Service
631	Speed Pot Vmax	-10.00	10.00	10.00	V	N	Service
632	Anlg Inp1 Vmin	-10.00	10.00	0.00	V	N	Service
633	Anlg Inp1 Vmax	-10.00	10.00	10.00	V	N	Service
634	Anlg Inp2 Vmin	-10.00	10.00	0.00	V	N	Service
635	Angl Inp2 Vmax	-10.00	10.00	10.00	V	N	Service
636	Anlg Inp3 Vmin	-10.00	10.00	0.00	V	N	Service
637	Anlg Inp3 Vmax	-10.00	10.00	10.00	V	N	Service

Analog Outputs Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
513	Anlg Output1	0	1160	0		N	Basic
514	Anlg Output2	0	1160	0		N	Basic
515	Anlg Output3	0	1160	0		N	Basic
508	Anlg Output4	0	1160	0		N	Basic
517	Anlg Output5	0	1160	361		N	Basic
518	Anlg Output6	0	1160	362		N	Basic
519	Anlg Output7	0	1160	363		N	Basic
520	Anlg Output8	0	1160	364		N	Basic
516	Anlg 4-20mAOut	0	1160	337		N	Basic
183	Anlg Out1 Scale	0.00	655.35	1.00		N	Basic
184	Anlg Out2 Scale	0.00	655.35	1.00		N	Basic
187	Anlg Out3 Scale	0.00	655.35	1.00		N	Basic
123	Anlg Out4 Scale	0.00	655.35	1.00		N	Basic
521	Anlg Out5 Scale	0.00	655.35	1.00		N	Basic
522	Anlg Out6 Scale	0.00	655.35	1.00		N	Basic
523	Anlg Out7 Scale	0.00	655.35	1.00		N	Basic
524	Anlg Out8 Scale	0.00	655.35	1.00		N	Basic
188	Anlg4-20mA Scale	0.00	655.35	2.00		N	Basic
509	Anlg RecTstPt1	0	1160	321		N	Service
510	Anlg RecTstPt2	0	1160	322		N	Service
124	Anlg RecTstPt3	0	1160	326		N	Service
125	Anlg RecTstPt4	0	1160	700		N	Service
511	Anlg InvTstPt1	0	1160	490		N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
512	Anlg InvTstPt2	0	1160	289		N	Service
126	Anlg InvTstPt3	0	1160	291		N	Service
127	Anlg InvTstPt4	0	1160	306		N	Service

XIO Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
421	RunTime Input	-	-	-	Hex	Y	Advanced
422	StndXIO Output	-	-	-	Hex	Y	Advanced
431	StndXIO FltInput	-	-	-	Hex	Y	Advanced
232	Ext Fault XIO	-	-	-	Hex	Y	Advanced
427	OptXIO Output	-	-	-	Hex	Y	Advanced
52	Liquid Inputs	-	-	-	Hex	Y	Advanced
14	Liquid Outputs	-	-	-	Hex	Y	Advanced
687	Logix Inputs	-	-	-	Hex	Y	Service
688	Logix Outputs	-	-	-	Hex	Y	Service
782	Heatpipe Inputs	-	-	-	Hex	Y	Advanced
783	Heatpipe Outputs	-	-	-	Hex	Y	Advanced
835	SpecApp Inputs	-	-	-	Hex	Y	Advanced
836	SpecApp Outputs	-	-	-	Hex	Y	Advanced
594	XIO Config Errs	-	-	-	Hex	Y	Advanced
592	XIO Standard IO	-	-	Card # 1		N	Advanced
593	XIO Ext Faults	-	-	Unassigned		N	Advanced
64	XIO Liquid Cool	-	-	Unassigned		N	Advanced
686	XIO Logix IO	-	-	Unassigned		N	Advanced
781	XIO Heatpipe	-	-	Unassigned		N	Advanced
833	XIO Special App	-	-	Unassigned		N	Advanced
834	XIO SpecApp Type	-	-	Marine 1		N	Advanced
439	StndXIO Config1	-	-	Reverse		N	Advanced
458	StndXIO Config2	-	-	Jog		N	Advanced
459	StndXIO Config3	-	-	Remote		N	Advanced
460	StndXIO Config4	-	-	Test Mode		N	Advanced
461	StndXIO Config5	-	-	At Speed		N	Advanced
462	StndXIO Config6	-	-	Thermal Alrm		N	Advanced
463	StndXIO Config7	-	-	Sync Xfer		N	Advanced
464	StndXIO Config8	-	-	In Trq Limit		N	Advanced
714	Logix Register A	0	65535	0		N	Service
715	Logix Register B	0	65535	0		N	Service

Metering Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
487	Motor Speed Hz	-120.0	120.0	-	Hz	Y	Basic
363	Motor Speed RPM	-6000	6000	-	RPM	Y	Basic
361	Motor Current	0	1500	-	A	Y	Basic
362	Motor Voltage	0	8000	-	V	Y	Basic
364	Motor Power	-15000	15000	-	kW	Y	Basic
500	Line Current	0	999	-	A	Y	Basic
324	Line Voltage	0	8000	-	V	Y	Basic
657	Line Frequency	-100.0	100.0	-	Hz	Y	Basic
116	DC Link Current	0	999	-	A	Y	Basic
367	GndFault Current	0.0	10.0	-	A	Y	Basic
303	Line PowerFactor	-1.00	1.00	-		Y	Advanced
118	Control AC#1 RMS	0.0	300.0	-	V	Y	Advanced
77	Control AC#2 RMS	0.0	300.0	-	V	Y	Advanced
79	Control AC#3 RMS	0.0	300.0	-	V	Y	Advanced
92	Control AC#4 RMS	0.0	300.0	-	V	Y	Advanced
121	Control 56V	0.0	72.0	-	V	Y	Advanced
139	Control 5V	0.0	8.0	-	V	Y	Advanced
142	Control 15V	0.0	24.0	-	V	Y	Advanced
156	Control HECS	0.0	36.0	-	V	Y	Advanced
237	Control 5V Redn	0.0	8.0	-	V	Y	Advanced
101	IGDPS 56V	0.0	72.0	-	V	Y	Advanced
196	Control XIO	0.0	36.0	-	V	Y	Advanced
987	Elapsed MWh	0	65535	-	MWh	Y	Advanced
697	ComMode Current	0.00	655.35	-	A	Y	Service
753	Input Power	-15000	15000	-	kW	Y	Service

PWM Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
95	Rec Pulse Number	0	36	-		Y	Service
295	Inv Pulse Number	0	65535	-		Y	Service
378	Inv PWM Pattern	-	-	-		Y	Service
311	PWM Mod Index	0.00	1.50	-		Y	Service
756	Idc 3 Pulse	0.000	10.000	-	pu	Y	Service
757	Idc 5 Pulse	0.000	10.000	-	pu	Y	Service
379	Vdc Ref 5p to 3p	0.00	1.50	0.10	pu	N	Service
465	Vdc Ref 7p to 5p	0.00	1.50	0.50	pu	N	Service
560	Idc Fac 3p to 5p	0.00	2.00	1.00		N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
640	Idc Fac 7p to 5p	0.00	2.00	1.00		N	Service
155	Rec PWM Max Freq	100	1000	440	Hz	N	Service
154	Inv PWM Max Freq	100	1000	440	Hz	N	Service
620	Rec DvcGat SeqnA	0	65535	-		Y	Service
621	Rec DvcGat SeqnB	0	65535	-		Y	Service
626	Rec DvcGat SeqnC	0	65535	-		Y	Service
627	Rec DvcDiag FbkA	0	65535	-		Y	Service
628	Rec DvcDiag FbkB	0	65535	-		Y	Service
629	Rec DvcDiag FbkC	0	65535	-		Y	Service
584	Inv DvcGat Seqn	0	65535	-		Y	Service
608	Inv DvcDiag FbkA	0	65535	-		Y	Service
609	Inv DvcDiag FbkB	0	65535	-		Y	Service
618	Inv DvcDiag FbkC	0	65535	-		Y	Service

Liquid Cooling Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
380	Coolant Temp C	0	65535	-	C	Y	Service
381	Coolant Temp F	0	65535	-	F	Y	Service
477	Fan Config	-	-	3 In-line		N	Service
478	Coolant Temp Wrn	35	85	49	C	N	Service
483	Coolant Temp Trp	35	85	54	C	N	Service
432	Pump Duty Cycle	1	720	8	hrs	N	Service
449	Fan Duty Cycle	1	720	8	hrs	N	Service

Thermal Manager Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
566	RecDvcJunctnTemp	-40.0	1000.0	-	C	Y	Service
884	InvDvcJunctnTemp	-40.0	1000.0	-	C	Y	Service
578	Calc RecDvc Loss	0	4000	-	Watt	Y	Service
882	Calc InvDvc Loss	0	4000	-	Watt	Y	Service
582	Rec HSink RTheta	0.00000	0.65535	-	C/W	Y	Service
881	Inv HSink RTheta	0.00000	0.65535	-	C/W	Y	Service
574	JunctionTemp Trp	-40.0	200.0	120.0	C	N	Service
577	JunctionTemp Wrn	-40.0	150.0	112.5	C	N	Service
780	Model AirFlw Nom	0	2000	1040	ft/m	N	Service
573	Elevation	-	-	1000	m	N	Service

Thermal Protection Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
496	Channel A	-	-	-		Y	Monitor
547	Channel B	-	-	-		Y	Monitor
497	Channel C	-	-	-		Y	Monitor
499	ChA HeatsinkTemp	-40.0	1000.0	-	Deg	Y	Monitor
558	ChA Ambient Temp	-40.0	1000.0	-	Deg	Y	Monitor
788	ChA Airflow	-2000	2000	-	ft/m	Y	Monitor
808	ChB HeatsinkTemp	-40.0	1000.0	-	Deg	Y	Monitor
809	ChB Ambient Temp	-40.0	1000.0	-	Deg	Y	Monitor
810	ChB Airflow	-2000	2000	-	ft/m	Y	Monitor
793	ChC HeatsinkTemp	-40.0	1000.0	-	Deg	Y	Monitor
794	ChC Ambient Temp	-40.0	1000.0	-	Deg	Y	Monitor
795	ChC Airflow	-2000	2000	-	ft/m	Y	Monitor
807	ChA GatePowerSup	0.0	30.0	-	V	Y	Advanced
805	ChB GatePowerSup	0.0	30.0	-	V	Y	Advanced
796	ChC GatePowerSup	0.0	30.0	-	V	Y	Advanced
892	HeatSinkTemp Wrn	0	200	-	C	Y	Service
893	HeatSinkTemp Trp	0	200	-	C	Y	Service

Heatpipe Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
815	Active Fan Set	-	-	-	Hex	Y	Monitor
958	LR AirPressure	-10.0	10.0	-	V	Y	Basic
799	InvUV AirPresure	-10.0	10.0	-	V	Y	Basic
800	InvVW AirPresure	-10.0	10.0	-	V	Y	Basic
801	CMC AirPresure	-10.0	10.0	-	V	Y	Basic
790	FanRuntime	0	65535	-	hrs	Y	Basic
789	FanRuntimeSelect	-	-	LR1 Runtime		N	Basic
806	CMCAirPresureNom	0.0	10.0	3.8	V	N	Service
811	CMC AirExhst Wrn	0.0	10.0	2.0	V	N	Service
812	CMC AirInlet Wrn	0.0	10.0	5.0	V	N	Service
813	CMC AirExhst Trp	0.0	10.0	1.5	V	N	Service
814	CMC AirInlet Trp	0.0	10.0	5.5	V	N	Service
787	Fan Rotate Cycle	1	14400	720	hrs	N	Service
959	LRAirPressureNom	0.0	10.0	3.8	V	N	Service
960	LR AirExhst Wrn	0.0	10.0	2.0	V	N	Service
961	LR AirInlet Wrn	0.0	10.0	5.0	V	N	Service
962	LR AirExhst Trp	0.0	10.0	1.5	V	N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
963	LR AirInlet Trp	0.0	10.0	5.5	V	N	Service
964	LR Fan Speed	0.0	10.0	7.0	V	N	Service
965	CNV Fan Speed 1	0.0	10.0	7.0	V	N	Service
966	CNV Fan Speed 2	0.0	10.0	7.0	V	N	Service
967	CMC Fan Speed	0.0	10.0	7.0	V	N	Service

Dynamic Braking Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
784	DB Power	0.0	200.0	-	%	Y	Advanced
785	DB Power kW	0	5000	-	kW	Y	Advanced
786	DB Energy	0.0	200.0	-	%	Y	Advanced
830	DB Exhaust Temp	0.0	1000.0	-	Deg	Y	Advanced
927	DB Air Speed	-2000	2000	-	ft/m	Y	Advanced
928	DB Ambient Temp	-40.0	1000.0	-	Deg	Y	Advanced
929	DB TFB PS Volt	0.0	30.0	-	V	Y	Advanced
792	DBR Load	0.00	2.00	-		Y	Advanced
819	DBRResistance pu	0.0	10.0	-	pu	Y	Service
831	DB DvcGat Seqn	0	65535	-		Y	Service
832	DB DvcGat Fbk	0	65535	-		Y	Service
853	Min DB Pwr Limit	0.000	1.000	0.010	pu	N	Advanced
847	DB Regulator Kp	0.000	65.535	0.100		N	Advanced
848	DB Regulator Ki	0.000	65.535	0.300		N	Advanced
888	LeakagDetectDly	0	20000	500	msec	N	Advanced
913	Pwr Lmt DB	0.00	4.00	0.30	pu	N	Advanced
817	DBR Power Rating	3	5000	300	kW	N	Service
818	DBR Resistance	0.0	6553.5	0.0	ohms	N	Service
820	DBR Inductance	0	2000	50	uH	N	Service
821	Series DBDvc	1	4	2		N	Service
852	DB SVM LPF Freq	0.1	1000.0	75.0	Hz	N	Service
849	DB Vdc LPF Freq	0.01	655.35	5.00	Hz	N	Service
822	DBR Temp Coeff	0	65535	600	uO/C	N	Service
823	DBR EnergyRating	0.1	60.0	3.0	MJ	N	Service
824	DBR Temp Limit	0.0	1000.0	250.0	C	N	Service
825	DBR Cycle Time	10	65535	1800	sec	N	Service
827	DBR Temp Wrn	0.0	250.0	150.0	C	N	Service
828	DBR Temp Trip	0.0	250.0	180.0	C	N	Service
408	DB Airflow Nom	0	2000	90	ft/m	N	Service
409	DB Airflow Trip	0	2000	10	ft/m	N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
837	DB Airflow Warn	0	2000	40	ft/m	N	Service
798	DBAmbientTempTrp	0.0	100.0	80.0	C	N	Service
838	DBAmbientTempWrn	0.0	100.0	60.0	C	N	Service
839	DB DvcDiag Delay	0	6	2		N	Service
887	IdcRefLmt DB	0.000	2.000	2.000	pu	N	Service
890	DB SVM Kp	0.000	65.535	0.100		N	Service
889	DB SVM Ki	0.000	65.535	0.200		N	Service

PF Compensation Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
845	Drv LeadingLimit	0.00	1.00	-	pu	Y	Service
846	Drv LaggingLimit	0.00	1.00	-	pu	Y	Service
304	PFC Flux Command	-1.500	1.500	-	pu	Y	Service
803	PFC ModIndexGain	0.0	50.0	1.0		N	Advanced
802	PFC FluxReg Gain	0.0	50.0	1.0		N	Advanced
952	PFC Isd Reg Gain	0.0	50.0	1.0		N	Advanced
331	Line VAR pu	-1.00	1.00	-	pu	Y	Service
902	Line Power pu	-4.00	4.00	-	pu	Y	Service
953	PFC Mtr Isd Cmd	-2.000	2.000	-	pu	Y	Service
301	VAR LeadingLimit	0.00	1.00	0.20	pu	N	Service
302	VAR LaggingLimit	0.00	1.00	1.00	pu	N	Service
850	PF LeadingLimit	0.00	1.00	0.95		N	Service
851	PF LaggingLimit	0.00	1.00	0.00		N	Service
299	PFC Access Code	0	65535	0		N	Service
300	PowerFactor Comp	-	-	Disable		N	Service
918	VAR SetPoint	-1.00	1.00	0.00	pu	N	Service
919	PF SetPoint	-1.00	1.00	0.00		N	Service

Security Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
708	Port Mask Act	-	-	-	Hex	Y	Advanced
709	Port Logic Mask	-	-	0000000001111111	Hex	N	Advanced
710	Logic Mask Act	-	-	-	Hex	Y	Advanced
711	Write Mask Cfg	-	-	0000000001111111	Hex	N	Advanced
712	Write Mask Act	-	-	-	Hex	Y	Advanced

Parallel Drive Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
716	Drive ID	0	7	0		N	Advanced
717	Powerup Config	-	-	Single Drive		N	Advanced
718	Master Mask	-	-	11111111	Hex	N	Advanced
719	Acting Master ID	0	8	0		N	Advanced
720	PD Fault Word	-	-	-	Hex	Y	Advanced
721	PD Warning Word	-	-	-	Hex	Y	Advanced
724	Drive0 Status	-	-	-	Hex	Y	Advanced
725	Drive1 Status	-	-	-	Hex	Y	Advanced
726	Drive2 Status	-	-	-	Hex	Y	Advanced
727	Drive3 Status	-	-	-	Hex	Y	Advanced
728	Drive4 Status	-	-	-	Hex	Y	Advanced
729	Drive5 Status	-	-	-	Hex	Y	Advanced
730	Drive6 Status	-	-	-	Hex	Y	Advanced
731	Drive7 Status	-	-	-	Hex	Y	Advanced
723	PD Status	-	-	-	Hex	Y	Service
732	Master Flux Ref	0	65535	-		Y	Service
733	Master Torq Ref	0	65535	-		Y	Service
734	Master Isd Cmd	0	65535	-		Y	Service
737	Master Capacity	0	65535	-		Y	Service
735	Master Command	-	-	-	Hex	Y	Service
736	Sp Slave ID	0	8	-		Y	Service
739	Sp Command	-	-	-	Hex	Y	Service
738	Sp Capacity	0	65535	-		Y	Service
740	PD Flux Ref	0	65535	-		Y	Service
741	PD Torq Ref	0	65535	-		Y	Service
742	PD Isd Cmd	0	65535	-		Y	Service
746	PD Capacity	0	32767	-		Y	Service
743	PD Command	-	-	-	Hex	Y	Service
941	PD Line VAR pu	-1.00	1.00	0.00	pu	N	Service
940	Hub Command Loss	-	-	Warning		N	Advanced
745	Drives in System	1	4	1		N	Advanced
765	Reduced Capacity	-	-	Enable		N	Advanced
722	PD Flags	-	-	0000000000000000	Hex	N	Service

Drv Application Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
760	ESP Surface Volt	0	8000	-	V	Y	Basic
750	ESP Cable Resis	0.000	65.535	0.000	ohms	N	Service
751	Drv Application	-	-	ID Fan		N	Basic
867	Motors on Drive	0	10	1		N	Service

Process Control Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
356	PID Output	-2.0000	2.0000	-	pu	Y	Advanced
357	Process Variable	-2.0000	2.0000	-	pu	Y	Advanced
366	Process Var Eng	-3276.7	3276.7	-		Y	Advanced
353	PID Gain	0.00	655.35	1.00		N	Advanced
354	PID Intgral Time	0.00	655.35	1.00	sec	N	Advanced
355	PID Deriv Time	0.00	655.35	0.00	sec	N	Advanced
360	Process Setpoint	-2.0000	2.0000	0.5000	pu	N	Advanced
398	Process Gain	0.0	6553.5	1.0		N	Advanced
336	PID Min Limit	-2.0000	2.0000	-1.0000	pu	N	Advanced
318	PID Max Limit	-2.0000	2.0000	1.0000	pu	N	Advanced
348	PID Manual Input	0.0000	2.0000	0.0000	pu	N	Advanced
352	PID Dead Band	0.0000	2.0000	0.0000	pu	N	Advanced
365	PID Preload	0.0000	2.0000	0.0000	pu	N	Advanced
390	PID Filter	0.0	6000.0	0.0	r/s	N	Service
313	PID Command	-	-	0000000000000000	Hex	N	Service

Commissioning Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
663	Master Phasing	-	-	-	Hex	Y	Service
664	Slave1 Phasing	-	-	-	Hex	Y	Service
665	Slave2 Phasing	-	-	-	Hex	Y	Service
667	CommissionStatus	-	-	-	Hex	Y	Service
668	CommissionFlags	-	-	0000000000000000	Hex	N	Service
659	Scale Zero Ref	-	-	0000000000000000	Hex	N	Service
660	Scale Full Ref	-	-	0000000000000000	Hex	N	Service
661	Provide Zero Ref	-	-	0000000000000000	Hex	N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
662	Provide Full Ref	-	-	0000000000000000	Hex	N	Service
13	Setup Wizard	-	-	0000000000000000	Hex	N	Service
666	Setup Wizard 2	0000	FFFF	0000	Hex	N	Service

HPTC Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1091	Load Obs Trq Est	-4.000	4.000	-	pu	Y	Advanced
1129	Speed Fbk HPTC	-120.00	120.00	-	Hz	Y	Advanced
1143	JComp Trq	-4.000	4.000	-	pu	Y	Advanced
1144	HPTC WrnCode	-	-	-	Hex	Y	Service
1135	Tr Adapt Ref	-3.2767	3.2767	-	pu	Y	Service
1136	Tr Adapt Fbk	-3.2767	3.2767	-	pu	Y	Service
1137	Tr Adapt Output	-3.2767	3.2767	-	pu	Y	Service
939	Load Obs Spd BW	1.0	500.0	100.0	r/s	N	Advanced
942	Load Obs Trq BW	1.0	500.0	40.0	r/s	N	Advanced
1047	Load Obs Gain	0.00	1.00	0.00		N	Advanced
1000	JComp Acc Gain	0.00	5.00	1.00		N	Advanced
1001	JComp Dec Gain	0.00	5.00	1.00		N	Advanced
1002	JComp Fil BW	1.0	500.0	100.0	r/s	N	Advanced
1004	IsqReg Kp	0.00	655.30	0.05		N	Advanced
1005	IsqReg Ki	0.00	655.30	1.00	/s	N	Advanced
1006	IsdReg Kp	0.00	655.30	0.05		N	Advanced
1007	IsdReg Ki	0.00	655.30	1.00	/s	N	Advanced
1008	IsqReg Limit	0.000	2.000	0.100	pu	N	Advanced
1009	IsdReg Limit	0.000	2.000	0.100	pu	N	Advanced
1015	StatorReg BW	0.1	200.0	10.0	r/s	N	Advanced
1131	StatorReg Alpha	0.01	100.00	1.00		N	Advanced
1133	IsdReg Kd	0.00	655.30	0.00	sec	N	Advanced
1134	IsqReg Kd	0.00	655.30	0.00	sec	N	Advanced
999	EncFbk BW HPTC	1.0	300.0	150.0	r/s	N	Service
1013	FFwd M Fil HPTC	0.1	100.0	30.0	Hz	N	Service
1014	FFwd L Fil HPTC	0.1	100.0	20.0	Hz	N	Service
1138	Tr Adapt Kp	0.000	65.530	0.000		N	Service
1139	Tr Adapt Ki	0.000	65.530	0.000	/s	N	Service
1140	Tr Adapt Limit	0.0000	6.5530	1.0000	pu	N	Service
1141	Tr Adapt TrqLvl	0.000	2.000	0.050	pu	N	Service
1142	Tr Adapt RateLmt	0.0000	6.5530	0.0000	pu	N	Service
1145	Enc Recovery Dly	0.0	60.0	10.0	sec	N	Service

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1159	HardwrEncLossDly	0	1000	5	msec	N	Service
1149	HPTC Integer 1	0	65535	0		N	Service
1150	HPTC Integer 2	0	65535	-		Y	Service
1151	HPTC Integer 3	0	65535	0		N	Service
1152	HPTC Integer 4	-32767	32767	0		N	Service
1153	HPTC Integer 5	-32767	32767	0		N	Service
1154	HPTC Float 1	-32.767	32.767	0.000		N	Service
1155	HPTC Float 2	-32.767	32.767	0.000		N	Service
1156	Disbl SpdReg Trq	0	0.05	0.000		N	Service
1157	HPTC Float 4	-3276.7	3276.7	0.0		N	Service
1158	HPTC Float 5	-3276.7	3276.7	0.0		N	Service

AHM Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1020	AHM Status Flags	-	-	-	Hex	Y	Service
1033	Harmonic 5th Mag	0.000	2.000	-	pu	Y	Service
1034	Harmonic 5th Ang	0.0	360.0	-	Deg	Y	Service
1035	Harmonic 7th Mag	0.000	2.000	-	pu	Y	Service
1036	Harmonic 7th Ang	0.0	360.0	-	Deg	Y	Service
1018	AHM Mode	-	-	AHM Disable		N	Service
1019	AHM Controls	-	-	0000000000000000	Hex	N	Service
1023	Tuning Cycle	0	1500	5	Min	N	Service
1028	AHM Access Code	0	65535	0		N	Service

DCSL Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
935	DCSL Node ID	0	7	0		N	Advanced
955	DCSL Config	-	-	00000000	Hex	N	Advanced
936	Number of Nodes	2	8	2		N	Advanced
937	DCSL Master ID	0	8	-		Y	Advanced
1048	Active Nodes	-	-	-	Hex	Y	Advanced
1089	DCSL Node Loss	-	-	-	Hex	Y	Advanced
945	Drive Status	-	-	-	Hex	Y	Advanced
954	Master Status	-	-	-	Hex	Y	Advanced
944	DCSL Master Cmd	-	-	-	Hex	Y	Advanced
1081	DCSL Drv0 Status	-	-	-	Hex	Y	Advanced

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1082	DCSL Drv1 Status	-	-	-	Hex	Y	Advanced
1083	DCSL Drv2 Status	-	-	-	Hex	Y	Advanced
1084	DCSL Drv3 Status	-	-	-	Hex	Y	Advanced
1085	DCSL Drv4 Status	-	-	-	Hex	Y	Advanced
1086	DCSL Drv5 Status	-	-	-	Hex	Y	Advanced
1087	DCSL Drv6 Status	-	-	-	Hex	Y	Advanced
1088	DCSL Drv7 Status	-	-	-	Hex	Y	Advanced
1046	DCSL Status	-	-	-	Hex	Y	Advanced
1045	Master Accept	-	-	-	Hex	Y	Advanced
931	DCSL MstrTorqRef	0	65535	-		Y	Service
932	Master RPM Ref	-6000	6000	-	RPM	Y	Service
1050	DCSL Fault Flags	-	-	-	Hex	Y	Service
1051	DCSL Warn Flags	-	-	-	Hex	Y	Service
1092	FlwrMaxRuningDly	0	10000	3000	msec	N	Advanced
943	DCSL TestProfile	-	-	Disabled		N	Advanced
1090	Spd Window Low	0	20000	400	RPM	N	Advanced
938	Spd Window High	0	20000	400	RPM	N	Advanced
1049	DCSL Command	-	-	00000000	Hex	N	Service
933	Torque Ref Scale	0.10	655.35	1.00		N	Service
934	Gear Ratio	0.10	655.35	1.00	x:1	N	Service

Functional Safety Parameters

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1054	STO Status	-	-	-	Hex	Y	Monitor
1057	RecOIBBS Status1	-	-	-	Hex	Y	Monitor
1058	RecOIBBS Status2	-	-	-	Hex	Y	Monitor
1069	InvOIBBS Status1	-	-	-	Hex	Y	Monitor
1070	InvOIBBS Status2	-	-	-	Hex	Y	Monitor
1066	Rec OIBBS Fault1	-	-	-	Hex	Y	Monitor
1067	Rec OIBBS Fault2	-	-	-	Hex	Y	Monitor
1078	Inv OIBBS Fault1	-	-	-	Hex	Y	Monitor
1079	Inv OIBBS Fault2	-	-	-	Hex	Y	Monitor
1063	Rec STO HW Rev	0	255	-		Y	Monitor
1064	Rec STO FW Rev	0.000	65.535	-		Y	Monitor
1065	Rec STO Build	0	255	-		Y	Monitor
1075	Inv STO HW Rev	0	255	-		Y	Monitor
1076	Inv STO FW Rev	0.000	65.535	-		Y	Monitor
1077	Inv STO Build	0	255	-		Y	Monitor

No.	Name	Min.	Max.	Default	Units	Read-Only	Access
1119	STO Event Reg	-	-	-	Hex	Y	Monitor
1055	STO Fault	-	-	-	Hex	Y	Service
1059	Rec NSRSupply	-10.00	35.00	-	Vdc	Y	Service
1060	Rec Prot Supply	-10.00	10.00	-	Vdc	Y	Service
1061	Rec Diag Supply	-10.00	10.00	-	Vdc	Y	Service
1062	Rec Safe Supply	-10.00	10.00	-	Vdc	Y	Service
1071	Inv NSRSupply	-10.00	35.00	-	Vdc	Y	Service
1072	Inv Prot Supply	-10.00	10.00	-	Vdc	Y	Service
1073	Inv Diag Supply	-10.00	10.00	-	Vdc	Y	Service
1074	Inv Safe Supply	-10.00	10.00	-	Vdc	Y	Service
1052	Func Safety Mode	-	-	00000000	Hex	N	Advanced
1056	STO Idc OffLevel	0.000	1.000	-	pu	Y	Monitor

Parameters Listed by Linear Number

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
1	Input Ctctr Cfg	-	-	All Faults		N	Basic
3	Auto Restart Dly	0.0	10.0	0.0	sec	N	Basic
4	Operating Mode	-	-	Normal		N	Monitor
5	Output Ctctr Cfg	-	-	Not Running		N	Basic
6	Autotune Manual	-	-	Off		N	Service
7	Speed Ref Select	-	-	Local		N	Monitor
8	Drv Fault6 Mask	-	-	1111111111111111		N	Service
9	Drive Fault6	-	-	-		Y	Service
10	InpCtctr OpenDly	0.0	60.0	0.0	min	N	Advanced
11	Passcode 0	0	65535	-		Y	Monitor
12	Passcode 1	0	65535	-		Y	Monitor
13	Setup Wizard	-	-	0000000000000000		N	Service
14	Liquid Outputs	-	-	-		Y	Advanced
15	Line Cap kVAR	1	7500	300	kVAR	N	Service
16	Line Cap Volts	100	10000	4160	V	N	Service
17	Rated Line Freq	50	60	60	Hz	N	Service
18	Rated Line Volts	100	7200	4160	V	N	Service
19	Rated Drive Amps	10	1750	159	A	N	Service
20	Motor Cap kVAR	1	7500	400	kVAR	N	Service
21	Motor Cap Volts	100	10000	4160	V	N	Service
22	Rated Motor Volt	100	8000	4000	V	N	Basic
23	Rated Motor Amps	10	1500	159	A	N	Basic
24	Rated Motor kW	10	15000	933	kW	N	Basic
25	Rated Motor HP	10	20000	1250	hp	N	Basic
26	Rated Motor RPM	0.0	5400.0	1192.0	RPM	N	Basic
27	DCLnk Inductance	1.0	500.0	24.0	mH	N	Service
28	Motor Cap Freq	50	90	60	Hz	N	Service
29	Rated Motor Freq	25	90	60	Hz	N	Basic
30	Motor Type	-	-	Induction		N	Service
31	Service Factor	0.75	1.25	1.00		N	Basic
32	Line Cap Freq	50	60	60	Hz	N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
33	Preset Speed 1	0.5	75.0	30.0	Hz	N	Advanced
34	Preset Speed 2	0.5	75.0	35.0	Hz	N	Advanced
35	Preset Speed 3	0.5	75.0	40.0	Hz	N	Advanced
36	Profile Mask	-	-	11111111		N	Basic
37	Profile Owner	-	-	-		Y	Monitor
38	Passcode 2	0	65535	-		Y	Monitor
39	Passcode 3	0	65535	-		Y	Monitor
40	Preset Jog Speed	1.0	60.0	6.0	Hz	N	Basic
41	RefCmd Pot Min	-120.0	120.0	6.0	Hz	N	Basic
42	RefCmd Pot Max	0.0	120.0	60.0	Hz	N	Basic
43	RefCmdAnlgInpMin	-120.0	120.0	6.0	Hz	N	Basic
44	RefCmdAnlgInpMax	0.0	120.0	60.0	Hz	N	Basic
45	RefCmd DPI Min	0.0	120.0	6.0	Hz	N	Basic
46	RefCmd DPI Max	0.0	120.0	60.0	Hz	N	Basic
47	SpdCmd Pot	-120.0	120.0	-	Hz	Y	Basic
48	SpdCmd Anlg Inp1	-120.0	120.0	-	Hz	Y	Basic
49	Skip Speed 1	1.0	90.0	90.0	Hz	N	Advanced
50	Skip Speed 2	1.0	90.0	90.0	Hz	N	Advanced
51	Skip Speed 3	1.0	90.0	90.0	Hz	N	Advanced
52	Liquid Inputs	-	-	-		Y	Advanced
53	Skip Speed Band1	0.0	5.0	0.0	Hz	N	Advanced
54	Skip Speed Band2	0.0	5.0	0.0	Hz	N	Advanced
55	Skip Speed Band3	0.0	5.0	0.0	Hz	N	Advanced
56	SpdCmd Anlg Inp2	-120.0	120.0	-	Hz	Y	Basic
57	Field Current	-2.000	2.000	-	pu	Y	Service
58	SpdCmd DPI	-120.0	120.0	-	Hz	Y	Basic
59	SpdCmd PID	-120.0	120.0	-	Hz	Y	Basic
60	Coast Speed	0.1	100.0	2.0	Hz	N	Basic
61	Total Accel Time	0.0	1200.0	32.0	sec	N	Monitor
62	Total Decel Time	0.0	1200.0	32.0	sec	N	Monitor
63	Inertia Type	-	-	Low		N	Basic
64	XIO Liquid Cool	-	-	Unassigned		N	Advanced
65	Accel Time 1	0.0	1200.0	5.0	sec	N	Advanced
66	Accel Time 2	0.0	1200.0	3.0	sec	N	Advanced
67	Accel Time 3	0.0	1200.0	14.0	sec	N	Advanced
68	Accel Time 4	0.0	1200.0	10.0	sec	N	Advanced
69	Decel Time 1	0.0	1200.0	5.0	sec	N	Advanced
70	Decel Time 2	0.0	1200.0	3.0	sec	N	Advanced
71	Decel Time 3	0.0	1200.0	14.0	sec	N	Advanced
72	Decel Time 4	0.0	1200.0	10.0	sec	N	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
73	Ramp Speed 1	5.0	100.0	5.0	Hz	N	Advanced
74	Ramp Speed 2	5.0	100.0	12.0	Hz	N	Advanced
75	Ramp Speed 3	5.0	100.0	54.0	Hz	N	Advanced
76	Ramp Speed 4	5.0	100.0	60.0	Hz	N	Advanced
77	Control AC#2 RMS	0.0	300.0	-	V	Y	Advanced
78	Motor Flux Time	0.0	10.0	3.0	sec	N	Advanced
79	Control AC#3 RMS	0.0	300.0	-	V	Y	Advanced
80	Ramp Test Step	0.0	30.0	0.0	Hz	N	Service
81	SpdReg Bandwidth	0.0	60.0	1.0	r/s	N	Advanced
82	Total Inertia	0.10	50.00	1.00	sec	N	Advanced
84	Trq Lmt Motoring	0.00	4.00	1.05		N	Advanced
85	Trq Lmt Braking	0.00	4.00	1.05		N	Advanced
86	TrqCmd0 SensrLss	0.00	4.00	0.40		N	Advanced
87	TrqCmd1 SensrLss	0.00	4.00	0.40		N	Advanced
88	Speed Ref Step	0.0	2.0	0.0	Hz	N	Service
89	Speed Fbk Mode	-	-	Sensorless		N	Advanced
90	Trq Control Mode	-	-	Speed Reg		N	Advanced
91	Trq Cmd PLC	-4.000	4.000	0.000		N	Advanced
92	Control AC#4 RMS	0.0	300.0	-	V	Y	Advanced
93	DPI Loss Fault	-	-	-		Y	Service
94	Logic Owner	-	-	-		Y	Monitor
95	Rec Pulse Number	0	36	-		Y	Service
96	InvAnlg SelfTst1	-	-	-		Y	Service
97	FlxReg Bandwidth	0.0	60.0	10.0	r/s	N	Advanced
98	Base Speed	25.0	100.0	60.0	Hz	N	Service
99	SpecialFeatures1	-	-	1000000000000000		N	Advanced
100	FlxCmd RatedLoad	0.000	1.500	0.900	pu	N	Advanced
101	IGDPS 56V	0.0	72.0	-	V	Y	Advanced
102	Flux RefStep	0.000	0.100	0.000	pu	N	Service
103	FlxCmd No Load	0.400	1.500	0.700	pu	N	Advanced
104	Ctrl Pwr FltMask	-	-	1111111111111111		N	Basic
105	Ctrl Pwr WrnMask	-	-	1111111111111111		N	Basic
106	Field Bandwidth	0.1	100.0	1.0	r/s	N	Advanced
107	Icd Command Gain	0.0	1.0	0.0		N	Advanced
108	Line CurUnbalTrp	0.00	1.00	0.05	pu	N	Advanced
109	Line CurUnbalDly	0.0	10.0	1.0	sec	N	Advanced
111	RecHSink TempTrp	0	100	55	C	N	Service
112	RecHSink TempWrn	0	100	53	C	N	Service
113	CurReg Bandwidth	50.0	6500.0	200.0	r/s	N	Advanced
114	DCLnk Induct pu	0.00	10.00	-	pu	Y	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
115	T DC Link	0.015	0.150	0.040	sec	N	Advanced
116	DC Link Current	0	999	-	A	Y	Basic
117	Bypass Voltage	0.000	2.000	-	pu	Y	Advanced
118	Control AC#1 RMS	0.0	300.0	-	V	Y	Advanced
119	Idc Test Command	0.000	1.500	0.000	pu	N	Advanced
120	Idc Ref Step	0.000	1.000	0.000	pu	N	Advanced
121	Control 56V	0.0	72.0	-	V	Y	Advanced
122	Line Current pu	0.000	4.000	-	pu	Y	Service
123	Anlg Out4 Scale	0.00	655.35	1.00		N	Basic
124	Anlg RecTstPt3	0	1160	326		N	Service
125	Anlg RecTstPt4	0	1160	700		N	Service
126	Anlg InvTstPt3	0	1160	291		N	Service
127	Anlg InvTstPt4	0	1160	306		N	Service
128	Motor Filter Cap	0.00	2.00	-	pu	Y	Service
129	R Stator	0.0000	0.5000	0.0000	pu	N	Advanced
130	L Total Leakage	0.00	0.75	0.25	pu	N	Advanced
131	Lm Rated	1.00	15.00	3.50	pu	N	Advanced
132	T Rotor	0.10	10.00	1.50	sec	N	Advanced
133	Line Filter Cap	0.00	2.00	-	pu	Y	Service
134	Lm Measured	0.00	15.00	-	pu	Y	Service
135	Line Voltage pu	0.000	2.000	-	pu	Y	Service
136	Master Line Volt	0.000	2.000	-	pu	Y	Service
137	Slave1 Line Volt	0.000	2.000	-	pu	Y	Service
138	Slave2 Line Volt	0.000	2.000	-	pu	Y	Service
139	Control 5V	0.0	8.0	-	V	Y	Advanced
140	Input Impedance	0.0000	1.0000	0.0500	pu	N	Service
141	HardwareOptions1	-	-	0000000010000000		N	Service
142	Control 15V	0.0	24.0	-	V	Y	Advanced
143	InvDvc CurRating	0	3500	800	A	N	Service
144	RecDvc CurRating	0	3500	800	A	N	Service
145	Series RecDvc	1	6	2		N	Service
146	Series InvDvc	1	6	2		N	Service
147	Active Trq Limit	-4.000	4.000	-		Y	Advanced
148	DPI Loss Warning	-	-	-		Y	Service
149	CT Ratio Line	10	10000	1000		N	Service
150	HECS Ratio Motor	10	10000	4000		N	Service
151	CT Brden Line	1.0	100.0	5.0	ohms	N	Service
152	HECS Brden Motor	1.0	100.0	50.0	ohms	N	Service
153	Rectifier Type	-	-	6 PWM		N	Service
154	Inv PWM Max Freq	100	1000	440	Hz	N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
155	Rec PWM Max Freq	100	1000	440	Hz	N	Service
156	Control HECS	0.0	36.0	-	V	Y	Advanced
157	CT Ratio Gndflt	10	10000	2000		N	Service
158	CT Burden Gndflt	10	10000	1000	ohms	N	Service
159	Bypass Frequency	-100.0	100.0	-	Hz	Y	Advanced
160	RecControl Flag2	-	-	-		Y	Service
161	Line OvrCur Trp	0.00	4.00	1.75	pu	N	Advanced
162	Line OvrCur Dly	0	100	10	msec	N	Advanced
163	Drv OvrLoad Trp	0.00	4.00	1.03	pu	N	Advanced
164	Drv OvrLoad Dly	0.0	600.0	60.0	sec	N	Advanced
165	Line OvrVolt Trp	0.00	2.00	1.20	pu	N	Advanced
166	Line OvrVolt Dly	0	1500	250	msec	N	Advanced
167	Line UndVolt Lvl	0.40	1.50	0.85	pu	N	Advanced
168	Line UndVolt Dly	0	100	17	msec	N	Advanced
169	DCLnk OvrCur Trp	0.00	4.00	1.75	pu	N	Advanced
170	DCLnk OvrCur Dly	0	100	10	msec	N	Advanced
171	Gnd OvrCur Trp	0.05	10.00	0.50	A	N	Advanced
172	Gnd OvrCur Dly	0.0	10.0	0.1	sec	N	Advanced
173	Rec OvrVolt Trp	0.00	2.00	1.50	pu	N	Advanced
174	Rec OvrVolt Dly	0	100	10	msec	N	Advanced
175	DPI Loss Mask	-	-	0000000000000000		N	Basic
176	Drive Model	-	-	B Frame		N	Service
177	Mtr OvrCur Trp	0.00	4.00	1.75	pu	N	Advanced
178	Mtr OvrCur Dly	0	500	100	msec	N	Advanced
179	Mtr OvrLoad Trp	0.00	4.00	1.15	pu	N	Advanced
180	Mtr OvrLoad Dly	0.0	600.0	60.0	sec	N	Advanced
181	Mtr OvrVolt Trp	0.00	2.00	1.20	pu	N	Advanced
182	Mtr OvrVolt Dly	0.0	10.0	0.5	sec	N	Advanced
183	Anlg Out1 Scale	0.00	655.35	1.00		N	Basic
184	Anlg Out2 Scale	0.00	655.35	1.00		N	Basic
185	Mtr OvrSpeed Trp	0.0	120.0	66.0	Hz	N	Advanced
186	Mtr OvrSpeed Dly	0.0	2.0	0.5	sec	N	Advanced
187	Anlg Out3 Scale	0.00	655.35	1.00		N	Basic
188	Anlg4-20mA Scale	0.00	655.35	2.00		N	Basic
189	Mtr NeutVolt Trp	0.00	1.50	0.20	pu	N	Advanced
190	Mtr NeutVolt Dly	0.0	10.0	1.0	sec	N	Advanced
191	Mtr Stall Dly	0.0	10.0	2.0	sec	N	Advanced
192	InpFilCutOffFreq	0.0	100.0	-	pu	Y	Service
193	Inv OvrVolt Trp	0.00	2.00	1.50	pu	N	Advanced
194	Inv OvrVolt Dly	0	100	10	msec	N	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
196	Control XIO	0.0	36.0	-	V	Y	Advanced
197	CTBurden CapNeut	1.0	100.0	25.0	ohms	N	Service
198	CTRatio CapNeut	10	10000	1000		N	Service
199	Load Loss Detect	-	-	Disabled		N	Advanced
200	ExtFault1 Class	-	-	Class2 Fault		N	Basic
201	ExtFault2 Class	-	-	Class2 Fault		N	Basic
202	ExtFault3 Class	-	-	Class2 Fault		N	Basic
203	ExtFault4 Class	-	-	Class2 Fault		N	Basic
204	ExtFault5 Class	-	-	Class2 Fault		N	Basic
205	ExtFault6 Class	-	-	Class2 Fault		N	Basic
206	ExtFault7 Class	-	-	Class2 Fault		N	Basic
207	ExtFault8 Class	-	-	Class2 Fault		N	Basic
208	Mtr CurUnbal Trp	0.00	1.00	0.05	pu	N	Advanced
209	Autotune Select	-	-	Off		N	Advanced
210	Autotune Idc Cmd	0.100	0.900	0.500	pu	N	Advanced
211	Autotune Idc Stp	0.000	0.500	0.250	pu	N	Advanced
212	Autotune Idc BW	10.0	100.0	50.0	r/s	N	Advanced
213	Autotune Spd Cmd	0.0	60.0	30.0	Hz	N	Advanced
214	Mtr CurUnbal Dly	0.0	5.0	1.0	sec	N	Advanced
215	Autotune Trq Stp	0.050	0.500	0.100	pu	N	Advanced
216	Autotune Isd Stp	0.010	0.200	0.100	pu	N	Advanced
217	Autotune L Input	0.00	1.00	0.00	pu	N	Advanced
218	Autotune T DCLnk	0.000	0.300	0.000	sec	N	Advanced
219	Autotune RStator	0.00	0.50	0.00	pu	N	Advanced
220	Autotune LLeakge	0.00	0.50	0.00	pu	N	Advanced
221	Autotune L Magn	0.00	15.00	0.00	pu	N	Advanced
222	Autotune T Rotor	0.00	10.00	0.00	sec	N	Advanced
223	Autotune Inertia	0.00	100.00	0.00	sec	N	Advanced
224	Autotune Lmd	0.00	10.00	0.00	pu	N	Advanced
225	Sync Reg Gain	0.0	5.0	1.0		N	Advanced
226	Sync Lead Angle	-90	90	0	Deg	N	Advanced
227	Sync Off Delay	0.000	0.500	0.100	sec	N	Advanced
228	Sync Error Max	0	30	0	Deg	N	Advanced
229	Sync Time	0.0	10.0	10.0	sec	N	Advanced
230	Sync Xfer Time	0.1	57.0	1.0	min	N	Advanced
231	Mtr LoadLoss Dly	0.0	30.0	1.0	sec	N	Advanced
232	Ext Fault XIO	-	-	-		Y	Advanced
233	Encoder Type	-	-	None		N	Basic
234	Encoder PPR	120	16384	1024	PPR	N	Basic
235	EncoderLossTrip	0.0	10.0	2.0	Hz	N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
236	EncoderLossDelay	0.0	1.0	0.1	sec	N	Service
237	Control 5V Redn	0.0	8.0	-	V	Y	Advanced
238	DrvStatus Flag2	-	-	-		Y	Service
239	Slave2 Line Freq	-100.0	100.0	-	Hz	Y	Service
241	Logic Mask	-	-	11111111		N	Basic
242	Local Mask	-	-	11111111		N	Basic
243	Start Mask	-	-	11111111		N	Basic
244	Direction Mask	-	-	11111111		N	Basic
245	Jog Mask	-	-	11111111		N	Basic
246	Mtr LoadLoss Lvl	0.00	1.00	0.25	pu	N	Advanced
247	Reset Mask	-	-	11111111		N	Basic
248	Ref Cmd Mask	-	-	11111111		N	Basic
249	Sync Xfer Mask	-	-	11111111		N	Basic
251	InvAnlg SelfTst2	-	-	-		Y	Service
252	Inv HSink Temp C	-40.0	100.0	-	C	Y	Monitor
253	Inv HSink Temp F	-40.0	212.0	-	F	Y	Monitor
254	Rec HSink Temp C	-40.0	100.0	-	C	Y	Monitor
255	Rec HSink Temp F	-40.0	212.0	-	F	Y	Monitor
257	Logic Command	-	-	-		Y	Monitor
258	Logic Status	-	-	-		Y	Monitor
259	Mtr LoadLoss Spd	0.0	100.0	30.0	Hz	N	Advanced
260	IdcRefLmt DCTest	0.000	4.000	-	pu	Y	Service
261	IdcRefLmt Autotn	0.000	4.000	-	pu	Y	Service
262	Drive Not Ready1	-	-	-		Y	Monitor
263	Motor Cur Unbal	0.00	1.00	-		Y	Service
264	RecControl Flag1	-	-	-		Y	Service
265	InvControl Flag1	-	-	-		Y	Service
266	Rec Dvc Diag Dly	0	6	2		N	Service
268	Inv Dvc Diag Dly	0	6	2		N	Service
269	Drv OvrLoad Min	0.00	4.00	0.95	pu	N	Advanced
270	Drv OvrLoad Wrn	0.00	1.00	0.50		N	Advanced
271	LineVoltUnbalTrp	0.00	1.00	0.05	pu	N	Advanced
272	LineVoltUnbalDly	0.0	10.0	1.0	sec	N	Advanced
273	Control Feedback	0.0	6553.5	-	Hz	Y	Basic
274	HardwareOptions2	-	-	0000000000000110		N	Service
275	Control Refernce	0.0	6553.5	-	Hz	Y	Basic
276	Speed Command In	-120.0	120.0	-	Hz	Y	Basic
277	Speed Command	-120.0	120.0	-	Hz	Y	Basic
278	Speed Reference	-120.0	120.0	-	Hz	Y	Monitor
279	Drive Fault1	-	-	-		Y	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
280	Drive Fault2	-	-	-		Y	Service
281	Drive Fault3	-	-	-		Y	Service
282	Drive Warning1	-	-	-		Y	Service
284	HECS Ratio DCLnk	10	10000	4000		N	Service
285	HECS Brden DCLnk	1.0	100.0	50.0	ohms	N	Service
287	Ctrl Pwr Fault	-	-	-		Y	Service
288	Ctrl Pwr Warning	-	-	-		Y	Service
289	Speed Feedback	-120.0	120.0	-	Hz	Y	Monitor
290	Speed Cmd Max	0.0	120.0	60.0	Hz	N	Basic
291	Torque Reference	-4.000	4.000	-		Y	Advanced
292	MtrTorque CurCmd	-4.000	4.000	-	pu	Y	Advanced
293	Speed Cmd Min	0.0	120.0	6.0	Hz	N	Basic
294	InvTorque CurCmd	-4.000	4.000	-	pu	Y	Advanced
295	Inv Pulse Number	0	65535	-		Y	Service
296	Lmq	0.10	10.00	1.00	pu	N	Advanced
297	Sync Reg Error	-180.0	180.0	-	Deg	Y	Advanced
298	Sync Reg Output	-10.00	10.00	-	Hz	Y	Advanced
299	PFC Access Code	0	65535	0		N	Service
300	PowerFactor Comp	-	-	Disable		N	Service
301	VAR LeadingLimit	0.00	1.00	0.20	pu	N	Service
302	VAR LaggingLimit	0.00	1.00	1.00	pu	N	Service
303	Line PowerFactor	-1.00	1.00	-		Y	Advanced
304	PFC Flux Command	-1.500	1.500	-	pu	Y	Service
305	Flux Reference	0.000	2.000	-	pu	Y	Advanced
306	Flux Feedback	0.000	2.000	-	pu	Y	Advanced
307	Flux Error	-2.000	2.000	-	pu	Y	Advanced
308	FluxCur Feedfwd	-2.000	2.000	-	pu	Y	Advanced
309	FluxCurRegulator	-2.000	2.000	-	pu	Y	Advanced
310	Mtr Flux CurCmd	-2.000	2.000	-	pu	Y	Advanced
311	PWM Mod Index	0.00	1.50	-		Y	Service
312	Inv Flux CurCmd	-2.000	2.000	-	pu	Y	Advanced
313	PID Command	-	-	0000000000000000		N	Service
314	Field CurCmd	0.000	2.000	-	pu	Y	Advanced
315	InvHSink TempTrp	0	100	64	C	N	Service
316	InvHSink TempWrn	0	100	61	C	N	Service
317	Air Pressure Nom	0.0	10.0	3.6	V	N	Service
318	PID Max Limit	-2.0000	2.0000	1.0000	pu	N	Advanced
319	AirLoPresure Trp	1.0	10.0	2.5	V	N	Service
320	AirLoPresure Wrn	0.0	10.0	3.0	V	N	Service
321	Idc Reference	0.000	4.000	-	pu	Y	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
322	Idc Feedback	-2.000	4.000	-	pu	Y	Advanced
323	Idc Error	-1.000	1.000	-	pu	Y	Advanced
324	Line Voltage	0	8000	-	V	Y	Basic
325	Autotune Lmq	0.00	10.00	0.00	pu	N	Advanced
326	Vdc Reference	-1.000	1.000	-		Y	Advanced
327	Alpha Rectifier	0.0	180.0	-	Deg	Y	Advanced
328	Alpha Inverter	-360.0	360.0	-	Deg	Y	Advanced
331	Line VAR pu	-1.00	1.00	-	pu	Y	Service
334	Master Line Freq	-100.0	100.0	-	Hz	Y	Service
335	Slave1 Line Freq	-100.0	100.0	-	Hz	Y	Service
336	PID Min Limit	-2.0000	2.0000	-1.0000	pu	N	Advanced
337	Rotor Frequency	0.00	120.00	-	Hz	Y	Monitor
338	MtrFlux Current	-4.000	4.000	-	pu	Y	Service
339	MtrTrq Current	-4.000	4.000	-	pu	Y	Service
340	Stator Current	0.000	4.000	-	pu	Y	Monitor
341	FlxFbk CurModel	0.000	2.000	-	pu	Y	Service
342	FlxFbk VoltModel	0.000	2.000	-	pu	Y	Service
343	Slip Frequency	-2.00	2.00	-	Hz	Y	Monitor
344	Stator Voltage	0.000	2.000	-	pu	Y	Monitor
345	Mtr AirGap Trq	-4.000	4.000	-	pu	Y	Monitor
346	Mtr AirGap Power	-4.000	4.000	-	pu	Y	Monitor
347	Mtr Neutral Volt	-2.000	2.000	-	pu	Y	Basic
348	PID Manual Input	0.0000	2.0000	0.0000	pu	N	Advanced
349	Encoder Feedback	-120.00	120.00	-	Hz	Y	Service
350	Mtr OvrLoad Min	0.00	4.00	1.05	pu	N	Advanced
351	Mtr OvrLoad Wrn	0.00	1.00	0.50		N	Advanced
352	PID Dead Band	0.0000	2.0000	0.0000	pu	N	Advanced
353	PID Gain	0.00	655.35	1.00		N	Advanced
354	PID Intgral Time	0.00	655.35	1.00	sec	N	Advanced
355	PID Deriv Time	0.00	655.35	0.00	sec	N	Advanced
356	PID Output	-2.0000	2.0000	-	pu	Y	Advanced
357	Process Variable	-2.0000	2.0000	-	pu	Y	Advanced
358	Liquid Cool Flt	-	-	0000000000000000		N	Service
359	Liquid Cool Wrn	-	-	0000000000000000		N	Service
360	Process Setpoint	-2.0000	2.0000	0.5000	pu	N	Advanced
361	Motor Current	0	1500	-	A	Y	Basic
362	Motor Voltage	0	8000	-	V	Y	Basic
363	Motor Speed RPM	-6000	6000	-	RPM	Y	Basic
364	Motor Power	-15000	15000	-	kW	Y	Basic
365	PID Preload	0.0000	2.0000	0.0000	pu	N	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
366	Process Var Eng	-3276.7	3276.7	-		Y	Advanced
367	GndFault Current	0.0	10.0	-	A	Y	Basic
368	RecControl Flag3	-	-	-		Y	Service
369	Motor Fault1	-	-	-		Y	Service
370	Drive Fault4	-	-	-		Y	Service
371	Drive Fault5	-	-	-		Y	Service
372	External Fault	-	-	-		Y	Service
373	Motor Warning1	-	-	-		Y	Service
374	Drive Warning3	-	-	-		Y	Service
375	AutotuneComplete	-	-	0000000000000000		N	Service
376	PLC Error Flags	-	-	-		Y	Basic
377	Autotune Warn1	-	-	-		Y	Advanced
378	Inv PWM Pattern	-	-	-		Y	Service
379	Vdc Ref 5p to 3p	0.00	1.50	0.10	pu	N	Service
380	Coolant Temp C	0	65535	-	C	Y	Service
381	Coolant Temp F	0	65535	-	F	Y	Service
382	Master Line Cur	0.000	4.000	-	pu	Y	Service
383	Slave1 Line Cur	0.000	4.000	-	pu	Y	Service
384	Slave2 Line Cur	0.000	4.000	-	pu	Y	Service
385	Stop Owner	-	-	-		Y	Monitor
386	Local Owner	-	-	-		Y	Monitor
387	Start Owner	-	-	-		Y	Monitor
388	Direction Owner	-	-	-		Y	Monitor
389	Jog Owner	-	-	-		Y	Monitor
390	PID Filter	0.0	6000.0	0.0	r/s	N	Service
391	Reset Owner	-	-	-		Y	Monitor
392	Ref Cmd Owner	-	-	-		Y	Monitor
393	Sync Xfer Owner	-	-	-		Y	Monitor
394	Drv Fault1 Mask	-	-	1111111111111111		N	Basic
395	Drv Fault2 Mask	-	-	1111111111111111		N	Basic
396	Drv Fault3 Mask	-	-	1111111111111111		N	Basic
397	Drv Wrn1 Mask	-	-	1111111111111111		N	Basic
398	Process Gain	0.0	6553.5	1.0		N	Advanced
399	RecHeatsink Type	-	-	MM Aluminum		N	Service
401	TorqueRef Select	-	-	None		N	Monitor
402	DualWndng Phase	0	90	0	Deg	N	Basic
403	Ref Switch Delay	0	1000	300	msec	N	Service
404	Trq Cmd Drive	-4.000	4.000	-		Y	Advanced
405	Power Limit	0.00	4.00	-		Y	Advanced
406	SGCT PwrSup Trip	10.0	30.0	17.5	V	N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
407	SGCT PwrSup Warn	10.0	30.0	19.0	V	N	Service
408	DB Airflow Nom	0	2000	90	ft/m	N	Service
409	DB Airflow Trip	0	2000	10	ft/m	N	Service
410	ExtFault9 Class	-	-	Class2 Fault		N	Basic
411	ExtFault10 Class	-	-	Class2 Fault		N	Basic
412	ExtFault11 Class	-	-	Class2 Fault		N	Basic
413	ExtFault12 Class	-	-	Class2 Fault		N	Basic
414	ExtFault13 Class	-	-	Class2 Fault		N	Basic
415	ExtFault14 Class	-	-	Class2 Fault		N	Basic
416	ExtFault15 Class	-	-	Class2 Fault		N	Basic
417	ExtFault16 Class	-	-	Class2 Fault		N	Basic
418	Lmd	0.10	10.00	1.00	pu	N	Advanced
419	Autotune Warn2	-	-	-		Y	Advanced
420	DvcDiag Flt Mask	-	-	1111111111111111		N	Service
421	RunTime Input	-	-	-		Y	Advanced
422	StndXIO Output	-	-	-		Y	Advanced
423	Drv Wrn3 Mask	-	-	1111111111111111		N	Basic
427	OptXIO Output	-	-	-		Y	Advanced
428	Bypass VoltUnbal	0.00	1.00	-		Y	Service
429	External Warning	-	-	-		Y	Service
431	StndXIO FltInput	-	-	-		Y	Advanced
432	Pump Duty Cycle	1	720	8	hrs	N	Service
433	Stnd XIO Fault	-	-	-		Y	Service
434	Stnd XIO Warning	-	-	-		Y	Service
435	Stnd XIOFlt Mask	-	-	11111111		N	Basic
439	StndXIO Config1	-	-	Reverse		N	Advanced
440	InputProt1 Class	-	-	Class2 Fault		N	Basic
441	TxReacOvrTmpClss	-	-	Class2 Fault		N	Basic
442	DCLnkOvrTmpClass	-	-	Class2 Fault		N	Basic
443	Motor Prot Class	-	-	Class2 Fault		N	Basic
444	InputProt2 Class	-	-	Class2 Fault		N	Basic
445	Aux Prot Class	-	-	Class2 Fault		N	Basic
446	InvControl Flag3	-	-	-		Y	Service
447	Conv AirPressure	-1.0	10.0	-	V	Y	Basic
448	Stator Frequency	0.00	120.00	-	Hz	Y	Service
449	Fan Duty Cycle	1	720	8	hrs	N	Service
458	StndXIO Config2	-	-	Jog		N	Advanced
459	StndXIO Config3	-	-	Remote		N	Advanced
460	StndXIO Config4	-	-	Test Mode		N	Advanced
461	StndXIO Config5	-	-	At Speed		N	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
462	StndXIO Config6	-	-	Thermal Alrm		N	Advanced
463	StndXIO Config7	-	-	Sync Xfer		N	Advanced
464	StndXIO Config8	-	-	In Trq Limit		N	Advanced
465	Vdc Ref 7p to 5p	0.00	1.50	0.50	pu	N	Service
467	Drive Warning4	-	-	-		Y	Service
468	Drv Wrn4 Mask	-	-	1111111111111111		N	Basic
469	InvControl Flag4	-	-	-		Y	Service
470	InvControl Flag5	-	-	-		Y	Service
471	RecControl Flag4	-	-	-		Y	Service
472	Speed Error	-10.00	10.00	-	Hz	Y	Advanced
473	RecAnlg SelfTst1	-	-	-		Y	Service
474	RecAnlg SelfTst2	-	-	-		Y	Service
475	S Curve Percent	0	100	0	%	N	Advanced
476	RecControl Flag5	-	-	-		Y	Service
477	Fan Config	-	-	3 In-line		N	Service
478	Coolant Temp Wrn	35	85	49	C	N	Service
479	S Curve Decel 1	0.0	1200.0	20.0	sec	N	Advanced
480	S Curve Decel 2	0.0	1200.0	20.0	sec	N	Advanced
481	S Curve Accel 1	0.0	1200.0	20.0	sec	N	Advanced
482	S Curve Accel 2	0.0	1200.0	20.0	sec	N	Advanced
483	Coolant Temp Trp	35	85	54	C	N	Service
484	DrvStatus Flag3	-	-	-		Y	Service
485	StatFrqVoltModel	0.0	100.0	-	Hz	Y	Service
486	StatFrqCurModel	0.0	100.0	-	Hz	Y	Service
487	Motor Speed Hz	-120.0	120.0	-	Hz	Y	Basic
490	Fault Output	0	1	-		Y	Service
491	Fan1 Run Time	0.1	60.0	30.0	Days	N	Service
492	HeatpipeWarning1	-	-	-		Y	Service
493	Fan2 Run Time	0.1	60.0	0.1	Days	N	Service
494	RecAnlg SelfTst3	-	-	-		Y	Service
495	HeatpipeWarning2	-	-	-		Y	Service
496	Channel A	-	-	-		Y	Monitor
497	Channel C	-	-	-		Y	Monitor
498	Heatpipe Fault1	-	-	-		Y	Service
499	ChA HeatsinkTemp	-40.0	1000.0	-	Deg	Y	Monitor
500	Line Current	0	999	-	A	Y	Basic
501	ThermalM WrnMask	-	-	1111111111111111		N	Basic
502	Feedforward Fil	0.1	100.0	2.0	Hz	N	Service
505	Contactor Cmd	-	-	-		Y	Service
506	Contactor Status	-	-	-		Y	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
507	SpecialFeatures2	-	-	0000000000000000		N	Advanced
508	Anlg Output4	0	1160	0		N	Basic
509	Anlg RecTstPt1	0	1160	321		N	Service
510	Anlg RecTstPt2	0	1160	322		N	Service
511	Anlg InvTstPt1	0	1160	490		N	Service
512	Anlg InvTstPt2	0	1160	289		N	Service
513	Anlg Output1	0	1160	0		N	Basic
514	Anlg Output2	0	1160	0		N	Basic
515	Anlg Output3	0	1160	0		N	Basic
516	Anlg 4-20mAOut	0	1160	337		N	Basic
517	Anlg Output5	0	1160	361		N	Basic
518	Anlg Output6	0	1160	362		N	Basic
519	Anlg Output7	0	1160	363		N	Basic
520	Anlg Output8	0	1160	364		N	Basic
521	Anlg Out5 Scale	0.00	655.35	1.00		N	Basic
522	Anlg Out6 Scale	0.00	655.35	1.00		N	Basic
523	Anlg Out7 Scale	0.00	655.35	1.00		N	Basic
524	Anlg Out8 Scale	0.00	655.35	1.00		N	Basic
527	ThermalModel Flt	-	-	-		Y	Service
528	ThermalModel Wrn	-	-	-		Y	Service
529	PLC Inp Link A1	0	1160	0		N	Basic
530	PLC Inp Link A2	0	1160	0		N	Basic
531	PLC Inp Link B1	0	1160	0		N	Basic
532	PLC Inp Link B2	0	1160	0		N	Basic
533	PLC Inp Link C1	0	1160	0		N	Basic
534	PLC Inp Link C2	0	1160	0		N	Basic
535	PLC Inp Link D1	0	1160	0		N	Basic
536	PLC Inp Link D2	0	1160	0		N	Basic
537	PLC Out Link A1	0	1160	0		N	Basic
538	PLC Out Link A2	0	1160	0		N	Basic
539	PLC Out Link B1	0	1160	0		N	Basic
540	PLC Out Link B2	0	1160	0		N	Basic
541	PLC Out Link C1	0	1160	0		N	Basic
542	PLC Out Link C2	0	1160	0		N	Basic
543	PLC Out Link D1	0	1160	0		N	Basic
544	PLC Out Link D2	0	1160	0		N	Basic
545	HeatpipeWrn1Mask	-	-	1111111111111111		N	Basic
546	HeatpipeWrn2Mask	-	-	1111111111111111		N	Basic
547	Channel B	-	-	-		Y	Monitor
549	HeatpipeFlt1Mask	-	-	1111111111111111		N	Basic

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
550	Motor Overload	0.00	1.00	-		Y	Service
551	Drive Overload	0.00	1.00	-		Y	Service
554	Motor Voltage pu	0.000	2.000	-	pu	Y	Service
555	Motor Current pu	0.000	4.000	-	pu	Y	Service
558	ChA Ambient Temp	-40.0	1000.0	-	Deg	Y	Monitor
559	Field Loss Dly	0	60	30	sec	N	Service
560	Idc Fac 3p to 5p	0.00	2.00	1.00		N	Service
561	Mtr Fault1 Mask	-	-	1111111111111111		N	Basic
562	Drv Fault4 Mask	-	-	1111111111111111		N	Basic
563	Drv Fault5 Mask	-	-	1111111111111111		N	Basic
564	Ext Fault Mask	-	-	1111111111111111		N	Basic
565	Mtr Wrn1 Mask	-	-	1111111111111111		N	Basic
566	RecDvcJunctnTemp	-40.0	1000.0	-	C	Y	Service
567	Air Filter Block	0.0	100.0	-	%	Y	Basic
568	Air Filter Allow	0.0	100.0	-	%	Y	Basic
569	DrvStatus Flag1	-	-	-		Y	Service
573	Elevation	-	-	1000		N	Service
574	JunctionTemp Trp	-40.0	200.0	120.0	C	N	Service
575	Number PwrSup	1	4	1		N	Service
577	JunctionTemp Wrn	-40.0	150.0	112.5	C	N	Service
578	Calc RecDvc Loss	0	4000	-	Watt	Y	Service
582	Rec HSink RTheta	0.00000	0.65535	-	C/W	Y	Service
583	NeutVolt TripDly	0	1000	100	msec	N	Service
584	Inv DvcGat Seqn	0	65535	-		Y	Service
585	Mtr FluxUnbalTrp	0.00	1.00	0.05	pu	N	Advanced
586	Mtr FluxUnbalDly	0.0	10.0	1.0	sec	N	Advanced
587	LineNeutVoltTrp	0.00	1.50	0.20	pu	N	Advanced
588	LineNeutVoltDly	0.0	10.0	1.0	sec	N	Advanced
589	LineNeutral Volt	-2.000	2.000	-	pu	Y	Basic
590	Rec Gating Test	-	-	Off		N	Service
591	Inv Gating Test	-	-	Off		N	Service
592	XIO Standard IO	-	-	Card # 1		N	Advanced
593	XIO Ext Faults	-	-	Unassigned		N	Advanced
594	XIO Config Errs	-	-	-		Y	Advanced
596	XIO Adaptr Loss	-	-	-		Y	Service
597	Parameter Error	0	65535	-		Y	Basic
608	Inv DvcDiag FbkA	0	65535	-		Y	Service
609	Inv DvcDiag FbkB	0	65535	-		Y	Service
610	Master VoltUnbal	0.00	1.00	-		Y	Service
611	Slave1 VoltUnbal	0.00	1.00	-		Y	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
612	Slave2 VoltUnbal	0.00	1.00	-		Y	Service
613	Master Cur Unbal	0.00	1.00	-		Y	Service
614	Slave1 Cur Unbal	0.00	1.00	-		Y	Service
615	Slave2 Cur Unbal	0.00	1.00	-		Y	Service
616	Slave1 Angle	-360.0	360.0	-	Deg	Y	Service
617	Slave2 Angle	-360.0	360.0	-	Deg	Y	Service
618	Inv DvcDiag FbkC	0	65535	-		Y	Service
619	Motor Flux Unbal	0.00	1.00	-		Y	Service
620	Rec DvcGat SeqnA	0	65535	-		Y	Service
621	Rec DvcGat SeqnB	0	65535	-		Y	Service
622	NeutVolt TripLvl	0.00	1.50	0.10	pu	N	Service
623	Flux Cmd Limit	0.000	1.500	-	pu	Y	Service
624	Line Reactor	0.00	50.00	0.00	mH	N	Service
625	Line Reactor pu	0.00	1.00	-	pu	Y	Service
626	Rec DvcGat SeqnC	0	65535	-		Y	Service
627	Rec DvcDiag FbkA	0	65535	-		Y	Service
628	Rec DvcDiag FbkB	0	65535	-		Y	Service
629	Rec DvcDiag FbkC	0	65535	-		Y	Service
630	Speed Pot Vmin	-10.00	10.00	0.00	V	N	Service
631	Speed Pot Vmax	-10.00	10.00	10.00	V	N	Service
632	Anlg Inp1 Vmin	-10.00	10.00	0.00	V	N	Service
633	Anlg Inp1 Vmax	-10.00	10.00	10.00	V	N	Service
634	Anlg Inp2 Vmin	-10.00	10.00	0.00	V	N	Service
635	Angl Inp2 Vmax	-10.00	10.00	10.00	V	N	Service
636	Anlg Inp3 Vmin	-10.00	10.00	0.00	V	N	Service
637	Anlg Inp3 Vmax	-10.00	10.00	10.00	V	N	Service
638	Forced Flt Mask	-	-	11111111		N	Basic
639	Forced Flt Owner	-	-	-		Y	Monitor
640	Idc Fac 7p to 5p	0.00	2.00	1.00		N	Service
641	TrqCmd0 Encoder	0.00	4.00	0.00		N	Service
642	InvControl Flag2	-	-	-		Y	Service
643	Inv DCLink Volt	-2.000	2.000	-	pu	Y	Service
644	Encoder Offset	0.00	360.00	0.00	Deg	N	Advanced
645	Rec DCLink Volt	-2.000	2.000	-	pu	Y	Service
646	Drive Warning2	-	-	-		Y	Service
647	Drv Wrn2 Mask	-	-	1111111111111111		N	Basic
648	Drive VSB Gain	0.0	6553.5	-	V/V	Y	Service
649	Drive VSB Tap	-	-	-		Y	Service
650	Ext Fault PLC	-	-	0000000000000000		N	Service
651	Ext Fault Selct	-	-	0000000000000000		N	Basic

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
652	Anlg Inp Config	-	-	0000000000000001		N	Service
653	IsoTxAirPressure	-10.0	10.0	-	V	Y	Basic
654	IsoTxPressureTrp	0.0	10.0	2.5	V	N	Service
655	IsoTxPressureWrn	0.0	10.0	3.0	V	N	Service
656	IsoTxPressureNom	0.0	10.0	3.6	V	N	Service
657	Line Frequency	-100.0	100.0	-	Hz	Y	Basic
658	Trq Lmt Overload	0.00	4.00	1.00		N	Advanced
659	Scale Zero Ref	-	-	0000000000000000		N	Service
660	Scale Full Ref	-	-	0000000000000000		N	Service
661	Provide Zero Ref	-	-	0000000000000000		N	Service
662	Provide Full Ref	-	-	0000000000000000		N	Service
663	Master Phasing	-	-	-		Y	Service
664	Slave1 Phasing	-	-	-		Y	Service
665	Slave2 Phasing	-	-	-		Y	Service
666	Setup Wizard 2	0000	FFFF	0000	Hex	N	Service
667	CommissionStatus	-	-	-		Y	Service
668	CommissionFlags	-	-	0000000000000000		N	Service
673	BusTransTrpFac	0.00	100.00	2.75	pu	N	Service
674	BusTransient Dly	0	100	2		N	Service
675	Harmonic VoltTrp	0.00	10.00	0.15	pu	N	Advanced
676	Harmonic VoltDly	0.0	100.0	1.0	sec	N	Advanced
677	BusTrans MinTrp	0.00	10.00	0.30	pu	N	Service
678	BusTrans IdcFac	0.00	10.00	0.50	pu	N	Service
679	Min Freewhl Time	0.000	1.000	0.016	sec	N	Service
680	Neutral Resistor	0.0	6553.5	0.0	ohms	N	Service
681	RNeut Pwr Rating	0	65535	1500	W	N	Service
682	RNeutral OvrLoad	0.00	1.00	-		Y	Service
683	Harmonic Voltage	0.000	32.767	-	pu	Y	Service
684	BusTransient Trp	0.000	32.767	-	pu	Y	Service
686	XIO Logix IO	-	-	Unassigned		N	Advanced
687	Logix Inputs	-	-	-		Y	Service
688	Logix Outputs	-	-	-		Y	Service
689	Scope Trigger	0	1	-		Y	Service
692	Mtr Power Factor	0.00	1.00	-		Y	Service
693	Lm Regen	0.50	2.00	1.00		N	Service
694	Lm Noload FlxMin	0.50	2.00	1.00		N	Service
695	Lm Noload FlxMax	0.50	2.00	1.00		N	Service
696	Rec Input Volt	0.000	2.000	-	pu	Y	Service
697	ComMode Current	0.00	655.35	-	A	Y	Service
698	Line Loss Trip	0.0	40.0	8.0	Hz	N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
699	Drive Not Ready2	-	-	-		Y	Monitor
700	Warning Output	0	1	-		Y	Service
701	Lm Predicted	0.00	15.00	-	pu	Y	Service
702	Extended Trend	-	-	Enabled		N	Service
703	Liq Cool Mask	-	-	1111111111111111		N	Basic
706	Drive Warning5	-	-	-		Y	Service
707	Drv Wrn5 Mask	-	-	1111111111111111		N	Basic
708	Port Mask Act	-	-	-		Y	Advanced
709	Port Logic Mask	-	-	0000000001111111		N	Advanced
710	Logic Mask Act	-	-	-		Y	Advanced
711	Write Mask Cfg	-	-	0000000001111111		N	Advanced
712	Write Mask Act	-	-	-		Y	Advanced
714	Logix Register A	0	65535	0		N	Service
715	Logix Register B	0	65535	0		N	Service
716	Drive ID	0	7	0		N	Advanced
717	Powerup Config	-	-	Single Drive		N	Advanced
718	Master Mask	-	-	11111111		N	Advanced
719	Acting Master ID	0	8	0		N	Advanced
720	PD Fault Word	-	-	-		Y	Advanced
721	PD Warning Word	-	-	-		Y	Advanced
722	PD Flags	-	-	0000000000000000		N	Service
723	PD Status	-	-	-		Y	Service
724	Drive0 Status	-	-	-		Y	Advanced
725	Drive1 Status	-	-	-		Y	Advanced
726	Drive2 Status	-	-	-		Y	Advanced
727	Drive3 Status	-	-	-		Y	Advanced
728	Drive4 Status	-	-	-		Y	Advanced
729	Drive5 Status	-	-	-		Y	Advanced
730	Drive6 Status	-	-	-		Y	Advanced
731	Drive7 Status	-	-	-		Y	Advanced
732	Master Flux Ref	0	65535	-		Y	Service
733	Master Torq Ref	0	65535	-		Y	Service
734	Master Isd Cmd	0	65535	-		Y	Service
735	Master Command	-	-	-		Y	Service
736	Sp Slave ID	0	8	-		Y	Service
737	Master Capacity	0	65535	-		Y	Service
738	Sp Capacity	0	65535	-		Y	Service
739	Sp Command	-	-	-		Y	Service
740	PD Flux Ref	0	65535	-		Y	Service
741	PD Torq Ref	0	65535	-		Y	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
742	PD Isd Cmd	0	65535	-		Y	Service
743	PD Command	-	-	-		Y	Service
745	Drives in System	1	4	1		N	Advanced
746	PD Capacity	0	32767	-		Y	Service
747	Pwr Lmt Motoring	0.00	4.00	1.50		N	Advanced
748	Pwr Lmt Braking	0.00	4.00	1.50		N	Advanced
749	Ref Command Loss	-	-	Fault		N	Basic
750	ESP Cable Resis	0.000	65.535	0.000	ohms	N	Service
751	Drv Application	-	-	ID Fan		N	Basic
753	Input Power	-15000	15000	-	kW	Y	Service
756	Idc 3 Pulse	0.000	10.000	-	pu	Y	Service
757	Idc 5 Pulse	0.000	10.000	-	pu	Y	Service
758	PD Warning	-	-	-		Y	Service
759	PD Wrn Mask	-	-	1111111111111111		N	Service
760	ESP Surface Volt	0	8000	-	V	Y	Basic
761	Inv Output Volt	0.000	2.000	-	pu	Y	Service
763	DeSync Start Dly	1	10	1	sec	N	Service
764	Cur Sens FltCode	-	-	-		Y	Service
765	Reduced Capacity	-	-	Enable		N	Advanced
767	BusTransient Lvl	0.000	32.767	-	pu	Y	Service
771	Mtr Thermal Cyc	0.0	6000.0	600.0	sec	N	Advanced
772	Drv Thermal Cyc	0.0	6000.0	600.0	sec	N	Advanced
773	IdcRefLmt Motor	0.000	4.000	-	pu	Y	Service
774	RNeut OvrLoadTrp	0.00	655.35	5.00		N	Service
775	RNeut OvrLoadDly	0.00	655.35	2.50	sec	N	Service
776	RNeut OvrCurTrp	0.00	655.35	10.00		N	Service
777	RNeut OvrCurDly	0.000	65.535	0.010	sec	N	Service
778	TransientVoltMax	0.000	2.000	-	pu	Y	Service
779	ComModeCur Peak	0.00	655.35	-	A	Y	Service
780	Model AirFlw Nom	0	2000	1040	ft/m	N	Service
781	XIO Heatpipe	-	-	Unassigned		N	Advanced
782	Heatpipe Inputs	-	-	-		Y	Advanced
783	Heatpipe Outputs	-	-	-		Y	Advanced
784	DB Power	0.0	200.0	-	%	Y	Advanced
785	DB Power kW	0	5000	-	kW	Y	Advanced
786	DB Energy	0.0	200.0	-	%	Y	Advanced
787	Fan Rotate Cycle	1	14400	720	hrs	N	Service
788	ChA Airflow	-2000	2000	-	ft/m	Y	Monitor
789	FanRuntimeSelect	-	-	LR1 Runtime		N	Basic
790	FanRuntime	0	65535	-	hrs	Y	Basic

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
792	DBR Load	0.00	2.00	-		Y	Advanced
793	ChC HeatsinkTemp	-40.0	1000.0	-	Deg	Y	Monitor
794	ChC Ambient Temp	-40.0	1000.0	-	Deg	Y	Monitor
795	ChC Airflow	-2000	2000	-	ft/m	Y	Monitor
796	ChC GatePowerSup	0.0	30.0	-	V	Y	Advanced
798	DBAmbientTempTrp	0.0	100.0	80.0	C	N	Service
799	InvUV AirPresure	-10.0	10.0	-	V	Y	Basic
800	InvVW AirPresure	-10.0	10.0	-	V	Y	Basic
801	CMC AirPresure	-10.0	10.0	-	V	Y	Basic
802	PFC FluxReg Gain	0.0	50.0	1.0		N	Advanced
803	PFC ModIndexGain	0.0	50.0	1.0		N	Advanced
805	ChB GatePowerSup	0.0	30.0	-	V	Y	Advanced
806	CMCAirPresureNom	0.0	10.0	3.8	V	N	Service
807	ChA GatePowerSup	0.0	30.0	-	V	Y	Advanced
808	ChB HeatsinkTemp	-40.0	1000.0	-	Deg	Y	Monitor
809	ChB Ambient Temp	-40.0	1000.0	-	Deg	Y	Monitor
810	ChB Airflow	-2000	2000	-	ft/m	Y	Monitor
811	CMC AirExhst Wrn	0.0	10.0	2.0	V	N	Service
812	CMC AirInlet Wrn	0.0	10.0	5.0	V	N	Service
813	CMC AirExhst Trp	0.0	10.0	1.5	V	N	Service
814	CMC AirInlet Trp	0.0	10.0	5.5	V	N	Service
815	Active Fan Set	-	-	-		Y	Monitor
817	DBR Power Rating	3	5000	300	kW	N	Service
818	DBR Resistance	0.0	6553.5	0.0	ohms	N	Service
819	DBRResistance pu	0.0	10.0	-	pu	Y	Service
820	DBR Inductance	0	2000	50	uH	N	Service
821	Series DBDvc	1	4	2		N	Service
822	DBR Temp Coeff	0	65535	600	uO/C	N	Service
823	DBR EnergyRating	0.1	60.0	3.0	MJ	N	Service
824	DBR Temp Limit	0.0	1000.0	250.0	C	N	Service
825	DBR Cycle Time	10	65535	1800	sec	N	Service
827	DBR Temp Wrn	0.0	250.0	150.0	C	N	Service
828	DBR Temp Trip	0.0	250.0	180.0	C	N	Service
830	DB Exhaust Temp	0.0	1000.0	-	Deg	Y	Advanced
831	DB DvcGat Seqn	0	65535	-		Y	Service
832	DB DvcGat Fbk	0	65535	-		Y	Service
833	XIO Special App	-	-	Unassigned		N	Advanced
834	XIO SpecApp Type	-	-	Marine 1		N	Advanced
835	SpecApp Inputs	-	-	-		Y	Advanced
836	SpecApp Outputs	-	-	-		Y	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
837	DB Airflow Warn	0	2000	40	ft/m	N	Service
838	DBAmbientTempWrn	0.0	100.0	60.0	C	N	Service
839	DB DvcDiag Delay	0	6	2		N	Service
840	Conv Airflow Trp	0	2000	450	ft/m	N	Service
841	Conv Airflow Wrn	0	2000	525	ft/m	N	Service
842	Max FlxCur Start	0.000	2.000	0.500	pu	N	Service
843	Max Field CurCmd	0.000	2.000	1.000	pu	N	Service
844	Rotor Position	0.00	360.00	-	Deg	Y	Advanced
845	Drv LeadingLimit	0.00	1.00	-	pu	Y	Service
846	Drv LaggingLimit	0.00	1.00	-	pu	Y	Service
847	DB Regulator Kp	0.000	65.535	0.100		N	Advanced
848	DB Regulator Ki	0.000	65.535	0.300		N	Advanced
849	DB Vdc LPF Freq	0.01	655.35	5.00	Hz	N	Service
850	PF LeadingLimit	0.00	1.00	0.95		N	Service
851	PF LaggingLimit	0.00	1.00	0.00		N	Service
852	DB SVM LPF Freq	0.1	1000.0	75.0	Hz	N	Service
853	Min DB Pwr Limit	0.000	1.000	0.010	pu	N	Advanced
855	Drive Warning6	-	-	-		Y	Service
856	Drive Warning7	-	-	-		Y	Service
857	Drive Warning8	-	-	-		Y	Service
858	Drive Fault7	-	-	-		Y	Service
859	Drv Wrn6 Mask	-	-	1111111111111111		N	Basic
860	Drv Wrn7 Mask	-	-	1111111111111111		N	Basic
861	Drv Wrn8 Mask	-	-	1111111111111111		N	Basic
862	Drv Fault7 Mask	-	-	1111111111111111		N	Basic
863	ThermalM FltMask	-	-	1111111111111111		N	Basic
864	UPS Type	-	-	None		N	Service
865	DrvOL AcelAdjust	-32.767	32.767	0.000		N	Service
866	DrvOvrLoadAdjust	-3276.7	3276.7	0.0		N	Service
867	Motors on Drive	0	10	1		N	Service
868	LineCurUnbal Lvl	0.00	1.00	0.03	pu	N	Service
869	Cap Trip Dly	200	5000	200	msec	N	Service
870	NeutCur TripDly	0	1000	100	msec	N	Service
871	CapNeutVolt Lvl	0.00	1.50	0.10	pu	N	Service
872	GndCurLvlCapProt	0.0	100.0	10.0	A	N	Service
873	SpdReg Kp	0.00	655.00	1.00		N	Advanced
874	SpdReg Ki	0.0	6553.0	1.0	/s	N	Advanced
875	Autotune WrnCode	-	-	-		Y	Service
877	Drive Fault8	-	-	-		Y	Service
878	Drv Fault8 Mask	-	-	1111111111111111		N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
879	NetSrvr FltAct'n	-	-	Fault		N	Advanced
880	InvHeatsink Type	-	-	MM Aluminum		N	Service
881	Inv HSink RTheta	0.00000	0.65535	-	C/W	Y	Service
882	Calc InvDvc Loss	0	4000	-	Watt	Y	Service
884	InvDvcJunctnTemp	-40.0	1000.0	-	C	Y	Service
887	IdcRefLmt DB	0.000	2.000	2.000	pu	N	Service
888	LeakagDetectDly	0	20000	500	msec	N	Advanced
889	DB SVM Ki	0.000	65.535	0.200		N	Service
890	DB SVM Kp	0.000	65.535	0.100		N	Service
891	NeutCur TripLvl	0.00	1.50	0.10	pu	N	Service
892	HeatSinkTemp Wrn	0	200	-	C	Y	Service
893	HeatSinkTemp Trp	0	200	-	C	Y	Service
894	Line Cur Unbal	0.00	1.00	-		Y	Service
895	NeutralFund Cur	0.00	1.00	-	pu	Y	Service
896	NeutralFund Volt	0.00	1.00	-	pu	Y	Service
897	Cap Neutral Volt	-2.000	2.000	-	pu	Y	Service
900	Sync Drift Angle	-15	15	2	Deg	N	Service
902	Line Power pu	-4.00	4.00	-	pu	Y	Service
912	Motor Efficiency	75.0	100.0	96.0	%	N	Basic
913	Pwr Lmt DB	0.00	4.00	0.30	pu	N	Advanced
914	Trq Reg Kp	0.00	655.35	0.00		N	Advanced
915	Trq Reg Ki	0.00	655.35	0.00		N	Advanced
916	TrqReg LPF Freq	0	20000	100	Hz	N	Advanced
917	TrqReg Limit	0.000	2.000	0.050		N	Advanced
918	VAR SetPoint	-1.00	1.00	0.00	pu	N	Service
919	PF SetPoint	-1.00	1.00	0.00		N	Service
920	SpecialFeatures3	-	-	0000000000000000		N	Advanced
921	Fault Lock Clear	0	65535	0		N	Service
922	DC Link Type	-	-	Normal Duty		N	Service
925	AirHiPresure Trp	0.0	10.0	9.5	V	N	Service
926	AirHiPresure Wrn	0.0	10.0	9.0	V	N	Service
927	DB Air Speed	-2000	2000	-	ft/m	Y	Advanced
928	DB Ambient Temp	-40.0	1000.0	-	Deg	Y	Advanced
929	DB TFB PS Volt	0.0	30.0	-	V	Y	Advanced
930	Trans IdcPeak	0.50	4.00	1.40	pu	N	Service
931	DCSL MstrTorqRef	0	65535	-		Y	Service
932	Master RPM Ref	-6000	6000	-	RPM	Y	Service
933	Torque Ref Scale	0.10	655.35	1.00		N	Service
934	Gear Ratio	0.10	655.35	1.00	x:1	N	Service
935	DCSL Node ID	0	7	0		N	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
936	Number of Nodes	2	8	2		N	Advanced
937	DCSL Master ID	0	8	-		Y	Advanced
938	Spd Window High	0	20000	400	RPM	N	Advanced
939	Load Obs Spd BW	1.0	500.0	100.0	r/s	N	Advanced
940	Hub Command Loss	-	-	Warning		N	Advanced
941	PD Line VAR pu	-1.00	1.00	0.00	pu	N	Service
942	Load Obs Trq BW	1.0	500.0	40.0	r/s	N	Advanced
943	DCSL TestProfile	-	-	Disabled		N	Advanced
944	DCSL Master Cmd	-	-	-		Y	Advanced
945	Drive Status	-	-	-		Y	Advanced
946	Autotune Mtr Cur	0.100	2.000	0.500	pu	N	Advanced
947	Autotune EncFreq	0.01	60.00	0.10	Hz	N	Advanced
948	Autotune If Cmd	0.10	2.00	0.80	pu	N	Advanced
949	Autotune EncOfst	0.00	360.00	0.00	Deg	N	Advanced
950	RtrStop Dly Time	0.0	120.0	10.0	sec	N	Advanced
951	Unbalance Ratio	0.0	50.0	1.3		N	Service
952	PFC Isd Reg Gain	0.0	50.0	1.0		N	Advanced
953	PFC Mtr Isd Cmd	-2.000	2.000	-	pu	Y	Service
954	Master Status	-	-	-		Y	Advanced
955	DCSL Config	-	-	00000000		N	Advanced
956	Motor Warning2	-	-	-		Y	Service
957	Mtr Wrn2 Mask	-	-	1111111111111111		N	Basic
958	LR AirPressure	-10.0	10.0	-	V	Y	Basic
959	LRAirPressureNom	0.0	10.0	3.8	V	N	Service
960	LR AirExhst Wrn	0.0	10.0	2.0	V	N	Service
961	LR AirInlet Wrn	0.0	10.0	5.0	V	N	Service
962	LR AirExhst Trp	0.0	10.0	1.5	V	N	Service
963	LR AirInlet Trp	0.0	10.0	5.5	V	N	Service
964	LR Fan Speed	0.0	10.0	7.0	V	N	Service
965	CNV Fan Speed 1	0.0	10.0	7.0	V	N	Service
966	CNV Fan Speed 2	0.0	10.0	7.0	V	N	Service
967	CMC Fan Speed	0.0	10.0	7.0	V	N	Service
969	PM MagFlux pu	0.000	2.000	0.800	pu	N	Advanced
970	Lmd Min	0.01	10.00	1.00		N	Service
971	Lmd Max	0.01	10.00	1.00		N	Service
972	Lmq Min	0.01	10.00	1.00		N	Service
973	Lmq Max	0.01	10.00	1.00		N	Service
975	Heatpipe Fault2	-	-	-		Y	Service
976	HeatpipeFlt2Mask	-	-	1111111111111111		N	Basic
977	AT PM MagFlux pu	0.000	2.000	0.000	pu	N	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
978	FluxReg Kp	0.00	655.00	1.00		N	Advanced
979	FluxReg Ki	0.00	655.00	1.00	/s	N	Advanced
981	NetSrvr MPntCntl	-	-	Enabled All		N	Advanced
982	LineCur Neg Seq	-200.0	200.0	-	A	Y	Service
983	LineVolt Neg Seq	0.000	2.000	-	pu	Y	Service
984	Neg Seq Trip Lvl	0.0	200.0	2.0	A	N	Service
985	Smallest CapkVAR	0	1000	300	kVAR	N	Service
986	LineCapStepVolt	0.00	1.50	0.30		N	Service
987	Elapsed MWh	0	65535	-	MWh	Y	Advanced
988	SCR PwrSup Trip	5.0	30.0	8.0	V	N	Service
989	SCR PwrSup Warn	10.0	30.0	15.0	V	N	Service
990	Neg Seq Trip Dly	25	5000	200	msec	N	Service
993	Vdc Ref Limit	-1.500	1.500	-		Y	Service
994	Actual SpdReg BW	0.0	60.0	-	r/s	Y	Advanced
995	Motor Cap Comp	-.100	0.100	0.000	pu	N	Advanced
996	SpecialFeatures4	-	-	0000000000000000		N	Advanced
998	Autotune M Cap	-.100	0.100	0.000	pu	N	Advanced
999	EncFbk BW HPTC	1.0	300.0	150.0	r/s	N	Service
1000	JComp Acc Gain	0.00	5.00	1.00		N	Advanced
1001	JComp Dec Gain	0.00	5.00	1.00		N	Advanced
1002	JComp Fil BW	1.0	500.0	100.0	r/s	N	Advanced
1004	IsqReg Kp	0.00	655.30	0.05		N	Advanced
1005	IsqReg Ki	0.00	655.30	1.00	/s	N	Advanced
1006	IsdReg Kp	0.00	655.30	0.05		N	Advanced
1007	IsdReg Ki	0.00	655.30	1.00	/s	N	Advanced
1008	IsqReg Limit	0.000	2.000	0.100	pu	N	Advanced
1009	IsdReg Limit	0.000	2.000	0.100	pu	N	Advanced
1010	Feedfwd L Fil	0.1	100.0	0.2	Hz	N	Service
1011	SourceDeltaAngle	-90.0	90.0	-	Deg	Y	Service
1012	EncFbk BW STD	1.0	200.0	100.0	r/s	N	Service
1013	FFwd M Fil HPTC	0.1	100.0	30.0	Hz	N	Service
1014	FFwd L Fil HPTC	0.1	100.0	20.0	Hz	N	Service
1015	StatorReg BW	0.1	200.0	10.0	r/s	N	Advanced
1018	AHM Mode	-	-	AHM Disable		N	Service
1019	AHM Controls	-	-	0000000000000000		N	Service
1020	AHM Status Flags	-	-	-		Y	Service
1023	Tuning Cycle	0	1500	5	Min	N	Service
1028	AHM Access Code	0	65535	0		N	Service
1033	Harmonic 5th Mag	0.000	2.000	-	pu	Y	Service
1034	Harmonic 5th Ang	0.0	360.0	-	Deg	Y	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
1035	Harmonic 7th Mag	0.000	2.000	-	pu	Y	Service
1036	Harmonic 7th Ang	0.0	360.0	-	Deg	Y	Service
1045	Master Accept	-	-	-		Y	Advanced
1046	DCSL Status	-	-	-		Y	Advanced
1047	Load Obs Gain	0.00	1.00	0.00		N	Advanced
1048	Active Nodes	-	-	-		Y	Advanced
1049	DCSL Command	-	-	00000000		N	Service
1050	DCSL Fault Flags	-	-	-		Y	Service
1051	DCSL Warn Flags	-	-	-		Y	Service
1052	Func Safety Mode	-	-	00000000		N	Advanced
1053	InvControl Flag6	-	-	-		Y	Service
1054	STO Status	-	-	-		Y	Monitor
1055	STO Fault	-	-	-		Y	Service
1056	STO Idc OffLevel	0.000	1.000	-	pu	Y	Monitor
1057	RecOIBBS Status1	-	-	-		Y	Monitor
1058	RecOIBBS Status2	-	-	-		Y	Monitor
1059	Rec NSRSupply	-10.00	35.00	-	Vdc	Y	Service
1060	Rec Prot Supply	-10.00	10.00	-	Vdc	Y	Service
1061	Rec Diag Supply	-10.00	10.00	-	Vdc	Y	Service
1062	Rec Safe Supply	-10.00	10.00	-	Vdc	Y	Service
1063	Rec STO HW Rev	0	255	-		Y	Monitor
1064	Rec STO FW Rev	0.000	65.535	-		Y	Monitor
1065	Rec STO Build	0	255	-		Y	Monitor
1066	Rec OIBBS Fault1	-	-	-		Y	Monitor
1067	Rec OIBBS Fault2	-	-	-		Y	Monitor
1069	InvOIBBS Status1	-	-	-		Y	Monitor
1070	InvOIBBS Status2	-	-	-		Y	Monitor
1071	Inv NSRSupply	-10.00	35.00	-	Vdc	Y	Service
1072	Inv Prot Supply	-10.00	10.00	-	Vdc	Y	Service
1073	Inv Diag Supply	-10.00	10.00	-	Vdc	Y	Service
1074	Inv Safe Supply	-10.00	10.00	-	Vdc	Y	Service
1075	Inv STO HW Rev	0	255	-		Y	Monitor
1076	Inv STO FW Rev	0.000	65.535	-		Y	Monitor
1077	Inv STO Build	0	255	-		Y	Monitor
1078	Inv OIBBS Fault1	-	-	-		Y	Monitor
1079	Inv OIBBS Fault2	-	-	-		Y	Monitor
1081	DCSL Drv0 Status	-	-	-		Y	Advanced
1082	DCSL Drv1 Status	-	-	-		Y	Advanced
1083	DCSL Drv2 Status	-	-	-		Y	Advanced
1084	DCSL Drv3 Status	-	-	-		Y	Advanced

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
1085	DCSL Drv4 Status	-	-	-		Y	Advanced
1086	DCSL Drv5 Status	-	-	-		Y	Advanced
1087	DCSL Drv6 Status	-	-	-		Y	Advanced
1088	DCSL Drv7 Status	-	-	-		Y	Advanced
1089	DCSL Node Loss	-	-	-		Y	Advanced
1090	Spd Window Low	0	20000	400	RPM	N	Advanced
1091	Load Obs Trq Est	-4.000	4.000	-	pu	Y	Advanced
1092	FlwrMaxRuningDly	0	10000	3000	msec	N	Advanced
1094	DCSL Fault	-	-	-		Y	Service
1095	DCSL Warning	-	-	-		Y	Service
1096	DCSL Wrn Mask	-	-	1111111111111111		N	Basic
1097	Drv Wrn9 Mask	-	-	1111111111111111		N	Basic
1098	Drv Fault9 Mask	-	-	1111111111111111		N	Basic
1099	Drive Warning9	-	-	-		Y	Service
1100	Drive Fault9	-	-	-		Y	Service
1107	IdcReg Kp	0.000	65.500	1.000		N	Advanced
1108	IdcReg Ki	0.00	655.00	1.00	/s	N	Advanced
1111	RecControl Flag6	-	-	-		Y	Service
1112	RecControl Flag7	-	-	-		Y	Service
1113	InvControl Flag7	-	-	-		Y	Service
1115	Instant Volt Max	0.000	2.000	-	pu	Y	Service
1118	Min Field CurCmd	0.000	2.000	1.000	pu	N	Service
1119	STO Event Reg	-	-	-		Y	Monitor
1120	Tr Adaptation	0.100	10.000	-	sec	Y	Service
1121	MtrVoltage DAxis	0.000	2.000	-	pu	Y	Service
1122	MtrVoltage QAxis	0.000	2.000	-	pu	Y	Service
1123	Spd Reg Damp	0.50	5.00	3.00		N	Advanced
1124	PI Trq Cmd	-4.000	4.000	-	pu	Y	Advanced
1127	Torque Fbk Fil	-4.000	4.000	-		Y	Service
1128	Trq Fbk LPF Freq	0.1	1000.0	300.0	Hz	N	Service
1129	Speed Fbk HPTC	-120.00	120.00	-	Hz	Y	Advanced
1131	StatorReg Alpha	0.01	100.00	1.00		N	Advanced
1133	IsdReg Kd	0.00	655.30	0.00	sec	N	Advanced
1134	IsqReg Kd	0.00	655.30	0.00	sec	N	Advanced
1135	Tr Adapt Ref	-3.2767	3.2767	-	pu	Y	Service
1136	Tr Adapt Fbk	-3.2767	3.2767	-	pu	Y	Service
1137	Tr Adapt Output	-3.2767	3.2767	-	pu	Y	Service
1138	Tr Adapt Kp	0.000	65.530	0.000		N	Service
1139	Tr Adapt Ki	0.000	65.530	0.000	/s	N	Service
1140	Tr Adapt Limit	0.0000	6.5530	1.0000	pu	N	Service

No.	Parameter Name	Min.	Max.	Default	Units	Read-Only	Access
1141	Tr Adapt TrqLvl	0.000	2.000	0.050	pu	N	Service
1142	Tr Adapt RateLmt	0.0000	6.5530	0.0000	pu	N	Service
1143	JComp Trq	-4.000	4.000	-	pu	Y	Advanced
1144	HPTC WrnCode	-	-	-		Y	Service
1145	Enc Recovery Dly	0.0	60.0	10.0	sec	N	Service
1149	HPTC Integer 1	0	65535	0		N	Service
1150	HPTC Integer 2	0	65535	-		Y	Service
1151	HPTC Integer 3	0	65535	0		N	Service
1152	HPTC Integer 4	-32767	32767	0		N	Service
1153	HPTC Integer 5	-32767	32767	0		N	Service
1154	HPTC Float 1	-32.767	32.767	0.000		N	Service
1155	HPTC Float 2	-32.767	32.767	0.000		N	Service
1156	Disbl SpdReg Trq	0.00	0.05	0.000		N	Service
1157	HPTC Float 4	-3276.7	3276.7	0.0		N	Service
1158	HPTC Float 5	-3276.7	3276.7	0.0		N	Service
1159	HardwrEncLossDly	0	1000	5	msec	N	Service
1160	Overhauling Load	-	-	Off		N	Basic

Drive Logic Command and Status

Logic Status Word – Database 11.xxx

The following is the Logic Status word from the drive.

It is common for all SCANport/DPI product specific peripherals.

Bit	Function	Value	Description	Notes
0	Ready	1	Drive is Ready	
1	Running	1	Drive is Running	
2	Commanded Direction	1	Drive has been commanded to run forward	0 = Reverse Command
3	Rotating Direction	1	Drive is rotating in the forward direction	0 = Reverse Rotation
4	Accelerating	1	Drive is accelerating to commanded speed	0 = Drive is at speed
5	Decelerating	1	Drive is decelerating to commanded speed	0 = Drive is at speed or stopped
6	At Speed	1	Drive has reached the commanded speed	
7	On Bypass	1	Motor is on bypass	0 = Motor connected to Drive
8	Reverse Enabled	1	The reverse function is enabled.	
9	Drive Fault	1	Drive has faulted	
10	Drive Warning	1	Drive has encountered a warning	
11	Local Lock	1	A DPI or XIO has local control of the drive	
12	Forced Stop	1	A DPI adapter or CIB has forced the drive to stop due to internal problems	
13,15	Preset Speeds	0 0 0	External Reference 0 (Speed Pot)	
		0 0 1	External Reference 1 – ANI 1	
		0 1 0	External Reference 2 – ANI 2	
		0 1 1	External Reference 3 – ANI 3	
		1 0 0	Preset 1	
		1 0 1	Preset 2	
		1 1 0	Preset 3	
		1 1 1	DPI Adapter Reference	

Product Specific Logic Command – Firmware 11.xxx

To be used with gateway adapters such as RIO or DeviceNet.

Bit	Function	Value	Description	Notes
0	Stop	1	Stop Drive using Stop Profile	
1	Start (Pulsed)	1	Start Drive on rising edge using Start Profile	
2	Jog	1	Jog at default or Preset Speed	
3	Clear Fault Queue	1	Clear Fault in Queue	
4	Clear Warning Queue	1	Clear Warning in Queue	
5	Reset Faults	1	Reset Faults and Warnings	
7,6	Direction	0 1	Forward	
		1 0	Reverse	
		1 1	Not Used	
8	DPI Local/Remote Profile	0	Remote	All adapters can control the drive (Full multiplexed control)
		1	Local	Only the adapter that has been granted permission has control of the Drive **(Includes XIO Front Panel Selector Switch)**
10,9	Synchronous Transfer	0 0	No Command	
		0 1	Transfer to Line	
		1 0	Transfer to Drive	
		1 1	Illegal	
11	Start Profile	0	Accel 1 (Default)	Must be maintained until at Speed.
		1	Accel 2	
12	Stop Profile	0	Decel 1 (Default)	Must be maintained until drive stopped.
		1	Decel 2	
15-13	Speed Command Select	0 0 0	No Command	
		0 0 1	External Ref0 (Front Panel Pot)	
		0 1 0	Preset 1	
		0 1 1	Preset 2	
		1 0 0	Preset 3	
		1 0 1	External Ref1 (Programmed Reference)	
		1 1 0	Manual Reference (Local DPI Adapter)	
		1 1 1	Not Used	

Critical Faults

Definition

A critical fault trips the drive and immediately opens the input contactor or circuit breaker. The input device cannot close and energize the drive until all critical faults are cleared.

All critical faults are latched. This means that the drive must be reset to clear the fault even after the fault condition is removed.

To clear a critical fault, the condition that triggered the fault must be cleared and you must reset the fault. A critical fault will not generate again if you attempt to reset the drive if the fault condition is still true.

Table 6 - Critical Fault List

Group	Fault Code	Fault Name	Description
XIO Input Faults	33	IsoTx/ReacOvrTmp	Iso Transformer/Line Reactor Over Temperature
	34	DCLnk OvrTemp	DC Link Over Temperature
	36	Input Prot'n#2	XIO Input Protection #2 Fault
Liquid-cooling Failures	64	Pressure Loss	Coolant Pressure Loss
	68	Coolant Conductivity High	Coolant Conductivity High
	69	CoolantlEVELl low	Coolant Level Low
	71	Pump/Fan Pwr Off	Coolant Pump / Cooling Fan Power Off
Over Current Faults	112	Line OvrCurrent	Line Over Current
	113	DCLnk OvrCurrent	DC link over current
	114	Gnd OvrCurrent	Ground Over Current
	115	RNeut OvrCurrent	Neutral Resistor Over Current
Over Voltage Faults	116	Line OvrVoltage	Line Over Voltage
	117	Rec OvrVoltage	Rectifier Input Over Voltage
	119	Line Harmonic	Line Harmonic Over Voltage
Line Current Unbalance Fault	123	Master CurUnbal	Rectifier Input Current Unbalance
Gating Power Supply Fault	130	2U GatePS V Low	Gating Power Low
Rectifier Over Voltage Failures	134	RecOvrVoltage SW	Rectifier Input Over Voltage
	135	RecOvrTimeout	
Line Cap Protection	136	Line Cap Failure	Line Cap Failure

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
Neutral R overload Fault	145	RNeutral OvrLoad	Neutral Resistor Overload
MV In Tests Faults	164	MV in System Test	MV Applied During System Tests
	165	MV in Gate Test	MV Applied During Gate Tests
Input Contactor Failure	166	Input CtctrOpen	Input Contactor Failure
SW Device Failures	264	2U1A Online	Switch Device Online Failure
	265	2W2A Online	
	266	2V3A Online	
	267	2U4A Online	
	268	2W5A Online	
	269	2V6A Online	
	270	2U1B Online	
	271	2W2B Online	
	272	2V3B Online	
	273	2U4B Online	
	274	2W5B Online	
	275	2V6B Online	
	276	2U1C Online	
	277	2W2C Online	
	278	2V3C Online	
	279	2U4C Online	
	280	2W5C Online	
	281	2V6C Online	
	282	2U1A DiagFbkLoss	Switch Device Feedback Loss
	283	2W2A DiagFbkLoss	
	284	2V3A DiagFbkLoss	
	285	2U4A DiagFbkLoss	
	286	2W5A DiagFbkLoss	
	287	2V6A DiagFbkLoss	
	288	2U1B DiagFbkLoss	
	289	2W2B DiagFbkLoss	
	290	2V3B DiagFbkLoss	
	291	2U4B DiagFbkLoss	
	292	2W5B DiagFbkLoss	
	293	2V6B DiagFbkLoss	
	294	2U1C DiagFbkLoss	
	295	2W2C DiagFbkLoss	
	296	2V3C DiagFbkLoss	

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
SW Device Failures (cont'd)	300	2U1A Gating Loss	Switch Device Gating Loss
	301	2W2A Gating Loss	
	302	2V3A Gating Loss	
	303	2U4A Gating Loss	
	304	2W5A Gating Loss	
	305	2V6A Gating Loss	Switch Device Gating Loss (cont'd)
	306	2U1B Gating Loss	
	307	2W2B Gating Loss	
	308	2V3B Gating Loss	
	309	2U4B Gating Loss	
	310	2W5B Gating Loss	
	311	2V6B Gating Loss	
	312	2U1C Gating Loss	
	313	2W2C Gating Loss	
	314	2V3C Gating Loss	
	315	2U4C Gating Loss	
	316	2W5C Gating Loss	
	317	2V6C Gating Loss	
	318	2U1A Offline	Switch Device Offline Failure
	319	2W2A Offline	
	320	2V3A Offline	
	321	2U4A Offline	
	322	2W5A Offline	
	323	2V6A Offline	
	324	2U1B Offline	
	325	2W2B Offline	
	326	2V3B Offline	
	327	2U4B Offline	
	328	2W5B Offline	
	329	2V6B Offline	
	330	2U1C Offline	
	331	2W2C Offline	
	332	2V3C Offline	
	333	2U4C Offline	
	334	2W5C Offline	
	335	2V6C Offline	

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
SW Device Failures (cont'd)	336	2U1A OnlineOpen	Switch Device Online Open Failure
	337	2W2A OnlineOpen	
	338	2V3A OnlineOpen	
	339	2U4A OnlineOpen	
	340	2W5A OnlineOpen	
	341	2V6A OnlineOpen	
	342	2U1B OnlineOpen	
	343	2W2B OnlineOpen	
	344	2V3B OnlineOpen	
	345	2U4B OnlineOpen	Switch Device Online Open Failure (cont'd)
	346	2W5B OnlineOpen	
	347	2V6B OnlineOpen	
	348	2U1C OnlineOpen	
	349	2W2C OnlineOpen	
	350	2V3C OnlineOpen	
	351	2U4C OnlineOpen	
	352	2W5C OnlineOpen	
	353	2V6C OnlineOpen	
	354	2U1A OnlineShrt	Switch Device Online Short Failure
	355	2W2A OnlineShrt	
	356	2V3A OnlineShrt	
	357	2U4A OnlineShrt	
	358	2W5A OnlineShrt	
	359	2V6A OnlineShrt	
	360	2U1B OnlineShrt	
	361	2W2B OnlineShrt	
	362	2V3B OnlineShrt	
	363	2U4B OnlineShrt	
	364	2W5B OnlineShrt	
	365	2V6B OnlineShrt	
	366	2U1C OnlineShrt	
	367	2W2C OnlineShrt	
	368	2V3C OnlineShrt	
	369	2U4C OnlineShrt	
	370	2W5C OnlineShrt	
	371	2V6C OnlineShrt	

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
SW Device Failures (cont'd)	372	2U1A OfflineOpen	Switch Device Offline Open Failure
	373	2W2A OfflineOpen	
	374	2V3A OfflineOpen	
	375	2U4A OfflineOpen	
	376	2W5A OfflineOpen	
	377	2V6A OfflineOpen	
	378	2U1B OfflineOpen	
	379	2W2B OfflineOpen	
	380	2V3B OfflineOpen	
	381	2U4B OfflineOpen	
	382	2W5B OfflineOpen	
	383	2V6B OfflineOpen	
	384	2U1C OfflineOpen	
	385	2W2C OfflineOpen	
	386	2V3C OfflineOpen	
	387	2U4C OfflineOpen	
	388	2W5C OfflineOpen	
	389	2V6C OfflineOpen	
	390	2U1A OfflineShrt	Switch Device Offline Short Failure
	391	2W2A OfflineShrt	
	392	2V3A OfflineShrt	
	393	2U4A OfflineShrt	
	394	2W5A OfflineShrt	
	395	2V6A OfflineShrt	
	396	2U1B OfflineShrt	
	397	2W2B OfflineShrt	
	398	2V3B OfflineShrt	
	399	2U4B OfflineShrt	
	400	2W5B OfflineShrt	
	401	2V6B OfflineShrt	
	402	2U1C OfflineShrt	
	403	2W2C OfflineShrt	
	404	2V3C OfflineShrt	
	405	2U4C OfflineShrt	
	406	2W5C OfflineShrt	
	407	2V6C OfflineShrt	

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
SW Device Failures (cont'd)	408	3U1B OnlineOpen	Switch Device Online Open Failure
	409	3W2B OnlineOpen	
	410	3V3B OnlineOpen	
	411	3U4B OnlineOpen	
	412	3W5B OnlineOpen	
	413	3V6B OnlineOpen	
	414	4U1C OnlineOpen	
	415	4W2C OnlineOpen	
	416	4V3C OnlineOpen	
	417	4U4C OnlineOpen	
	418	4W5C OnlineOpen	
	419	4V6C OnlineShrt	Switch Device Online Short Failure
	420	3U1B OnlineShrt	
	421	3W2B OnlineShrt	
	422	3V3B OnlineShrt	
	423	3U4B OnlineShrt	
	424	3W5B OnlineShrt	
	425	3V6B OnlineShrt	
	426	4U1C OnlineShrt	
	427	4W2C OnlineShrt	
	428	4V3C OnlineShrt	
	429	4U4C OnlineShrt	
	430	4W5C OnlineShrt	
	431	4V6C OnlineShrt	
	432	3U1B OfflineOpen	Switch Device Offline Open Failure
	433	3W2B OfflineOpen	
	434	3V3B OfflineOpen	
	435	3U4B OfflineOpen	
	436	3W5B OfflineOpen	
	437	3V6B OfflineOpen	
	438	4U1C OfflineOpen	
	439	4W2C OfflineOpen	
	440	4V3C OfflineOpen	
	441	4U4C OfflineOpen	
	442	4W5C OfflineOpen	
	443	4V6C OfflineOpen	

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
SW Device Failures (cont'd)	444	3U1B OfflineShrt	Switch Device Offline Short Failure
	445	3W2B OfflineShrt	
	446	3V3B OfflineShrt	
	447	3U4B OfflineShrt	
	448	3W5B OfflineShrt	
	449	3V6B OfflineShrt	
	450	4U1C OfflineShrt	
	451	4W2C OfflineShrt	
	452	4V3C OfflineShrt	
	453	4U4C OfflineShrt	
	454	4W5C OfflineShrt	
	455	4V6C OfflineShrt	
	520	DBSE1DiagFbkLoss	Switch Device Feedback Loss
	521	DBSE2DiagFbkLoss	
	522	DBSE3DiagFbkLoss	
	523	DBSE4DiagFbkLoss	
	524	DBSH1DiagFbkLoss	
	525	DBSH2DiagFbkLoss	
	526	DBSH3DiagFbkLoss	
	527	DBSH4DiagFbkLoss	
	528	DBSE1GatingLoss	Switch Device Gating Loss
	529	DBSE2GatingLoss	
	530	DBSE3GatingLoss	
	531	DBSE4GatingLoss	
	532	DBSH1GatingLoss	
	533	DBSH2GatingLoss	
	534	DBSH3GatingLoss	
	535	DBSH4GatingLoss	
	536	DBSE1Offline	Switch Device Offline Failure
	537	DBSE2Offline	
	538	DBSE3Offline	
	539	DBSE4Offline	
	540	DBSH1Offline	
	541	DBSH2Offline	
	542	DBSH3Offline	
	543	DBSH4Offline	

Table 6 - Critical Fault List (Continued)

Group	Fault Code	Fault Name	Description
SW Device Failures (cont'd)	544	DBSE1Online	Switch Device Online Failure
	545	DBSE2Online	
	546	DBSE3Online	
	547	DBSE4Online	
	548	DBSH1Online	
	549	DBSH2Online	
	550	DBSH3Online	
	551	DBSH4Online	

Access Level 4 Parameters

Overview

The following table shows the complete list of access level 4 parameters. These parameters are listed here for reference only and you generally do not need to access or change these parameter settings.

Table 7 - Access Level 4 Parameters

Group	Parameter Number	Name	Unit
Feature Select	195	Ride Thru Delay	mS
	581	Fan Off Delay	sec
	974	DirectnChangeSpd	Hz
Drive Hardware	240	Motor Cur Gain	A/V
	250	Motor Flux Gain	
	503	Line ACCurr Gain	A/V
	504	Line DCCurr Gain	A/V
	769	RecDvcVoltRating	V
	770	InvDvcVoltRating	V
Speed Control	110	Speed Fbk Filter	r/s
Torque Control	83	Trq Rate Limit	pu/s
	489	TorqueUnfiltered	
	797	TrqModeRateLimit	pu/s
	1125	Trq Lmt Sync Mtr	
	1126	Torque AlphaBeta	
Flux Control	980	Flux Fbk Filter	r/s
	991	Flux Blend Freq1	Hz
	992	Flux Blend Freq2	Hz
	1093	FluxBlend Filter	r/s
	1116	FlxMagBlendRatio	
	1117	FlxAngBlendRatio	
Current Control	329	Idc Fbk Sampled	pu
	330	Idc Fbk Average	pu
	332	Vdc Error	
	333	Vdc Feedfwd	
	488	Vdc Feedfwd Inv	
	685	Vdc Step	pu
	256	LinePLLBandwidth	r/s
	1101	Vdc FFwd Offset	pu

Table 7 - Access Level 4 Parameters (Continued)

Group	Parameter Number	Name	Unit
Current Control (cont'd)	1102	Discnt Factor 7P	
	1103	Dis Com Latch 7P	pu
	1104	Discnt Factor 5P	
	1105	Dis Com Latch 5P	pu
	1106	FFwd Enable Freq	Hz
	1109	IdcReg Kaw	
	1110	Power Angle	Deg
Drive Protection	525	RecChB TempTrp	C
	526	RecChB TempWrn	C
	570	Ambient TempTrp	C
	571	Ambient TempWrn	C
	752	AirPres Loss Dly	sec
Autotuning	267	Autotune Flags	Hex
	997	Autotune Flags2	Hex
Sync Xfr Option	466	Sync Xfer Flags	Hex
Alarm Config	424	Ext Fault1 Mask	Hex
	425	Ext Fault2 Mask	Hex
	426	Ext Warn Mask	Hex
	436	Stnd XIOFlt1Mask	Hex
	437	Stnd XIOFlt2Mask	Hex
	438	Stnd XIOWrnMask	Hex
Encoder Option	1114	GlitchDetect Lmt	r/s
Feedback	552	Ambient Temp C	C
	553	Ambient Temp F	F
	556	Rec ChB Temp C	C
	557	Rec ChB Temp F	F
Liquid Cooling	430	Temperature 3	
Rockwell	2	LED Problem Code	
	283	Time Audit Inv	
	286	Time Audit Rec	
	450	Rec S/W Probe1	
	451	Rec S/W Probe2	
	452	Rec S/W Probe3	
	453	Rec S/W Probe4	
	454	Inv S/W Probe1	
	455	Inv S/W Probe2	
	456	Inv S/W Probe3	
	457	Inv S/W Probe4	
	595	Test Second Enum	Hex
	598	Test Signed Int	

Table 7 - Access Level 4 Parameters (Continued)

Group	Parameter Number	Name	Unit
Rockwell (cont'd)	599	Test Signed Flt	
	600	Rec S/W Data1	
	601	Rec S/W Data2	
	602	Rec S/W Data3	
	603	Rec S/W Data4	
	604	Inv S/W Data1	
	605	Inv S/W Data2	
	606	Inv S/W Data3	
	607	Inv S/W Data4	
	669	Inv Anlg Tp1 Fil	
	670	Inv Anlg Tp2 Fil	
	671	Rec Anlg Tp1 Fil	
	672	Rec Anlg Tp2 Fil	
	690	Debug Int 1	
	691	Debug Int 2	
	704	Debug Int 3	
	705	Debug Int 4	
	713	Debug Int 5	
	754	Debug Float 1	
	755	Debug Float 2	
	762	Debug Float 3	
	766	Debug Float 4	
	768	Debug Float 5	
	885	Debug Int 6	
	886	Test Word1	
	923	FloatTrack1	
	924	FloatTrack1 Slct	
Parallel Drive	744	Drive Enable	Hex
Thermal Manager	572	Rec ThermalModel	
	854	Scaling Factor	
	883	Inv ThermalModel	
	898	HSinkRTheta22C m	
	899	HSinkRTheta22C b	
	901	HSinkRTheta25C b	
	903	HSinkRTheta30C b	
	904	HSinkRTheta45C b	
	905	HSinkRTheta35C b	
	906	HSinkRTheta50C b	
	907	HSinkRTheta40C b	
	908	HSink Temp Trp m	
Thermal Manager (cont'd)	909	HSink Temp Trp b	
	910	HSink Temp Wrn m	
	911	HSink Temp Wrn b	
Heatpipe	791	FanRuntimeReset	Hex
	816	Heatpipe Option	Hex

Table 7 - Access Level 4 Parameters (Continued)

Group	Parameter Number	Name	Unit
Dynamic Braking	826	Max DB Voltage	pu
	829	DBR Calc Temp	Deg
Power Factor Compensation	548	Input kVAR	kVAR
	804	VAR Reference	pu
	876	PF Reference	
	968	LineCapCurEst pu	pu
HPTC	1003	HPTC Enable	
	1016	MaxFF RateLimit	
	1017	MinFF RateLimit	
	1130	FF RateLimit Lvl	pu
	1132	InvAlpha Dly Lvl	pu
	1146	TrqRateLmtHP	pu/s
	1147	TrqModeRateLmtHP	pu/s
	1148	Inv Alpha Rate	
AHM	1021	Mag Comp Ratio	%
	1022	AngleComp Offset	Deg
	1024	Tuning Time	Sec
	1025	Max Comp Limit	%
	1026	Mag Slew Limit	pu/t
	1027	Angle Slew Limit	d/t
	1029	AHM Reserved1	
	1030	AHM Reserved2	
	1031	AHM Reserved3	
	1032	AHM Reserved4	
	1037	Mag Comp Ref1	pu
	1038	Angle Comp Ref1	Deg
	1039	Mag Comp Ref2	pu
	1040	Angle Comp Ref2	Deg
	1041	AHM Feedback1	
	1042	AHM Feedback2	
	1043	AHM Feedback3	
	1044	AHM Feedback4	
Functional Safety	1068	RecOIBBS CommCnt	Hex
	1080	InvOIBBS CommCnt	Hex

There are three Access Level 4 parameters for firmware use only.

Group	Parameter Number	Name	Unit
(unassigned)	576	Database Size	tags
	579	Print Command	
	580	Print Status	

A

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Notes:

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

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