PowerFlex 6000 Medium Voltage Variable Frequency Drive Communications Specifications

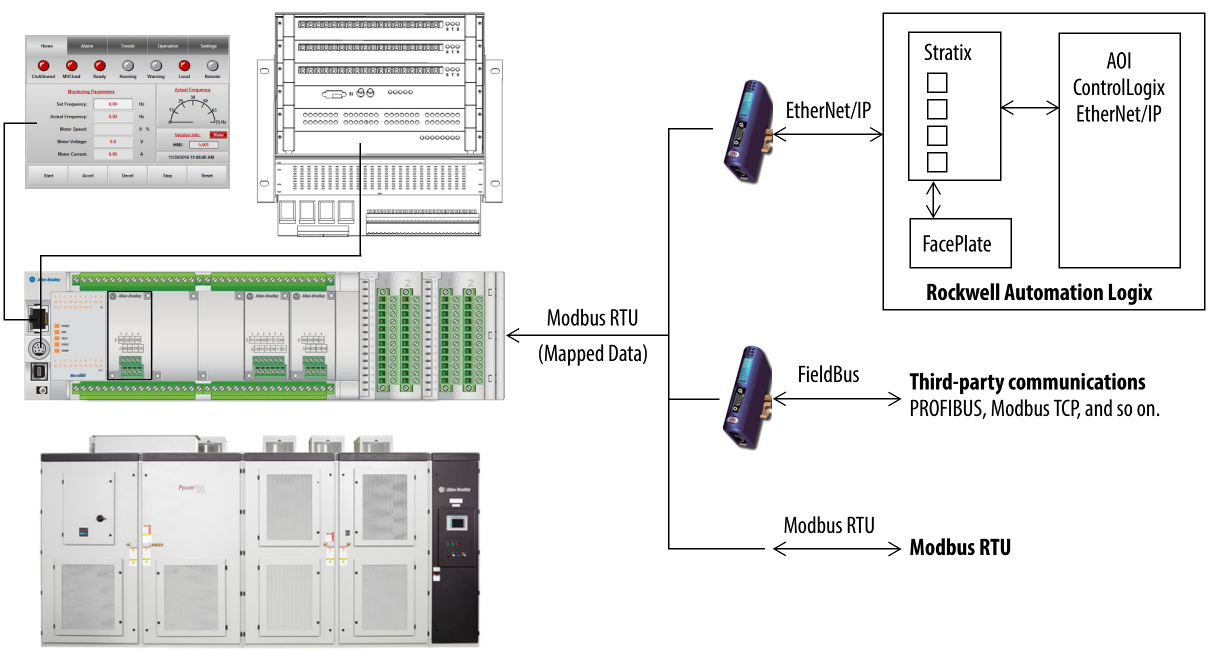
The default communication protocol for PowerFlex® 6000 drives is Modbus RTU, using a plug-in module with the following configuration:
Baud Rate = 19200 (default), Data Bits = 8, Stop Bits = 1, Unit Address = 64.

Communication Structure

The drive communicates with the upstream PC through a Micro800® controller with the 2080-SERIALSOL plug-in module. If using the Modbus RTU communication protocol, you can wire the drive directly to the 2080-SERIALSOL plug-in module.

If using other communication protocols such as Modbus TCP, Modbus Plus, EtherNet/IP, and PROFIBUS, a third-party adapter is required.

Figure 1 - PowerFlex 6000 Drive Communication Protocol Diagram

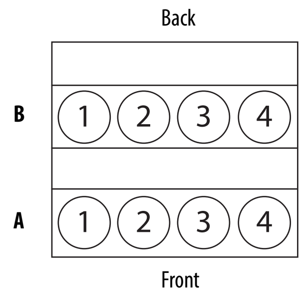


Modbus RTU Communication

Wire the Module

Follow the pinout diagram below to wire your plug-in module.

Figure 2 - 8-Pin Female Terminal Block



(View into terminal block)

Pin A1 RS485 +485	Pin B1 RS232 DOD
Pin A2 RS232/485 GND	Pin B2 RS232 RXD
Pin A3 RS232 RTS	Pin B3 RS232 TXD
Pin A4 RS232 CTS	Pin B4 RS232 -485

When the client communicates with the drive using MODBUS (drive set as slave and client's controller as master), the client's controller can read the drive information and write control command to the drive using the Modbus address as shown in Table 1. This is used only when Remote control has been selected.

Table 1 - Modbus Mapping

No.	Variable Name	Function	Description	Read/Write	Modbus Address	Data Type
			Remote Read			
1	Status_to_RMT	Status Word	See Table 3	Read	400001	INT
2	F_DCS	Drive Output Frequency	Output frequency (Hz), 500 = 50 Hz	Read	400002	INT
3	I_DCS	Motor Current	Motor current in Amps, 1000 = 1000 A	Read	400003	INT
4	A_Pu	Motor Current Pu	Motor current in PU, 1000 = 1.000 PU = 100.0%	Read	400004	INT
5	V_DCS	Motor Voltage	Motor voltage, 1000 = 1000V	Read	400005	INT
6	Power_DCS	Output Power KW	Drive output power in kW, 1000 = 1000 kW	Read	400006	INT
7	P_Pu	Output Power Pu	Motor power in PU, 1000 = 1.000 PU = 100.0%	Read	400007	INT
8	Max_Freq	Max Frequency	Frequency set-point scale	Read	400008	–
9	Fault_Out (0...43)	Fault Word Array [0...43]	Fault Status Words – See Appendix	Read	400009...400052	INT
10	Verify_To_RMT	Communication Watchdog From PLC	Cycle counter for communication checking – the drive copies this value from the Communication Watchdog from PLC	Read	400053	INT
11	P_No_B	P Parameter Number Feedback	The current parameter number that is showing its value in address 400087	Read	400054	INT
12	P_R_V_RMT	P Parameter Current Value	The current value of the parameter referenced by the parameter number written in address 400054 (If you want to read the data in addresses 400054 and 400055, the upstream controller needs to send the P parameter number to the drive through address 400087)	Read	400055	INT
13	Spare [0...4]		Spare	Read	400056...400060	
14	Reserved [0]	Total Power PU	Total Power in PU, 1000 = 1.000 PU = 100.0% (Total Power = Motor rated voltage * Motor rated current * Total Power PU * 1.732/1000)	Read	400061	INT
15	Reserved [1]	Motor Speed PU	Motor Speed in PU, 1000 = 1.000 PU = 100.0% (Motor Speed = Motor Speed PU * Motor rated speed/1000)	Read	400062	INT
16	Reserved [2...17]	Reserved	Reserved	Read	400063...400078	INT
17	PLC _Major	PLC Major Version	PLC major is 6, if version number is V6.001	Read	400079	INT
18	PLC_Minor	PLC Minor Version	PLC minor is 1, if version number is V6.001	Read	400080	INT

Table 1 - Modbus Mapping

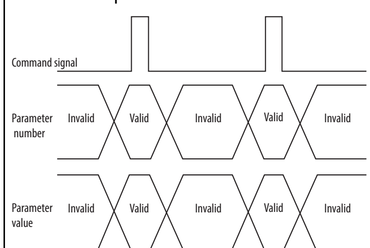
No.	Variable Name	Function	Description	Read/Write	Modbus Address	Data Type
			Remote Write			
1	RMT_Control	Drive Control Word	See Table 2	Write	400081	INT
2	SP_DCS_D	Frequency Set-point (PID is disabled); Set-point (PID is enabled) such as pressure, flow	Drive Output Frequency Command, 1000 = 1.000 PU = 100.0% rated motor frequency, SP_DCS_D = Frequency set-point / Max_Freq * 100% * 10 (PID function is disabled); Set-point such as pressure, flow (PID function is enabled)	Write	400082	INT
3	Spare word	Spare Output Word #1	Spare word	Write	400083	INT
4	Spare word	Spare Output Word #2	Spare word	Write	400084	INT
5	Verify_COMM	Communication Watchdog to PLC	Cycle counting from 0…255 (Cycle counter for communication checking – the PLC copies this value from the Communication Watchdog from DCS)	Write	400085	INT
6	P_W_SW_RMT	P Parameter Write Command	0…1 = Write P parameter to drive  	Write	400086	INT
7	P_Num_RMT	P Parameter Number	P parameter number to read or write data to in drive	Write	400087	INT
8	P_W_V_RMT	P Parameter New Value	Parameter value to write into P parameter number	Write	400088	INT

Table 2 - Control Word

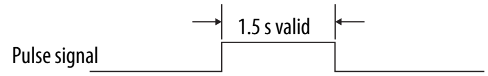
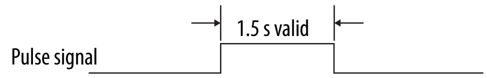
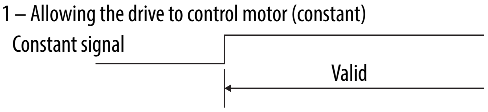
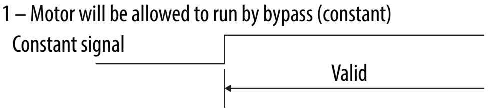
		RMT_Control.0 (400004)	
Bit	**Status Name**	**Description**	**Read/Write**
0	Start	Drive will start when it has received the command  	Write
1	Stop	Drive will stop following a preset stop method when it has received the command (3S pulse high level) Note: Stop has priority so if the stop bit remains on, no owner can start the drive.	Write
2	Reset	1 – Reset Faults and Warnings  	Write
3	To Drive	Automatic bypass valid 1 – Allowing the drive to control motor (constant)  	Write
4	To Bypass	Automatic bypass valid 1 – Motor will be allowed to run by bypass (constant)  	Write

Table 2 - Control Word

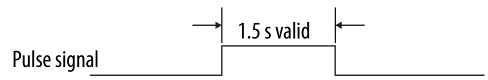
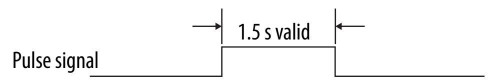
RMT_Control.0 (400004)			
Bit	**Status Name**	**Description**	**Read/Write**
5	Drive to Bypass	Automatic bypass valid 1 – Switch to bypass when the drive is running 	Write
6	Bypass to Drive	Automatic bypass valid 1 – Switch to drive when the bypass is running 	Write
7…15	Spare		

Table 3 - Status Word

Status_to_RMT (INT)			
Bit	**Status Name**	**Description**	**Read/Write**
0			
1	MV Closed	1 = MV closed, 0 = MV opened	Read
2	Ready	1 = Ready to run, 0 = Not Ready	Read
3			
4	Running	1 = Running, 0 = Stopped	Read
5			
6	Warning	1 = Drive Warning	Read
7	Fault	1 = Drive Faulted	Read
8	Allowed	1 = MV is allowed to close, 0 = MV is not allowed to close	Read
9			
10	Local	1 = Control Owner is Local	Read
11	Remote	1 = Control Owner is Remote	Read
12	Remote Box	1 = Control Owner is Remote box	Read
13	Drive	1 = Selected the drive to control motor, automatic bypass valid	Read
14	Bypass	1 = Selected the bypass to control motor, automatic bypass valid	Read
15	Forward	1 = Forward	Read

Other Communication

To use other communication protocols (EtherNet/IP, PROFIBUS, ControlNet, DeviceNet, or Modbus Plus), optional third-party adapters are required – Models: Anybus Communicator AB7007, AB7000-C, AB7006, AB7001, and AB7002.

For more information and documentation on the third-party adapters, visit the HMS website at http://www.anybus.com.

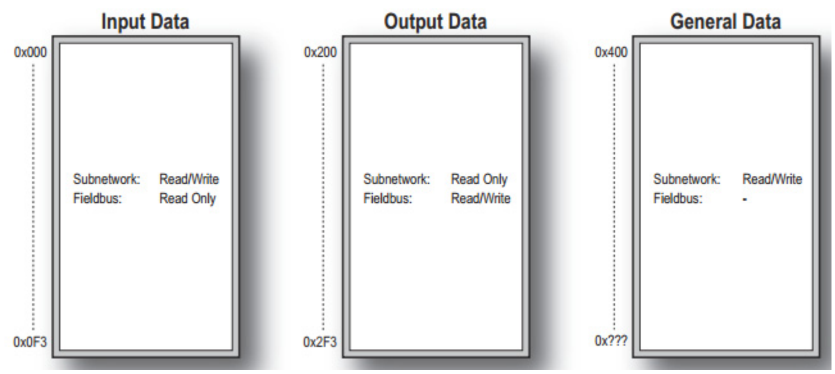
Adapter Configuration

If using a communication protocol other than ModBus RTU, the upstream controller can read and write data to the drive through the appropriate Anybus adapter.

The internal memory buffer of the adapter is divided into three areas based on their function:

- Output data areas can be written by the higher level network.
- Input data areas can be read by the higher level network.
- General data areas are not used.

When building the subnetwork configuration using the Anybus Configuration Manager, the different areas described above are mapped to the memory locations (addresses) specified below.



The upstream controller can read and write data to the drive based on Table 4.

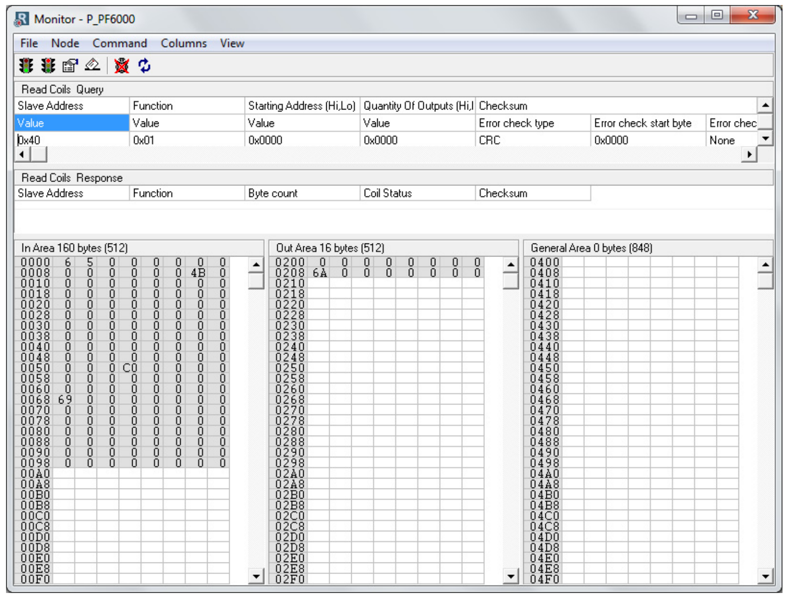
Table 4 - Drive Data Mapping

	Adapter Address				
	Input Areas		Output Areas		
No.	Address	Description	Address	Description	Data Type
0	0x0000	Drive Status Word	0x0200	Drive Control Word	INT
	0x0001		0x0201		
1	0x0002	Drive Frequency Output	0x0203	Frequency Set-point Pu	
	0x0003		0x0204		
2	0x0004	Motor Current	0x0205	Spare Output Word #1	
	0x0005		0x0206		
3	0x0006	Motor Current PU	0x0207	Spare Output Word #2	
	0x0007		0x0208		
4	0x0008	Motor Voltage	0x0209	Communication Watchdog to PLC	
	0x0009		0x0210		
5	0x000A	Output Power KW	0x0211	P Parameter Write Command	
	0x000B		0x0212		
6	0x000C	Motor Power Pu	0x0213	P Parameter Number	
	0x000D		0x0214		
7	0x000E	Maximum Output Frequency	0x0215	P Parameter New Value	
	0x000F		0x0216		
8	0x00010	Fault Word Array [0…43]			
51	0x0067				
52	0x0068	Communication Watchdog from PLC			
	0x0069				
53	0x006A	P Parameter Number Feedback			
	0x006B				
54	0x006C	P Parameter Current Value			
	0x006D				
55	0x006E	Spare Input Word #1			
	0x006F				
56	0x0070	Spare Input Word #2			
	0x0071				
57	0x0072	Spare Input Word #3			
	0x0073				
58	0x0074	Spare Input Word #4			
	0x0075				
59	0x0076	Spare Input Word #5			
	x00077				
60	0x0078	Total Power			
	0x0079				
61	0x0080	Motor Speed			
	0x0081				
62…77	0x0082	Output Array [2…17] Reserved			
	0x009B				
78	0x009C	PLC Major Version			
	0x009D				
79	0x009E	PLC Minor Version			
	0x009F				

Subnetwork Monitor

The Anybus adapter configuration software contains the Node Monitor function. The Node Monitor provides valuable information when setting up the communication with the subnetwork. Its main purpose is to display the data allocated for subnetwork communication and detect if any area has been allocated twice – this means that a collision has occurred.

The Node Monitor function can also detect the data of communication between the drive and the upstream controller, which is helpful for performing tests.



Client Controller Configuration

Depending on the communication protocol used, you need to import the corresponding EDS or GSD file to complete the configuration.

For more information on how to configure and connect the controller, download the corresponding configuration wizard at http://www.anybus.com, refer to the CD-ROM that comes with the communication adapter, or contact the factory after-sales service personnel.

See an example of the EtherNet/IP configuration below.

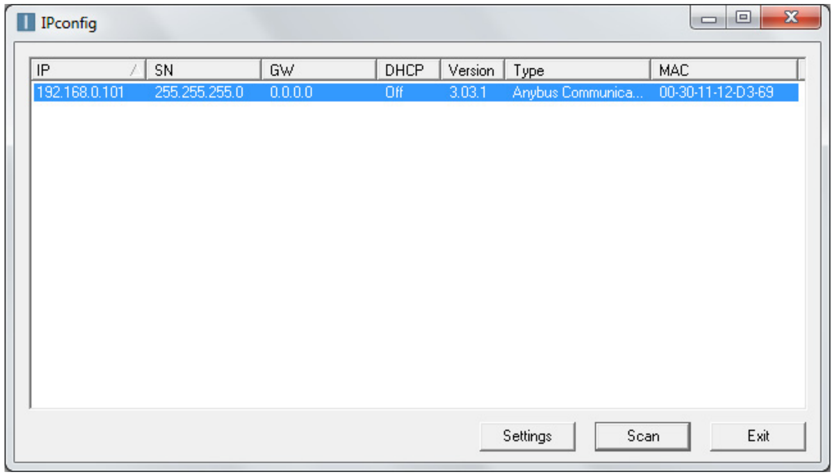
EtherNet/IP Configuration

If using the EtherNet/IP communication protocol, you can change the Ethernet configuration (such as IP address, Subnet mask, Gateway, and so on.) of the Anybus adapter by using the IP configuration software that comes with the CD-ROM provided by the manufacturer.

Make sure to connect to the Anybus module through the network interface, then perform the following steps to configure the IP address settings.

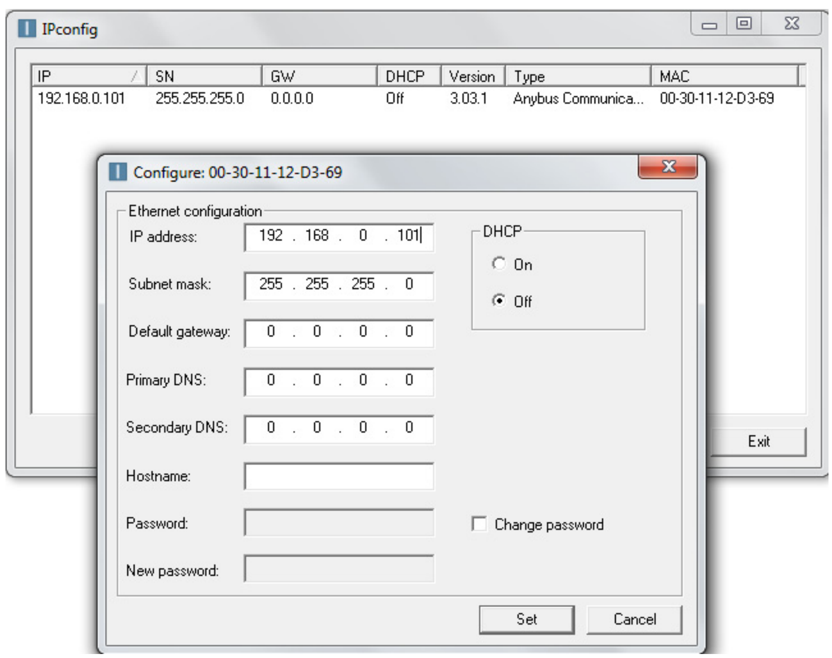
1. Launch the IPconfig software.
2. Click Scan.

   The current IP address settings of the module appears in the window.



3. Right-click the IP address and select Configuration.

   The Configure window appears.



4. Change the settings to the desired values.
5. Click Set to finish configuring the module.

Import the EDS File

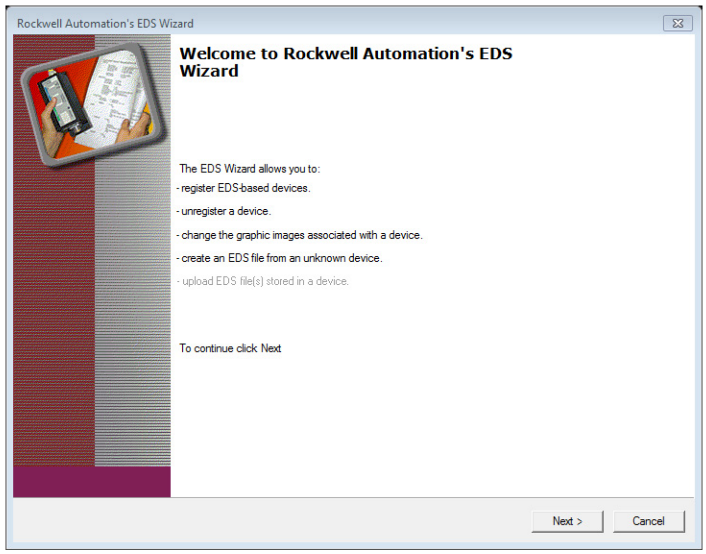
It is required to import the Anybus EDS file to the configuration tool in order to include the Anybus module. The EDS file is available at http://www.anybus.com/support

Enter the AB code for your product to locate and download the EDS file.

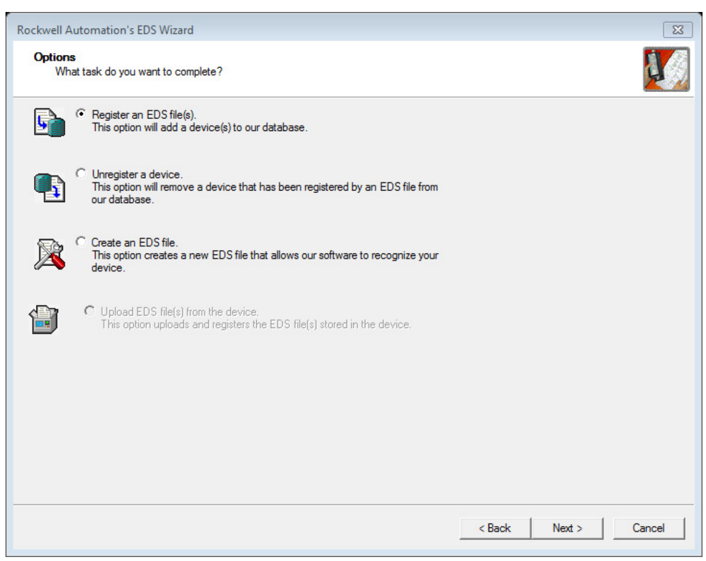
After you have downloaded the EDS file, perform the following steps to import it to the configuration tool.

1. In Studio 5000 Logix Designer® software menu bar, click Tools and select EDS Hardware Installation Tool.

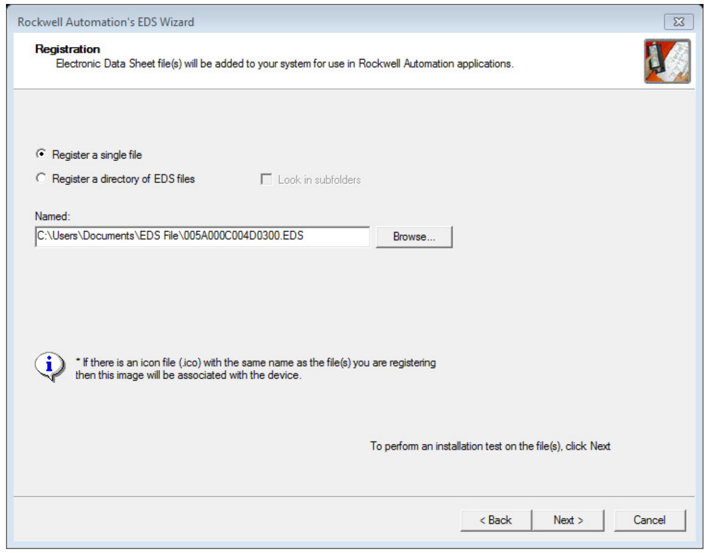
   The Rockwell Automation's EDS Wizard window appears.



2. Click Next.
3. Select the "Register an EDS file(s)" option, then click Next.



4. Click Browse to find the Anybus EDS file that you have downloaded, then click Next.



5. Click Next three times, then click Finish to end the EDS installation.

Configure the Anybus Module

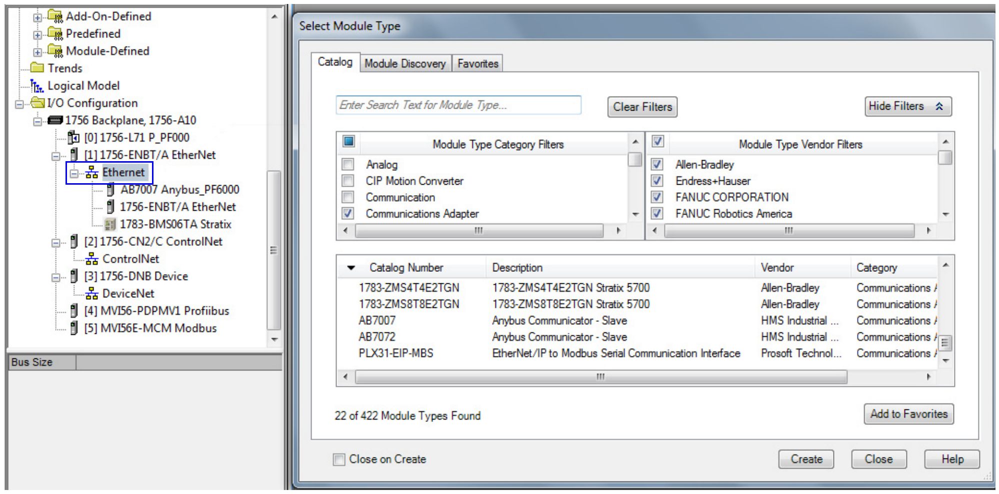
Studio 5000 Logix Designer software is used to configure the controller and the EtherNet/IP network.

The Anybus module can be found in the hardware catalog after the EDS file has been imported.

Follow these steps to add the Communicator module to the configuration in the controller.

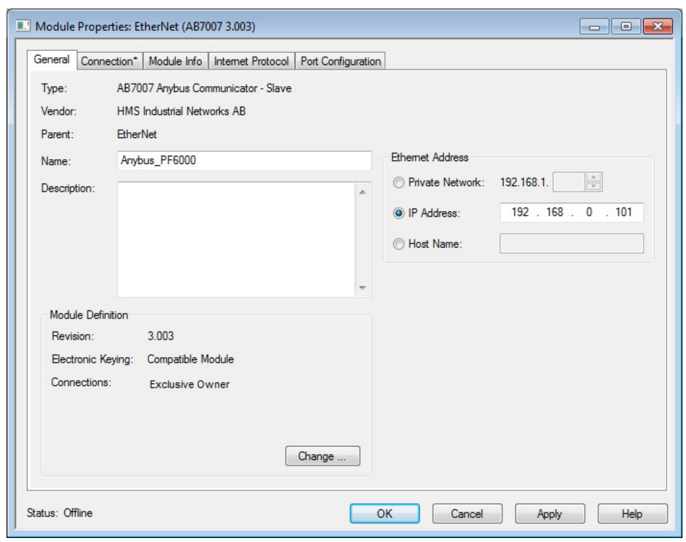
1. Verify the program is in Offline mode.
2. Right-click the EtherNet/IP bridge in the I/O configuration and select New Module.

The Select Module Type window appears.



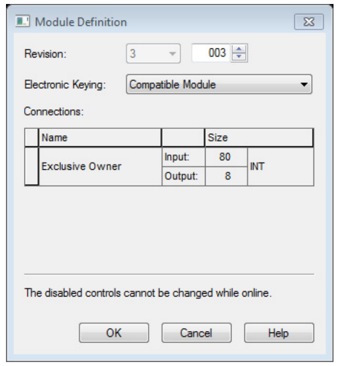
3. Select catalog number AB7007 “Anybus Communicator - Slave” and click Create.

The Module Properties window appears.

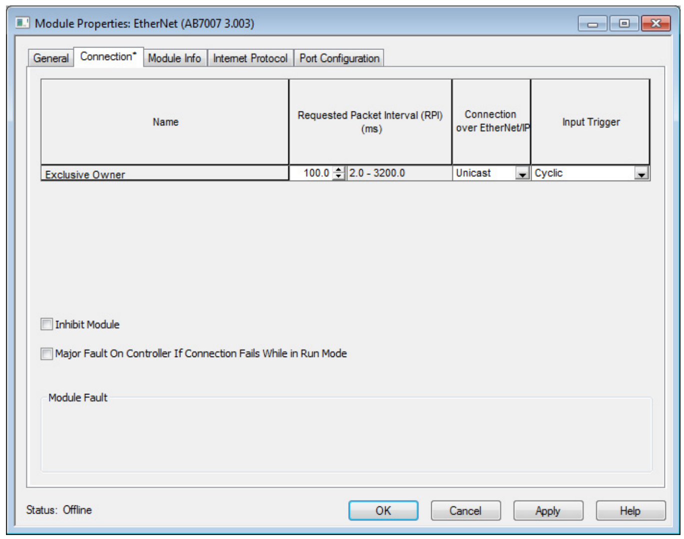


4. Enter the following module information:
   a. Name
   b. IP Address
   c. Description (optional)

5. Click Change and configure the module definition based on the picture below, then click OK.



6. Click the Connection tab and configure the module based on the picture below.



7. Click OK to finish configuring the module.

Once the module is configured, the I/O data for the Anybus adapter can be read directly.

To improve customer experience in integrating PowerFlex 6000 drives into Process Control applications, Rockwell Automation has developed process object Add-on instructions and FACEPLATE. For more information see Rockwell Automation Library of Process Objects: PowerFlex 6000 Drive (P_PF6000) Reference Manual, publication SYSLIB-RM057.

Appendix

The column "TrigTag" corresponds to the fault word from 0…43. The column "Trigger Bit" corresponds to the fault bit from 1…16, whose value changes from 0 to 1 when an alarm is triggered.

TrigTag	Trigger Bit	Fault Description
{Fault Out[0]}	1	IGBT Over Current in Power Cell #1
{Fault Out[0]}	2	Capacitor Abnormal In Power Cell #1
{Fault Out[0]}	3	Input Over Voltage In Power Cell #1
{Fault Out[0]}	4	DC Bus Undervoltage In Power Cell #1
{Fault Out[0]}	5	Communication Error In Power Cell #1
{Fault Out[0]}	6	No PWM Pulse For IGBT In Power Cell #1
{Fault Out[0]}	7	Bypass Hardware Fault in Power Cell #1
{Fault Out[0]}	8	Communication Link Fault in Power Cell #1
{Fault Out[0]}	9	PCCB Version Not Compatible in Power Cell #1
{Fault Out[0]}	10	Power Cell #1 Bypassed
{Fault Out[0]}	11	Over Temperature In Power Cell #1
{Fault Out[0]}	12	Power Cell #1 Failed To Bypass
{Fault Out[0]}	13	One Phase Lost In Power Cell #1
{Fault Out[0]}	14	Two Phases Lost In Power Cell #1
{Fault Out[0]}	15	Bypass Failure (OV) In Power Cell #1
{Fault Out[1]}	1	IGBT Over Current in Power Cell #2
{Fault Out[1]}	2	Capacitor Abnormal In Power Cell #2
{Fault Out[1]}	3	Input Over Voltage In Power Cell #2
{Fault Out[1]}	4	DC Bus Undervoltage In Power Cell #2
{Fault Out[1]}	5	Communication Error In Power Cell #2
{Fault Out[1]}	6	No PWM Pulse For IGBT In Power Cell #2
{Fault Out[1]}	7	Bypass Hardware Fault in Power Cell #2
{Fault Out[1]}	8	Communication Link Fault in Power Cell #2
{Fault Out[1]}	9	PCCB Version Not Compatible in Power Cell #2
{Fault Out[1]}	10	Power Cell #2 Bypassed
{Fault Out[1]}	11	Over Temperature In Power Cell #2
{Fault Out[1]}	12	Power Cell #2 Failed To Bypass
{Fault Out[1]}	13	One Phase Lost In Power Cell #2
{Fault Out[1]}	14	Two Phases Lost In Power Cell #2
{Fault Out[1]}	15	Bypass Failure (OV) In Power Cell #2
{Fault Out[2]}	1	IGBT Over Current in Power Cell #3
{Fault Out[2]}	2	Capacitor Abnormal In Power Cell #3
{Fault Out[2]}	3	Input Over Voltage In Power Cell #3
{Fault Out[2]}	4	DC Bus Undervoltage In Power Cell #3
{Fault Out[2]}	5	Communication Error In Power Cell #3
{Fault Out[2]}	6	No PWM Pulse For IGBT In Power Cell #3
{Fault Out[2]}	7	Bypass Hardware Fault in Power Cell #3

TrigTag	Trigger Bit	Fault Description
{Fault Out[2]}	8	Communication Link Fault in Power Cell #3
{Fault Out[2]}	9	PCCB Version Not Compatible in Power Cell #3
{Fault Out[2]}	10	Power Cell #3 Bypassed
{Fault Out[2]}	11	Over Temperature In Power Cell #3
{Fault Out[2]}	12	Power Cell #3 Failed To Bypass
{Fault Out[2]}	13	One Phase Lost In Power Cell #3
{Fault Out[2]}	14	Two Phases Lost In Power Cell #3
{Fault Out[2]}	15	Bypass Failure (OV) In Power Cell #3
{Fault Out[3]}	1	IGBT Over Current in Power Cell #4
{Fault Out[3]}	2	Capacitor Abnormal In Power Cell #4
{Fault Out[3]}	3	Input Over Voltage In Power Cell #4
{Fault Out[3]}	4	DC Bus Undervoltage In Power Cell #4
{Fault Out[3]}	5	Communication Error In Power Cell #4
{Fault Out[3]}	6	No PWM Pulse For IGBT In Power Cell #4
{Fault Out[3]}	7	Bypass Hardware Fault in Power Cell #4
{Fault Out[3]}	8	Communication Link Fault in Power Cell #4
{Fault Out[3]}	9	PCCB Version Not Compatible in Power Cell #4
{Fault Out[3]}	10	Power Cell #4 Bypassed
{Fault Out[3]}	11	Over Temperature In Power Cell #4
{Fault Out[3]}	12	Power Cell #4 Failed To Bypass
{Fault Out[3]}	13	One Phase Lost In Power Cell #4
{Fault Out[3]}	14	Two Phases Lost In Power Cell #4
{Fault Out[3]}	15	Bypass Failure (OV) In Power Cell #4
{Fault Out[4]}	1	IGBT Over Current in Power Cell #5
{Fault Out[4]}	2	Capacitor Abnormal In Power Cell #5
{Fault Out[4]}	3	Input Over Voltage In Power Cell #5
{Fault Out[4]}	4	DC Bus Undervoltage In Power Cell #5
{Fault Out[4]}	5	Communication Error In Power Cell #5
{Fault Out[4]}	6	No PWM Pulse For IGBT In Power Cell #5
{Fault Out[4]}	7	Bypass Hardware Fault in Power Cell #5
{Fault Out[4]}	8	Communication Link Fault in Power Cell #5
{Fault Out[4]}	9	PCCB Version Not Compatible in Power Cell #5
{Fault Out[4]}	10	Power Cell #5 Bypassed
{Fault Out[4]}	11	Over Temperature In Power Cell #5
{Fault Out[4]}	12	Power Cell #5 Failed To Bypass
{Fault Out[4]}	13	One Phase Lost In Power Cell #5
{Fault Out[4]}	14	Two Phases Lost In Power Cell #5
{Fault Out[4]}	15	Bypass Failure (OV) In Power Cell #5
{Fault Out[5]}	1	IGBT Over Current in Power Cell #6
{Fault Out[5]}	2	Capacitor Abnormal In Power Cell #6

TrigTag	Trigger Bit	Fault Description
{Fault Out[5]}	3	Input Over Voltage In Power Cell #6
{Fault Out[5]}	4	DC Bus Undervoltage In Power Cell #6
{Fault Out[5]}	5	Communication Error In Power Cell #6
{Fault Out[5]}	6	No PWM Pulse For IGBT In Power Cell #6
{Fault Out[5]}	7	Bypass Hardware Fault in Power Cell #6
{Fault Out[5]}	8	Communication Link Fault in Power Cell #6
{Fault Out[5]}	9	PCCB Version Not Compatible in Power Cell #6
{Fault Out[5]}	10	Power Cell #6 Bypassed
{Fault Out[5]}	11	Over Temperature In Power Cell #6
{Fault Out[5]}	12	Power Cell #6 Failed To Bypass
{Fault Out[5]}	13	One Phase Lost In Power Cell #6
{Fault Out[5]}	14	Two Phases Lost In Power Cell #6
{Fault Out[5]}	15	Bypass Failure (OV) In Power Cell #6
{Fault Out[6]}	1	IGBT Over Current in Power Cell #7
{Fault Out[6]}	2	Capacitor Abnormal In Power Cell #7
{Fault Out[6]}	3	Input Over Voltage In Power Cell #7
{Fault Out[6]}	4	DC Bus Undervoltage In Power Cell #7
{Fault Out[6]}	5	Communication Error In Power Cell #7
{Fault Out[6]}	6	No PWM Pulse For IGBT In Power Cell #7
{Fault Out[6]}	7	Bypass Hardware Fault in Power Cell #7
{Fault Out[6]}	8	Communication Link Fault in Power Cell #7
{Fault Out[6]}	9	PCCB Version Not Compatible in Power Cell #7
{Fault Out[6]}	10	Power Cell #7 Bypassed
{Fault Out[6]}	11	Over Temperature In Power Cell #7
{Fault Out[6]}	12	Power Cell #7 Failed To Bypass
{Fault Out[6]}	13	One Phase Lost In Power Cell #7
{Fault Out[6]}	14	Two Phases Lost In Power Cell #7
{Fault Out[6]}	15	Bypass Failure (OV) In Power Cell #7
{Fault Out[7]}	1	IGBT Over Current in Power Cell #8
{Fault Out[7]}	2	Capacitor Abnormal In Power Cell #8
{Fault Out[7]}	3	Input Over Voltage In Power Cell #8
{Fault Out[7]}	4	DC Bus Undervoltage In Power Cell #8
{Fault Out[7]}	5	Communication Error In Power Cell #8
{Fault Out[7]}	6	No PWM Pulse For IGBT In Power Cell #8
{Fault Out[7]}	7	Bypass Hardware Fault in Power Cell #8
{Fault Out[7]}	8	Communication Link Fault in Power Cell #8
{Fault Out[7]}	9	PCCB Version Not Compatible in Power Cell #8
{Fault Out[7]}	10	Power Cell #8 Bypassed
{Fault Out[7]}	11	Over Temperature In Power Cell #8
{Fault Out[7]}	12	Power Cell #8 Failed To Bypass

TrigTag	Trigger Bit	Fault Description
{Fault Out[7]}	13	One Phase Lost In Power Cell #8
{Fault Out[7]}	14	Two Phases Lost In Power Cell #8
{Fault Out[7]}	15	Bypass Failure (OV) In Power Cell #8
{Fault Out[8]}	1	IGBT Over Current in Power Cell #9
{Fault Out[8]}	2	Capacitor Abnormal In Power Cell #9
{Fault Out[8]}	3	Input Over Voltage In Power Cell #9
{Fault Out[8]}	4	DC Bus Undervoltage In Power Cell #9
{Fault Out[8]}	5	Communication Error In Power Cell #9
{Fault Out[8]}	6	No PWM Pulse For IGBT In Power Cell #9
{Fault Out[8]}	7	Bypass Hardware Fault in Power Cell #9
{Fault Out[8]}	8	Communication Link Fault in Power Cell #9
{Fault Out[8]}	9	PCCB Version Not Compatible in Power Cell #9
{Fault Out[8]}	10	Power Cell #9 Bypassed
{Fault Out[8]}	11	Over Temperature In Power Cell #9
{Fault Out[8]}	12	Power Cell #9 Failed To Bypass
{Fault Out[8]}	13	One Phase Lost In Power Cell #9
{Fault Out[8]}	14	Two Phases Lost In Power Cell #9
{Fault Out[8]}	15	Bypass Failure (OV) In Power Cell #9
{Fault Out[9]}	1	IGBT Over Current in Power Cell #10
{Fault Out[9]}	2	Capacitor Abnormal In Power Cell #10
{Fault Out[9]}	3	Input Over Voltage In Power Cell #10
{Fault Out[9]}	4	DC Bus Undervoltage In Power Cell #10
{Fault Out[9]}	5	Communication Error In Power Cell #10
{Fault Out[9]}	6	No PWM Pulse For IGBT In Power Cell #10
{Fault Out[9]}	7	Bypass Hardware Fault in Power Cell #10
{Fault Out[9]}	8	Communication Link Fault in Power Cell #10
{Fault Out[9]}	9	PCCB Version Not Compatible in Power Cell #10
{Fault Out[9]}	10	Power Cell #10 Bypassed
{Fault Out[9]}	11	Over Temperature In Power Cell #10
{Fault Out[9]}	12	Power Cell #10 Failed To Bypass
{Fault Out[9]}	13	One Phase Lost In Power Cell #10
{Fault Out[9]}	14	Two Phases Lost In Power Cell #10
{Fault Out[9]}	15	Bypass Failure (OV) In Power Cell #10
{Fault Out[10]}	1	IGBT Over Current in Power Cell #11
{Fault Out[10]}	2	Capacitor Abnormal In Power Cell #11
{Fault Out[10]}	3	Input Over Voltage In Power Cell #11
{Fault Out[10]}	4	DC Bus Undervoltage In Power Cell #11
{Fault Out[10]}	5	Communication Error In Power Cell #11
{Fault Out[10]}	6	No PWM Pulse For IGBT In Power Cell #11
{Fault Out[10]}	7	Bypass Hardware Fault in Power Cell #11

TrigTag	Trigger Bit	Fault Description
{Fault Out[10]}	8	Communication Link Fault in Power Cell #11
{Fault Out[10]}	9	PCCB Version Not Compatible in Power Cell #11
{Fault Out[10]}	10	Power Cell #11 Bypassed
{Fault Out[10]}	11	Over Temperature In Power Cell #11
{Fault Out[10]}	12	Power Cell #11 Failed To Bypass
{Fault Out[10]}	13	One Phase Lost In Power Cell #11
{Fault Out[10]}	14	Two Phases Lost In Power Cell #11
{Fault Out[10]}	15	Bypass Failure (OV) In Power Cell #11
{Fault Out[11]}	1	IGBT Over Current in Power Cell #12
{Fault Out[11]}	2	Capacitor Abnormal In Power Cell #12
{Fault Out[11]}	3	Input Over Voltage In Power Cell #12
{Fault Out[11]}	4	DC Bus Undervoltage In Power Cell #12
{Fault Out[11]}	5	Communication Error In Power Cell #12
{Fault Out[11]}	6	No PWM Pulse For IGBT In Power Cell #12
{Fault Out[11]}	7	Bypass Hardware Fault in Power Cell #12
{Fault Out[11]}	8	Communication Link Fault in Power Cell #12
{Fault Out[11]}	9	PCCB Version Not Compatible in Power Cell #12
{Fault Out[11]}	10	Power Cell #12 Bypassed
{Fault Out[11]}	11	Over Temperature In Power Cell #12
{Fault Out[11]}	12	Power Cell #12 Failed To Bypass
{Fault Out[11]}	13	One Phase Lost In Power Cell #12
{Fault Out[11]}	14	Two Phases Lost In Power Cell #12
{Fault Out[11]}	15	Bypass Failure (OV) In Power Cell #12
{Fault Out[12]}	1	IGBT Over Current in Power Cell #13
{Fault Out[12]}	2	Capacitor Abnormal In Power Cell #13
{Fault Out[12]}	3	Input Over Voltage In Power Cell #13
{Fault Out[12]}	4	DC Bus Undervoltage In Power Cell #13
{Fault Out[12]}	5	Communication Error In Power Cell #13
{Fault Out[12]}	6	No PWM Pulse For IGBT In Power Cell #13
{Fault Out[12]}	7	Bypass Hardware Fault in Power Cell #13
{Fault Out[12]}	8	Communication Link Fault in Power Cell #13
{Fault Out[12]}	9	PCCB Version Not Compatible in Power Cell #13
{Fault Out[12]}	10	Power Cell #13 Bypassed
{Fault Out[12]}	11	Over Temperature In Power Cell #13
{Fault Out[12]}	12	Power Cell #13 Failed To Bypass
{Fault Out[12]}	13	One Phase Lost In Power Cell #13
{Fault Out[12]}	14	Two Phases Lost In Power Cell #13
{Fault Out[12]}	15	Bypass Failure (OV) In Power Cell #13
{Fault Out[13]}	1	IGBT Over Current in Power Cell #14
{Fault Out[13]}	2	Capacitor Abnormal In Power Cell #14

TrigTag	Trigger Bit	Fault Description
{Fault Out[13]}	3	Input Over Voltage In Power Cell #14
{Fault Out[13]}	4	DC Bus Undervoltage In Power Cell #14
{Fault Out[13]}	5	Communication Error In Power Cell #14
{Fault Out[13]}	6	No PWM Pulse For IGBT In Power Cell #14
{Fault Out[13]}	7	Bypass Hardware Fault in Power Cell #14
{Fault Out[13]}	8	Communication Link Fault in Power Cell #14
{Fault Out[13]}	9	PCCB Version Not Compatible in Power Cell #14
{Fault Out[13]}	10	Power Cell #14 Bypassed
{Fault Out[13]}	11	Over Temperature In Power Cell #14
{Fault Out[13]}	12	Power Cell #14 Failed To Bypass
{Fault Out[13]}	13	One Phase Lost In Power Cell #14
{Fault Out[13]}	14	Two Phases Lost In Power Cell #14
{Fault Out[13]}	15	Bypass Failure (OV) In Power Cell #14
{Fault Out[14]}	1	IGBT Over Current in Power Cell #15
{Fault Out[14]}	2	Capacitor Abnormal In Power Cell #15
{Fault Out[14]}	3	Input Over Voltage In Power Cell #15
{Fault Out[14]}	4	DC Bus Undervoltage In Power Cell #15
{Fault Out[14]}	5	Communication Error In Power Cell #15
{Fault Out[14]}	6	No PWM Pulse For IGBT In Power Cell #15
{Fault Out[14]}	7	Bypass Hardware Fault in Power Cell #15
{Fault Out[14]}	8	Communication Link Fault in Power Cell #15
{Fault Out[14]}	9	PCCB Version Not Compatible in Power Cell #15
{Fault Out[14]}	10	Power Cell #15 Bypassed
{Fault Out[14]}	11	Over Temperature In Power Cell #15
{Fault Out[14]}	12	Power Cell #15 Failed To Bypass
{Fault Out[14]}	13	One Phase Lost In Power Cell #15
{Fault Out[14]}	14	Two Phases Lost In Power Cell #15
{Fault Out[14]}	15	Bypass Failure (OV) In Power Cell #15
{Fault Out[15]}	1	IGBT Over Current in Power Cell #16
{Fault Out[15]}	2	Capacitor Abnormal In Power Cell #16
{Fault Out[15]}	3	Input Over Voltage In Power Cell #16
{Fault Out[15]}	4	DC Bus Undervoltage In Power Cell #16
{Fault Out[15]}	5	Communication Error In Power Cell #16
{Fault Out[15]}	6	No PWM Pulse For IGBT In Power Cell #16
{Fault Out[15]}	7	Bypass Hardware Fault in Power Cell #16
{Fault Out[15]}	8	Communication Link Fault in Power Cell #16
{Fault Out[15]}	9	PCCB Version Not Compatible in Power Cell #16
{Fault Out[15]}	10	Power Cell #16 Bypassed
{Fault Out[15]}	11	Over Temperature In Power Cell #16
{Fault Out[15]}	12	Power Cell #16 Failed To Bypass

TrigTag	Trigger Bit	Fault Description
{Fault Out[15]}	13	One Phase Lost In Power Cell #16
{Fault Out[15]}	14	Two Phases Lost In Power Cell #16
{Fault Out[15]}	15	Bypass Failure (OV) In Power Cell #16
{Fault Out[16]}	1	IGBT Over Current in Power Cell #17
{Fault Out[16]}	2	Capacitor Abnormal In Power Cell #17
{Fault Out[16]}	3	Input Over Voltage In Power Cell #17
{Fault Out[16]}	4	DC Bus Undervoltage In Power Cell #17
{Fault Out[16]}	5	Communication Error In Power Cell #17
{Fault Out[16]}	6	No PWM Pulse For IGBT In Power Cell #17
{Fault Out[16]}	7	Bypass Hardware Fault in Power Cell #17
{Fault Out[16]}	8	Communication Link Fault in Power Cell #17
{Fault Out[16]}	9	PCCB Version Not Compatible in Power Cell #17
{Fault Out[16]}	10	Power Cell #17 Bypassed
{Fault Out[16]}	11	Over Temperature In Power Cell #17
{Fault Out[16]}	12	Power Cell #17 Failed To Bypass
{Fault Out[16]}	13	One Phase Lost In Power Cell #17
{Fault Out[16]}	14	Two Phases Lost In Power Cell #17
{Fault Out[16]}	15	Bypass Failure (OV) In Power Cell #17
{Fault Out[17]}	1	IGBT Over Current in Power Cell #18
{Fault Out[17]}	2	Capacitor Abnormal In Power Cell #18
{Fault Out[17]}	3	Input Over Voltage In Power Cell #18
{Fault Out[17]}	4	DC Bus Undervoltage In Power Cell #18
{Fault Out[17]}	5	Communication Error In Power Cell #18
{Fault Out[17]}	6	No PWM Pulse For IGBT In Power Cell #18
{Fault Out[17]}	7	Bypass Hardware Fault in Power Cell #18
{Fault Out[17]}	8	Communication Link Fault in Power Cell #18
{Fault Out[17]}	9	PCCB Version Not Compatible in Power Cell #18
{Fault Out[17]}	10	Power Cell #18 Bypassed
{Fault Out[17]}	11	Over Temperature In Power Cell #18
{Fault Out[17]}	12	Power Cell #18 Failed To Bypass
{Fault Out[17]}	13	One Phase Lost In Power Cell #18
{Fault Out[17]}	14	Two Phases Lost In Power Cell #18
{Fault Out[17]}	15	Bypass Failure (OV) In Power Cell #18
{Fault Out[18]}	1	IGBT Over Current in Power Cell #19
{Fault Out[18]}	2	Capacitor Abnormal In Power Cell #19
{Fault Out[18]}	3	Input Over Voltage In Power Cell #19
{Fault Out[18]}	4	DC Bus Undervoltage In Power Cell #19
{Fault Out[18]}	5	Communication Error In Power Cell #19
{Fault Out[18]}	6	No PWM Pulse For IGBT In Power Cell #19
{Fault Out[18]}	7	Bypass Hardware Fault in Power Cell #19

TrigTag	Trigger Bit	Fault Description
{Fault Out[18]}	8	Communication Link Fault in Power Cell #19
{Fault Out[18]}	9	PCCB Version Not Compatible in Power Cell #19
{Fault Out[18]}	10	Power Cell #19 Bypassed
{Fault Out[18]}	11	Over Temperature In Power Cell #19
{Fault Out[18]}	12	Power Cell #19 Failed To Bypass
{Fault Out[18]}	13	One Phase Lost In Power Cell #19
{Fault Out[18]}	14	Two Phases Lost In Power Cell #19
{Fault Out[18]}	15	Bypass Failure (OV) In Power Cell #19
{Fault Out[19]}	1	IGBT Over Current in Power Cell #20
{Fault Out[19]}	2	Capacitor Abnormal In Power Cell #20
{Fault Out[19]}	3	Input Over Voltage In Power Cell #20
{Fault Out[19]}	4	DC Bus Undervoltage In Power Cell #20
{Fault Out[19]}	5	Communication Error In Power Cell #20
{Fault Out[19]}	6	No PWM Pulse For IGBT In Power Cell #20
{Fault Out[19]}	7	Bypass Hardware Fault in Power Cell #20
{Fault Out[19]}	8	Communication Link Fault in Power Cell #20
{Fault Out[19]}	9	PCCB Version Not Compatible in Power Cell #20
{Fault Out[19]}	10	Power Cell #20 Bypassed
{Fault Out[19]}	11	Over Temperature In Power Cell #20
{Fault Out[19]}	12	Power Cell #20 Failed To Bypass
{Fault Out[19]}	13	One Phase Lost In Power Cell #20
{Fault Out[19]}	14	Two Phases Lost In Power Cell #20
{Fault Out[19]}	15	Bypass Failure (OV) In Power Cell #20
{Fault Out[20]}	1	IGBT Over Current in Power Cell #21
{Fault Out[20]}	2	Capacitor Abnormal In Power Cell #21
{Fault Out[20]}	3	Input Over Voltage In Power Cell #21
{Fault Out[20]}	4	DC Bus Undervoltage In Power Cell #21
{Fault Out[20]}	5	Communication Error In Power Cell #21
{Fault Out[20]}	6	No PWM Pulse For IGBT In Power Cell #21
{Fault Out[20]}	7	Bypass Hardware Fault in Power Cell #21
{Fault Out[20]}	8	Communication Link Fault in Power Cell #21
{Fault Out[20]}	9	PCCB Version Not Compatible in Power Cell #21
{Fault Out[20]}	10	Power Cell #21 Bypassed
{Fault Out[20]}	11	Over Temperature In Power Cell #21
{Fault Out[20]}	12	Power Cell #21 Failed To Bypass
{Fault Out[20]}	13	One Phase Lost In Power Cell #21
{Fault Out[20]}	14	Two Phases Lost In Power Cell #21
{Fault Out[20]}	15	Bypass Failure (OV) In Power Cell #21
{Fault Out[21]}	1	IGBT Over Current in Power Cell #22
{Fault Out[21]}	2	Capacitor Abnormal In Power Cell #22

TrigTag	Trigger Bit	Fault Description
{Fault Out[21]}	3	Input Over Voltage In Power Cell #22
{Fault Out[21]}	4	DC Bus Undervoltage In Power Cell #22
{Fault Out[21]}	5	Communication Error In Power Cell #22
{Fault Out[21]}	6	No PWM Pulse For IGBT In Power Cell #22
{Fault Out[21]}	7	Bypass Hardware Fault in Power Cell #22
{Fault Out[21]}	8	Communication Link Fault in Power Cell #22
{Fault Out[21]}	9	PCCB Version Not Compatible in Power Cell #22
{Fault Out[21]}	10	Power Cell #22 Bypassed
{Fault Out[21]}	11	Over Temperature In Power Cell #22
{Fault Out[21]}	12	Power Cell #22 Failed To Bypass
{Fault Out[21]}	13	One Phase Lost In Power Cell #22
{Fault Out[21]}	14	Two Phases Lost In Power Cell #22
{Fault Out[21]}	15	Bypass Failure (OV) In Power Cell #22
{Fault Out[22]}	1	IGBT Over Current in Power Cell #23
{Fault Out[22]}	2	Capacitor Abnormal In Power Cell #23
{Fault Out[22]}	3	Input Over Voltage In Power Cell #23
{Fault Out[22]}	4	DC Bus Undervoltage In Power Cell #23
{Fault Out[22]}	5	Communication Error In Power Cell #23
{Fault Out[22]}	6	No PWM Pulse For IGBT In Power Cell #23
{Fault Out[22]}	7	Bypass Hardware Fault in Power Cell #23
{Fault Out[22]}	8	Communication Link Fault in Power Cell #23
{Fault Out[22]}	9	PCCB Version Not Compatible in Power Cell #23
{Fault Out[22]}	10	Power Cell #23 Bypassed
{Fault Out[22]}	11	Over Temperature In Power Cell #23
{Fault Out[22]}	12	Power Cell #23 Failed To Bypass
{Fault Out[22]}	13	One Phase Lost In Power Cell #23
{Fault Out[22]}	14	Two Phases Lost In Power Cell #23
{Fault Out[22]}	15	Bypass Failure (OV) In Power Cell #23
{Fault Out[23]}	1	IGBT Over Current in Power Cell #24
{Fault Out[23]}	2	Capacitor Abnormal In Power Cell #24
{Fault Out[23]}	3	Input Over Voltage In Power Cell #24
{Fault Out[23]}	4	DC Bus Undervoltage In Power Cell #24
{Fault Out[23]}	5	Communication Error In Power Cell #24
{Fault Out[23]}	6	No PWM Pulse For IGBT In Power Cell #24
{Fault Out[23]}	7	Bypass Hardware Fault in Power Cell #24
{Fault Out[23]}	8	Communication Link Fault in Power Cell #24
{Fault Out[23]}	9	PCCB Version Not Compatible in Power Cell #24
{Fault Out[23]}	10	Power Cell #24 Bypassed
{Fault Out[23]}	11	Over Temperature In Power Cell #24
{Fault Out[23]}	12	Power Cell #24 Failed To Bypass

TrigTag	Trigger Bit	Fault Description
{Fault Out[23]}	13	One Phase Lost In Power Cell #24
{Fault Out[23]}	14	Two Phases Lost In Power Cell #24
{Fault Out[23]}	15	Bypass Failure (OV) In Power Cell #24
{Fault Out[24]}	1	IGBT Over Current in Power Cell #25
{Fault Out[24]}	2	Capacitor Abnormal In Power Cell #25
{Fault Out[24]}	3	Input Over Voltage In Power Cell #25
{Fault Out[24]}	4	DC Bus Undervoltage In Power Cell #25
{Fault Out[24]}	5	Communication Error In Power Cell #25
{Fault Out[24]}	6	No PWM Pulse For IGBT In Power Cell #25
{Fault Out[24]}	7	Bypass Hardware Fault in Power Cell #25
{Fault Out[24]}	8	Communication Link Fault in Power Cell #25
{Fault Out[24]}	9	PCCB Version Not Compatible in Power Cell #25
{Fault Out[24]}	10	Power Cell #25 Bypassed
{Fault Out[24]}	11	Over Temperature In Power Cell #25
{Fault Out[24]}	12	Power Cell #25 Failed To Bypass
{Fault Out[24]}	13	One Phase Lost In Power Cell #25
{Fault Out[24]}	14	Two Phases Lost In Power Cell #25
{Fault Out[24]}	15	Bypass Failure (OV) In Power Cell #25
{Fault Out[25]}	1	IGBT Over Current in Power Cell #26
{Fault Out[25]}	2	Capacitor Abnormal In Power Cell #26
{Fault Out[25]}	3	Input Over Voltage In Power Cell #26
{Fault Out[25]}	4	DC Bus Undervoltage In Power Cell #26
{Fault Out[25]}	5	Communication Error In Power Cell #26
{Fault Out[25]}	6	No PWM Pulse For IGBT In Power Cell #26
{Fault Out[25]}	7	Bypass Hardware Fault in Power Cell #26
{Fault Out[25]}	8	Communication Link Fault in Power Cell #26
{Fault Out[25]}	9	PCCB Version Not Compatible in Power Cell #26
{Fault Out[25]}	10	Power Cell #26 Bypassed
{Fault Out[25]}	11	Over Temperature In Power Cell #26
{Fault Out[25]}	12	Power Cell #26 Failed To Bypass
{Fault Out[25]}	13	One Phase Lost In Power Cell #26
{Fault Out[25]}	14	Two Phases Lost In Power Cell #26
{Fault Out[25]}	15	Bypass Failure (OV) In Power Cell #26
{Fault Out[26]}	1	IGBT Over Current in Power Cell #27
{Fault Out[26]}	2	Capacitor Abnormal In Power Cell #27
{Fault Out[26]}	3	Input Over Voltage In Power Cell #27
{Fault Out[26]}	4	DC Bus Undervoltage In Power Cell #27
{Fault Out[26]}	5	Communication Error In Power Cell #27
{Fault Out[26]}	6	No PWM Pulse For IGBT In Power Cell #27
{Fault Out[26]}	7	Bypass Hardware Fault in Power Cell #27

TrigTag	Trigger Bit	Fault Description
{Fault Out[26]}	8	Communication Link Fault in Power Cell #27
{Fault Out[26]}	9	PCCB Version Not Compatible in Power Cell #27
{Fault Out[26]}	10	Power Cell #27 Bypassed
{Fault Out[26]}	11	Over Temperature In Power Cell #27
{Fault Out[26]}	12	Power Cell #27 Failed To Bypass
{Fault Out[26]}	13	One Phase Lost In Power Cell #27
{Fault Out[26]}	14	Two Phases Lost In Power Cell #27
{Fault Out[26]}	15	Bypass Failure (OV) In Power Cell #27
{Fault Out[27]}	1	Motor Over Current 2
{Fault Out[27]}	2	Motor Over Current 1
{Fault Out[27]}	3	Fan Failure in Fan Group #1
{Fault Out[27]}	4	Output Over Voltage
{Fault Out[27]}	5	Abnormal Output Voltage
{Fault Out[27]}	6	Ground Fault
{Fault Out[27]}	7	Over Speed Fault
{Fault Out[27]}	8	Motor Stalled
{Fault Out[27]}	10	Output Phase Over Current
{Fault Out[27]}	11	VFD Over Current 1
{Fault Out[27]}	12	Fan Failure in Fan Group #2
{Fault Out[27]}	13	Pre-Charge Contactor Failure
{Fault Out[27]}	14	Pre-Charge Timeout
{Fault Out[27]}	15	Pre-Charge Repeat Interval Low
{Fault Out[27]}	16	Reserved
{Fault Out[28]}	1	Fan Failure Warning in Fan Group #1
{Fault Out[28]}	2	Abnormal Output Voltage Warning
{Fault Out[28]}	3	Ground Fault Warning
{Fault Out[28]}	4	Output Frequency Deviation Warning
{Fault Out[28]}	6	Input Power Loss, Waiting For Recovery
{Fault Out[28]}	7	Input Voltage Sag, Derating Operating
{Fault Out[28]}	8	Low Voltage Ride Through Operating
{Fault Out[28]}	9	Input Voltage Sag, Flux Controlling
{Fault Out[28]}	10	Fan Failure Warning in Fan Group #2
{Fault Out[28]}	11	Bypass Operating
{Fault Out[28]}	12	DC Bus Under Voltage Warning
{Fault Out[28]}	13	Fan Failure Warning in Fan Group #3
{Fault Out[28]}	14	Line Neutral Over Voltage Warning
{Fault Out[28]}	15	Line Under Voltage Warning
{Fault Out[28]}	16	Fan Failure Warning in Fan Group #4
{Fault Out[29]}	1	Cabinet Door Opened While Drive Energized
{Fault Out[29]}	2	E-Stop Trip

TrigTag	Trigger Bit	Fault Description
{Fault Out[29]}	3	Input Circuit Breaker Opened (Not Initiated By The Drive)
{Fault Out[29]}	4	Non-Zero Frequency Command Exists Upon Start
{Fault Out[29]}	5	Flying Start Failed
{Fault Out[29]}	10	System Locked
{Fault Out[29]}	11	CPU Board In Wrong Position
{Fault Out[29]}	12	AT Board In Wrong Position
{Fault Out[29]}	13	5V Power Supply Fault
{Fault Out[29]}	14	15V Power Supply Fault
{Fault Out[29]}	15	24V DCS Power Supply Fault
{Fault Out[29]}	16	24V PLC Power Supply Fault
{Fault Out[30]}	1	PWMA Board in Wrong Position
{Fault Out[30]}	2	PWMB Board In Wrong Position
{Fault Out[30]}	3	PWMC Board In Wrong Position
{Fault Out[30]}	4	DT Board In Wrong Position
{Fault Out[30]}	6	Low Voltage Ride Through Over Max Time Limit
{Fault Out[30]}	7	Low Voltage Ride Through Short Interval (Between Two Ride Through)
{Fault Out[30]}	8	Low Voltage Ride Through Failure
{Fault Out[30]}	9	Input Voltage Loss While Stop
{Fault Out[30]}	10	Input Voltage Loss Over Time Limit
{Fault Out[30]}	12	Input Voltage Loss
{Fault Out[30]}	13	Cell Bypass Over Time Limit
{Fault Out[30]}	14	Cell Bypass Start Fault
{Fault Out[30]}	15	Cell Bypass Logic Fault
{Fault Out[30]}	16	Reserved
{Fault Out[31]}	1	PWMA Board Not Compatible With PCCBA1 Board
{Fault Out[31]}	2	PWMA Board Not Compatible With PCCBA2 Board
{Fault Out[31]}	3	PWMA Board Not Compatible With PCCBA3 Board
{Fault Out[31]}	4	PWMA Board Not Compatible With PCCBA4 Board
{Fault Out[31]}	5	PWMA Board Not Compatible With PCCBA5 Board
{Fault Out[31]}	6	PWMA Board Not Compatible With PCCBA6 Board
{Fault Out[31]}	7	PWMA Board Not Compatible With PCCBA7 Board
{Fault Out[31]}	8	PWMA Board Not Compatible With PCCBA8 Board
{Fault Out[31]}	9	PWMA Board Not Compatible With PCCBA9 Board
{Fault Out[31]}	10	Reserved
{Fault Out[31]}	11	Reserved
{Fault Out[31]}	12	Reserved
{Fault Out[31]}	13	Reserved
{Fault Out[31]}	14	Reserved
{Fault Out[31]}	15	Reserved
{Fault Out[31]}	16	Reserved

TrigTag	Trigger Bit	Fault Description
{Fault Out[32]}	1	PWMB Board Not Compatible With PCCBB1 Board
{Fault Out[32]}	2	PWMB Board Not Compatible With PCCBB2 Board
{Fault Out[32]}	3	PWMB Board Not Compatible With PCCBB3 Board
{Fault Out[32]}	4	PWMB Board Not Compatible With PCCBB4 Board
{Fault Out[32]}	5	PWMB Board Not Compatible With PCCBB5 Board
{Fault Out[32]}	6	PWMB Board Not Compatible With PCCBB6 Board
{Fault Out[32]}	7	PWMB Board Not Compatible With PCCBB7 Board
{Fault Out[32]}	8	PWMB Board Not Compatible With PCCBB8 Board
{Fault Out[32]}	9	PWMB Board Not Compatible With PCCBB9 Board
{Fault Out[32]}	10	Reserved
{Fault Out[32]}	11	Reserved
{Fault Out[32]}	12	Reserved
{Fault Out[32]}	13	Reserved
{Fault Out[32]}	14	Reserved
{Fault Out[32]}	15	Reserved
{Fault Out[32]}	16	Reserved
{Fault Out[33]}	1	PWMC Board Not Compatible With PCCBC1 Board
{Fault Out[33]}	2	PWMC Board Not Compatible With PCCBC2 Board
{Fault Out[33]}	3	PWMC Board Not Compatible With PCCBC3 Board
{Fault Out[33]}	4	PWMC Board Not Compatible WithPCCBC4 Board
{Fault Out[33]}	5	PWMC Board Not Compatible With PCCBC5 Board
{Fault Out[33]}	6	PWMC Board Not Compatible With PCCBC6 Board
{Fault Out[33]}	7	PWMC Board Not Compatible With PCCBC7 Board
{Fault Out[33]}	8	PWMC Board Not Compatible With PCCBC8 Board
{Fault Out[33]}	9	PWMC Board Not Compatible With PCCBC9 Board
{Fault Out[33]}	10	Reserved
{Fault Out[33]}	11	Reserved
{Fault Out[33]}	12	Reserved
{Fault Out[33]}	13	Reserved
{Fault Out[33]}	14	Reserved
{Fault Out[34]}	1	Primary FPGA Not Compatible With PWMA Board
{Fault Out[34]}	2	Primary FPGA Not Compatible With PWMB Board
{Fault Out[34]}	3	Primary FPGA Not Compatible With PWMC Board
{Fault Out[34]}	4	Primary FPGA Not Compatible With DT Board
{Fault Out[34]}	5	Primary DSP Not Compatible With Primary FPGA
{Fault Out[34]}	6	Primary DSP Not Compatible With Secondary DSP
{Fault Out[34]}	9	Primary DSP Not Compatible With PLC
{Fault Out[34]}	15	Versions Of System Not Compatible
{Fault Out[35]}	1	Over Temperature Time Out In Power Cell #1
{Fault Out[35]}	2	Over Temperature Time Out In Power Cell #2

TrigTag	Trigger Bit	Fault Description
{Fault Out[35]}	3	Over Temperature Time Out In Power Cell #3
{Fault Out[35]}	4	Over Temperature Time Out In Power Cell #4
{Fault Out[35]}	5	Over Temperature Time Out In Power Cell #5
{Fault Out[35]}	6	Over Temperature Time Out In Power Cell #6
{Fault Out[35]}	7	Over Temperature Time Out In Power Cell #7
{Fault Out[35]}	8	Over Temperature Time Out In Power Cell #8
{Fault Out[35]}	9	Over Temperature Time Out In Power Cell #9
{Fault Out[35]}	10	Over Temperature Time Out In Power Cell #10
{Fault Out[35]}	11	Over Temperature Time Out In Power Cell #11
{Fault Out[35]}	12	Over Temperature Time Out In Power Cell #12
{Fault Out[35]}	13	Over Temperature Time Out In Power Cell #13
{Fault Out[35]}	14	Over Temperature Time Out In Power Cell #14
{Fault Out[35]}	15	Over Temperature Time Out In Power Cell #15
{Fault Out[35]}	16	Over Temperature Time Out In Power Cell #16
{Fault Out[36]}	1	Over Temperature Time Out In Power Cell #17
{Fault Out[36]}	2	Over Temperature Time Out In Power Cell #18
{Fault Out[36]}	3	Over Temperature Time Out In Power Cell #19
{Fault Out[36]}	4	Over Temperature Time Out In Power Cell #20
{Fault Out[36]}	5	Over Temperature Time Out In Power Cell #21
{Fault Out[36]}	6	Over Temperature Time Out In Power Cell #22
{Fault Out[36]}	7	Over Temperature Time Out In Power Cell #23
{Fault Out[36]}	8	Over Temperature Time Out In Power Cell #24
{Fault Out[36]}	9	Over Temperature Time Out In Power Cell #25
{Fault Out[36]}	10	Over Temperature Time Out In Power Cell #26
{Fault Out[36]}	11	Over Temperature Time Out In Power Cell #27
{Fault Out[37]}	1	DIP Configuration Fault in PWMA
{Fault Out[37]}	2	Bypass Cell Re-activation Fault
{Fault Out[37]}	3	PCCB Parameters R/W Timeout
{Fault Out[37]}	4	Power Cells Parameters Mismatch
{Fault Out[37]}	5	DC Bus Voltage Deviation Fault
{Fault Out[37]}	6	DIP Configuration Fault in PWMB
{Fault Out[37]}	7	DIP Configuration Fault in PWMC
{Fault Out[37]}	8	Transformer Cabinet Fan Configuration Error
{Fault Out[37]}	9	Reserved
{Fault Out[37]}	10	Reserved
{Fault Out[37]}	11	Reserved
{Fault Out[37]}	12	Reserved
{Fault Out[37]}	13	Reserved
{Fault Out[37]}	14	Reserved
{Fault Out[37]}	15	Reserved

TrigTag	Trigger Bit	Fault Description
{Fault Out[37]}	16	Reserved
{Fault Out[38]}	1	Line Over Voltage
{Fault Out[38]}	2	Line Neutral Over Voltage
{Fault Out[38]}	3	Line Short Circuit
{Fault Out[38]}	4	Line Voltage Unbalance
{Fault Out[38]}	5	Line Current Unbalanced
{Fault Out[38]}	6	Line Side VSB Feedback Loss
{Fault Out[38]}	7	Fan Failure in Fan Group #4
{Fault Out[38]}	8	Pre-Charge Resistor Short Circuit
{Fault Out[38]}	9	VFD Over Current 2
{Fault Out[38]}	10	DC Bus Under Voltage Fault
{Fault Out[38]}	11	Reserved
{Fault Out[38]}	12	Reserved
{Fault Out[38]}	13	Reserved
{Fault Out[38]}	14	Reserved
{Fault Out[38]}	15	Reserved
{Fault Out[38]}	16	Reserved
{Fault Out[40]}	1	Input Circuit Breaker Tripped
{Fault Out[40]}	2	Transformer Over Temperature Trip
{Fault Out[40]}	3	Transformer Over Temperature Warning
{Fault Out[40]}	4	Power Module Cabinet Fan Fault
{Fault Out[40]}	5	Power Module Cabinet Fan Circuit Breaker Open
{Fault Out[40]}	6	Transformer Cabinet Fan Fault
{Fault Out[40]}	7	Transformer Cabinet Fan Circuit Breaker Open
{Fault Out[40]}	8	Auxiliary Power Off
{Fault Out[40]}	9	Cabinet Door Open
{Fault Out[40]}	10	External Control Power Loss Warning
{Fault Out[40]}	11	Analog Channel #1 Loss Warning
{Fault Out[40]}	12	DSP Communication Fault
{Fault Out[40]}	13	Cooling Fan Contactor Open
{Fault Out[40]}	14	DCS Communication Fault
{Fault Out[40]}	15	DCS Communication Fault Warning
{Fault Out[40]}	16	Analog Feedback Loss Warning
{Fault Out[41]}	1	Motor Over Temperature
{Fault Out[41]}	2	Filter Cabinet Over Temperature
{Fault Out[41]}	3	Motor Side HECS Power Supply Fault
{Fault Out[41]}	4	Analog Channel #2 Loss Warning
{Fault Out[41]}	5	Reserved
{Fault Out[41]}	6	Reserved
{Fault Out[41]}	7	Reserved

TrigTag	Trigger Bit	Fault Description
{Fault Out[41]}	8	Reserved
{Fault Out[41]}	9	Reserved
{Fault Out[41]}	10	Reserved
{Fault Out[41]}	11	Reserved
{Fault Out[41]}	12	Reserved
{Fault Out[41]}	13	Reserved
{Fault Out[41]}	14	Reserved
{Fault Out[41]}	15	Reserved
{Fault Out[41]}	16	Reserved
{Fault Out[42]}	1	User Defined Fault #1
{Fault Out[42]}	2	User Defined Fault #2
{Fault Out[42]}	3	User Defined Fault #3
{Fault Out[42]}	4	User Defined Fault #4
{Fault Out[42]}	5	User Defined Fault #5
{Fault Out[42]}	6	User Defined Fault #6
{Fault Out[42]}	7	User Defined Fault #7
{Fault Out[42]}	8	User Defined Fault #8
{Fault Out[42]}	9	User Defined Fault #9
{Fault Out[42]}	10	User Defined Fault #10
{Fault Out[42]}	11	User Defined Fault #11
{Fault Out[42]}	12	User Defined Fault #12
{Fault Out[42]}	13	User Defined Fault #13
{Fault Out[42]}	14	User Defined Fault #14
{Fault Out[42]}	15	User Defined Fault #15
{Fault Out[42]}	16	User Defined Fault #16
{Fault Out[43]}	1	User Defined Warning #1
{Fault Out[43]}	2	User Defined Warning #2
{Fault Out[43]}	3	User Defined Warning #3
{Fault Out[43]}	4	User Defined Warning #4
{Fault Out[43]}	5	User Defined Warning #5
{Fault Out[43]}	6	User Defined Warning #6
{Fault Out[43]}	7	User Defined Warning #7
{Fault Out[43]}	8	User Defined Warning #8
{Fault Out[43]}	9	User Defined Warning #9
{Fault Out[43]}	10	User Defined Warning #10
{Fault Out[43]}	11	User Defined Warning #11
{Fault Out[43]}	12	User Defined Warning #12
{Fault Out[43]}	13	User Defined Warning #13

TrigTag	Trigger Bit	Fault Description
{Fault Out[43]}	14	User Defined Warning #14
{Fault Out[43]}	15	User Defined Warning #15
{Fault Out[43]}	16	User Defined Warning #16

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support, you can find technical manuals, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools. You can also visit our Knowledgebase at http://www.rockwellautomation.com/knowledgebase for FAQs, technical information, support chat and forums, software updates, and to sign up for product notification updates.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/support/.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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Medium Voltage Products, 135 Dundas Street, Cambridge, ON, N1R 5X1 Canada, Tel: (1) 519.740.4100, Fax: (1) 519.623.8930
Online: www.ab.com/mvb

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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