# Analog Input Modules



## P3-04ADS $724.00

***Isolated Voltage/Current Analog Input***

The P3-04ADS Isolated Voltage/Current Analog Input Module provides four isolated channels for receiving ± 10 VDC, 0 to 5 VDC, 0 to 10 VDC and 0 to 20mA signals.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

| Input Specifications | |
|---|---|
| ***Input Channels*** | 4 Channel-to-Channel Isolated |
| ***Module Signal Input Ranges**** | ±10VDC, 0–5 VDC, 0–10 VDC,<br>0–20 mA |
| ***Resolution*** | 15 bit + sign (0-10V), 16-bit (all others) |
| ***Value of LSB (least significant bit)*** | ±10V = 305µV,<br>0–5 V = 152µV,<br>0–10 V = 305µV,<br>0–20 mA = 0.610 µA |
| ***Data Range*** | 0 to 65535 counts unipolar<br>-32768 to +32767 counts bipolar |
| ***Isolated Loop Pwr for Ext. Xmitters*** | 20–30 VDC, current limited to < 30mA |
| ***Input Type*** | Differential |
| ***Common Mode Rejection Ratio*** | -75dB min. @ DC, -500kHz |
| ***Maximum Continuous Overload*** | ±31mA., current input<br>±100V, voltage input |
| ***Input Impedance*** | 250kV ±5% voltage input<br>250V ±0.1% ¼W. current input |
| ***Filter Characteristics*** | Active low pass, -3dB @ 30Hz,<br>-10dB @ 55Hz |
| ***Sample Duration Time*** | 1.28 ms per channel<br>(does not include ladder scan time) |
| ***All Channel Update Rate*** | 5.2 ms |
| ***Open Circuit Detection Time*** | Zero reading within 1s |
| ***Conversion Method*** | Successive Approximation |
| ***Accuracy vs. Temperature*** | ±25 PPM / °C max |
| ***Maximum Inaccuracy*** | 0.1% of range voltage, 0.2% of range current<br>(including temperature drift) |
| ***Linearity Error (End to End)*** | ±0.025% of range maximum,<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ±0.02% of range maximum after 10 min. |
| ***Full Scale Calibration Error (not including Offset)*** | ±0.05% of range maximum |
| ***Offset Calibration Error*** | ±0.05% of range maximum |
| ***Max Crosstalk*** | -96 dB 1 LSB |
| ***Channel to Channel Isolation*** | 900VDC applied for 1s |
| ***Recommended Fuse (external)*** | Edison S500-32-R, 0.032A fuse<br>on current inputs only |

***Select any two ranges via hardware jumpers. Range setting is for channels 1 and 3; and channels 2 and 4.**

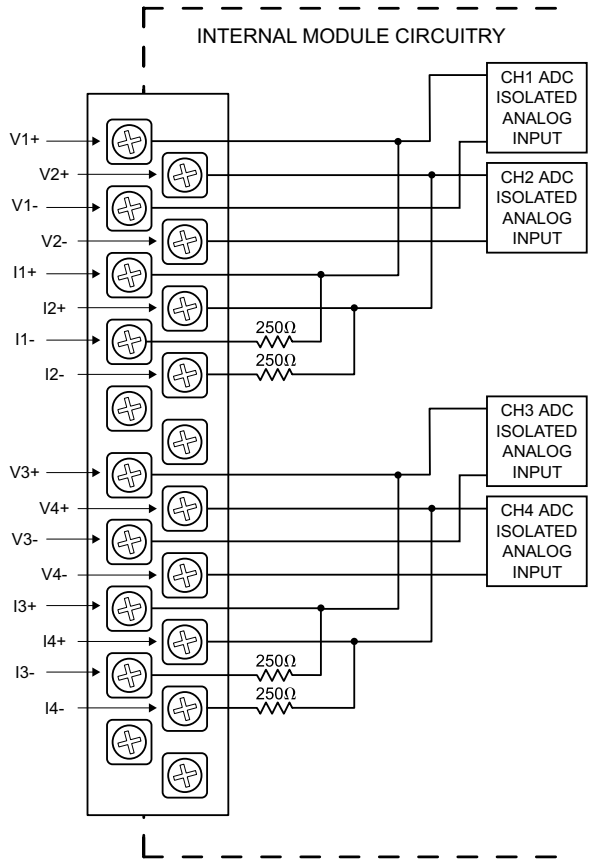
| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 2.6 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 61g (2.14 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

# Analog Input Modules

## P3-04ADS (cont'd)

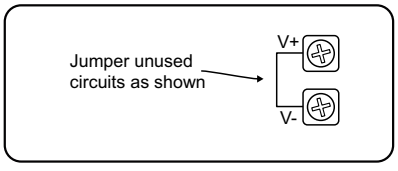
***Wiring Diagrams***

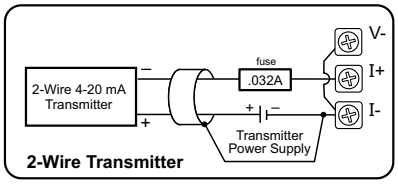



### Current Input Circuits

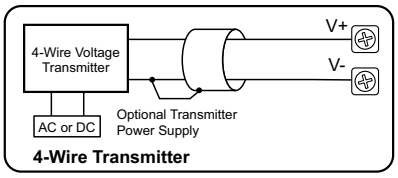
An Edison S500-32-R 0.032A fast-acting fuse is recommended for all 4-20mA current loops.

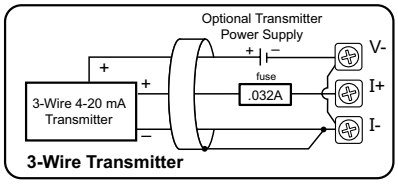
**Unused Circuits**

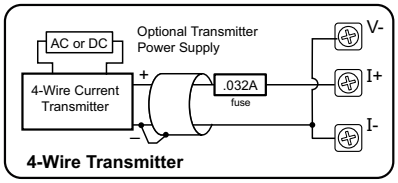



**Voltage Input Circuits**




NOTES:
1. Shield connected to signal source common.
2. If current is chosen, I- **MUST** be jumpered to V-. For example, when using 4-20 mA source for Input 3, I3- must be connected to V3-.

# Analog Input Modules

## P3-08AD $393.00

***Voltage/Current Input***

The P3-08AD Voltage/Current Analog Input Module provides 8 channels for receiving ±10VDC, ±5VDC, 0 to 5 VDC, 0 to 10VDC, and 0 to 20mA signals.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

| Input Specifications | |
|---|---|
| ***Input Channels*** | 8 |
| ***Module Signal Input Ranges*** | ±10VDC, ±5VDC, 0–5 VDC, 0–10 VDC,<br>0–20mA |
| ***Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | 1 LSB = 1 count<br>±10V = 305µV<br>±5V = 152µV<br>0–5V = 76µV<br>0–10V = 152µV<br>0–20mA = 0.305 µA |
| ***Data Range*** | 0 to 65535 counts unipolar<br>-32768 to +32767 counts bipolar |
| ***Maximum Continuous Overload*** | ±31mA, current input<br>±100V, voltage input |
| ***Input Impedance*** | 1MΩ ±10% voltage input<br>250Ω ±0.1% 1/4 W. current input |
| ***Hardware Filter Characteristics*** | Low pass 1st order, -3dB@48Hz |
| ***Sample Duration Time*** | 455µs per channel<br>(does not include ladder scan time) |
| ***All Channel Update Rate*** | 4ms |
| ***Open Circuit Detection Time*** | Zero reading within 1s (current input only) |
| ***Conversion Method*** | Successive approximation |
| ***Accuracy vs. Temperature*** | ±10PPM / °C maximum |
| ***Maximum Inaccuracy*** | 0.1% of range voltage, 0.2% of range current (including temperature drift) |
| ***Linearity Error (end to end)*** | ±0.01% of range max., ±10V & ±5V<br>±0.015% of range max., 0–10 V, 0–5 V &<br>0–20 mA<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ±0.035% of range (after 10 min. warmup) |
| ***Full Scale Calibration Error (not including offset)*** | ±0.1% of range maximum |
| ***Offset Calibration Error*** | ±0.065% of range maximum |
| ***Max Crosstalk*** | -96dB |
| ***Recommended Fuse (external)*** | Edison S500-32-R, .032A fuse<br>on current inputs only |
| ***External DC Power Required*** | 24VDC (-20% / + 25%) 33mA |

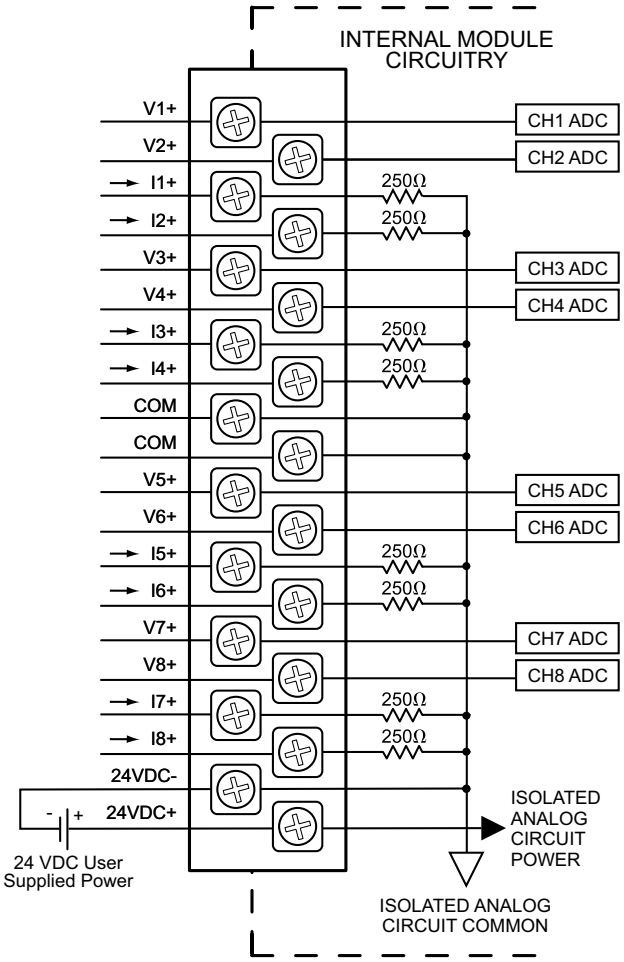
| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 1.1 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

# Analog Input Modules

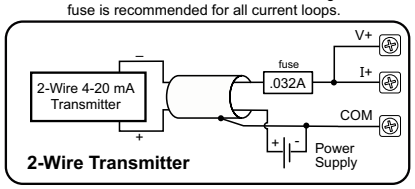
## P3-08AD (cont'd)

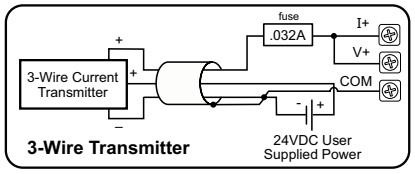
***Wiring Diagrams***

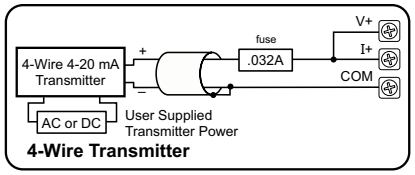



**Current Sinking Input Circuits**

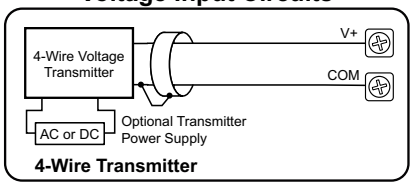
An Edison S500-32-R 0.032A fast-acting fuse is recommended for all current loops.

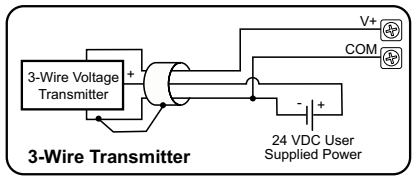



**Voltage Input Circuits**



# Analog Input Modules

## P3-16AD-1 $535.00

***Current Analog Input***
The P3-16AD-1 Current Analog Input Module provides sixteen channels for receiving current sinking 0 to 20mA input signals.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

WARNING: Explosion hazard – Substitution of components may impair suitability for Class I, Division 2.

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Input Specifications | |
|---|---|
| ***Input Channels*** | 16 sinking |
| ***Module Signal Input Range*** | 0–20mA |
| ***Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | 0–20mA = 0.305µA per count<br>(1 LSB = 1 count) |
| ***Data Range*** | 0–65535 counts |
| ***Input Type*** | Single-ended (1 common) |
| ***Maximum Continuous Overload*** | ±31mA |
| ***Input Impedance*** | 250Ω ±0.1% ¼W |
| ***Filter Characteristics*** | Low Pass, -3dB @ 100Hz |
| ***Sample Duration Time*** | 7ms per channel<br>(does not include ladder scan time) |
| ***All Channel Update Rate*** | 112ms |
| ***Open Circuit Detection Time*** | Zero reading within 1s |
| ***Conversion Method*** | Successive approximation |
| ***Accuracy vs. Temperature*** | ±25PPM / °C maximum |
| ***Maximum Inaccuracy*** | 0.1% of range<br>(including temperature drift) |
| ***Linearity Error (end to end)*** | ±10 LSB maximum (±0.015% of range)<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ±10 LSB |
| ***Full Scale Calibration Error (not including offset)*** | ±10 LSB maximum (±0.015% of range) |
| ***Offset Calibration Error*** | ±10 LSB maximum |
| ***Max Crosstalk*** | -76dB, ±10 LSB |
| ***Recommended Fuse (external)*** | Edison S500-32-R, 0.032 A fuse |
| ***External DC Power Required*** | 24VDC (-20% / + 25%) 20mA |

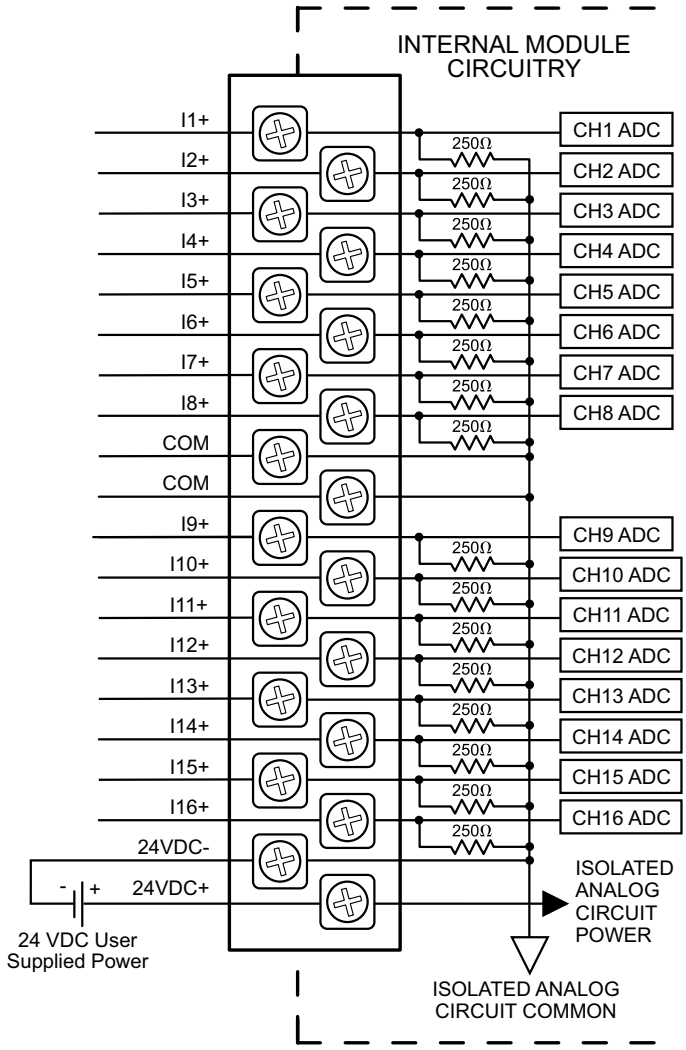
| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 2.1 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

# Analog Input Modules

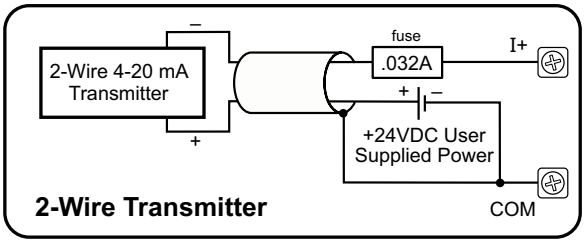
## P3-16AD-1 (cont'd)

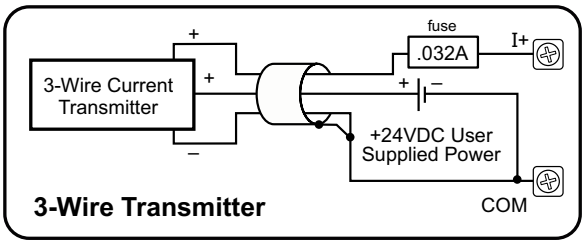
***Wiring Diagrams***

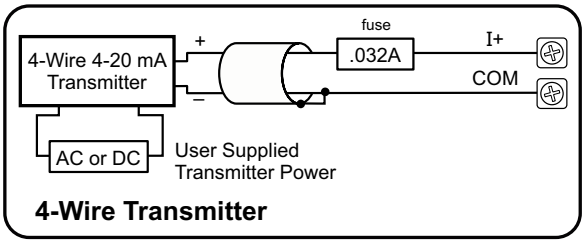



### Current Input Circuits

An Edison S500-32-R 0.032A fast-acting fuse is recommended for current loops.




Note: Do not connect both ends of shield.

# Analog Input Modules

## P3-16AD-2 $524.00

***Voltage Analog Input***
The P3-16AD-2 Voltage Analog Input Module provides sixteen channels for receiving 0 to 10 VDC signals.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Input Specifications | |
|---|---|
| ***Input Channels*** | 16 |
| ***Module Signal Input Range*** | 0–10 VDC |
| ***Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | 0–10 VDC = 152µV per count<br>(1 LSB = 1 count) |
| ***Data Range*** | 0 to 65535 counts |
| ***Input Type*** | Single-ended (one common) |
| ***Maximum Continuous Overload*** | ±100V |
| ***Input Impedance*** | 250kΩ (typical) |
| ***Filter Characteristics*** | Low Pass, -3dB @ 100Hz |
| ***Sample Duration Time*** | 7ms per channel<br>(does not include ladder scan time) |
| ***All Channel Update Rate*** | 112ms |
| ***Open Circuit Detection Time*** | Zero reading within 1s |
| ***Conversion Method*** | Successive approximation |
| ***Accuracy vs. Temperature*** | ±25 PPM / °C maximum |
| ***Maximum Inaccuracy*** | 0.1% of range<br>(including temperature drift) |
| ***Linearity Error (end to end)*** | ±10 LSB maximum (±0.015% of range)<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ±10 LSB |
| ***Full Scale Calibration Error (not including offset)*** | ±10 LSB maximum (±0.015% of range) |
| ***Offset Calibration Error*** | ±10 LSB maximum |
| ***Max Crosstalk*** | -76dB, 10 LSB |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 41mA maximum |

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 1.4 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

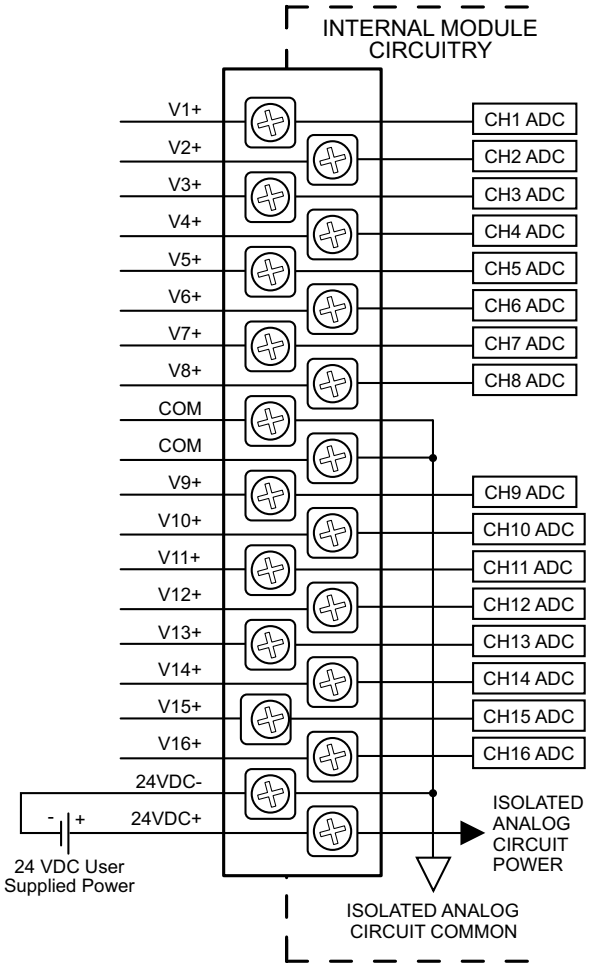
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

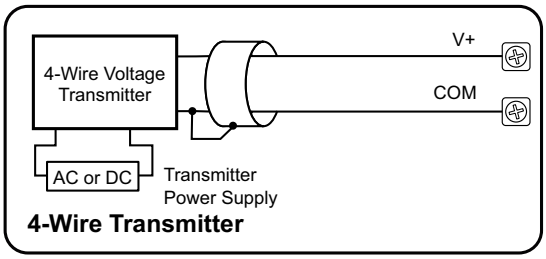
# Analog Input Modules

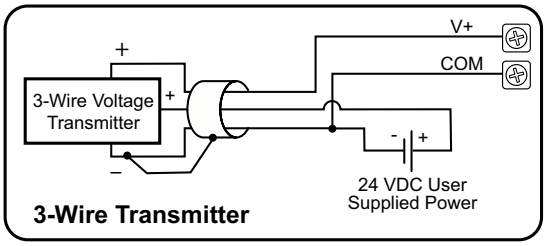
## P3-16AD-2 (cont'd)

***Wiring Diagrams***




**Voltage Input Circuits**




***Notes for maximum accuracy:***
***1. Jumper unused inputs to common.***

# Analog Input Modules

## P3-08RTD $581.00

***RTD Analog Input***
The P3-08RTD input module provides eight differential channels for receiving RTD and resistance input signals.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal Block P3-RTB and Cover included. Not compatible with Z/PLink.**

| RTD Input Specifications | |
|---|---|
| ***Input Channels*** | 8 Differential |
| ***Max. Common Mode Voltage*** | 5VDC |
| ***Data Format*** | Floating Point |
| ***Common Mode Rejection*** | -90dB min. @ DC, -150dB min. @ 50/60Hz |
| ***Absolute Maximum Ratings*** | Fault protected input, ±50V |
| ***Internal Resolution*** | 16-bit, ± 0.1°C or °F (up to 100Hz filter) |
| ***Input Ranges (RTD Types)*** | Pt100 -200°C/850°C (-328°F/1562°F)<br>Pt1000 -200°C/595°C (-328°F/1103°F)<br>JPt100 -100°C/450°C (-148°F/ 842°F)<br>10V Cu. -200°C/260°C (-328°F/ 500°F)<br>25V Cu. -200°C/260°C (-328°F/ 500°F)<br>120V Ni. -80°C/260°C (-112°F/ 500°F) |
| ***RTD Linearization*** | Automatic |
| ***Excitation Current (all ranges)*** | 200µA |
| ***Accuracy vs. Temperature*** | ±5PPM per °C (maximum) |
| ***Full Scale Calibration*** | ±1°C |
| ***Offset Calibration Error*** | ±1 count (negligible) |
| ***Linearity Error (end to end)*** | ±0.5°C maximum, ±0.01°C typical, Monotonic with no missing codes |
| ***Maximum Inaccuracy*** | ±1°C maximum (excluding RTD error) (including temperature drift) |
| ***Warm-up Time*** | 2 minutes for ±0.2% repeatability |
| ***Sample Duration (Single channel update rate)*** | Dependent on Digital Filter Settings -- 488ms @ 10Hz, 88ms @ 50Hz, 75ms @ 60Hz, 56ms @ 100Hz, 48ms @ 250Hz |
| ***Filter Characteristics*** | Digital filter cutoff frequencies: 10Hz, 50Hz, 60Hz, 100Hz, or 250Hz |
| ***All Channel Update Rate*** | Single channel update rate times the number of enabled channels |
| ***Open Circuit Detection Time*** | Positive full scale reading within 2s |
| ***Conversion Method*** | Sigma-Delta |
| ***External DC Power Required*** | None |

| Resistance Input Specifications | |
|---|---|
| ***Internal Resolution*** | 16-bit, .0015% of full scale range in ohms (up to 100Hz filter) |
| ***Resistance Input Ranges and CPU Resolution*** | 0–10,000Ω, Resolution 1Ω<br>0–6,250Ω, Resolution 0.1 Ω<br>0–3,125Ω, Resolution 0.1 Ω<br>0–1,562.5 Ω, Resolution 0.1 Ω<br>0–781.25 Ω, Resolution 0.1 Ω<br>0–390.625 Ω, Resolution 0.01 Ω<br>0–195.3125 Ω, Resolution 0.01 Ω |
| ***Accuracy vs. Temperature*** | ±25PPM per °C (maximum) |
| ***Full Scale Calibration*** | ± 0.02% of full scale range |
| ***Offset Calibration Error*** | ± 0.0015% of full scale range in ohms |
| ***Linearity Error (end to end)*** | ± 0.0015% of full scale range maximum at 25°C, Monotonic with no missing codes |
| ***Maximum Inaccuracy*** | ± 0.10% of full scale range |

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

| Diagnostics | |
|---|---|
| ***Module Diagnostics Failure*** | 1 bit per module |
| ***Module Not Ready*** | 1 bit per module |
| ***Channel Burn-out (RTD only)*** | 1 bit per channel |
| ***Under-range (RTD only)*** | 1 bit per channel |
| ***Over-range*** | 1 bit per channel |

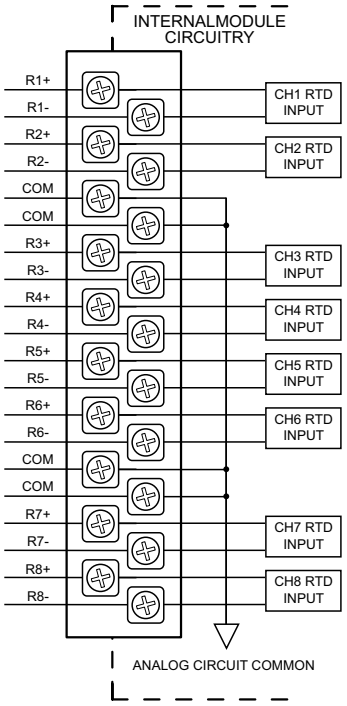
# Analog Input Modules

## P3-08RTD (cont'd)

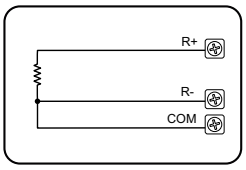
| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Heat Dissipation*** | 0.33 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (included).<br>The P3-08RTD module is not compatible with the ***ZIP***Link wiring system. |
| ***Terminal Type*** | 20-position removable terminal block (included) |
| ***Weight*** | 107.8 g (3.79 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

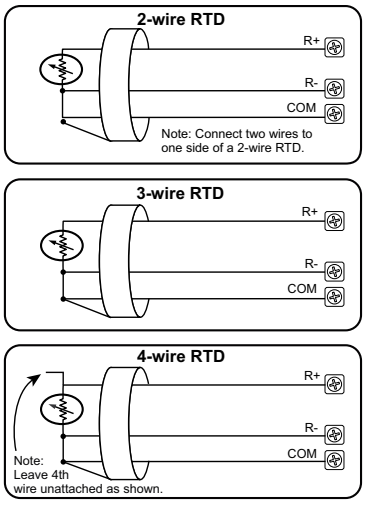
***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*




**Resistance Input**




**RTD Input Circuits**




### Notes for maximum accuracy:

1. For 2-wire RTD, attach third wire to module common.
2. R+, R-, and COM wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
3. Do not use cable shield as sensing wire.
4. When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
5. Jumper unused inputs to common.

# Analog Input Modules

## P3-08THM $448.00

***Thermocouple Analog Input***
The P3-08THM Thermocouple Input Module provides eight differential channels for receiving thermocouple and voltage input signals.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal Block P3-RTB and Cover included. Not compatible with *ZIP*Link.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

*** Use shielded, twisted thermocouple wire that matches the thermocouple type.**

| T/C Input Specifications | |
|---|---|
| ***Input channels*** | 8 differential |
| ***Data Format*** | Floating point |
| ***Common Mode Range*** | ± 1.25 V |
| ***Common Mode Rejection*** | 100dB @ DC and 130dB @ 60Hz |
| ***Input Impedance*** | >5M ohms |
| ***Maximum Ratings*** | Fault-protected inputs to ±50VDC |
| ***Resolution*** | 16-bit, ± 0.1°C or °F |
| ***Thermocouple Input Ranges*** | Type J -190° to 760°C (-310° to 1400°F);<br>Type E -210° to 1000°C (-346° to 1832°F);<br>Type K -150° to 1372°C (-238° to 2502°F);<br>Type R 65° to 1768°C (149° to 3214°F);<br>Type S 65° to 1768°C (149° to 3214°F);<br>Type T -230° to 400°C (-382° to 752°F);<br>Type B 529° to 1820°C (984° to 3308°F);<br>Type N -70° to 1300°C (-94° to 2372°F);<br>Type C 65° to 2320°C (149° to 4208°F); |
| ***Cold Junction Compensation*** | Automatic |
| ***Thermocouple Linearization*** | Automatic |
| ***Accuracy vs. Temperature*** | ±50PPM / °C maximum |
| ***Linearity Error*** | ±1°C maximum (±0.5 °C typical),<br>Monotonic with no missing codes |
| ***Maximum Inaccuracy*** | ±3°C Max (excluding thermocouple error)<br>(including temperature drift) |
| ***Warm-up Time*** | 30 Minutes for ±1°C Repeatability<br>2 minutes to reach voltage specifications |
| ***Sample Duration Time*** | 270ms |
| ***All Channel Update Rate*** | 2.16 s |
| ***Open Circuit Detection Time*** | 10–15 secs, 20 secs max. |
| ***Conversion Method*** | Sigma-Delta |
| ***External DC Power*** | NONE |

| Voltage Input Specifications | |
|---|---|
| ***Linear mV Device Input Ranges*** | 0–39.0625 mVDC,<br>±39.0625 mVDC,<br>±78.125 mVDC,<br>0-156.25 mVDC,<br>±156.25 mVDC,<br>0–1250 mVDC |
| ***Max Voltage Input Offset Error*** | 0.05% @ 0° - 60°C, typical 0.04% @ 25°C |
| ***Max Voltage Input Gain Error*** | 0.06% @ 25°C |
| ***Max Voltage Input Linearity Error*** | 0.05% @ 0° - 60°C, typical 0.03% @ 25°C |
| ***Max Voltage Input Inaccuracy*** | 0.2% @ 0° - 60°C, typical 0.06% @ 25°C |

| Configuration/Diagnostics | |
|---|---|
| ***Burn-out Detection Enable/Disable*** | 1-bit per module |
| ***°C/°F (T/C only)*** | 1 bit per module |
| ***Module Diagnostics Failure*** | 1 bit per module |
| ***Burn-out (on if T/C input is open – no connection between TCn+ and TCn-)*** | 1 bit per channel |
| ***Channel Under-range (T/C only)*** | 1 bit per channel |
| ***Channel Over-range (T/C only)*** | 1 bit per channel |

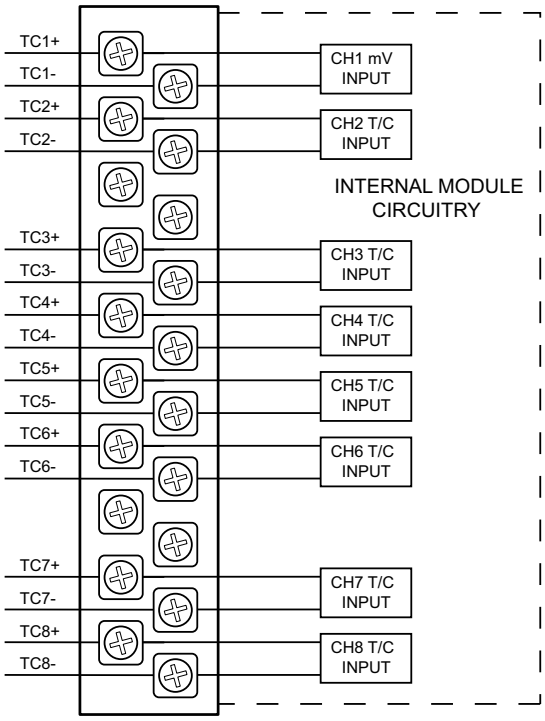
# Analog Input Modules

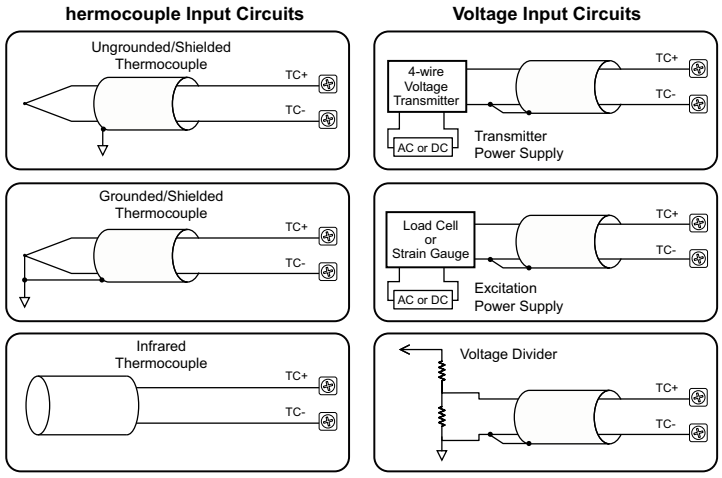
## P3-08THM (cont'd)

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 0.36 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (included).<br>The P3-08THM module is not compatible with the ***ZIP***Link wiring system. |
| ***Terminal Type*** | 20-position removable terminal block (included) |
| ***Weight*** | 150g (5.3 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

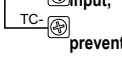
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

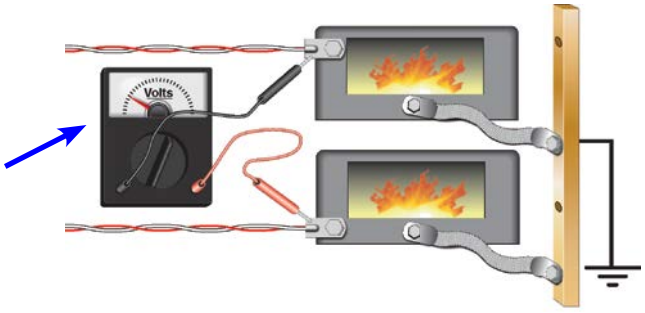
***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*




**NOTES:**

1. **Connect shield to thermocouple signal/ground only. Do not connect to both ends.**
2. **Install jumper wire on each unused**  **input, TC+ to TC-.**
3. **With grounded thermocouples, take precautions to prevent having a voltage potential between thermocouple tips. A voltage of 1.25 V or greater between tips will skew measurements.**
4. **Use shielded, twisted thermocouple extension wire that matches the thermocouple type. Use thermocouple-compatible junction blocks.**



# Analog Output Modules

## P3-04DA $449.00

***Voltage/Current Analog Output***
The P3-04DA Voltage/Current Analog Output Module provides four channels of ±10VDC or
4–20 mA sink/source selectable outputs.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Output Specifications | |
|---|---|
| ***Output Channels*** | 4 |
| ***Module signal output range*** | ±10V or 4–20 mA sink or source selectable each channel |
| ***Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | ±10V = 305µV/ count<br>4–20mA = 0.244 µA/ count<br>1 LSB = 1 count |
| ***Data Range*** | 0–65535 counts uni-polar and -32768 to +32767 counts bi-polar |
| ***Output Type*** | Voltage outputs sourcing/sinking at 10mA max, or Current outputs sink or source at 20mA max. |
| ***Output Value in Fault Mode*** | Voltage outputs 0V or 0mA current outputs |
| ***Load Impedance (Minimum External Power Supply)*** | >1000Ω (voltage outputs)(19.2–30 VDC)<br>0–755Ω Sinking, 0–600Ω Sourcing (19.2 VDC)<br>0–875Ω Sinking, 0–700Ω Sourcing (21.6 VDC)<br>0–1000Ω Sinking, 0–855Ω Sourcing (24.0 VDC)<br>0–1110Ω Sinking, 0–970Ω Sourcing (26.4 VDC)<br>0–1350Ω Sinking, 0–1150V Sourcing (30VDC) |
| ***Maximum Capacitive Load*** | 0.01 µF maximum voltage outputs |
| ***Maximum Inductive Load*** | 1mH maximum current outputs |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy (% of range)*** | 0.1% voltage, 0.1% current (including temperature drift) |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.025% of range maximum voltage outputs<br>±0.025% of range maximum current outputs |
| ***Accuracy vs. Temperature*** | ±25PPM/°C max. f.s. calibration change (±0.0025% of range / °C) |
| ***Max Crosstalk*** | -80dB, 6 LSB |
| ***Linearity Error (End to End)*** | ±16 LSB maximum (±0.025% of full scale)<br>Monotonic with no missing codes |
| ***Output Stability and Repeatability*** | ±10 LSB after 10 minute warm-up (typical) |
| ***Output Ripple*** | 0.05% of Full Scale |
| ***Output Settling Time*** | 0.3 ms max., 5µs min. (full scale change) |
| ***All Channel Update Rate*** | 0.6 ms |
| ***Maximum Continuous Overload*** | Voltage Outputs current limited to 35mA typical.<br>Current Outputs open circuit protected |
| ***Type of Output Protection*** | 15VDC Peak Output Voltage<br>Current outputs current limited to ≤20mA |
| ***Output Signal (power-up, -down)*** | 0V voltage outputs, 0mA current outputs |
| ***External DC Power Required*** | 94mA voltage operation 4 channels<br>126mA current operation 4 channels<br>24VDC -20% / + 25% |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

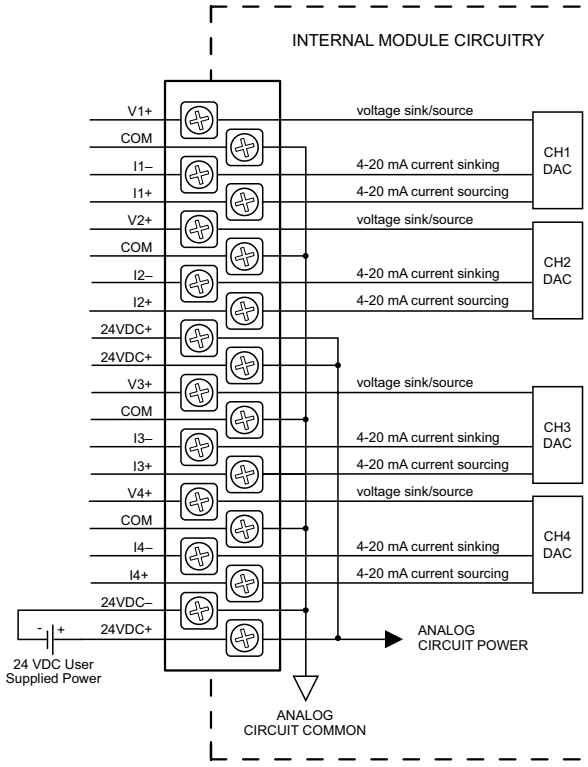
# Analog Output Modules

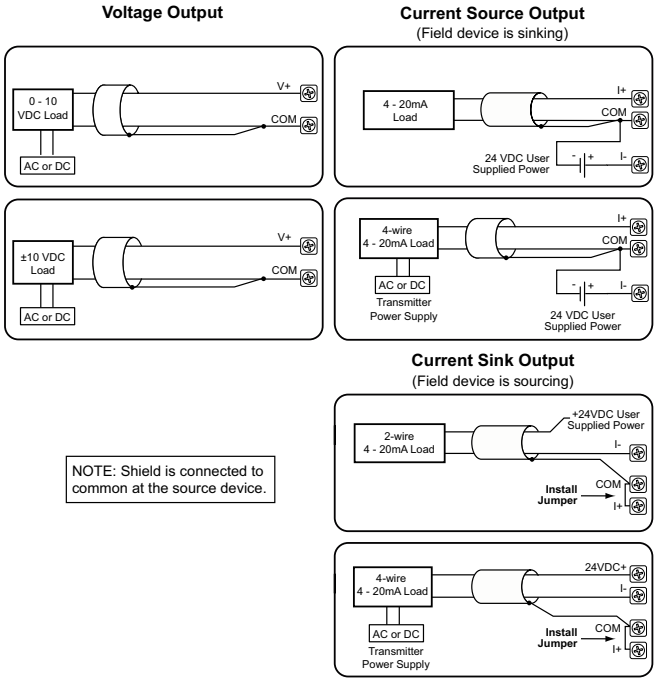
## P3-04DA (cont'd)

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 2.6 W voltage outputs<br>3.4 W current outputs |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*




NOTE: Shield is connected to common at the source device.

# Analog Output Modules

## P3-08DA-1 $779.00

***Current Analog Output***

The P3-08DA-1 Current Analog Output Module provides eight channels of 4 to 20mA sourcing outputs.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

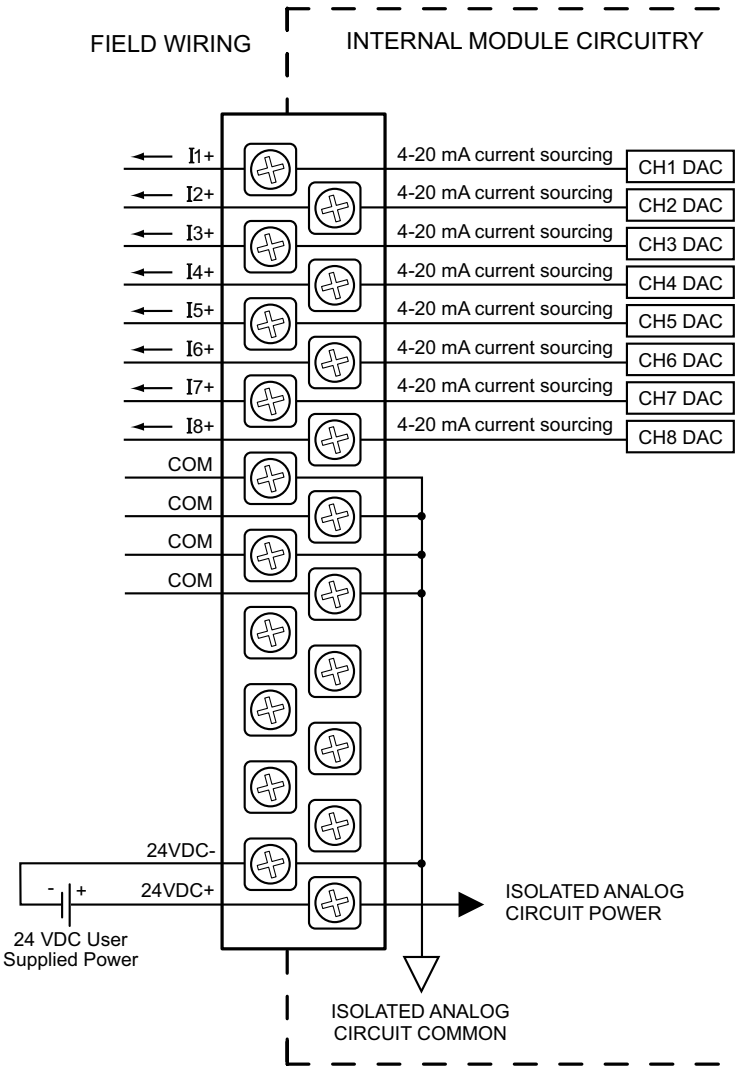
| Output Specifications | |
|---|---|
| ***Output Channels (commons)*** | 8 |
| ***Module Signal Output Range*** | 4–20mA |
| ***Output Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | 4–20mA = 0.244 µA / count<br>1 LSB = 1 count |
| ***Data Range*** | 0 to 65535 counts |
| ***Output Type (sourcing)*** | Current: 20mA max |
| ***Output Value in Fault Mode*** | Near 0mA |
| ***Load Impedance*** | 0–570Ω (19.2 VDC)<br>0–690Ω (21.6 VDC)<br>0–810Ω (24.0 VDC)<br>0–930Ω (26.4 VDC)<br>0–1100Ω (30.0 VDC)<br>Minimum Load 0Ω @ 0-45°C<br>125Ω @ 45-60°C |
| ***Maximum Inductive Load*** | 1mH |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy*** | 0.1% of range<br>(including temperature drift) |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.025% of range maximum |
| ***Maximum Offset Calibration Error*** | ±0.025% of range maximum |
| ***Accuracy vs. Temperature*** | ±25PPM/ °C maximum full-scale calibration change (± 0.0025% of range / °C) |
| ***Max Crosstalk*** | -96 dB, 1 LSB |
| ***Linearity Error (end to end)*** | ±16 LSB maximum (±0.025% of full scale)<br>monotonic with no missing codes |
| ***Output Stability and Repeatability*** | ±10 count after 10 min. warm-up (typical) |
| ***Output Ripple*** | 0.05% of full scale |
| ***Output Settling Time*** | 0.3 ms max., 5µs min. (full scale change) |
| ***All channel Update Rate*** | 0.6 ms |
| ***Maximum Continuous Overload*** | Outputs open circuit protected |
| ***Type of Output Protection*** | Electronically current limited to 20mA or less |
| ***Output Signal at Power-up and Power-down*** | 4mA |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 180mA |

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20°C–70°C (-4°F–158°F) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 4.7 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

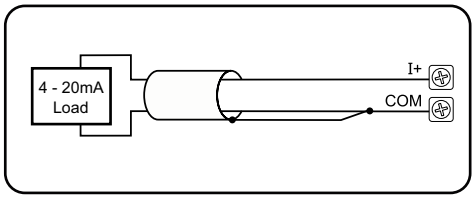
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

# Analog Output Modules

## P3-08DA-1 (cont'd)




**Current Source Output Circuit**




Note: Shield is connected to common at the source device.

# Analog Output Modules

## P3-08DA-2 $725.00

***Voltage Analog Output***
The P3-08DA-2 Voltage Analog Output Module provides eight channels of ±10 VDC sinking/sourcing outputs.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Output Specifications | |
|---|---|
| ***Output Channels*** | 8 |
| ***Module Signal Output Range*** | ±10VDC |
| ***Output Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | ±10V = 305µv/count<br>1 LSB = 1 count |
| ***Data range*** | -32768 to +32767 |
| ***Output Type (sourcing/sinking)*** | Voltage (10mA max current) |
| ***Output Value in Fault Mode*** | 0V |
| ***Load Impedance*** | ≤1000Ω |
| ***Maximum Capacitive Load*** | 0.01 µF maximum |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy*** | 0.1% of range<br>(including temperature drift) |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.025% of range maximum |
| ***Maximum Offset Calibration Error*** | ±0.025% of range maximum |
| ***Accuracy vs. Temperature*** | ±25PPM/ °C maximum full scale calibration change (± 0.0025% of range / °C) |
| ***Max Crosstalk*** | -96dB, 1 LSB |
| ***Linearity Error (End to End)*** | ±16 LSB maximum (±0.025% of full scale)<br>Monotonic with no missing codes |
| ***Output Stability and Repeatability*** | ±10 LSB after 10 min. warm-up (typical) |
| ***Output Ripple*** | 0.05% of full-scale |
| ***Output Settling Time*** | 0.3 ms max., 5µs min. (full scale change) |
| ***All Channel Update Rate (typical)*** | 0.6 ms |
| ***Maximum Continuous Overload*** | Outputs current limited to 40mA typical<br>Continuous overloads on multiple outputs can damage the module. |
| ***Type of Output Protection*** | 0.1 µf Transient Suppressor |
| ***Output Signal (power-up, -down)*** | 0V |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 120mA |

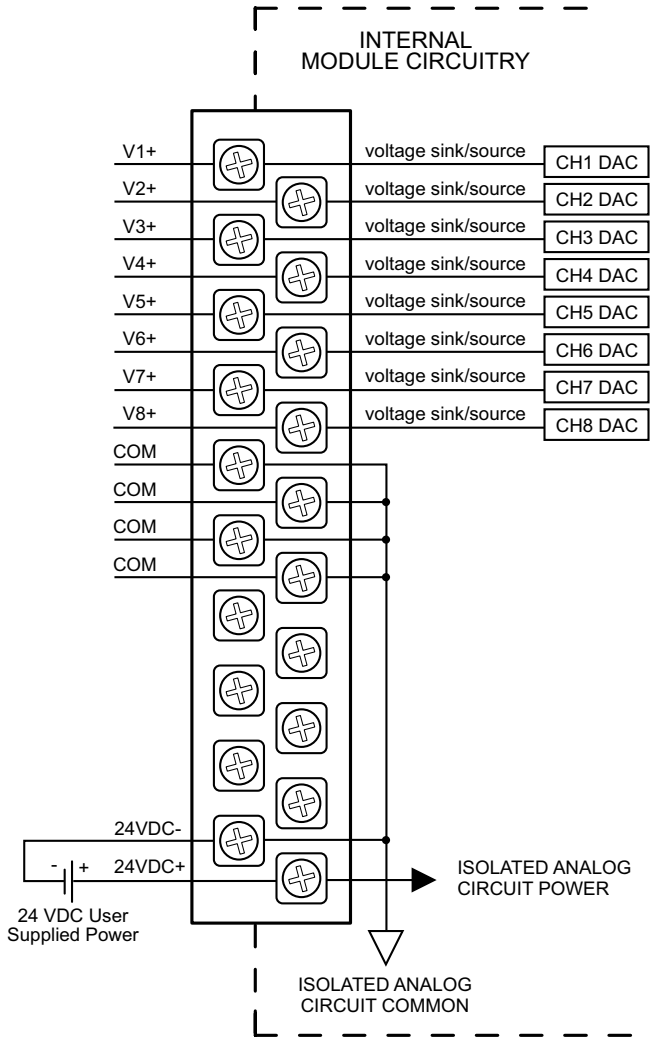
| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20°C–70°C (-4°F–158°F) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 3.3 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

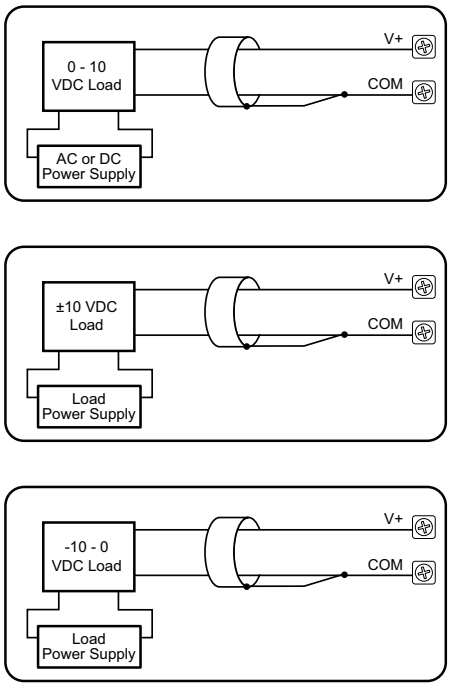
***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

# Analog Output Modules

## P3-08DA-2 (cont'd)



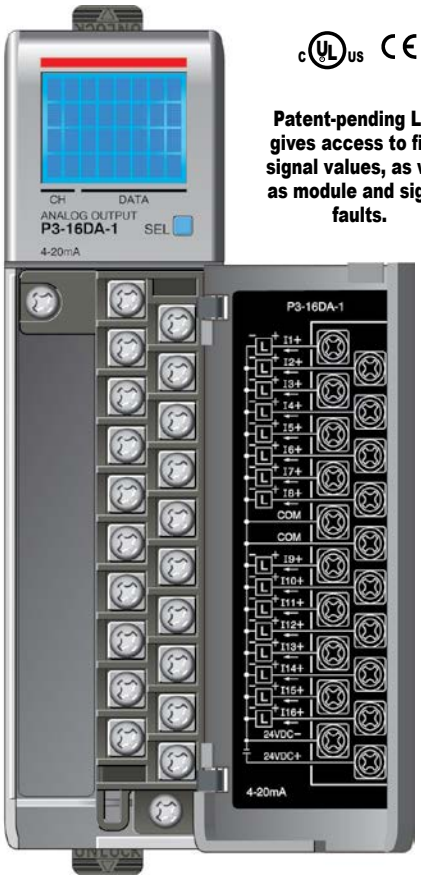

**Voltage Output Circuits**



# Analog Output Modules

## P3-16DA-1 $929.00

***Current Analog Output***
The P3-16DA-1 Current Analog Output Module provides sixteen channels of 4–20 mA sourcing outputs.




**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

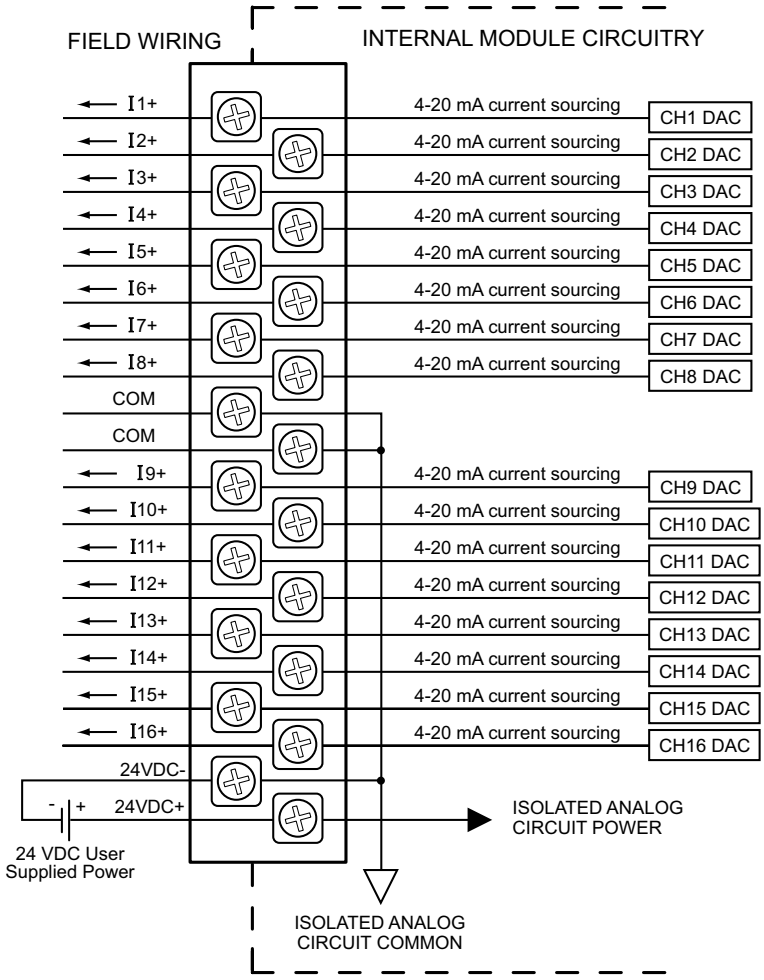
| Output Specifications | |
|---|---|
| ***Output Channels*** | 16 (non-isolated) |
| ***Module Signal Output Range*** | 4–20mA |
| ***Output Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | 4–20mA = 0.244 µA/count<br>1 LSB = 1 count |
| ***Data Range*** | 0 to 65535 counts |
| ***Output Value in Fault Mode*** | Less than 4mA |
| ***Load Impedance (Minimum External Power Supply)*** | 0–570Ω (19.2 VDC)<br>0–690Ω (21.6 VDC)<br>0–810Ω (24.0 VDC)<br>0–930Ω (26.4 VDC)<br>0–1100Ω (30.0 VDC)<br>Minimum Load 0Ω 0–45°C, 125Ω 45–60°C, ambient |
| ***Maximum Inductive Load*** | 1 mH |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy*** | 0.1% of range<br>(including temperature drift) |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.025% of range maximum |
| ***Maximum Offset Calibration Error*** | ±0.025% of range maximum |
| ***Accuracy vs. Temperature*** | ±25PPM/ °C maximum full scale calibration change (± 0.0025% of range / °C) |
| ***Max Crosstalk*** | -96dB, 1 LSB |
| ***Linearity Error (end to end)*** | ±16 LSB maximum (±0.025% of full scale)<br>monotonic with no missing codes |
| ***Output Stability and Repeatability*** | ±10 LSB after 10 min. warm-up (typical) |
| ***Output Ripple*** | 0.05% of full scale |
| ***Output Settling Time*** | 0.3 ms max., 5µs min. (full scale change) |
| ***All Channel Update Rate*** | 0.6 ms |
| ***Maximum Continuous Overload*** | Outputs open circuit protected |
| ***Type of Output Protection*** | Electronically current limited to 20mA or less |
| ***Output Signal at Power-up and Power-down*** | 4mA |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 356mA |

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20°C–70°C (-4°F–158°F) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 9.0 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 and UL1604 (Certified for Canada and USA)<br>CE (EN61131-2:2003)<br>This equipment is suitable for use in Class I, Division 2/Zone 2, Groups A, B, C, and D or non-hazardous locations only. |

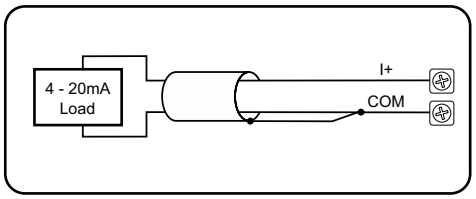
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

# Analog Output Modules

## P3-16DA-1 (cont'd)




**Current Source Output Circuit**




NOTE: Shield is connected to common at the source device.

# Analog Output Modules

## P3-16DA-2 $911.00

***Voltage Analog Output***
The P3-16DA-2 Voltage Analog Output Module provides sixteen channels of ±10VDC outputs.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

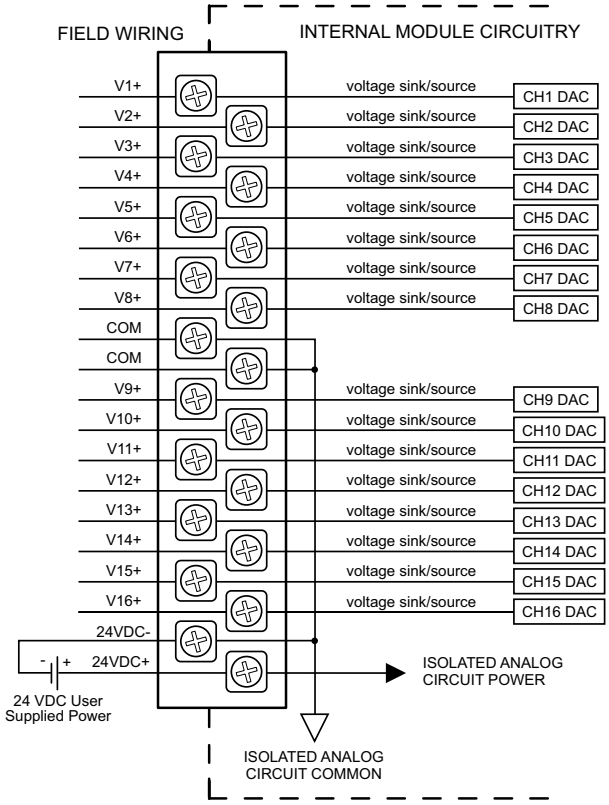
| Output Specifications | |
|---|---|
| ***Output Channels*** | 16 |
| ***Module Signal Output Range*** | ±10VDC |
| ***Output Signal Resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | ±10V = 305µV/count<br>1 LSB = 1 count |
| ***Data Range*** | -32768 to +32767 |
| ***Output type (sourcing/sinking)*** | Voltage (10mA max current) |
| ***Output Value in Fault Mode*** | 0V |
| ***Output Impedance*** | 0.2 Ω typical |
| ***Load Impedance*** | ≤1000Ω |
| ***Maximum Capacitive Load*** | 0.01 µF maximum |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy*** | 0.1% of range<br>(including temperature drift) |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.025% of range maximum |
| ***Maximum Offset Calibration Error*** | ±0.025% of range maximum |
| ***Accuracy vs. Temperature*** | ±25PPM/ °C maximum f.s. calibration change (± 0.0025% of range / °C) |
| ***Max Crosstalk*** | -96dB, 1 LSB |
| ***Linearity Error (end to end)*** | ±16 LSB maximum (±0.025% of full scale)<br>Monotonic with no missing codes |
| ***Output Stability and Repeatability*** | ±10 LSB after 10 min. warm-up (typical) |
| ***Output Ripple*** | 0.05% of full scale |
| ***Output Settling Time*** | 0.3 ms max, 5µs min. (full scale change) |
| ***All Channel Update Rate*** | 0.6 ms |
| ***Maximum Continuous Overload*** | Outputs current limited to 40mA typical<br>Continuous overloads on multiple outputs can damage the module. |
| ***Type of Output Protection*** | 0.1 µF Transient Suppressor |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 252mA |

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 6.4 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 and UL1604 (Certified for Canada and USA)<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class I, Division 2/Zone 2, Groups A, B, C, and D or non-hazardous locations only. |

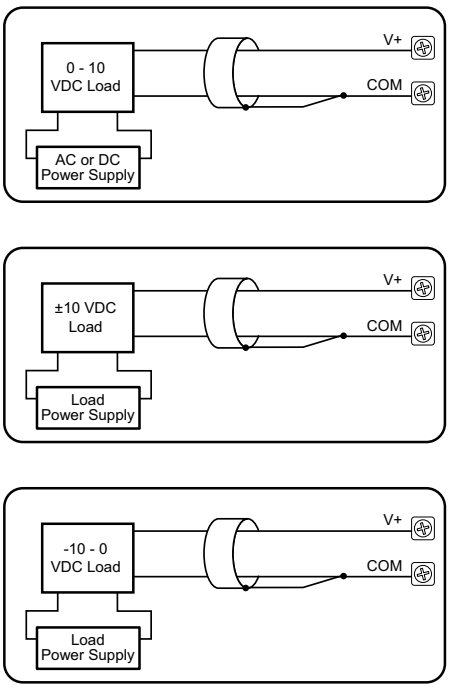
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

# Analog Output Modules

## P3-16DA-2 (cont'd)




### Voltage Output Circuits



# Analog Input/Output Modules

## P3-8AD4DA-1 $598.00

***Current Analog Input/Output***

The P3-8AD4DA-1 Current Analog Input/ Output Module provides eight channels of current sinking 0–20 mA inputs and four channels of current sourcing 4–20 mA outputs.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Input Specifications | |
|---|---|
| ***Input channels*** | 8 (1 common) |
| ***Module Signal Input Range*** | 0–20mA |
| ***Signal Resolution*** | 12–16-bit, depending on input resolution |
| ***Input Resolution & Update Rate See Note 1*** | Fine: 7.1 ms, 0.305 µA, 16-bit<br>Medium: 1.78 ms, 1.22 µA, 14-bit<br>Coarse: 444µs, 4.88 µA, 12-bit |
| ***Data Range*** | 0–65535 counts |
| ***Input Type*** | Single Ended (one common) |
| ***Maximum Continuous Overload*** | ±31mA |
| ***Input Impedance*** | 250Ω ±0.1% ¼W |
| ***Hardware Filter Characteristics*** | Low pass 1st order, -3dB @ 48Hz |
| ***All Channel Update Rate See Note 2*** | Fine: 56.8 ms<br>Medium: 14.24 ms<br>Coarse: 3.55 ms |
| ***All Channel Update Rate*** | 56.8 ms |
| ***Open Circuit Detection Time*** | Zero reading within 1s |
| ***Conversion Method*** | Successive approximation |
| ***Accuracy vs. Temperature*** | ±15PPM / °C maximum |
| ***Maximum Inaccuracy*** | 0.1% of range |
| ***Linearity Error (end to end)*** | 0.015% of range maximum<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ±0.015% of range (after 10 min. warm up) |
| ***Full Scale Calibration Error (not including offset)*** | ±0.05% of range maximum |
| ***Offset Calibration Error*** | ±.0.05% of range maximum |
| ***Maximum Crosstalk*** | -96dB ±1 - 0.015% of full scale maximum |
| ***Recommended Fuse (external)*** | Edison S500-32-R, 0.032 A fuse |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 183mA maximum |

**Note 1: The Input Resolution of Fine returns 16-bit resolution. Medium and Coarse are 14 and 12-bit respectively. The 12 and 14-bit input values are scaled to 0-65535.**
**Note 2: Valid when all channels are set for the same Input Resolution.**

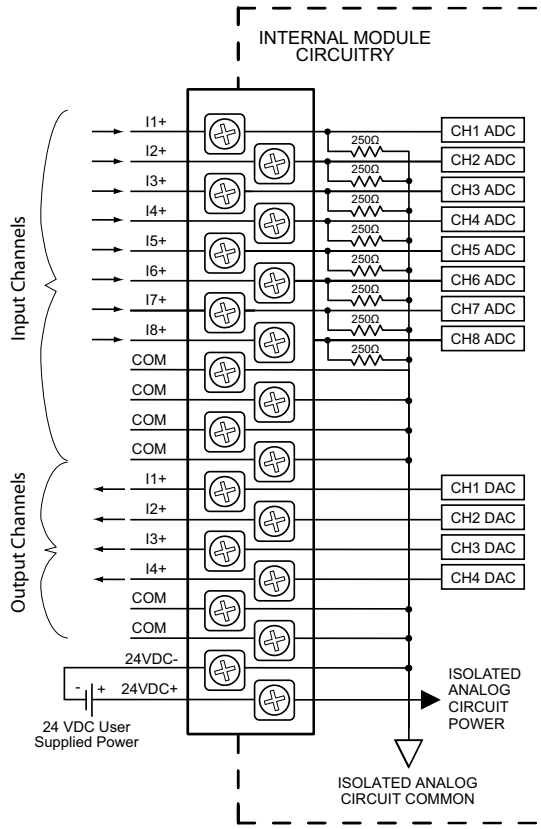
| Output Specifications | | |
|---|---|---|
| ***Outputs per module*** | 4 (1 common) | |
| ***Module signal output range*** | 4–20mA | |
| ***Output Signal resolution*** | 16-bit | |
| ***Resolution Value of LSB (least significant bit)*** | 0.244 µA/count<br>1 LSB = 1 count | |
| ***Data Range*** | 0–65535 counts | |
| ***Output Type*** | Current sourcing, 20mA max | |
| ***Output Value in Fault Mode*** | ≤4mA | |
| ***Load Impedance (Minimum Ext. Power Supply)*** | 0–480Ω (19.2 VDC)<br>0–600Ω (21.6 VDC)<br>0–715Ω (24.0 VDC) | 0–840Ω (26.4 VDC)<br>0–1010Ω (30.0 VDC) |
| ***Maximum Inductive Load*** | 1mH | |
| ***Allowed Load Type*** | Grounded | |
| ***Maximum Inaccuracy*** | ±0.1% of range | |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.065% of full scale | |
| ***Maximum Offset Calibration Error*** | ±0.065% of full scale | |
| ***Accuracy vs. Temperature*** | ±15PPM/ °C maximum full scale calibration change (± 0.025% of range / °C) | |
| ***Maximum Crosstalk*** | -96dB | |
| ***Linearity Error (end to end)*** | ±0.015% of range maximum<br>Monotonic with no missing codes | |
| ***Output Stability and Repeatability*** | ±0.015% after 10 min. warm-up typical | |
| ***Output Ripple*** | 0.01% of Full Scale at 50/60 Hz | |
| ***Output Settling Time*** | Rising Time 200µs; Falling Time 135µs; (full scale change) | |
| ***All Channel Update Rate*** | 3.55 ms | |
| ***Maximum Continuous Overload*** | Outputs open circuit protected | |
| ***Type of Output Protection*** | Electronically current limited to 20mA or less | |
| ***Output Signal (power-up, -down)*** | m 4mA | |

# Analog Input/Output Modules

## P3-8AD4DA-1 (cont'd)

| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500VDC |
| ***Heat Dissipation*** | 3.8 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 106.9 g (3.76 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

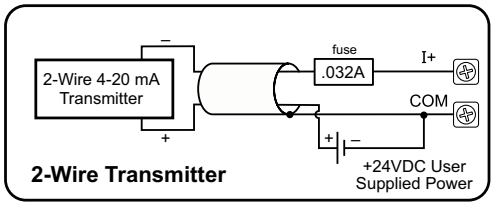
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**



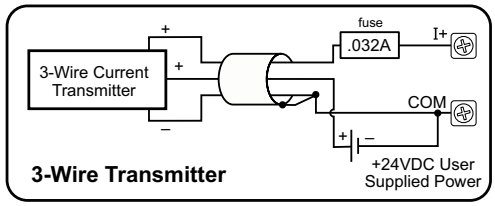

Note: This module includes input and output channels. Before connecting field wiring, verify that you are connecting to the appropriate terminals.

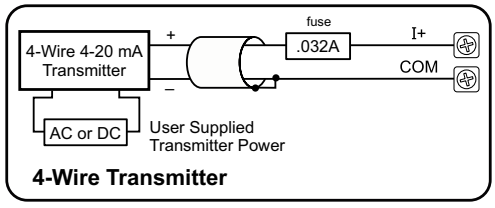
***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

### Current Input Circuits



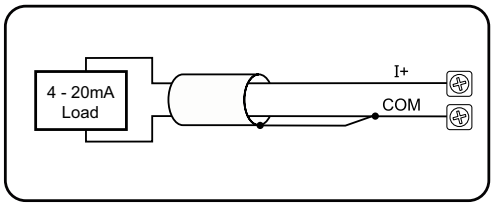

An Edison S500-32-R 0.032A fast-acting fuse is recommended for all current loops.




Note: Do not connect both ends of shield.

### Current Output Circuits




Note: Shield is connected to common at the source device.

# Analog Input/Output Modules

## P3-8AD4DA-2 $617.00

***Voltage Analog Input/Output***

The P3-8AD4DA-2 Voltage Analog Input/ Output Module provides eight channels of 0-5 VDC and 0-10 VDC inputs and four channels of 0-5 VDC and 0-10 VDC outputs.


**Patent-pending LCD gives access to field signal values, as well as module and signal faults.**

**Terminal block sold separately; terminal block cover included with module.**

| Input Specifications | |
|---|---|
| ***Input channels*** | 8 inputs (1 common) |
| ***Input ranges*** | 0–5V, 0–10V |
| ***Signal resolution*** | 12–16-bit, depending on input resolution |
| ***0-5 V Input Resolution & Update Rate See Note 1*** | Fine: 7.1 ms, 76µV, 16-bit<br>Medium: 1.78 ms, 305µV, 14-bit<br>Coarse: 444µs, 1.22 mV, 12-bit |
| ***0-10 V Input Resolution & Update Rate See Note 1*** | Fine: 7.1 ms, 152µV, 16-bit<br>Medium: 1.78 ms, 610µV, 14-bit<br>Coarse: 444µs, 2.44 mV, 12-bit |
| ***Data Range*** | 0–65535 counts |
| ***Maximum continuous overload*** | ±100V, voltage input |
| ***Input impedance*** | 1MΩ (± 10%) voltage input |
| ***Hardware Filter Characteristics*** | Low pass 1st order, -3dB @ 80Hz |
| ***All Channel Update Rate See Note 2*** | Fine: 56.8 ms<br>Medium: 14.24 ms<br>Coarse: 3.55 ms |
| ***Conversion Method*** | Successive Approximation |
| ***Accuracy vs. Temperature*** | ±15PPM / °C maximum |
| ***Maximum Inaccuracy*** | 0.1% of range |
| ***Linearity Error (end to end)*** | ±0.015% of range maximum<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ± 0.025% of range (after 10 min. warm up) |
| ***Full Scale Calibr. Error (minus offset)*** | ±0.05% of range maximum |
| ***Offset Calibration Error*** | ±0.05% of range maximum |
| ***Max Crosstalk*** | -96dB |
| ***External DC Power Required*** | 24VDC (-20% / + 25%), 90mA maximum |

**Note 1: The Input Resolution of Fine returns 16-bit resolution. Medium and Coarse are 14 and 12-bit respectively. The 12 and 14-bit input values are scaled to 0-65535.**
**Note 2: Valid when all channels are set for the same Input Resolution.**

| Removable Terminal Block Specifications | |
|---|---|
| ***Description*** | Part No. P3-RTB; 20 screw terminals |
| ***Wire Range*** | 22–14 AWG (0.324 to 2.08 sq. mm)<br>Solid / stranded conductor<br>3/64 in. (1.2 mm) insulation maximum<br>USE COPPER CONDUCTORS , 60°C or equivalent. |
| ***Screw Driver Width*** | 1/4 inch (6.5 mm) maximum |
| ***Screw Size*** | M3 size |
| ***Screw Torque*** | Field terminals - 7–9 in·lb (0.882–1.02 N·m)<br>Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m).<br>Do not overtighten screws when installing terminal block. |

We recommend using prewired ***ZIP***Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

| Output Specifications | |
|---|---|
| ***Output channels*** | 4 (1 common) |
| ***Output ranges*** | 0–10V, 0–5V |
| ***Output Signal resolution*** | 16-bit |
| ***Resolution Value of LSB (least significant bit)*** | 0–5V = 76µV/count<br>0–10V = 152µV/count<br>1 LSB = 1 count |
| ***Data Range*** | 0–65535 counts |
| ***Output Type*** | Voltage sourcing/sinking at 10mA max. |
| ***Output Value in Fault Mode*** | 0V |
| ***Load Impedance*** | ≤1125Ω |
| ***Maximum capacitive load*** | 0.01 µF maximum |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy*** | 0.1% of range |
| ***Maximum Full Scale Calibration Error (not including offset error)*** | ±0.065% of range maximum |
| ***Maximum Offset Calibration Error*** | ±0.065% of range maximum |
| ***Accuracy vs. Temperature*** | ±25PPM/ °C maximum full scale calibration change (± 0.0025% of range / °C) |
| ***Max Crosstalk*** | -96dB |
| ***Linearity Error (end to end)*** | 0.015% of full scale<br>Monotonic with no missing codes |
| ***Output Stability and Repeatability*** | ±0.015% after 10 min. warm-up typical |
| ***Output Ripple*** | 0.01% of Full Scale at 50/60 Hz |
| ***Output Settling Time*** | 0.5 ms max, 5µs min. (full scale change) |
| ***All Channel Update Rate*** | 5ms |
| ***Maximum Continuous Overload*** | Outputs current limited to 15mA typical |
| ***Type of Output Protection*** | 15VDC peak output voltage |
| ***Output Signal (power-up, -down)*** | 0V |

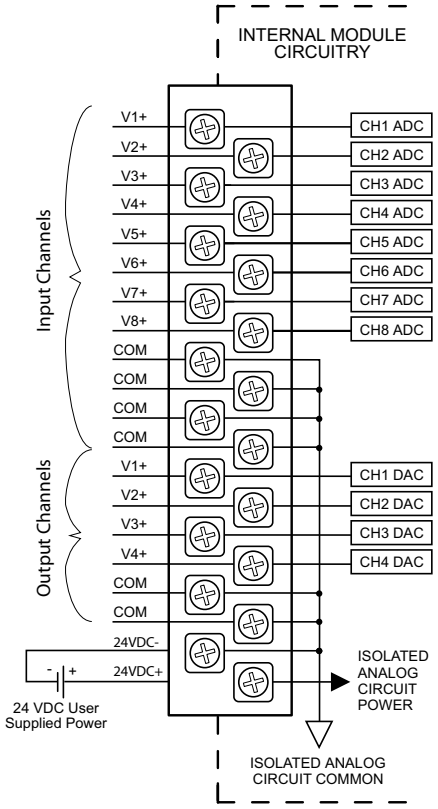
# Analog Input/Output Modules

## P3-8AD4DA-2 (cont'd)

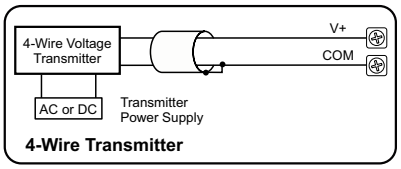
| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0°C– 60°C (32°F–140°F), |
| ***Storage Temperature*** | -20ºC–70ºC (-4ºF–158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Environmental Air*** | No corrosive gases permitted |
| ***Vibration*** | IEC60068-2-6 (Test Fc) |
| ***Shock*** | IEC60068-2-27 (Test Ea) |
| ***Field to Logic Side Isolation*** | 1800VAC applied for 1s |
| ***Insulation Resistance*** | >10MΩ @ 500 VDC |
| ***Heat Dissipation*** | 2.5 W |
| ***Enclosure Type*** | Open equipment |
| ***Module Keying to Backplane*** | Electronic |
| ***Module Location*** | Any I/O slot in any local, expansion, or remote base in a Productivity3000 system. |
| ***Field Wiring*** | Removable terminal block (not included). Use ***ZIP***Link wiring system or optional terminal block. See Wiring Solutions. |
| ***Terminal Type (not included)*** | 20-position removable terminal block |
| ***Weight*** | 105g (3.73 oz) |
| ***Agency Approvals*** | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

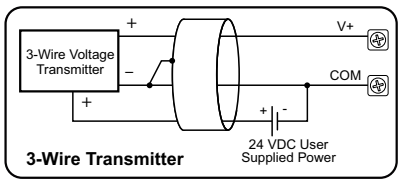
***Meets EMC and Safety requirements. See the Declaration of Conformity for details.**

***WARNING:*** *EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.*

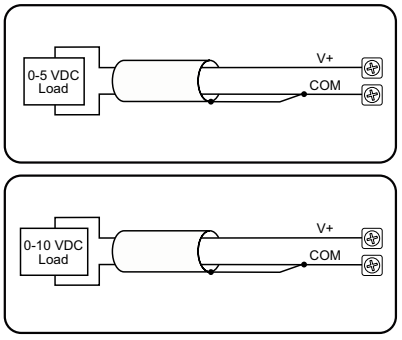



**Voltage Input Circuits**




**Voltage Output Circuits**




Note: This module includes input and output channels. Before connecting field wiring, verify that you are connecting to the appropriate terminals.

# Wiring Solutions

## Wiring Solutions using the *ZIP*Link wiring system

***ZIP***Links eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end or terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the ***ZIP***Link System ranging from PLC I/O-to-***ZIP***Link Connector Modules that are ready for field termination, options for connecting to third party devices, GS, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of ***ZIP***Link modules are provided with ***ZIP***Link cables. See the following solutions to help determine the best ***ZIP***Link system for your application.

***Solution 1: Productivity Series I/O Modules to ZIPLink Connector Modules***

When looking for quick and easy I/O-to-field termination, a ***ZIP***Link connector module used in conjunction with a prewired ***ZIP***Link cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.

Using the PLC I/O Modules to ***ZIP***Link Connector Modules selector tables located in this section,

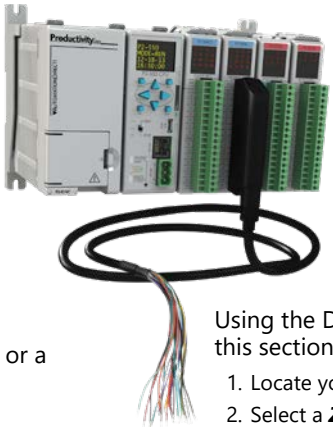
1. Locate your I/O module/PLC.
2. Select a ***ZIP***Link Module.
3. Select a corresponding ***ZIP***Link Cable.

***Solution 2: Productivity Series I/O Modules to ZIPLink Connector Modules***

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the ***ZIP***Link Pigtail Cables. ***ZIP***Link Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.

Using the I/O Modules to 3rd Party Devices selector tables located in this section,

1. Locate your PLC I/O module.
2. Select a ***ZIP***Link Pigtail Cable that is compatible with your 3rd party device.



***Solution 3: GS Series and DuraPulse Drives Communication Cables***

Need to communicate via Modbus RTU to a drive or a network of drives?

***ZIP***Link cables are available in a wide range of configurations for connecting to PLCs and SureServo, SureStep, Stellar Soft Starter and AC drives. Add a ***ZIP***Link communications module to quickly and easily set up a multi-device network.

Using the Drives Communication selector tables located in this section,

1. Locate your Drive and type of communications.
2. Select a ***ZIP***Link cable and other associated hardware.

# Wiring Solutions

***Solution 4: Serial Communications Cables***

***ZIP***Link offers communications cables for use with DirectLOGIC, CLICK, and Productivity3000 CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the Serial Communications Cables selector table located in this section,

1. Locate your connector type
2. Select a cable.

***Solution 5: Specialty ZIPLink Modules***

For additional application solutions, ***ZIP***Link modules are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the ***ZIP***Link Specialty Modules selector table located in this section,

1. Locate the type of application.
2. Select a ***ZIP***Link module.


***Solution 6: ZIPLink Connector Modules to 3rd Party Devices***

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible ***ZIP***Link Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Using the Universal Connector Modules and Pigtail Cables table located in this section,

1. Select module type.
2. Select the number of pins.
3. Select cable.

# CPU I/O Modules to ZIPLink Connector Modules - Productivity3000®

## Productivity3000 CPU Input Module *ZIP*Link Selector

| CPU | | ZIPLink | | |
|---|---|---|---|---|
| Input Module | # of Terms | Component | Module Part No. | Cable Part No. |
| P3-08NAS | 20 | Feedthrough | ZL-RTB20 | ZL-P3-CBL20 * |
| P3-08ND3S | 20 | Feedthrough | | |
| P3-16NA | 20 | Feedthrough | | ZL-P3-CBL20-1L<br>ZL-P3-CBL20-2L |
| P3-16ND3 | 20 | Feedthrough | | |
| | | Sensor | ZL-LTB16-24-1 | |
| P3-32ND3 | 40 | Feedthrough | ZL-RTB40 | ZL-CBL40<br>ZL-CBL40-1<br>ZL-CBL40-2 |
| | | Sensor | ZL-LTB32-24-1 | |
| P3-64ND31 | 40 | Feedthrough | ZL-RTB40 | |
| | | Sensor | ZL-LTB32-24-1 | |

## Productivity3000 CPU Analog In Module *ZIP*Link Selector

| CPU | | ZIPLink | | |
|---|---|---|---|---|
| Analog Module | # of Terms | Component | Module | Cable |
| P3-04ADS | 20 | Feedthrough | ZL-RTB20 | ZL-P3-CBL20-1L<br>ZL-P3-CBL20-2L |
| P3-08AD | 20 | Feedthrough | | |
| P3-16AD-1 | 20 | Feedthrough | | |
| P3-16AD-2 | 20 | Feedthrough | | |
| P3-08RTD[2] | Matched Only | See Note 2 | | |
| P3-08THM[2] | T/C Wire Only | See Note 2 | | |
| P3-04DA | 20 | Feedthrough | ZL-RTB20 | ZL-P3-CBL20-1L<br>ZL-P3-CBL20-2L |
| P3-08DA-1 | 20 | Feedthrough | | |
| P3-08DA-2 | 20 | Feedthrough | | |
| P3-16DA-1 | 20 | Feedthrough | | |
| P3-16DA-2 | 20 | Feedthrough | | |
| P3-8AD4DA-1 | 20 | Feedthrough | | |
| P3-8AD4DA-2 | 20 | Feedthrough | | |

## Productivity3000 CPU Specialty Module *ZIP*Link Selector

| CPU | | ZIPLink | | |
|---|---|---|---|---|
| Input Module | # of Terms | Component | Module Part No. | Cable Part No. |
| P3-HSI | 40 | Feedthrough | ZL-RTB40 | ZL-CBL40-S<br>ZL-CBL40-1S<br>ZL-CBL40-2S |
| P3-HSO | | | | |

Note: ***ZIP***Link Connector Modules specifications follow the Compatibility Matrix tables. ***ZIP***Link Cables specifications are at the end of this ***ZIP***Link section.

## Productivity3000 CPU Output Module *ZIP*Link Selector

| CPU | | ZIPLink | | |
|---|---|---|---|---|
| Output Module | # of Terms | Component | Module Part No. | Cable Part No. |
| P3-08TAS | 20 | Feedthrough | ZL-RTB20 | ZL-P3-CBL20 * |
| P3-08TD1S | 20 | Feedthrough | | ZL-P3-CBL20-1L<br>ZL-P3-CBL20-2L |
| P3-08TD2S | 20 | Feedthrough | | |
| P3-08TRS | 20 | Feedthrough | | ZL-P3-CBL20<br>ZL-P3-CBL20-1<br>ZL-P3-CBL20-2 |
| P3-16TA | 20 | Feedthrough | | |
| | | Fuse | | |
| P3-16TD1 | 20 | Feedthrough | | |
| | | Fuse | ZL-RFU20[4] | |
| | | Relay (sinking) | ZL-RRL16-24-1 | |
| P3-16TD2 | 20 | Feedthrough | ZL-RTB20 | |
| | | Fuse | ZL-RFU20[4] | |
| | | Relay (sourcing) | ZL-RRL16-24-2 | |
| P3-16TR | 20 | Feedthrough | ZL-RTB20 | |
| | | Fuse | ZL-RFU20[4] | |
| P3-08TRS-1[3] | 20 | Feedthrough | ZL-RTB20 | |
| | | Fuse | ZL-RFU20[4] | |
| P3-32TD1 | 40 | Feedthrough | ZL-RTB40 | ZL-CBL40<br>ZL-CBL40-1<br>ZL-CBL40-2 |
| | | Fuse | ZL-RFU40[4] | |
| P3-32TD2 | 40 | Feedthrough | ZL-RTB40 | |
| | | Fuse | ZL-RFU40[4] | |
| P3-64TD1[1] | 40 | Feedthrough | ZL-RTB40 | |
| | | Fuse | ZL-RFU40[4] | |
| P3-64TD2[1] | 40 | Feedthrough | ZL-RTB40 | |
| | | Fuse | ZL-RFU40[4] | |

** Select the cable length by replacing the * with: Blank = 0.5m, -1 = 1.0m, or -2 = 2.0m.*

*1 The P3-64ND3, P3-64TD1 and P3-64TD2 modules have two 32-point connectors and require two ZIPLink cables and two ZIPLink connector modules.*

*2 These modules are not supported by the ZIPLink wiring system.*

*3 The P3-08TRS-1 output module is derated not to exceed 2A per point maxiumum when used with the ZIPLink wiring system.*

*4 Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.*
*To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.*

# I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in local, expansion, and remote I/O bases. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number P3-FILL).

## Discrete Input Modules

| Productivity3000 Discrete Input Modules | | | |
|---|---|---|---|
| **Part Number** | **Number of Inputs** | **Description** | **Price** |
| P3-16SIM | 16 | Input Simulator Module | $197.00 |
| P3-08ND3S | 8 | Isolated Sinking/Sourcing DC Input | $99.00 |
| P3-16ND3 | 16 | Sinking/Sourcing DC Input | $152.00 |
| P3-32ND3 | 32 | Sinking/Sourcing DC Input | $208.00 |
| P3-64ND3 | 64 | Sinking/Sourcing DC Input | $260.00 |
| P3-08NAS | 8 | Isolated AC Input | $126.00 |
| P3-16NA | 16 | AC Input | $159.00 |

*ZIPLink required.

## Analog I/O Modules

| Productivity3000 Analog Input Modules | | | |
|---|---|---|---|
| **Part Number** | **Number of Channels** | **Description** | **Price** |
| P3-04ADS | 4 | Isolated Analog Input | $724.00 |
| P3-08AD | 8 | Analog Input | $393.00 |
| P3-16AD-1 | 16 | Analog Input (Current) | $535.00 |
| P3-16AD-2 | 16 | Analog Input (Voltage) | $524.00 |
| P3-08RTD | 8 | Analog RTD Input | $581.00 |
| P3-08THM | 8 | Analog Thermocouple Input | $736.00 |

| Productivity3000 Analog Output Modules | | | |
|---|---|---|---|
| **Part Number** | **Number of Channels** | **Description** | **Price** |
| P3-04DA | 4 | Analog Output | $449.00 |
| P3-08DA-1 | 8 | Analog Output (Current) | $779.00 |
| P3-08DA-2 | 8 | Analog Output (Voltage) | $725.00 |
| P3-16DA-1 | 16 | Analog Output (Current) | $929.00 |
| P3-16DA-2 | 16 | Analog Output (Voltage) | $911.00 |

| Productivity3000 Analog Input/Output Modules | | | |
|---|---|---|---|
| **Part Number** | **Number of Channels** | **Description** | **Price** |
| P3-8AD4DA-1 | 8/4 | Analog Input/Output (Current) | $598.00 |
| P3-8AD4DA-2 | 8/4 | Analog Input/Output (Voltage) | $617.00 |

## Specialty Modules

| Productivity3000 Specialty Modules | | | |
|---|---|---|---|
| **Part Number** | **Number of Channels** | **Description** | **Price** |
| P3-HSI | 2 | High-Speed Pulse Input | $563.00 |
| P3-HSO* | 2 | High-Speed Output | $587.00 |
| P3-SCM | 4 ports | Serial Communications Module | $475.00 |

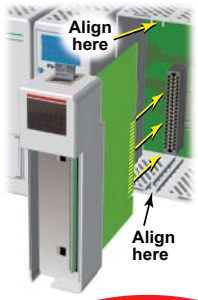
*ZIPLink required.

## Discrete Output Modules

| Productivity3000 Discrete Output Modules | | | |
|---|---|---|---|
| **Part Number** | **Number of Outputs** | **Description** | **Price** |
| P3-08TD1S | 8 | Isolated Sinking Output | $135.00 |
| P3-08TD2S | 8 | Isolated Sourcing Output | $141.00 |
| P3-16TD1 | 16 | Sinking Output | $162.00 |
| P3-16TD2 | 16 | Sourcing Output | $167.00 |
| P3-32TD1* | 32 | Sinking Output | $208.00 |
| P3-32TD2* | 32 | Sourcing Output | $208.00 |
| P3-64TD1* | *64 | Sinking Output | $280.00 |
| P3-64TD2* | *64 | Sourcing Output | $265.00 |
| P3-08TAS | 8 | Isolated AC Output | $177.00 |
| P3-16TA | 16 | AC Output | $210.00 |
| P3-08TRS | 8 | Isolated Relay Output | $159.00 |
| P3-08TRS-1 | 8 | Isolated Relay Output | $194.00 |
| P3-16TR | 16 | Relay Output | $177.00 |

*ZIPLink required.

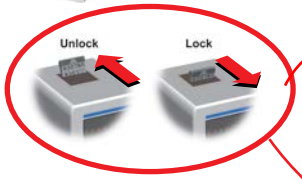
## Module Installation Procedure




***WARNING:*** *DO NOT APPLY FIELD POWER UNTIL THE FOLLOWING STEPS ARE COMPLETED. SEE HOT-SWAPPING PROCEDURE FOR EXCEPTIONS.*

**Step One:** Align circuit card with slot and press firmly to seat module into connector.

**Step Two:** Pull top and bottom locking tabs toward module face. Click indicates lock is engaged.




**Step Three:** Attach field wiring using optional terminal block or ***ZIP***Link wiring system and install cover.

To install or remove terminal block cover, press middle to flex cover.

***WARNING:*** *EXPLOSION HAZARD – DO NOT CONNECT OR DISCONNECT CONNECTORS OR OPERATE SWITCHES WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS. DO NOT HOT-SWAP MODULES UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS.*