PowerFlex 750-Series I/O, Feedback, and Power Option Modules

Overview
Each 750-Series drive has a slot-based architecture. Option modules provide additional analog and digital I/O, feedback, and auxiliary power options. These 750-Series option modules support PowerFlex® 750-Series and PowerFlex 755T drive products with TotalFORCE® control. For instructions on installing the option module in the control pod, see the PowerFlex 750-Series Option Modules Installation Instructions, publication 750-IN002. This publication covers drive compatibility, jumper settings, terminal designations, and wiring examples for the option modules.
Wiring

Important points to remember about I/O wiring:

- Always use copper wire.
- Use wire with an insulation rating of 600V or greater.
- Separate control and signal wires from power wires by at least 0.3 meters (1.0 ft).
- For CE compliance, 115V digital input wiring must be shielded or must not exceed 30 m (98.4 ft) in length.
- Follow these guides to maintain electrical safety for all user-accessible low voltage circuits for I/O terminals that are designated for 24V or lower voltage. Standards are safety extra low voltage (SELV) and protective extra low voltage (PELV). SELV is as defined in IEC 61010-2-201 and PELV is as defined in IEC 61131-2.
  - Do not connect to a circuit of higher voltage.
  - Do not connect to a circuit that is not adequately insulated from dangerous voltages with double or reinforced insulation within other connected equipment or wiring.
- Provide a common earth reference for all equipment that is connected to the drive. This common earth reference is to provide electrical safety for user-accessible low voltage I/O circuits that are referenced to earth (PELV circuits) and that can be touched simultaneously.
- If the wires are short and contained within a cabinet that has no sensitive circuits, the use of shielded wire is not necessary, but is always recommended.

**IMPORTANT** I/O terminals that are labeled ‘(–)’ or ‘Common’ are not referenced to earth ground and are designed to reduce common mode interference. Grounding these terminals can cause signal noise.

**ATTENTION:** Hazard of personal injury or equipment damage exists when using bipolar input sources. Noise and drift in sensitive input circuits can cause unpredictable changes in motor speed and direction. Use speed command parameters to help reduce input source sensitivity.

<table>
<thead>
<tr>
<th>Type</th>
<th>Wire Types</th>
<th>Description</th>
<th>Min Insulation Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal</td>
<td>Standard analog I/O</td>
<td>–</td>
<td>0.750 mm² (18 AWG), twisted-pair, 100% shield with drain.</td>
</tr>
<tr>
<td></td>
<td>Remote potentiometer</td>
<td>–</td>
<td>0.750 mm² (18 AWG), 3 conductor, shielded.</td>
</tr>
<tr>
<td></td>
<td>Encoder/Pulse I/O</td>
<td>Combined</td>
<td>0.196 mm² (24 AWG) Individually shielded pairs.</td>
</tr>
<tr>
<td></td>
<td>Encoder/Pulse I/O</td>
<td>Signal</td>
<td>0.196 mm² (24 AWG) Individually shielded pairs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power</td>
<td>0.750 mm² (18 AWG) Individually shielded pairs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Combined</td>
<td>0.330 mm² (22 AWG), power is 0.500 mm² (20 AWG) Individually shielded pairs.</td>
</tr>
<tr>
<td>Encoder/Pulse I/O</td>
<td>Signal</td>
<td>0.196 mm² (24 AWG) Individually shielded pairs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power</td>
<td>0.750 mm² (18 AWG) Individually shielded pairs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0.750 mm² (18 AWG) individually shielded pairs.</td>
<td></td>
</tr>
<tr>
<td>Digital I/O Safety Inputs</td>
<td>Shielded</td>
<td>Multi-conductor shielded cable</td>
<td>0.750 mm² (18 AWG), 3 conductor, shielded.</td>
</tr>
<tr>
<td>Digital I/O Homing Inputs</td>
<td>Unshielded</td>
<td>–</td>
<td>Per US NEC or applicable national or local code.</td>
</tr>
</tbody>
</table>
## Table 2 - Option Module I/O Terminal Block Specifications

<table>
<thead>
<tr>
<th>Name</th>
<th>Wire Size Range $\text{mm}^2$ (AWG)</th>
<th>Torque N-m (lb-in)</th>
<th>Strip Length $\text{mm}$ (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>22-Series I/O Modules TB1 with Screw Terminals</td>
<td>2.5 (14)</td>
<td>0.3 (28)</td>
<td>0.25 (2.2)</td>
</tr>
<tr>
<td>22-Series I/O Modules TB2 with Screw Terminals</td>
<td>4.0 (12)</td>
<td>0.25 (24)</td>
<td>0.5 (4.4)</td>
</tr>
<tr>
<td>11-Series I/O Module TB1 with Tension Clamp Terminals</td>
<td>2.5 (14)</td>
<td>0.13 (28)</td>
<td>—</td>
</tr>
<tr>
<td>11-Series I/O Module TB2 with Tension Clamp Terminals</td>
<td>4.0 (12)</td>
<td>0.25 (24)</td>
<td>—</td>
</tr>
<tr>
<td>Single Incremental Encoder</td>
<td>0.8 (18)</td>
<td>0.3 (28)</td>
<td>—</td>
</tr>
<tr>
<td>Dual Incremental Encoder</td>
<td>0.8 (18)</td>
<td>0.3 (28)</td>
<td>—</td>
</tr>
<tr>
<td>Universal Feedback Module</td>
<td>0.8 (18)</td>
<td>0.3 (28)</td>
<td>—</td>
</tr>
<tr>
<td>Auxiliary Power Supply TB1</td>
<td>2.5 (14)</td>
<td>0.3 (28)</td>
<td>0.25 (2.2)</td>
</tr>
</tbody>
</table>
11-Series I/O Option Module

This section provides a description of the 11-Series I/O option module. Digital inputs can be 24V DC or 120V AC. Analog inputs can be configured for Voltage or Current mode.

ATTENTION: When used in Integrated Motion on EtherNet/IP™ network applications for firmware, versions 12.xxx and later, the 11-Series module must only be installed in slot (port) 7.

You cannot use the ATEX card with the 11-Series I/O card in slot (port) 7 when used in an Integrated Motion on EtherNet/IP application.

I/O Option Kits for 11-Series I/O Module

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>Used with PowerFlex Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>24V DC 11-Series I/O Module with 1 Analog In, 1 Analog Out, 3 Digital In and 2 Relay Outputs</td>
<td>20-750-1132C-2R</td>
<td>X</td>
</tr>
<tr>
<td>24V DC 11-Series I/O Module with 1 Analog In, 1 Analog Out, 3 Digital In, 1 Relay and 2 Transistor Outputs</td>
<td>20-750-1133C-1R2T</td>
<td>X</td>
</tr>
<tr>
<td>115V AC 11-Series I/O Module with 1 Analog In, 1 Analog Out, 3 Digital In and 2 Relay Outputs</td>
<td>20-750-1132D-2R</td>
<td>X</td>
</tr>
</tbody>
</table>

P5

20-750-1132C-2R (24 Volts DC)
20-750-1133C-1R2T (24 Volts DC)
20-750-1132D-2R (120 Volts AC)

Analog Input Mode Jumpers

<table>
<thead>
<tr>
<th>Voltage Mode</th>
<th>Current Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4 1 1 P5 2 2</td>
<td>P4 1 1 P5 2 2</td>
</tr>
</tbody>
</table>
## Terminal Designations for 11-Series I/O Option Modules

These tables list terminal designations for 11-Series I/O option modules.

### Table 3 - TB1 Terminal Designations for 11-Series I/O Option Modules

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
<th>Related Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>–10V</td>
<td>–10V reference</td>
<td>Negative 10V DC for analog inputs. 2 kΩ min.</td>
<td></td>
</tr>
<tr>
<td>10VC</td>
<td>10V common</td>
<td>For (–) and (+) 10V references.</td>
<td></td>
</tr>
<tr>
<td>+10V</td>
<td>+10V reference</td>
<td>Positive 10V DC for analog inputs. 2 kΩ min.</td>
<td></td>
</tr>
<tr>
<td>Sh</td>
<td>Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
<td></td>
</tr>
<tr>
<td>Ao0–</td>
<td>Analog out 0 (–)</td>
<td>Bipolar, ±10V, 11 bit, and sign, 2 kΩ min load.</td>
<td>75 On port nn</td>
</tr>
<tr>
<td>Ao0+</td>
<td>Analog out 0 (+)</td>
<td>4…20 mA, 11 bit, and sign, 400 Ω max load.</td>
<td></td>
</tr>
<tr>
<td>Sh</td>
<td>Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
<td></td>
</tr>
<tr>
<td>Ai0–</td>
<td>Analog input 0 (–)</td>
<td>Differential (2), bipolar, 11 bit and sign. Voltage Mode: ±10V at 88 kΩ input impedance. Current Mode: 0…20 mA at 93 Ω input impedance.</td>
<td>50, 70 On port nn</td>
</tr>
<tr>
<td>Ai0+</td>
<td>Analog input 0 (+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sh</td>
<td>Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
<td></td>
</tr>
<tr>
<td>Di0</td>
<td>Digital input 0</td>
<td>24V DC (30V DC Max) — Opto isolated High state: 20…24V DC 11.2 mA DC Low state: 0…5V DC</td>
<td>1 On port nn</td>
</tr>
<tr>
<td>Di0P</td>
<td>Digital input 0 power(3)</td>
<td>120V AC (132V AC Max) 50/60 Hz(3) — Opto isolated High state: 100…132V AC Low state: 0…30V AC</td>
<td></td>
</tr>
<tr>
<td>Di1</td>
<td>Digital input 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di1P</td>
<td>Digital input 1 power(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di2</td>
<td>Digital input 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di2P</td>
<td>Digital input 2 power(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ip</td>
<td>Input power</td>
<td>External 24V DC or 115V AC power supply input connections. Does not power the main control board.</td>
<td></td>
</tr>
<tr>
<td>Ic</td>
<td>Input common</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EnC</td>
<td>Enable output</td>
<td>ATEX fault enable output. Used only when an ATEX option module is installed.</td>
<td></td>
</tr>
<tr>
<td>EnNO</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Digital Inputs are either 24V DC (1132C) or 115V AC (1132D) based on module catalog number. Verify that applied voltage is correct for I/O module.
(2) Differential – External source must be maintained at less than 160V regarding PE. Input provides high common mode immunity.
(3) For CE compliance, use shielded cable. Do not exceed cable length of 30 m (98.4 ft).
(4) I/O Module parameters also have a port designation.
(5) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

---

**ATTENTION:** Risk of equipment damage exists. Verify that the correct voltage is applied to the I/O Module digital inputs. See the I/O Module catalog number to determine the voltage rating.

- 20-750-1132C-2R is rated 24V DC
- 20-750-1133C-1R2T is rated 24V DC
- 20-750-1132D-2R is rated 120V AC
# PowerFlex 750-Series I/O, Feedback, and Power Option Modules

## Table 4 - TB2 Terminal Designations (Two Relay Outputs: 2R)

<table>
<thead>
<tr>
<th>Relay Out</th>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
<th>Related Parameter(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RONO</td>
<td>Relay 0 N.O.</td>
<td>Relay normally open contact output: 240V AC, 30V DC, 3.5 A max General purpose (inductive)/resistive</td>
<td>10, 100, 101, 105, 106 On port nn</td>
</tr>
<tr>
<td></td>
<td>ROC</td>
<td>Relay 0 common</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RONC</td>
<td>Relay 0 N.C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R1NO</td>
<td>Relay 1 N.O.</td>
<td>Relay normally closed contact output: 240V AC, 30V DC, 5 A max Only resistive</td>
<td>20, 110, 111, 115, 116 On port nn</td>
</tr>
<tr>
<td></td>
<td>R1C</td>
<td>Relay 1 common</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R1NC</td>
<td>Relay 1 N.C.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

## Table 5 - TB2 Terminal Designations (One Relay and Two Transistor Outputs: 1R2T)

<table>
<thead>
<tr>
<th>Relay Out</th>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
<th>Related Parameter(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RONO</td>
<td>Relay 0 N.O.</td>
<td>Relay normally open contact output: 240V AC, 24V DC, 3.5 A max General purpose (inductive)/resistive</td>
<td>10, 100, 101, 105, 106 On port nn</td>
</tr>
<tr>
<td></td>
<td>ROC</td>
<td>Relay 0 common</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RONC</td>
<td>Relay 0 N.C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T0</td>
<td>Transistor output 0</td>
<td>Transistor output Rating: 24V DC = 1 A max including U.L. applications Resistive</td>
<td>20 On port nn</td>
</tr>
<tr>
<td></td>
<td>TC</td>
<td>Transistor output common</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1</td>
<td>Transistor output 1</td>
<td></td>
<td>30 On port nn</td>
</tr>
</tbody>
</table>

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
11-Series I/O Option Module Wiring Examples

This section provides examples for how to wire the 11-Series I/O option module.

11-Series I/O Module TB1 Wiring Examples

Potentiometer Unipolar Speed Reference (10 K-Ohm Potentiometer Recommended) (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex 755TL and PowerFlex 755STR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set direction mode</td>
<td>• Port 0:308 [Direction Mode] = 0 ‘Unipolar’</td>
<td>• Port 0/10:1930 [Direction Mode] = 0 ‘Unipolar’</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>• Port 0:545 [Spd Ref A Sel] = Port nn:50 [Anlg In0 Value]</td>
<td>• Port 0/10:1800 [VRef A Sel] = Port nn:50 [Anlg In0 Value]</td>
</tr>
</tbody>
</table>
|                    | Adjust scaling            | • Port nn:51 [Anlg In0 Hi] = 10V  
• Port nn:52 [Anlg In0 Lo] = 0V  
• Port 0:547 [Spd Ref A AnlgHi] = +60 Hz  
• Port 0:548 [Spd Ref A AnlgLo] = 0 Hz | • Port nn:51 [Anlg In0 Hi] = 10V  
• Port nn:52 [Anlg In0 Lo] = 0V  
• Port 0/10:1802 [VRef A AnlgHi] = 60 Hz  
• Port 0/10:1803 [VRef A AnlgLo] = 0 Hz |
|                    | View results              | • Port nn:50 [Anlg In0 Value]  
• Port 0:592 [Selected Spd Ref] | • Port nn:50 [Anlg In0 Value]  
• Port 0/10:1892 [VRef Selected] |

(1) 2 kOhm minimum
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

Joystick Bipolar Speed Reference ±10V Input(1)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set direction mode</td>
<td>• Port 0:308 [Direction Mode] = 1 ‘Bipolar’</td>
<td>• Port 0/10:1930 [Direction Mode] = 1 ‘Bipolar’</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>• Port 0:545 [Spd Ref A Sel] = Port nn:50 [Anlg In0 Value]</td>
<td>• Port 0/10:1800 [VRef A Sel] = Port nn:50 [Anlg In0 Value]</td>
</tr>
</tbody>
</table>
|                    | Adjust scaling            | • Port nn:51 [Anlg In0 Hi] = +10V  
• Port nn:52 [Anlg In0 Lo] = -10V  
• Port 0:547 [Spd Ref A AnlgHi] = +60 Hz  
• Port 0:548 [Spd Ref A AnlgLo] = -60 Hz | • Port nn:51 [Anlg In0 Hi] = +10V  
• Port nn:52 [Anlg In0 Lo] = -10 Volts  
• Port 0/10:1802 [VRef A AnlgHi] = 60 Hz  
• Port 0/10:1803 [VRef A AnlgLo] = -60 Hz |
|                    | View results              | • Port nn:50 [Anlg In0 Value]  
• Port 0:592 [Selected Spd Ref] | • Port nn:50 [Anlg In0 Value]  
• Port 0/10:1892 [VRef Selected] |

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
Analog Input Bipolar Speed Reference (1) (2)

Connection Example

<table>
<thead>
<tr>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set direction mode</td>
<td>• Port 0:308 [Direction Mode] = 1 'Bipolar'</td>
<td>• Port 10/11:930 [Direction Mode] = 1 'Bipolar'</td>
</tr>
<tr>
<td>Set selection</td>
<td>• Port 0:545 [Spd Ref A Sel] = Port nnn:50 [Anlg In0 Value]</td>
<td>• Port 10/11:1800 [VRef A Sel] = Port nnn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td>Adjust scaling</td>
<td>• Port nnn:51 [Anlg In0 Hi] = +10V</td>
<td>• Port nnn:51 [Anlg In0 Hi] = +10V</td>
</tr>
<tr>
<td></td>
<td>• Port nnn:52 [Anlg In0 Lo] = –10V</td>
<td>• Port nnn:52 [Anlg In0 Lo] = –10V</td>
</tr>
<tr>
<td></td>
<td>• Port 0.547 [Spd Ref A AnlgHi] = +60 Hz</td>
<td>• Port 10/11:1802 [VRef A AnlgHi] = +60 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port 0.548 [Spd Ref A AnlgLo] = –60 Hz</td>
<td>• Port 10/11:1803 [VRef A AnlgLo] = –60 Hz</td>
</tr>
<tr>
<td>View results</td>
<td>• Port nnn:50 [Anlg In0 Value]</td>
<td>• Port nnn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>• Port 0.592 [Selected Spd Ref]</td>
<td>• Port 10/11:1892 [VRef Selected]</td>
</tr>
</tbody>
</table>

(1) ±10V Input
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

Analog Voltage Input Unipolar Speed Reference (1) (2)

Connection Example

<table>
<thead>
<tr>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set direction mode</td>
<td>• Port 0:08 [Direction Mode] = 0 'Unipolar'</td>
<td>• Port 10/11:930 [Direction Mode] = 0 'Unipolar'</td>
</tr>
<tr>
<td>Set selection</td>
<td>• Port 0:545 [Spd Ref A Sel] = Port 0:260 [Anlg In0 Value]</td>
<td>• Port 10/11:1800 [VRef A Sel] = Port nnn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td>Adjust scaling</td>
<td>• Port 0.261 [Anlg In1 Hi] = 10V</td>
<td>• Port nnn:51 [Anlg In1 Hi] = 10V</td>
</tr>
<tr>
<td></td>
<td>• Port 0.262 [Anlg In1 Lo] = 0V</td>
<td>• Port nnn:52 [Anlg In1 Lo] = 0V</td>
</tr>
<tr>
<td></td>
<td>• Port 0.547 [Spd Ref A AnlgHi] = 60 Hz</td>
<td>• Port 10/11:1802 [VRef A AnlgHi] = 60 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port 0.548 [Spd Ref A AnlgLo] = 0 Hz</td>
<td>• Port 10/11:1803 [VRef A AnlgLo] = 0 Hz</td>
</tr>
<tr>
<td>View results</td>
<td>• Port 0.260 [Anlg In0 Value]</td>
<td>• Port nnn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>• Port 0.592 [Selected Spd Ref]</td>
<td>• Port 10/11:1892 [VRef Selected]</td>
</tr>
</tbody>
</table>

(1) 0 … 10V Input
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### Analog Current Input Unipolar Speed Reference (1) (2)

**Connection Example**

![11- Series I/O Module TB1](image)

**Required Parameter Changes**

<table>
<thead>
<tr>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Set direction mode</strong></td>
<td>• Port 0:308 [Direction Mode] = 0 'Unipolar'</td>
</tr>
<tr>
<td><strong>Set selection</strong></td>
<td>• Port 0:545 [Spd Ref A Sel] = Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>• Port 10/11:930 [Direction Mode] = 0 (nn is a variable to denote that this parameter is for whichever port you are using.)</td>
</tr>
<tr>
<td><strong>Adjust scaling</strong></td>
<td>• Port nn:51 [Anlg In0 Hi] = 20 mA</td>
</tr>
<tr>
<td></td>
<td>• Port nn:52 [Anlg In0 Lo] = 0 mA or 4 mA</td>
</tr>
<tr>
<td></td>
<td>• Port 0:546 [Spd Ref A AnlgHi] = 60 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port 0:548 [Spd Ref A AnlgLo] = 0 Hz</td>
</tr>
<tr>
<td><strong>View results</strong></td>
<td>• Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>• Port 0:592 [Selected Spd Ref]</td>
</tr>
</tbody>
</table>

(1) 0…20 mA Input

(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### Analog Voltage Output (1) (2) (3)

**Connection Example**

![11-Series I/O Module TB1](image)

**Required Parameter Changes**

<table>
<thead>
<tr>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Configuration</strong></td>
<td>• Port nn:70 [Anlg Out Type], bit 0 = 0</td>
</tr>
<tr>
<td></td>
<td>• Port nn:75 [Anlg Out0 Sel] = Port 0:3 [Mtr Vel Fdbk]</td>
</tr>
<tr>
<td></td>
<td>• Port nn:78 [Anlg Out0 DataHi] = 60 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port nn:80 [Anlg Out0 Data] = 0 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port nn:81 [Anlg Out0 Lo] = 0V/0 mA</td>
</tr>
<tr>
<td><strong>Set selection</strong></td>
<td>• Port nn:75 [Anlg Out0 Sel] = Port 10/11:1044 [Motor Vel Fb]</td>
</tr>
<tr>
<td><strong>Adjust scaling</strong></td>
<td>• Port nn:78 [Anlg Out0 DataHi] = 60 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port nn:80 [Anlg Out0 Data] = 0 Hz</td>
</tr>
<tr>
<td></td>
<td>• Port nn:81 [Anlg Out0 Lo] = 0V/0 mA</td>
</tr>
<tr>
<td><strong>View results</strong></td>
<td>• Port nn:77 [Anlg Out0 Data]</td>
</tr>
<tr>
<td></td>
<td>• Port nn:82 [Anlg Out0 Val]</td>
</tr>
</tbody>
</table>

(1) ±10V, 0…20 mA Bipolar

(2) +10V Unipolar

(3) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### 2-Wire Control Non-reversing (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Set direction mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:308 [Direction Mode] = 2 'Rev Disable'</td>
<td>• Port 10/11:930 [Direction Mode] = 2 'Rev Disable'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set selection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:163 [DI Run] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
<td>• Port 0:120 [Di M Run] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>View results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port nn:1 [Dig In Sts] Port 0:935 [Drive Status 1]</td>
<td>• Port nn:1 [Dig In Sts] Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

(1) 24V DC internal supply
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### 2-Wire Control Reversing (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Set direction mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:308 [Direction Mode] = 0 'Unipolar'</td>
<td>• Port 10/11:930 [Direction Mode] = 0 'Unipolar'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set selection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:164 [DI Run Forward] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
<td>• Port 0:121 [Di M Run Forward] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:165 [DI Run Reverse] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
<td>• Port 0:122 [Di M Run Reverse] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>View results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port nn:1 [Dig In Sts] Port 0:935 [Drive Status 1]</td>
<td>• Port nn:1 [Dig In Sts] Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

(1) External 24V supply
20-750-1132C-2R
20-750-1133C-1R2T
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### 3-Wire Control (Internal Supply) (1)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
</table>
| ![11-Series I/O Module TB1](image) | Set selection | • Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0  
• Port 0:161 [DI Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1 | • Port 0:108 [DI M Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0  
• Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1 |
| ![11-Series I/O Module TB1](image) | View results | • Port nn:1 [Dig In Sts]  
• Port 0:935 [Drive Status 1] | • Port nn:1 [Dig In Sts]  
• Port 10/11:354 [Motor Side Sts 1] |

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### 3-Wire Control (External 24V Supply) (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
</table>
| ![11-Series I/O Module TB1](image) | Set selection | • Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0  
• Port 0:161 [DI Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1 | • Port 0:108 [DI M Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0  
• Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1 |
| ![11-Series I/O Module TB1](image) | View results | • Port nn:1 [Dig In Sts]  
• Port 0:935 [Drive Status 1] | • Port nn:1 [Dig In Sts]  
• Port 10/11:354 [Motor Side Sts 1] |

(1) External 24V supply  
20-750-1132C-2R  
20-750-1133C-1R2T

(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### 3-Wire Control (External 120V Supply) \(^{(1)}\) \(^{(2)}\)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image_url" alt="Image" /></td>
<td><strong>Set selection</strong>&lt;br&gt;• Port 0:158 [Di Stop] = Port nn(n):1 [Dig In Sts], bit 0 = Input 0&lt;br&gt;• Port 0:161 [Di Start] = Port nn(n):1 [Dig In Sts], bit 1 = Input 1</td>
<td><img src="image_url" alt="Image" /></td>
<td><img src="image_url" alt="Image" /></td>
</tr>
<tr>
<td><img src="image_url" alt="Image" /></td>
<td><strong>View results</strong>&lt;br&gt;• Port nn(n):1 [Dig In Sts]&lt;br&gt;• Port 0:935 [Drive Status 1]</td>
<td><img src="image_url" alt="Image" /></td>
<td><img src="image_url" alt="Image" /></td>
</tr>
</tbody>
</table>

\(^{(1)}\) External 120V supply 20-750-11320-2R

\(^{(2)}\) In this table, \(n\) is a variable to denote that this parameter is for whichever port you are using.
Digital Input PLC Output Module (1) (2)

<table>
<thead>
<tr>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set selection</td>
<td>Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
<td>Port 0:108 [DI M Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td>Port 0:161 [DI Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
<td>Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
</tr>
<tr>
<td>View results</td>
<td>Port nn:1 [Dig In Sts]</td>
<td>Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td>Port 0:935 [Drive Status 1]</td>
<td>Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

IMPORTANT: Some PLC interfaces require pull-down resistors.

(1) External supply

(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
Digital Output (Internal Supply) (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Connection Example" /></td>
<td>Set selection</td>
<td>Port nr:20 [T00 Sel] = Port 0:935 [Drive Status 1], bit 7 = Faulted</td>
<td>Port nr:20 [T00 Sel] = Port 10/11:354 [Motor Side Sts 1], bit 7 = Faulted</td>
</tr>
<tr>
<td><img src="image2" alt="Connection Example" /></td>
<td>View results</td>
<td>Port nr:5 [Dig Out Sts]</td>
<td>Port nr:5 [Dig Out Sts]</td>
</tr>
</tbody>
</table>

(1) 20-750-1113C-1R2T
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### Digital Output External Supply \(^{(1)}\) \(^{(2)}\)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Set selection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn:20 ([\text{T00 Sel}] = \text{Port 0:935 (Drive Status 1)}), bit 7 = Faulted</td>
<td>Port nn:20 ([\text{T00 Sel}] = \text{Port 10/11:354 (Motor Side Sts 1)}), bit 7 = Faulted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>View results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn:5 ([\text{Dig Out Sts}])</td>
<td>Port nn:5 ([\text{Dig Out Sts}])</td>
</tr>
</tbody>
</table>

\(^{(1)}\) 20-750-1133C-1R2T

\(^{(2)}\) In this table, \(nn\) is a variable to denote that this parameter is for whichever port you are using.

---

### Relay Output (External Supply) \(^{(1)}\)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Set selection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PowerFlex 753</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0:230 ([\text{R00 Sel}] = \text{Port 0:935 (Drive Status 1)}), bit 7 = Faulted</td>
<td>Port nn:10 ([\text{R00 Sel}] = \text{Port 10/11:354 (Motor Side Sts 1)}), bit 7 = Faulted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11-Series I/O Modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn (11-Series I/O Module):10 ([\text{R00 Sel}] = \text{Port 0:935 (Drive Status 1)}), bit 7 = Faulted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>View results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PowerFlex 753</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0:225 ([\text{Dig Out Sts}])</td>
<td>Port nn:5 ([\text{Dig Out Sts}])</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11-Series I/O Modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn:5 ([\text{Dig Out Sts}])</td>
<td></td>
</tr>
</tbody>
</table>

\(^{(1)}\) In this table, \(nn\) is a variable to denote that this parameter is for whichever port you are using.
22-Series I/O Option Module

Digital inputs can be 24V DC or 120V AC. Analog inputs can be configured for Voltage or Current mode.

I/O Option Kits for 22-Series I/O Modules

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>Used with PowerFlex Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>24V DC 22-Series I/O Module with 2 Analog In, 2 Analog Out, 6 Digital In, and 2 Relay Outputs</td>
<td>20-750-2262C-2R</td>
<td>X(1) X</td>
</tr>
<tr>
<td>115V AC 22-Series I/O Module with 2 Analog In, 2 Analog Out, 6 Digital In, and 2 Relay Outputs</td>
<td>20-750-2262D-2R</td>
<td>X X</td>
</tr>
<tr>
<td>24V DC 22-Series I/O Module with 2 Analog In, 2 Analog Out, 6 Digital In, 3 Digital Out, 1 Relay, and 2 Transistor Outputs</td>
<td>20-750-2263C-1R2T</td>
<td>X X</td>
</tr>
</tbody>
</table>

(1) For kits to be used with Integrated Motion on EtherNet/IP instructions, the option module can only be used in slot 7 of the PowerFlex 755 drive. It also requires PowerFlex 755 firmware version 12 and higher, and Studio 5000™ version 28 and higher.

ATTENTION: When used in an Integrated Motion on EtherNet/IP networks application for firmware, versions 12.xxx and later, the 22-Series I/O module must be installed only in slot (port) 7.

Input Mode Jumpers

<table>
<thead>
<tr>
<th>Jumper Position</th>
<th>Voltage Mode</th>
<th>Current Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-750-2262C-2R (24 Volts DC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-750-2262D-2R (120 Volts AC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Terminal Designations for 22-Series I/O Option Modules

These tables list terminal designations for 22-Series I/O option modules.

#### TB1 Terminal Designations for 22-Series I/O Option Modules

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
<th>Related Parameter (5) (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sh</td>
<td>Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
<td>--</td>
</tr>
<tr>
<td>Sh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ptc−</td>
<td>Motor PTC (−)</td>
<td>Motor protection device (Positive Temperature Coefficient), (2)</td>
<td>40 On port nn</td>
</tr>
<tr>
<td>Ptc+</td>
<td>Motor PTC (+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ao0−</td>
<td>Analog out 0 (−)</td>
<td>Bipolar, ±10V, 11 bit, and sign, 2 kΩ minimum load.</td>
<td>75 On port nn</td>
</tr>
<tr>
<td>Ao0+</td>
<td>Analog out 0 (+)</td>
<td>4…20 mA, 11 bit, and sign, 400 Ω maximum load.</td>
<td></td>
</tr>
<tr>
<td>Ao1−</td>
<td>Analog Out 1 (−)</td>
<td></td>
<td>85 On port nn</td>
</tr>
<tr>
<td>Ao1+</td>
<td>Analog Out 1 (+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>−10V</td>
<td>−10V reference</td>
<td>2 kΩ minimum.</td>
<td>--</td>
</tr>
<tr>
<td>10VC</td>
<td>10V common</td>
<td>For (−) and (+) 10V references.</td>
<td></td>
</tr>
<tr>
<td>+10V</td>
<td>+10V reference</td>
<td>2 kΩ minimum.</td>
<td></td>
</tr>
<tr>
<td>Ai0−</td>
<td>Analog input 0 (−)</td>
<td>Isolated (3), bipolar, differential, 11 bit and sign.</td>
<td>50, 70 On port nn</td>
</tr>
<tr>
<td>Ai0+</td>
<td>Analog input 0 (+)</td>
<td>Voltage Mode: ±10V at 85 kΩ input impedance.</td>
<td></td>
</tr>
<tr>
<td>Ai1−</td>
<td>Analog Input 1 (−)</td>
<td>Current Mode: 0…20 mA at 93 Ω input impedance.</td>
<td>60, 70 On port nn</td>
</tr>
<tr>
<td>Ai1+</td>
<td>Analog Input 1 (+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24VC</td>
<td>24V common</td>
<td>Drive supplied logic input power.</td>
<td>--</td>
</tr>
<tr>
<td>+24V</td>
<td>+24V DC</td>
<td>200 mA max per I/O module</td>
<td></td>
</tr>
<tr>
<td>Di C</td>
<td>Digital input common</td>
<td>Common for Digital Inputs 0…5</td>
<td>--</td>
</tr>
<tr>
<td>Di 0</td>
<td>Digital input 0 (1)</td>
<td>24V DC (30V DC max) – Opto isolated</td>
<td>1 On port nn</td>
</tr>
<tr>
<td>Di 1</td>
<td>Digital input 1 (1)</td>
<td>24V DC (30V DC max) – Opto isolated</td>
<td></td>
</tr>
<tr>
<td>Di 2</td>
<td>Digital input 2 (1)</td>
<td>120V AC (132V AC max) 50/60 Hz (4) – Opto isolated</td>
<td></td>
</tr>
<tr>
<td>Di 3</td>
<td>Digital input 3 (1)</td>
<td>High state: 100…132V AC</td>
<td></td>
</tr>
<tr>
<td>Di 4</td>
<td>Digital input 4 (1)</td>
<td>Low state: 0…30V AC</td>
<td></td>
</tr>
<tr>
<td>Di 5</td>
<td>Digital input 5 (1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Digital Inputs are either 24 V DC (2262C) or 115 V AC (2262D) based on module catalog number. Verify that applied voltage is correct for I/O module.
(2) See HW Input P TC on page 20 for P TC data.
(3) Differential Isolation – External source must be maintained at less than 160 V with respect to PE. Input provides high common mode immunity.
(4) For CE compliance, use shielded cable. Do not exceed cable length of 30 m (98.4 ft).
(5) I/O Module parameters also have a port designation.
(6) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
TB2 Terminal Designations (Two Relay Outputs: 2R)

<table>
<thead>
<tr>
<th>Relay Out</th>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
<th>Related Parameter (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RONO</td>
<td>Relay 0 N.O.</td>
<td>Relay normally open contact output:</td>
<td>10, 100, 101, 105, 106</td>
</tr>
<tr>
<td></td>
<td>ROC</td>
<td>Relay 0 Common</td>
<td>240V AC, 24V DC, 2 A max</td>
<td>On port nn</td>
</tr>
<tr>
<td></td>
<td>RONC</td>
<td>Relay 0 N.C.</td>
<td>General-purpose (inductive)/resistive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R1NO</td>
<td>Relay 1 N.O.</td>
<td>Relay normally closed contact output:</td>
<td>20, 110, 111, 115, 116</td>
</tr>
<tr>
<td></td>
<td>R1C</td>
<td>Relay 1 Common</td>
<td>240V AC, 24V DC, 2 A max</td>
<td>On port nn</td>
</tr>
<tr>
<td></td>
<td>R1NC</td>
<td>Relay 1 N.C.</td>
<td>Only resistive</td>
<td></td>
</tr>
</tbody>
</table>

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

Table 6 - TB2 Terminal Designations (One Relay and Two Transistor Outputs: 1R2T)

<table>
<thead>
<tr>
<th>Relay Out</th>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
<th>Related Parameter (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RONO</td>
<td>Relay 0 N.O.</td>
<td>Relay normally open contact output:</td>
<td>10, 100, 101, 105, 106</td>
</tr>
<tr>
<td></td>
<td>ROC</td>
<td>Relay 0 Common</td>
<td>240V AC, 24V DC, 2 A max</td>
<td>On port nn</td>
</tr>
<tr>
<td></td>
<td>RONC</td>
<td>Relay 0 N.C.</td>
<td>General-purpose (inductive)/resistive</td>
<td></td>
</tr>
<tr>
<td>T0</td>
<td>Transistor output 0</td>
<td>Transistor output</td>
<td>Rating: 24V DC = 1 A max</td>
<td>20 On port nn</td>
</tr>
<tr>
<td>TC</td>
<td>Transistor output common</td>
<td>Rating: 24V DC = 0.4 A Max for UL applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>Transistor output 1</td>
<td>transistors output 1</td>
<td>Resistive</td>
<td>30 On port nn</td>
</tr>
</tbody>
</table>

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

22-Series I/O Option Module Wiring Examples

This section provides examples for how to wire the 22-Series I/O option modules.

Potentiometer Unipolar Speed Reference (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Port 10/11:930 [Direction Mode] = 0 'Unipolar'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Port 10/11:1800 [VRef A Sel] = Port nn:30 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Port 10/11:1801 [VRef A AnlgHi] = 60 Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Port 10/11:1802 [VRef A AnlgLo] = 0 Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Port 10/11:1803 [VRef A AnlgLo] = 0 Hz</td>
</tr>
</tbody>
</table>

(1) 2 kΩ minimum
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### Joystick Bipolar Speed Reference (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set direction mode</td>
<td>Port 0:308 [Direction Mode] = 1 'Bipolar'</td>
<td>Port 10/11:930 [Direction Mode] = 1 'Bipolar'</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>Port 0.545 [Spd Ref A Set] = Port nn:50 [Anlg In0 Value]</td>
<td>Port 10/11:1800 [VRef A Set] = Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>Adjust scaling</td>
<td>Port nn:51 [Anlg In0 Hi] = +10V</td>
<td>Port nn:51 [Anlg In0 Hi] = +10V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn:52 [Anlg In0 Lo] = -10V</td>
<td>Port nn:52 [Anlg In0 Lo] = -10V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.547 [Spd Ref A AnlgHi] = +60 Hz</td>
<td>Port 10/11:1802 [VRef A AnlgHi] = +60 Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.548 [Spd Ref A AnlgLo] = -60 Hz</td>
<td>Port 10/11:1803 [VRef A AnlgLo] = -60 Hz</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>Port nn:50 [Anlg In0 Value]</td>
<td>Port 10/11:1892 [VRef Selected]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.592 [Selected Spd Ref]</td>
<td>Port 10/11:1892 [VRef Selected]</td>
</tr>
</tbody>
</table>

(1) ±10V Input
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### Analog Input Bipolar Speed Reference (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set direction mode</td>
<td>Port 0:308 [Direction Mode] = 1 'Bipolar'</td>
<td>Port 10/11:930 [Direction Mode] = 1 'Bipolar'</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>Port 0.545 [Spd Ref A Set] = Port nn:50 [Anlg In0 Value]</td>
<td>Port 10/11:1800 [VRef A Set] = Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>Adjust scaling</td>
<td>Port nn:51 [Anlg In0 Hi] = +10V</td>
<td>Port nn:51 [Anlg In0 Hi] = +10V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn:52 [Anlg In0 Lo] = -10V</td>
<td>Port nn:52 [Anlg In0 Lo] = -10V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.547 [Spd Ref A AnlgHi] = +60 Hz</td>
<td>Port 10/11:1802 [VRef A AnlgHi] = +60 Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.548 [Spd Ref A AnlgLo] = -60 Hz</td>
<td>Port 10/11:1803 [VRef A AnlgLo] = -60 Hz</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>Port nn:50 [Anlg In0 Value]</td>
<td>Port 10/11:1892 [VRef Selected]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.592 [Selected Spd Ref]</td>
<td>Port 10/11:1892 [VRef Selected]</td>
</tr>
</tbody>
</table>

(1) ±10V Input
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### Analog Voltage Input Unipolar Speed Reference (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set direction mode</td>
<td>Port 0:308 [Direction Mode] = 0 'Unipolar'</td>
<td>Port 10/11:930 [Direction Mode] = 0 'Unipolar'</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>Port 0.545 [Spd Ref A Set] = Port nn:50 [Anlg In0 Value]</td>
<td>Port 10/11:1800 [VRef A Set] = Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>Adjust scaling</td>
<td>Port nn:51 [Anlg In1 Hi] = 10V</td>
<td>Port nn:51 [Anlg In1 Hi] = 10V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port nn:52 [Anlg In1 Lo] = 0V</td>
<td>Port nn:52 [Anlg In1 Lo] = 0V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.547 [Spd Ref A AnlgHi] = +60 Hz</td>
<td>Port 10/11:1803 [VRef A AnlgHi] = +60 Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.548 [Spd Ref A AnlgLo] = 0 Hz</td>
<td>Port 10/11:1803 [VRef A AnlgLo] = 0 Hz</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>Port nn:50 [Anlg In0 Value]</td>
<td>Port 10/11:1892 [VRef Selected]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port 0.592 [Selected Spd Ref]</td>
<td>Port 10/11:1892 [VRef Selected]</td>
</tr>
</tbody>
</table>

(1) 0V to 10V Input
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
Analog Current Input Unipolar Speed Reference (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set direction mode</td>
<td>• Port 0:308 [Direction Mode] = 0 'Unipolar'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>• Port 0:545 [Spd Ref A Sel] = Port nn:50 [Anlg In0 Value]</td>
<td>• Port 10/11:1800 [VRef A Sel] = Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td>Adjust scaling</td>
<td>• Port nn:51 [Anlg In0 Hi] = 20 mA</td>
<td>• Port nn:51 [Anlg In0 Hi] = 20 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port nn:52 [Anlg In0 Lo] = 0 mA</td>
<td>• Port nn:52 [Anlg In0 Lo] = 0 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:546 [Spd Ref A AnlgLo] = 0 Hz</td>
<td>• Port 10/11:1803 [VRef A AnlgLo] = 0 Hz</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>• Port nn:50 [Anlg In0 Value]</td>
<td>• Port nn:50 [Anlg In0 Value]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:592 [Selected Spd Ref]</td>
<td>• Port 10/11:1892 [VRef Selected]</td>
</tr>
</tbody>
</table>

(1) 0…20 mA Input
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

HW Input PTC (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Configuration</td>
<td>• Port nn:40 [PTC Cfg] = 0 'Ignore', 1 'Alarm', 2 'Flt Minor', 3 'Flt CoastStop', 4 'Flt RampStop', or 5 'Flt CL Stop'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>• Port nn:41 [PTC Sts]</td>
<td>• Port nn:41 [PTC Sts]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port nn:42 [PTC Raw Value]</td>
<td>• Port nn:42 [PTC Raw Value]</td>
</tr>
</tbody>
</table>

ATTENTION: To avoid an electric shock hazard, the connection of the motor temperature sensor requires double or reinforced insulation between motor live parts and the PTC.

(1) Standard = DIN 44082
PTC Nominal = 1.8 kΩ
PTC Trip = 3.1 kΩ
PTC Reset = 2.2 kΩ
Short Circuit Trip = 300 Ω
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

Analog Voltage Output (1) (2)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Configuration</td>
<td>• Port nn:70 [Anlg Out0 Type] = 0</td>
<td>• Port nn:70 [Anlg Out0 Type] = 0</td>
</tr>
</tbody>
</table>
|                    |                           | • Port nn:75 [Anlg Out0 Sel] = Port 0:3 [Mtr Vel Fdbk] | • Port nn:75 [Anlg Out0 Sel] = Port 10/11:1044 [Motor Vel Fl]
|                    | Set selection             | • Port nn:78 [Anlg Out0 Dath] = 60 Hz | • Port nn:78 [Anlg Out0 Dath] = 60 Hz |
|                    |                           | • Port nn:79 [Anlg Out0 DataLO] = 0 Hz | • Port nn:79 [Anlg Out0 DataLO] = 0 Hz |
|                    |                           | • Port nn:80 [Anlg Out0 Hi] = 10V/20 mA | • Port nn:80 [Anlg Out0 Hi] = 10V/20 mA |
|                    |                           | • Port nn:81 [Anlg Out0 Lo] = 0V/0 mA | • Port nn:81 [Anlg Out0 Lo] = 0V/0 mA |
|                    | Adjust scaling            | • Port nn:77 [Anlg Out0 Data] | • Port nn:77 [Anlg Out0 Data] |
|                    |                           | • Port nn:82 [Anlg Out0 Val] | • Port nn:82 [Anlg Out0 Val] |

(1) ±10V, 0…20 mA Bipolar
+10V Unipolar
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### 2-Wire Control Non-reversing \(^{(1)}\) \(^{(2)}\)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set direction mode</td>
<td>• Port 0:308 [Direction Mode] = 2 ‘Rev Disable’</td>
<td>• Port 10/11:930 [Direction Mode] = 2 ‘Rev Disable’</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>• Port 0:163 [DI Run] = Port nn:1 [Dig In Sts]; bit 0 = Input 0</td>
<td>• Port 0:120 [DI M Run] = Port nn:1 [Dig In Sts]; bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>• Port nn:1 [Dig In Sts]</td>
<td>• Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:935 [Drive Status 1]</td>
<td>• Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

\(^{(1)}\) 24V DC internal supply
\(^{(2)}\) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

---

### 2-Wire Control Reversing \(^{(1)}\) \(^{(2)}\)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set direction mode</td>
<td>• Port 0:308 [Direction Mode] = 0 ‘Unipolar’</td>
<td>• Port 10/11:930 [Direction Mode] = 0 ‘Unipolar’</td>
</tr>
<tr>
<td></td>
<td>Set selection</td>
<td>• Port 0:164 [DI Run Forward] = Port nn:1 [Dig In Sts]; bit 0 = Input 0</td>
<td>• Port 0:183 [DI Run Reverse] = Port nn:1 [Dig In Sts]; bit 1 = Input 1</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>• Port nn:1 [Dig In Sts]</td>
<td>• Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:935 [Drive Status 1]</td>
<td>• Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

\(^{(1)}\) External 24 volt supply
20-750-2262C-2R
20-750-2263C-1R

\(^{(2)}\) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

---

### 3-Wire Control (Internal Supply) \(^{(1)}\)

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set selection</td>
<td>• Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts]; bit 0 = Input 0</td>
<td>• Port 0:080 [DI M Stop] = Port nn:1 [Dig In Sts]; bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:161 [DI Start] = Port nn:1 [Dig In Sts]; bit 1 = Input 1</td>
<td>• Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts]; bit 1 = Input 1</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>• Port nn:1 [Dig In Sts]</td>
<td>• Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Port 0:935 [Drive Status 1]</td>
<td>• Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

\(^{(1)}\) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### 3-Wire Control (External 24V Supply) (1) (2)

**Connection Example**

![22-Series I/O Module TB1](image)

<table>
<thead>
<tr>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set selection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
<td>• Port 0:108 [DI M Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td>• Port 0:161 [DI Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
<td>• Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
</tr>
<tr>
<td>View results</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Port nn:1 [Dig In Sts]</td>
<td>• Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td>• Port 0:935 [Drive Status 1]</td>
<td>• Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

(1) 20-750-2262C-2R  
20-750-2263C-1R2T  
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### 3-Wire Control (External 120V Supply) (1) (2)

**Connection Example**

![22-Series I/O Module TB1](image)

<table>
<thead>
<tr>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set selection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
<td>• Port 0:108 [DI M Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td>• Port 0:161 [DI Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
<td>• Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
</tr>
<tr>
<td>View results</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Port nn:1 [Dig In Sts]</td>
<td>• Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td>• Port 0:935 [Drive Status 1]</td>
<td>• Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

(1) 20-750-2262D-2R  
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### Digital Input (1) (2)

**Connection Example**

![22-Series I/O Module TB1](image)

<table>
<thead>
<tr>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set selection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Port 0:158 [DI Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
<td>• Port 0:108 [DI M Stop] = Port nn:1 [Dig In Sts], bit 0 = Input 0</td>
</tr>
<tr>
<td></td>
<td>• Port 0:161 [DI Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
<td>• Port 0:117 [DI M Start] = Port nn:1 [Dig In Sts], bit 1 = Input 1</td>
</tr>
<tr>
<td>View results</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Port nn:1 [Dig In Sts]</td>
<td>• Port nn:1 [Dig In Sts]</td>
</tr>
<tr>
<td></td>
<td>• Port 0:935 [Drive Status 1]</td>
<td>• Port 10/11:354 [Motor Side Sts 1]</td>
</tr>
</tbody>
</table>

(1) PLC Output Module  
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
### Digital Output (Internal Supply) 

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Connection Diagram" /></td>
<td>Set selection</td>
<td>Port nn:20 [TO0 Sel] = Port 0:935 [Drive Status 1], bit 7 = Faulted</td>
<td>Port nn:20 [TO0 Sel] = Port 10/11:354 [Motor Side Sts 1], bit 7 = Faulted</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>Port nn:5 [Dig Out Sts]</td>
<td>Port nn:5 [Dig Out Sts]</td>
</tr>
</tbody>
</table>

(1) 20-750-2263C-1R2T  
(2) In this table, nn is a variable to denote that this parameter is for whichever port you are using.

### Digital Output (External Supply) 

<table>
<thead>
<tr>
<th>Connection Example</th>
<th>Required Parameter Changes</th>
<th>PowerFlex 753 and PowerFlex 755</th>
<th>PowerFlex TotalFORCE Drive Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Connection Diagram" /></td>
<td>Set selection</td>
<td>Port nn:20 [TO0 Sel] = Port 0:935 [Drive Status 1], bit 7 = Faulted</td>
<td>Port nn:20 [TO0 Sel] = Port 10/11:354 [Motor Side Sts 1], bit 7 = Faulted</td>
</tr>
<tr>
<td></td>
<td>View results</td>
<td>Port nn:5 [Dig Out Sts]</td>
<td>Port nn:5 [Dig Out Sts]</td>
</tr>
</tbody>
</table>

(1) In this table, nn is a variable to denote that this parameter is for whichever port you are using.
Auxiliary Power Supply Option Module (20-750-APS)

This section provides details for the auxiliary power supply option module, number 20-750-APS.

Auxiliary Power Supply Option Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Frame Size</th>
<th>Cat. No.</th>
<th>Used with PowerFlex Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Power Supply</td>
<td>24V Aux Power Supply</td>
<td>1…7</td>
<td>20-750-APS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>753</td>
</tr>
</tbody>
</table>

(1) PowerFlex 755 Frame Size 8 and above and PowerFlex 755T drives have an auxiliary power supply that is built into the drive.

Terminal Designations

Table 7 - TB1 Terminal Designations for the Auxiliary Power Supply Option Module (20-750-APS).

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP+</td>
<td>+24V Auxiliary Power</td>
<td>Connections for customer supplied power supply: 24V DC ±10%, 3 A, PELV or SELV.</td>
</tr>
<tr>
<td>AP–</td>
<td>Auxiliary Power Common</td>
<td></td>
</tr>
<tr>
<td>Sh</td>
<td>Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
</tr>
</tbody>
</table>

**IMPORTANT** The auxiliary power supply option module can be installed in any option slot (port). Due to its size, the module extends over and blocks the adjacent port. Therefore, installation in slot (port) 8 is recommended.

Connector Cable

A connector cable is provided with auxiliary power supply option modules for use in PowerFlex 753 and PowerFlex 755, Frame 1 drives. The cable is used to connect the module to the backplane when installed on the upper control pod brackets.

**IMPORTANT** The cable is not used with PowerFlex 755 Frame 2 and larger drives.
Single Incremental Encoder Module

This section provides details for the single incremental encoder option module.

Single Incremental Encoder Feedback Option

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>Used with PowerFlex Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental Encoder</td>
<td>20-750-ENC-1</td>
<td>X(1) 755/755TR</td>
</tr>
</tbody>
</table>

(1) Homing and registration functions are not supported when using this device with Studio 5000 Logix Designer embedded motion instructions. To use these functions, the Universal Feedback Board (20-750-UFB-1) must be used.

Table 8 - Single Incremental Encoder Specifications

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Differential or Single Ended operation, Constant Current Sink operation, approx 10 mA</td>
</tr>
<tr>
<td></td>
<td>5V DC min to 15V DC max sourcing 10 mA</td>
</tr>
<tr>
<td></td>
<td>Minimum high state voltage of 3.5V DC</td>
</tr>
<tr>
<td></td>
<td>Maximum low state voltage of 0.4V DC</td>
</tr>
<tr>
<td>Maximum Cable Length</td>
<td>30 m (100 ft) at 5V, 183 m (600 ft) at 12V</td>
</tr>
<tr>
<td>Maximum Input Frequency</td>
<td>250 kHz</td>
</tr>
</tbody>
</table>
Terminal Designations for Single Incremental Encoder Modules

Table 9 lists the terminal designations for the Single Incremental Encoder module.

Table 9 - TB1 Terminal Designations

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sd</td>
<td>Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
</tr>
<tr>
<td>12</td>
<td>+12V DC Power</td>
<td>Power supply for encoder 250 mA.</td>
</tr>
<tr>
<td>Com</td>
<td>Common</td>
<td>+12V and +5V Common.</td>
</tr>
<tr>
<td>5</td>
<td>+5V DC Power</td>
<td>Power supply for encoder 250 mA.</td>
</tr>
<tr>
<td>A</td>
<td>Encoder A</td>
<td>Single channel or quadrature A input.</td>
</tr>
<tr>
<td>A-</td>
<td>Encoder A (NOT)</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Encoder B</td>
<td>Quadrature B input.</td>
</tr>
<tr>
<td>B-</td>
<td>Encoder B (NOT)</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>Encoder Z</td>
<td>Pulse or marker input.</td>
</tr>
<tr>
<td>Z-</td>
<td>Encoder Z (NOT)</td>
<td></td>
</tr>
<tr>
<td>+24</td>
<td>+24V</td>
<td>Power source for homing input.</td>
</tr>
<tr>
<td>24C</td>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>HmC</td>
<td>Homing Input Common</td>
<td>Captures the AB edge counter.</td>
</tr>
<tr>
<td>Hm</td>
<td>Homing Input</td>
<td></td>
</tr>
</tbody>
</table>
## Wiring Examples for Single Encoder Module

Table 10 shows wiring examples using the Single Encoder Module.

### Table 10 - Single Incremental Encoder Sample Wiring

<table>
<thead>
<tr>
<th>I/O</th>
<th>Connection Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Encoder Power by Drive</strong></td>
<td></td>
</tr>
<tr>
<td>12V DC, 250 mA</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>5V DC, 250 mA</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Separately Powered Encoder</strong></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td><strong>Encoder Signal – Single-Ended, Dual Channel</strong></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>I/O</td>
<td>Connection Example</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>Encoder Signal — Differential, Dual Channel</strong></td>
<td>![Encoder Signal Diagram]</td>
</tr>
<tr>
<td><strong>Homing Signal — Internal Drive Power</strong></td>
<td>![Homing Signal Internal Drive Power Diagram]</td>
</tr>
<tr>
<td><strong>Homing Signal — External Power</strong></td>
<td>![Homing Signal External Power Diagram]</td>
</tr>
</tbody>
</table>
Dual Incremental Encoder Option Module

This section provides details for the dual incremental encoder option module.

### Dual Incremental Encoder Feedback Option

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>Used with PowerFlex Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Incremental Encoder</td>
<td>20-750-DENC-1</td>
<td>X</td>
</tr>
</tbody>
</table>

(1) Homing and registration functions are not supported when using this device with Studio 5000 Logix Designer embedded motion instructions. To use these functions, the Universal Feedback Board (20-750-UFB-1) must be used.

### Table 11 - Dual Incremental Encoder Jumper Settings

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Enabled Position</th>
<th>Storage Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3 - Safety Jumper</td>
<td>Enables use with speed monitoring safety option (20-750-S1).</td>
<td></td>
</tr>
<tr>
<td>P4 - 12V Jumper</td>
<td>Enables use with 12V supply in 'Enabled' position and 5V supply in 'Storage' position.</td>
<td></td>
</tr>
</tbody>
</table>

### Table 12 - Dual Incremental Encoder Specifications

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Differential or Single Ended operation, Constant Current Sink operation, approximately 10 mA</td>
</tr>
<tr>
<td></td>
<td>5V DC minimum to 15V DC maximum sourcing 10 mA</td>
</tr>
<tr>
<td></td>
<td>Minimum high state voltage of 3.5V DC</td>
</tr>
<tr>
<td></td>
<td>Maximum low state voltage of 0.4V DC</td>
</tr>
<tr>
<td>Maximum Cable Length</td>
<td>30 m (100 ft) at 5V, 183 m (600 ft) at 12V</td>
</tr>
<tr>
<td>Maximum Input Frequency</td>
<td>250 kHz</td>
</tr>
</tbody>
</table>

**IMPORTANT**

The 20-750-DENC-1 card can function in slot 7 or 8. However, if inserted in these slots the HIM cradle cannot shut all the way.

**IMPORTANT**

PowerFlex 753 drives and PowerFlex 755 drives support the use of the Dual Incremental Encoder option module when used with the Safe Speed Monitor option module (catalog number 20-750-S1).

**IMPORTANT**

When used with the Safe Speed Monitor option, both modules must be installed on the same backplane using slots (ports) 4, 5, or 6.
Terminal Designations for the Dual Incremental Encoder

Table 13 lists the terminal designations for the Dual Incremental Encoder.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES</td>
<td>+12V or +5V DC Power</td>
<td>Power supply for Encoder 0, 250 mA.</td>
</tr>
<tr>
<td>EC</td>
<td>Common</td>
<td>+12V and +5V Encoder 0, common</td>
</tr>
<tr>
<td>0A</td>
<td>Encoder 0: A</td>
<td>Single channel or quadrature A input.</td>
</tr>
<tr>
<td>0A-</td>
<td>Encoder 0: A (NOT)</td>
<td></td>
</tr>
<tr>
<td>0B</td>
<td>Encoder 0: B</td>
<td>Quadrature B input.</td>
</tr>
<tr>
<td>0B-</td>
<td>Encoder 0: B (NOT)</td>
<td></td>
</tr>
<tr>
<td>0Z</td>
<td>Encoder 0: Z</td>
<td>Pulse or marker input.</td>
</tr>
<tr>
<td>0Z-</td>
<td>Encoder 0: Z (NOT)</td>
<td></td>
</tr>
<tr>
<td>Sd</td>
<td>Encoder Shield</td>
<td>Terminating point for wire shields when an EMC plate or conduit box is not installed.</td>
</tr>
<tr>
<td>24</td>
<td>+24V</td>
<td>Power source for homing input.</td>
</tr>
<tr>
<td>Hm</td>
<td>Homing Input</td>
<td>Captures the AB edge counter.</td>
</tr>
<tr>
<td>HmC</td>
<td>Homing Input Common</td>
<td></td>
</tr>
</tbody>
</table>
Wiring Examples for Dual Incremental Encoder Option Module Connections

This section provides a wiring example for the dual incremental encoder option module.

Differential Dual Channel with Z Channel

Universal Feedback Option Module

This section provides details for the universal feedback option module (only for PowerFlex 755 drives).

| IMPORTANT | Only PowerFlex 755 drives support the use of the Universal Feedback option module when used with the Safe Speed Monitor option module (catalog number 20-750-S1). |

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>Used with PowerFlex Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal Feedback (includes Stegmann, Heidenhain, SSI, Biss, 5V Incremental)</td>
<td>20-750-UFB-1</td>
<td>753/755 X 755TL/755TR</td>
</tr>
</tbody>
</table>

(1) Only for PowerFlex 755 drives.
Table 14 - Universal Feedback Incremental AquadB Encoder

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Differential or single-ended operation, constant current sink operation, approximately 10 mA</td>
</tr>
<tr>
<td></td>
<td>3.5V DC minimum to 7.5V DC maximum sourcing 10 mA</td>
</tr>
<tr>
<td></td>
<td>Minimum high state voltage of 3.5V DC</td>
</tr>
<tr>
<td></td>
<td>Maximum low state voltage of 0.4V DC</td>
</tr>
<tr>
<td>Maximum Cable Length</td>
<td>30 m (100 ft) at 5V</td>
</tr>
<tr>
<td>Maximum Input Frequency</td>
<td>250 kHz</td>
</tr>
</tbody>
</table>

Table 15 - Supported Encoders

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Heidenhain (EnDat)</th>
<th>SSI</th>
<th>Stegmann (Hiperface)</th>
<th>BiSS</th>
<th>Stahl (Linear)</th>
<th>Temposonics (Linear)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoder Voltage Supply</td>
<td>5V at 250 mA</td>
<td>10.5V at 250 mA</td>
<td>10.5V at 250 mA</td>
<td>10.5V at 250 mA</td>
<td>External Supplied 24V</td>
<td>External Supplied 24V</td>
</tr>
<tr>
<td>High-resolution Signal</td>
<td>Sine/Cosine 1V P-P</td>
<td>Sine/Cosine 1V P-P</td>
<td>Sine/Cosine 1V P-P</td>
<td>Sine/Cosine 1V P-P</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Maximum Cable length</td>
<td>100 m (328.1 ft)</td>
<td>100 m (328.1 ft)</td>
<td>90 m (295.3 ft)</td>
<td>100 m (328.1 ft)</td>
<td>100 m (328.1 ft)</td>
<td>100 m (328.1 ft)</td>
</tr>
<tr>
<td>Update Rate&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>102.4 µs</td>
<td>102.4 µs</td>
<td>102.4 µs</td>
<td>102.4 µs</td>
<td>0.5/1.0/1.5/2.0 ms</td>
<td>0.5/1.0/1.5/2.0 ms</td>
</tr>
<tr>
<td>Maximum Input Frequency</td>
<td>163.8 kHz</td>
<td>163.8 kHz</td>
<td>163.8 kHz</td>
<td>163.8 kHz</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> The Universal Feedback encoder option module acquires the position with the update rates displayed.

**IMPORTANT** Only PowerFlex 755 drives support the use of the Universal Feedback option module when used with the Safe Speed Monitor option module (catalog number 20-750-S1).
### Table 16 - Universal Feedback Option Module DIP Switch Settings – Safety Application

<table>
<thead>
<tr>
<th>Safety Channel Selection</th>
<th>DIP Switch Settings (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Safety Channel</strong></td>
<td></td>
</tr>
<tr>
<td>To connect feedback signals to the primary safety channel, set:</td>
<td></td>
</tr>
<tr>
<td>S1 sliders to ON</td>
<td></td>
</tr>
<tr>
<td>S2 sliders to OFF</td>
<td></td>
</tr>
<tr>
<td>S3 slider to ON</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Safety Channel</strong></td>
<td></td>
</tr>
<tr>
<td>To connect feedback signals to the secondary safety channel, set:</td>
<td></td>
</tr>
<tr>
<td>S1 sliders to OFF</td>
<td></td>
</tr>
<tr>
<td>S2 sliders to ON</td>
<td></td>
</tr>
<tr>
<td>S3 slider to ON</td>
<td></td>
</tr>
<tr>
<td><strong>Primary and Secondary Safety Channels</strong></td>
<td></td>
</tr>
<tr>
<td>To connect feedback signals to both the primary and secondary safety channels, set:</td>
<td></td>
</tr>
<tr>
<td>S1 sliders to ON</td>
<td></td>
</tr>
<tr>
<td>S2 sliders to ON</td>
<td></td>
</tr>
<tr>
<td>S3 slider to ON</td>
<td></td>
</tr>
</tbody>
</table>

(1) DIP switches only function when safety channels are used.
**Terminal Designations for Universal Feedback Option Module**

*Table 17* and *Table 18* list the terminal designations for TB1 and TB2 of the Universal Feedback Option module.

### Table 17 - TB1 Terminal Designations

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>–Sn</td>
<td>Sine (–)</td>
<td>Positive and negative terminals for Sine and Cosine signals. For use with 5V incremental encoders only.</td>
</tr>
<tr>
<td>+Sn</td>
<td>Sine (+)</td>
<td></td>
</tr>
<tr>
<td>–Cs</td>
<td>Cosine (–)</td>
<td></td>
</tr>
<tr>
<td>+Cs</td>
<td>Cosine (+)</td>
<td></td>
</tr>
<tr>
<td>Is</td>
<td>Inner Shield</td>
<td>Heidenhain inner shield terminal.</td>
</tr>
<tr>
<td>Os</td>
<td>Outer Shield</td>
<td>Cable shield terminal.</td>
</tr>
<tr>
<td>–Xc</td>
<td>Channel X Clock (–)</td>
<td>Negative clock terminal (channel X).</td>
</tr>
<tr>
<td>+Xc</td>
<td>Channel X Clock (+)</td>
<td>Positive clock terminal (channel X).</td>
</tr>
<tr>
<td>–Xd</td>
<td>Channel X Data (–)</td>
<td>Negative data terminal (channel X).</td>
</tr>
<tr>
<td>+Xd</td>
<td>Channel X Data (+)</td>
<td>Positive data terminal (channel X).</td>
</tr>
<tr>
<td>–Hf</td>
<td>Heidenhain Supply Feedback (–)</td>
<td>For incremental feedback applications, tie terminal –Hf to 5c and terminal +Hf to +5 for proper voltage regulation.</td>
</tr>
<tr>
<td>+Hf</td>
<td>Heidenhain Supply Feedback (+)</td>
<td></td>
</tr>
<tr>
<td>5c</td>
<td>Common</td>
<td>+5V common.</td>
</tr>
<tr>
<td>+12c</td>
<td>Common</td>
<td>+12V common.</td>
</tr>
<tr>
<td>–A</td>
<td>Encoder A (NOT)</td>
<td>Single channel or quadrature A input or encoder output. (1)</td>
</tr>
<tr>
<td>A</td>
<td>Encoder A</td>
<td></td>
</tr>
<tr>
<td>–B</td>
<td>Encoder B (NOT)</td>
<td>Quadrature B input or encoder output. (1)</td>
</tr>
<tr>
<td>B</td>
<td>Encoder B</td>
<td></td>
</tr>
<tr>
<td>–Z</td>
<td>Encoder Z (NOT)</td>
<td>Pulse or marker input or encoder output. (1)</td>
</tr>
<tr>
<td>Z</td>
<td>Encoder Z</td>
<td></td>
</tr>
</tbody>
</table>

(1) Inputs support 5V incremental encoders only. The encoder outputs differential voltage is 3.3V.
Table 18 - TB2 Terminal Designations

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Hm</td>
<td>Home Input (-)</td>
<td>12V DC at 9 mA to 24V DC at 40 mA.</td>
</tr>
<tr>
<td>+Hm</td>
<td>Home Input (+)</td>
<td></td>
</tr>
<tr>
<td>-R0</td>
<td>Registration Input 0 (-)</td>
<td>Positive and negative encoder registration terminals.</td>
</tr>
<tr>
<td>+R0</td>
<td>Registration Input 0 (+)</td>
<td>12V DC at 9 mA to 24V DC at 40 mA.</td>
</tr>
<tr>
<td>-R1</td>
<td>Registration Input 1 (-)</td>
<td></td>
</tr>
<tr>
<td>+R1</td>
<td>Registration Input 1 (+)</td>
<td></td>
</tr>
<tr>
<td>-Yc</td>
<td>Channel Y Clock (-)</td>
<td>Negative clock terminal (channel Y).</td>
</tr>
<tr>
<td>+Yc</td>
<td>Channel Y Clock (+)</td>
<td>Positive clock terminal (channel Y).</td>
</tr>
<tr>
<td>-Yd</td>
<td>Channel Y Data (-)</td>
<td>Negative data terminal (channel Y).</td>
</tr>
<tr>
<td>+Yd</td>
<td>Channel Y Data (+)</td>
<td>Positive data terminal (channel Y).</td>
</tr>
</tbody>
</table>

**IMPORTANT** Only one linear feedback device can be connected to the option module. Wire the device to either channel X on TB1, or channel Y on TB2.

Motor Feedback Wiring

Motor Power Cables

For detailed information on 2090-Series flying lead motor cables, see the Kinetix Motion Accessories Specifications Technical Data, publication GMC-TD004.

Feedback Device Resolution

When using a PowerFlex 755 drive to control a permanent magnet motor, the motor feedback device must have a resolution so that the number of pulses per revolution (PPR) is an exponent of 2.

For example: 512, 1024, 2048, 4096, 8192...524288, 1048576...

Motor Feedback Wiring Examples

This section includes motor, feedback device, and cable wiring examples.
Heidenhain EnDat Angle Encoder with Internal Power Supply

Universal Feedback Option
Module TB1

Heidenhain EnDat Encoder TB

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 1 ‘EnDat SC’.

IMPORTANT
See the installation instructions that are supplied with encoder for additional information.

Heidenhain EnDat Angle Encoder with External Power Supply

Universal Feedback Option
Module TB1

Heidenhain EnDat Encoder TB

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 1 ‘EnDat SC’.

IMPORTANT
See the installation instructions that are supplied with encoder for additional information. The external power supply must be 3.6V…5.25V, maximum 350 mA. TB1-14 (Power+) and TB1-13 (Power–) must not be connected to the encoder. The brown/green and white/green conductors must be connected to the external power supply. If the external power supply does not have sense connections, the supply feedback (sense) connection is still made from the encoder to the universal board (TB1-11, 12).
Heidenhain Non-EnDat Rotary Encoder with Internal Power Supply

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 11 ‘SinCos Only’.

IMPORTANT See the installation instructions that are supplied with encoder for additional information.

Heidenhain EnDat Rotary Encoder (ECN 412 EnDat01) with Internal Power Supply

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 1 ‘EnDat SC’.

IMPORTANT See the installation instructions that are supplied with encoder for additional information.
460V MP-Series™, HPK-Series, or Allen-Bradley® 1326AB-Series Motor and a Stegmann Rotary or Rotary Encoder Connected With a 2090-CFBM7DF-CEAAXX (Non-flex) or -CEAFXX (Flex)

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 2 'Hiperface SC'.

**IMPORTANT** Do not use 120 volts with the motor thermostat.

**IMPORTANT** The Thermal Switch cannot be accessed using 2090-XXNFMP-SXX or 2090-CFBM7XX series cables.

Stegmann Rotary Encoder Connected With a 1326-CECU-XXL-XXX Cable

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 2 'Hiperface SC'.
Stegmann Rotary Encoder Connected With a Pre-attached, Shielded, Twisted-pair Cable

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 2 'Hiperface SC'.

Stegmann Rotary Encoder Connected With a Shielded, Twisted-pair Cable with an 8-pin Berg Style Connector

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 2 'Hiperface SC'.
Stegmann Rotary Encoder Connected With a Shielded, Twisted-pair Cable with a 10-pin MS-Style Connector

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 2 'Hiperface SC'.

Stegmann Rotary Encoder Connected With a Shielded, Twisted-pair Cable with a 12-pin DIN Style Connector

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 2 'Hiperface SC'.
Linear Sensor with MDI RG Connector or P Integral Cable

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 17 'LinStahl Ch Y' or 19 'LinSSI Ch Y'.

Registration Sensor

See Universal Feedback parameters 90...129.
Simulated Incremental Encoder Output

Universal Feedback Option
Module TB1

-5n
+5n
-5s
+5s
-5c
+5c

Set Universal Feedback parameter P80 [Enc Out Sel] to 2 'Sine Cosine', 3 'Channel X', or 4 'Channel Y' as needed.

Differential Dual Channel with Z Channel with 5V Internal Supply

Universal Feedback Option
Module TB1

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 12 'Inc A B Z'.

Incremental Encoder TB

Shield

DC Return
DC+ Input
/Enc A
Enc A
/Enc B
Enc B
/Enc Z
Enc Z

Customer Equipment
Differential Dual Channel with Z Channel with External Power Supply

Set Universal Feedback parameter P6 [FB0 Device Sel] or P36 [FB1 Device Sel] to 12 'Inc A B Z'.
### Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
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<tr>
<td>PowerFlex 750-Series Option Modules Installation Instructions, publication 750-IN002</td>
<td>Provides information on installing PowerFlex 750-Series Option Modules</td>
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<tr>
<td>PowerFlex 750-Series Products with TotalFORCE Control Installation Instructions, publication 750-IN100</td>
<td>Provides procedures for the mechanical and electrical installation of PowerFlex 750-Series products with TotalFORCE control. This manual includes the basic steps to transport, position, and join the product enclosures, to make internal electrical connections, to connect power and the motor, and to wire basic I/O.</td>
</tr>
<tr>
<td>PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001</td>
<td>Provides information on the basic steps for mechanical installation and for connecting incoming power, the motor, and basic I/O to the PowerFlex 750-Series Adjustable Frequency AC drive.</td>
</tr>
<tr>
<td>Network Communication Option Module Installation Instructions, publication 750COM-IN002</td>
<td>Provides information on the installation of PowerFlex 750-Series Network Communication modules.</td>
</tr>
<tr>
<td>PowerFlex 750-Series Safe Speed Monitor Option Module Safety Reference Manual, publication 750-RM001</td>
<td>Provides detailed information on installation, set-up, and operation of the 750-Series safety option modules.</td>
</tr>
<tr>
<td>PowerFlex 750-Series Safe Torque Off Option Module User Manual, publication 750-UM002</td>
<td>Provides information on the basic steps for mechanical installation and for connecting incoming power, the motor, and basic I/O to the PowerFlex 750-Series Adjustable Frequency AC drive.</td>
</tr>
<tr>
<td>PowerFlex 750-Series ATEX Option Module User Manual, publication 750-UM003</td>
<td>Provides information on the installation of PowerFlex 750-Series Network Communication modules.</td>
</tr>
<tr>
<td>PowerFlex 755/755T Integrated Safety Functions Option Module, publication 750-UM005</td>
<td>Provides information on the installation of PowerFlex 750-Series Network Communication modules.</td>
</tr>
<tr>
<td>PowerFlex Drives with TotalFORCE Control Programming Manual, publication 750-100</td>
<td>Provides the basic information that is needed to start up and troubleshoot PowerFlex 750-Series Products with TotalFORCE Control.</td>
</tr>
<tr>
<td>PowerFlex 750-Series AC Drives Programming Manual, publication 750-001</td>
<td>Provides the basic information that is needed to start up and troubleshoot PowerFlex 750-Series Adjustable Frequency AC Drives.</td>
</tr>
<tr>
<td>Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1</td>
<td>Provides general guidelines for installing a Rockwell Automation™ industrial system.</td>
</tr>
<tr>
<td>Product Certifications website, rok.auto/certifications</td>
<td>Provides declarations of conformity, certificates, and other certification details.</td>
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You can view or download publications at [http://www.rockwellautomation.com/global/literature-library/overview.page](http://www.rockwellautomation.com/global/literature-library/overview.page). To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.
Rockwell Automation Support

Use the following resources to access support information.

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<tr>
<td>Direct Dial Codes</td>
<td>Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.</td>
<td><a href="http://www.rockwellautomation.com/global/support/direct-dial.page">http://www.rockwellautomation.com/global/support/direct-dial.page</a></td>
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Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002___en-c.pdf.


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