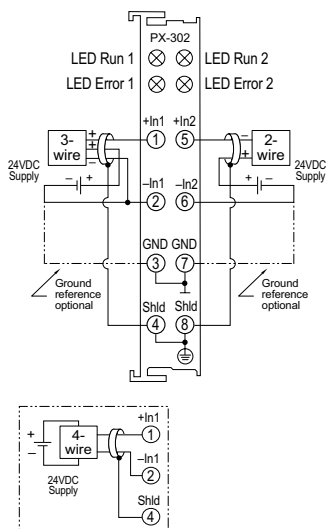


# Analog Current Input Terminals

## PX-302 \$00?en:

### Two-channel, 4-20 mA Analog Input Terminal

The PX-302 (type 3) Analog Input Terminal provides two electrically isolated 4-20 mA inputs with 12-bit resolution and Run and Error LED status.



General Specifications	
Operating Temp	32 to 131 °F (0 to 55 °C)
Storage Temp	-13 to 185 °F (-25 to 85 °C)
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/ Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

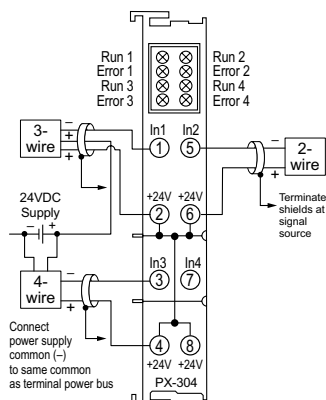
Terminal Specifications	
Number of Channels	2
Input Ranges	4 to 20 mA
Resolution	12 bits
Input Type	External ground reference
Data Format	Decimal: 0-32767
Data Bytes Consumed	PX-MOD: 4 bytes input PX-TCP1/TCP2: 8 bytes in/ 8 bytes out (not used)
Input Power Source	Loop power external
Current Consumption (from Terminal Power Bus)	NA
Input Impedance	50V internal resistor
Absolute Max Ratings	35VDC surge
Conversion Time	Approx. 2ms
Full Scale Calibration Error	± 0.3% of full scale
Current Consumption (from I/O Bus)	60mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, see LED Status chart

LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.
Red LED: ERROR	Broken wire or current is > 21.5 mA	Normal Operation

## PX-304 \$00?eo:

### Four-channel, 4-20 mA Analog Input Terminal

The PX-304 (type 1) Analog Input Terminal provides four electrically isolated 4-20 mA inputs with 12-bit resolution and Run and Error LED status.



General Specifications	
Operating Temp	32 to 131 °F (0 to 55 °C)
Storage Temp	-13 to 185 °F (-25 to 85 °C)
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/ Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	75g (2.6 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes, DC only
Adjacent Mounting on Bus Terminals without Power Contact	No
Passes Terminal Bus Power	Yes
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
Number of Channels	4
Input Ranges	4 to 20 mA
Resolution	12 bits
Input Type	Single-ended
Data Format	Decimal: 0-32767
Data Bytes Consumed	PX-MOD: 8 bytes input PX-TCP1/TCP2: 16 bytes in/ 16 bytes out (not used)
Input Power Source	24VDC provided via terminal power bus
Current Consumption (from Terminal Power Bus)	Load
Input Impedance	< 85V
Absolute Max Ratings	30VDC surge
Conversion Time	Approx. 2ms
Full Scale Calibration Error	± 0.3% of full scale
Current Consumption (from I/O Bus)	85mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	8, see LED Status chart

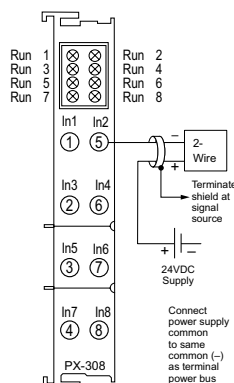
LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.
Red LED: ERROR	Broken wire or current is > 20.8 mA	Normal Operation

# Analog Current Input Terminals

## PX-308 \$00?ep:

### Eight-channel, 4-20 mA Analog Input Terminal

The PX-308 (type 1) Analog Input Terminal provides eight electrically isolated 4-20 mA inputs with 12-bit resolution and Error LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	75g (2.6 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

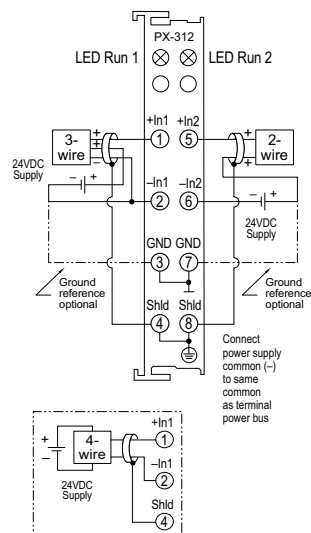
Terminal Specifications	
<b>Number of Channels</b>	8
<b>Input Ranges</b>	4 to 20 mA
<b>Resolution</b>	12 bits
<b>Input Type</b>	Single-ended
<b>Data Format</b>	Decimal: 0-32767
<b>Data Bytes Consumed</b>	PX-MOD: 16 bytes input PX-TCP1/TCP2: 32 bytes in/32 bytes out (not used)
<b>Input Power Source</b>	Requires external 24VDC power source
<b>Current Consumption (from Terminal Power Bus)</b>	Load
<b>Input Impedance</b>	< 85V
<b>Absolute Max Ratings</b>	30VDC surge
<b>Conversion Time</b>	Approx. 4ms
<b>Full Scale Calibration Error</b>	± 0.3% of full scale
<b>Current Consumption (from I/O Bus)</b>	105mA
<b>Electrical Isolation</b>	500Vms (I/O bus/field potential)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	8, Red: Error, broken wire or current is > 20.8 mA

# Analog Voltage Input Terminals

## PX-312 \$00?eq:

### Two-channel, -10 to +10 VDC Analog Input Terminal

The PX-312 (type 3) Analog Input Terminal provides two electrically isolated -10 to +10 VDC inputs with 12-bit resolution and LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	70g (2.4 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	Yes
<b>Passes Terminal Bus Power</b>	No
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

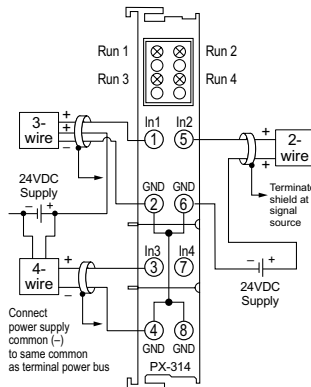
\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
<b>Number of Channels</b>	2
<b>Input Ranges</b>	-10 to +10 VDC
<b>Resolution</b>	12 bits (11 bits between 0 to 10 VDC)
<b>Input Type</b>	External ground reference
<b>Data Format</b>	Decimal: -32767 to +32767
<b>Data Bytes Consumed</b>	PX-MOD: 4 bytes input PX-TCP1/TCP2: 8 bytes in/ 8 bytes out (not used)
<b>Input Power Source</b>	Voltage source external
<b>Current Consumption (from Terminal Power Bus)</b>	NA
<b>Input Impedance</b>	> 200kV
<b>Absolute Max Ratings</b>	35VDC surge
<b>Conversion Time</b>	Approx. 2ms
<b>Full Scale Calibration Error</b>	± 0.3% of full scale
<b>Current Consumption (from I/O Bus)</b>	65mA
<b>Electrical Isolation</b>	500Vms (I/O bus/field potential)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	2, indicates I/O Bus activity

## PX-314 \$00?es:

### Four-channel, -10 to +10 VDC Analog Input Terminal

The PX-314 (type 1) Analog Input Terminal provides four electrically isolated -10 to +10 VDC inputs with 12-bit resolution and LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	75g (2.6 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

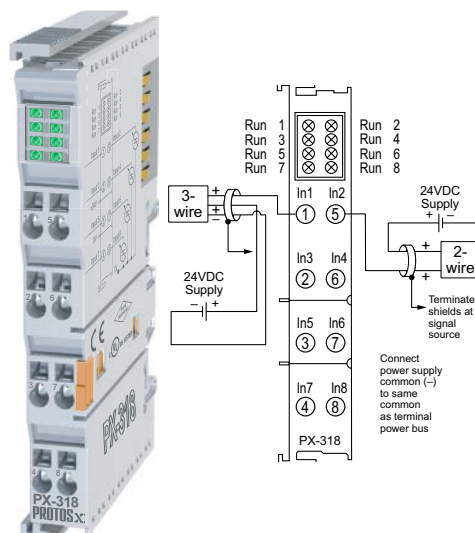
Terminal Specifications	
<b>Number of Channels</b>	4
<b>Input Ranges</b>	-10 to +10 VDC
<b>Resolution</b>	12 bits (11 bits between 0 to 10 VDC)
<b>Input Type</b>	Single-ended
<b>Data Format</b>	Decimal: -32767 to +32767
<b>Data Bytes Consumed</b>	PX-MOD: 8 bytes input PX-TCP1/TCP2: 16 bytes in/ 16 bytes out (not used)
<b>Input Power Source</b>	Voltage source external
<b>Current Consumption (from Terminal Power Bus)</b>	NA
<b>Input Impedance</b>	> 130kV
<b>Absolute Max Ratings</b>	30VDC surge
<b>Conversion Time</b>	Approx. 2ms
<b>Full Scale Calibration Error</b>	± 0.3% of full scale
<b>Current Consumption (from I/O Bus)</b>	100mA
<b>Electrical Isolation</b>	500Vms (I/O bus/field potential)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	4, indicates I/O Bus activity

# Analog Voltage Input Terminals

## PX-318 \$;00?et:

### ***Eight-channel, -10 to +10 VDC Analog Input Terminal***

The PX-318 (type 1) Analog Input Terminal provides eight electrically isolated -10 to +10 VDC inputs with 12-bit resolution and LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN 61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	75g (2.6 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
<b>Number of Channels</b>	8
<b>Input Ranges</b>	-10 to +10 VDC
<b>Resolution</b>	12 bits (11 bits between 0 to 10 VDC)
<b>Input Type</b>	Single-ended
<b>Data Format</b>	Decimal: -32767 to +32767
<b>Data Bytes Consumed</b>	PX-MOD: 16 bytes input PX-TCP1/TCP2: 32 bytes in/ 32 bytes out (not used)
<b>Input Power Source</b>	Voltage source external
<b>Current Consumption (from Terminal Pwr Bus)</b>	NA
<b>Input Impedance</b>	> 130kV
<b>Absolute Max Ratings</b>	30VDC surge
<b>Conversion Time</b>	Approx. 4ms
<b>Full Scale Calibration Error</b>	± 0.3% of full scale
<b>Current Consumption (from I/O Bus)</b>	140mA
<b>Electrical Isolation</b>	500Vms (I/O bus/field potential)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	8, indicates I/O Bus activity



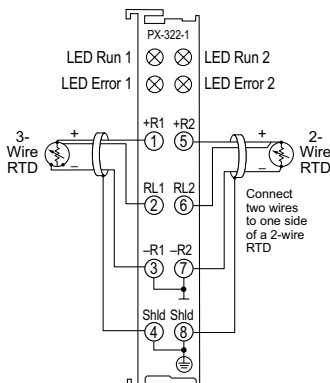
# RTD Input Terminals

## PX-322-1

\$00?eu:

### Two-channel RTD Input Terminal

The PX-322-1 (type 3) RTD Input Terminal provides two PT100 RTD inputs with full linearization and LED status.



General Specifications	
Operating Temp	0 to 55 °C
Storage Temp	-25 to 85 °C
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/ Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
Number of Channels	2
Range	-200 to 850 °C
Resolution	0.1 °C per digit
Input Type	PT100
Data Bytes Consumed	PX-MOD: 4 bytes input PX-TCP1/TCP2: 8 bytes in/ 8 bytes out (not used)
Connection Method	2-wire or 3-wire (3-wire default)
Power Supply	Via I/O Bus
Conversion Time	Approx. 250ms
Measuring Current	5mA typical
Linearity Error	< ± 1°C
Current Consumption (from I/O Bus)	60mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, see LED Status chart

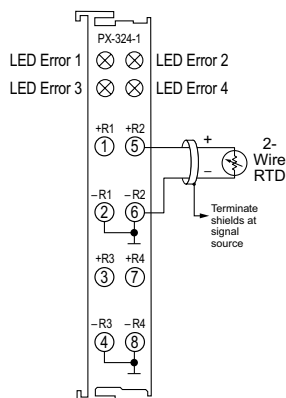
LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.
Red LED: ERROR	Sensor fault, e.g. broken wire	No Error

## PX-324-1

\$00?ev:

### Four-channel RTD Input Terminal

The PX-324-1 (type 3) RTD Input Terminal provides four PT100 RTD inputs with full linearization and LED status.



General Specifications	
Operating Temp	0 to 55 °C
Storage Temp	-25 to 85 °C
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/ Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

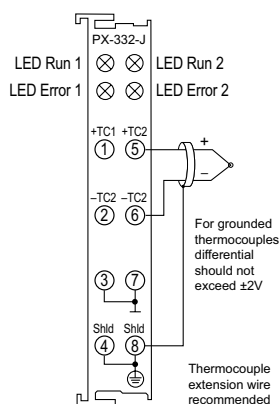
Terminal Specifications	
Number of Channels	4
Range	-200 to 850 °C
Resolution	0.1 °C per digit
Input Type	PT100
Data Bytes Consumed	PX-MOD: 8 bytes input PX-TCP1/TCP2: 16 bytes in/ 16 bytes out (not used)
Connection Method	2-wire
Power Supply	Via I/O Bus
Conversion Time	Approx. 250ms
Measuring Current	5mA typical
Linearity Error	< ± 1°C
Current Consumption (from I/O Bus)	60mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, Red: sensor fault

# Thermocouple Input Terminals

## PX-332-J \$00?ex:

### Two-channel Type J Thermocouple Input Terminal

The PX-332-J (type 3) Thermocouple Input Terminal provides two Type J thermocouple inputs with full linearization, cold-junction compensation, and LED status.



General Specifications	
Operating Temp	0 to 55 °C
Storage Temp	-25 to 85 °C
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

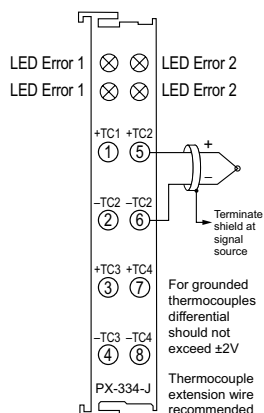
Terminal Specifications	
Number of Channels	2
Range	-100 to 1200 °C
Resolution	0.1 °C per digit
Input Type	Type J thermocouple
Data Bytes Consumed	PX-MOD: 4 bytes input PX-TCP1/TCP2: 8 bytes in/ 8 bytes out (not used)
Connection Method	2-wire (Thermocouple extension wire recommended)
Power Supply	Via I/O Bus
Conversion Time	Approx. 250ms
Measuring Current	5mA typical
Linearity Error	± 0.5% (relative to full scale value)
Current Consumption (from I/O Bus)	65mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, see LED Status chart

LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.
Red LED: ERROR	Sensor fault, e.g. broken wire	No Error

## PX-334-J \$00?ez:

### Four-channel Type J Thermocouple Input Terminal

The PX-334-J (type 3) Thermocouple Input Terminal provides four Type J thermocouple inputs with full linearization, cold-junction compensation, and LED status.



General Specifications	
Operating Temp	0 to 55 °C
Storage Temp	-25 to 85 °C
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

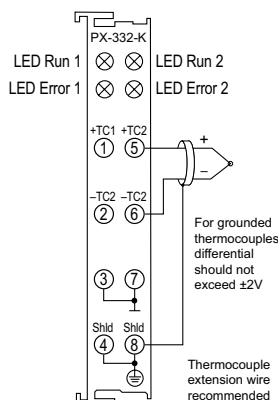
Terminal Specifications	
Number of Channels	4
Range	-100 to 1200 °C
Resolution	0.1 °C per digit
Input Type	Type J thermocouple
Data Bytes Consumed	PX-MOD: 8 bytes input PX-TCP1/TCP2: 16 bytes in/ 16 bytes out (not used)
Connection Method	2-wire (Thermocouple extension wire recommended)
Power Supply	Via I/O Bus
Conversion Time	Approx. 250ms
Measuring Current	5mA typical
Linearity Error	± 0.5% (relative to full scale value)
Current Consumption (from I/O Bus)	75mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, Red: sensor fault/broken wire

# Thermocouple Input Terminals

## PX-332-K \$00?ey:

### Two-channel Type K Thermocouple Input Terminal

The PX-332-K (type 3) Thermocouple Input Terminal provides two Type K thermocouple inputs with full linearization, cold-junction compensation, and LED status.



General Specifications	
Operating Temp	0 to 55 °C
Storage Temp	-25 to 85 °C
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN 61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

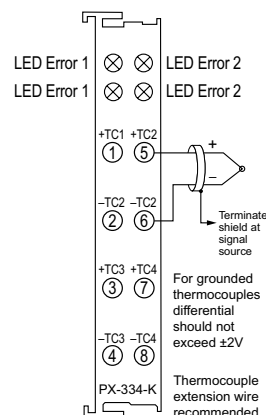
Terminal Specifications	
Number of Channels	2
Range	-100 to 1370 °C
Resolution	0.1 °C per digit
Input Type	Type K thermocouple
Data Bytes Consumed	PX-MOD: 4 bytes input PX-TCP1/TCP2: 8 bytes in/ 8 bytes out (not used)
Connection Method	2-wire (Thermocouple extension wire recommended)
Power Supply	Via I/O Bus
Conversion Time	Approx. 250ms
Measuring Current	5mA typical
Linearity Error	± 0.5% (relative to full scale value)
Current Consumption (from I/O Bus)	65mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, see LED Status chart

LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.
Red LED: ERROR	Sensor fault, e.g. broken wire	No Error

## PX-334-K \$;00?ej:

### Four-channel Type K Thermocouple Input Terminal

The PX-334-K (type 3) Thermocouple Input Terminal provides four Type K thermocouple inputs with full linearization, cold-junction compensation, and LED status.



General Specifications	
Operating Temp	0 to 55 °C
Storage Temp	-25 to 85 °C
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN 61000-6-4
Protection Class	IP20
Weight	70g (2.4 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
Number of Channels	4
Range	-100 to 1370 °C
Resolution	0.1 °C per digit
Input Type	Type K thermocouple
Data Bytes Consumed	PX-MOD: 8 bytes input PX-TCP1/TCP2: 16 bytes in/ 16 bytes out (not used)
Connection Method	2-wire (Thermocouple extension wire recommended)
Power Supply	Via I/O Bus
Conversion Time	Approx. 250ms
Measuring Current	5mA typical
Linearity Error	± 0.5% (relative to full scale value)
Current Consumption (from I/O Bus)	75mA
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Status Indicators	4, Red: sensor fault/broken wire

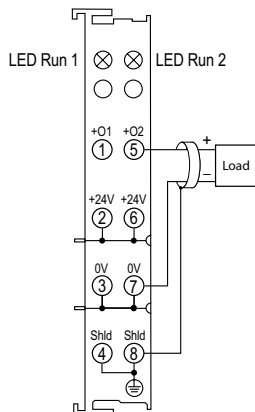


# Analog Current Output Terminals

## PX-402 \$;00?e[:

### Two-channel, 4-20 mA Analog Output Terminal

The PX-402 (type 1) Analog Output Terminal provides two electrically isolated, 4-20 mA outputs with 12-bit resolution and Run LED status.



\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	80g (2.8 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

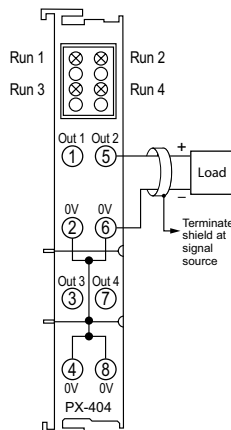
Terminal Specifications	
<b>Number of Channels</b>	2
<b>Output Ranges</b>	4 to 20 mA
<b>Resolution</b>	12 bit
<b>Output Type</b>	Single-ended
<b>Data Format</b>	Decimal: 0-32767
<b>Data Bytes Consumed</b>	PX-MOD: 4 bytes output PX-TCP1/TCP2: 8 bytes out/ 8 bytes in (not used)
<b>Output Power Source</b>	24VDC via terminal power bus
<b>Current Consumption (from Load Voltage)</b>	50mA + load
<b>Source Load</b>	< 500Ω (short-circuit protected)
<b>Conversion Time</b>	Approx. 1.5 ms
<b>Accuracy</b>	± 0.5 LSB linearity error, ± 0.5 LSB offset error ± 0.1% of the full scale value
<b>I/O Bus current Consumption (5V)</b>	60mA
<b>Electrical Isolation</b>	500Vms (I/O Bus/signal voltage)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	2, see LED Status chart

LED Status		
LED	LED ON	LED OFF
<b>Green LED: RUN</b>	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.

## PX-404 \$00?e\_:

### Four-channel, 4-20 mA Analog Output Terminal

The PX-404 (type 1) Analog Output Terminal provides four electrically isolated, 4-20 mA outputs with 12-bit resolution and Run LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	80g (2.8 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
<b>Number of Channels</b>	4
<b>Output Ranges</b>	4 to 20 mA
<b>Resolution</b>	12 bit
<b>Output Type</b>	Single-ended
<b>Data Format</b>	Decimal: 0-32767
<b>Data Bytes Consumed</b>	PX-MOD: 8 bytes output PX-TCP1/TCP2: 16 bytes out/ 16 bytes in (not used)
<b>Output Power Source</b>	24VDC via terminal power bus
<b>Current Consumption (from Load Voltage)</b>	60mA + load
<b>Source Load</b>	< 350Ω (short-circuit protected)
<b>Conversion Time</b>	Approx. 4ms
<b>Accuracy</b>	± 0.5 LSB linearity error, ± 0.5 LSB offset error ± 0.1% of the full scale value
<b>I/O Bus current Consumption (5V)</b>	20mA
<b>Electrical Isolation</b>	500Vms (I/O Bus/signal voltage)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	4, see LED Status chart

LED Status		
LED	LED ON	LED OFF
<b>Green LED: RUN</b>	Normal Operation	Watchdog-timer overflow if no data transmitted within WD set time.

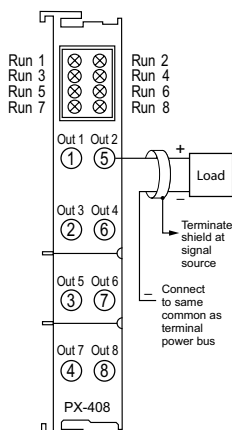


# Analog Current Output Terminals

## PX-408 \$00?e#:

### Eight-channel, 4-20 mA Analog Output Terminal

The PX-408 (type 1) Analog Output Terminal provides eight electrically isolated, 4-20 mA outputs with 12-bit resolution and Run LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/ Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	80g (2.8 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
<b>Number of Channels</b>	8
<b>Output Ranges</b>	4 to 20 mA
<b>Resolution</b>	12 bit
<b>Output Type</b>	Single-ended
<b>Data Format</b>	Decimal: 0-32767
<b>Data Bytes Consumed</b>	PX-MOD: 16 bytes output PX-TCP1/TCP2: 32 bytes out/ 32 bytes in (not used)
<b>Output Power Source</b>	24VDC via terminal power bus
<b>Current Consumption (from Load Voltage)</b>	50mA + load
<b>Source Load</b>	< 150Ω (short-circuit protected)
<b>Conversion Time</b>	Approx. 8ms
<b>Accuracy</b>	± 0.5 LSB linearity error, ± 0.5 LSB offset error ± 0.1% of the full scale value
<b>I/O Bus current Consumption (5V)</b>	25mA
<b>Electrical Isolation</b>	500Vrms (I/O Bus/signal voltage)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	8, see LED Status chart

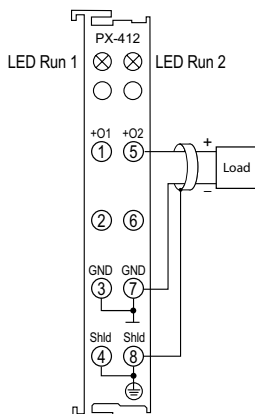
LED Status		
LED	LED ON	LED OFF
<b>Green LED: RUN</b>	Normal Operation	Watchdog error if no data transmitted within WD set time.

# Analog Voltage Output Terminals

## PX-412 \$,00?e!:

### Two-channel, 0 to 10 VDC Analog Output Terminal

The PX-412 (type 3) Analog Output Terminal provides two electrically isolated, 0 to 10 VDC outputs with 12-bit resolution, common ground potential, and Run LED status.



General Specifications	
Operating Temp	32 to 131 °F (0 to 55 °C)
Storage Temp	-13 to 185 °F (-25 to 85 °C)
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	85g (3.0 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

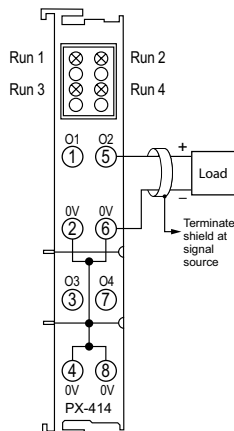
Terminal Specifications	
Number of Channels	2
Output Ranges	0 to 10 VDC
Resolution	12 bit
Output Type	Single-ended
Data Format	Decimal: 0-32767
Data Bytes Consumed	PX-MOD: 4 bytes output PX-TCP1/TCP2: 8 bytes out/ 8 bytes in (not used)
Output Power Source	24VDC via terminal power bus
Current Consumption (from Load Voltage)	50mA + load
Source Load	> 5kV (short-circuit protected)
Conversion Time	Approx. 1.5 ms
Accuracy	± 0.5 LSB linearity error, ± 0.5 LSB offset error ± 0.1% of the full scale value
I/O Bus current Consumption (5V)	75mA
Electrical Isolation	500Vms (I/O Bus/signal voltage)
Heat Dissipation	1W max
Status Indicators	2, see LED Status chart

LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog error if no data transmitted within WD set time.

## PX-414 \$00?e?:

### Four-channel, 0 to 10 VDC Analog Output Terminal

The PX-414 (type 1) Analog Output Terminal provides four electrically isolated, 0 to 10 VDC outputs with 12-bit resolution, common ground potential, and Run LED status.w



General Specifications	
Operating Temp	32 to 131 °F (0 to 55 °C)
Storage Temp	-13 to 185 °F (-25 to 85 °C)
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	Conforms to EN 60068-2-6
Shock	Conforms to EN 60068-2-27/ EN 60068-2-29
Noise Immunity	Conforms to EN 61000-6-2/ EN61000-6-4
Protection Class	IP20
Weight	85g (3.0 oz)
Dimensions (WxHxD)	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
Adjacent Mounting on Bus Terminals with Power Contact	Yes, DC only
Adjacent Mounting on Bus Terminals without Power Contact	Yes
Passes Terminal Bus Power	No
Passes PE Bus	No
Agency Approvals*	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
Number of Channels	4
Output Ranges	0 to 10 VDC
Resolution	12 bit
Output Type	Single-ended
Data Format	Decimal: 0-32767
Data Bytes Consumed	PX-MOD: 8 bytes output PX-TCP1/TCP2: 16 bytes out/ 16 bytes in (not used)
Output Power Source	24VDC via terminal power bus
Current Consumption (from Load Voltage)	50mA + load
Source Load	> 5kV (short-circuit protected)
Conversion Time	Approx. 1.5 ms
Accuracy	± 0.5 LSB linearity error, ± 0.5 LSB offset error ± 0.1% of the full scale value
I/O Bus current Consumption (5V)	75mA
Electrical Isolation	500Vms (I/O Bus/signal voltage)
Heat Dissipation	1W max
Status Indicators	2, see LED Status chart

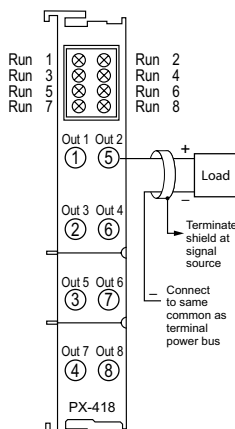
LED Status		
LED	LED ON	LED OFF
Green LED: RUN	Normal Operation	Watchdog error if no data transmitted within WD set time.

# Analog Voltage Output Terminals

## PX-418 \$,00?e,;

### **Eight-channel, -10 to +10 VDC Analog Output Terminal**

The PX-418 (type 1) Analog Output Terminal provides eight electrically isolated, -10 to +10 VDC outputs with 12-bit resolution, common ground potential, and Run LED status.



General Specifications	
<b>Operating Temp</b>	32 to 131 °F (0 to 55 °C)
<b>Storage Temp</b>	-13 to 185 °F (-25 to 85 °C)
<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Environment Air</b>	No corrosive gases permitted
<b>Mounting/Orientation Restrictions</b>	35mm DIN rail/None
<b>Vibration</b>	Conforms to EN 60068-2-6
<b>Shock</b>	Conforms to EN 60068-2-27/ EN 60068-2-29
<b>Noise Immunity</b>	Conforms to EN 61000-6-2/ EN61000-6-4
<b>Protection Class</b>	IP20
<b>Weight</b>	85g (3.0 oz)
<b>Dimensions (WxHxD)</b>	12 x 100 x 68.8 mm (0.47 x 3.94 x 2.71 in)
<b>Adjacent Mounting on Bus Terminals with Power Contact</b>	Yes, DC only
<b>Adjacent Mounting on Bus Terminals without Power Contact</b>	No
<b>Passes Terminal Bus Power</b>	Yes
<b>Passes PE Bus</b>	No
<b>Agency Approvals*</b>	UL/cUL File No. E157382, CE

\*To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Terminal Specifications	
<b>Number of Channels</b>	8
<b>Output Ranges</b>	-10 to +10 VDC
<b>Resolution</b>	12 bit
<b>Output Type</b>	Single-ended
<b>Data Format</b>	Decimal: 0-32767
<b>Data Bytes Consumed</b>	PX-MOD: 16 bytes output PX-TCP1/TCP2: 32 bytes out/ 32 bytes in (not used)
<b>Output Power Source</b>	24VDC via terminal power bus
<b>Current Consumption (from Load Voltage)</b>	20mA
<b>Source Load</b>	> 5kV (short-circuit protected)
<b>Conversion Time</b>	Approx. 8ms
<b>Accuracy</b>	± 0.5 LSB linearity error, ± 0.5 LSB offset error ± 0.1% of the full scale value
<b>I/O Bus current Consumption (5V)</b>	20mA
<b>Electrical Isolation</b>	500Vms (I/O Bus/signal voltage)
<b>Heat Dissipation</b>	1W max
<b>Status Indicators</b>	8, see LED Status chart

LED Status		
LED	LED ON	LED OFF
<b>Green LED: RUN</b>	Normal Operation	Watchdog error if no data transmitted within WD set time.

# System Installation and Removal

## Bus Coupler and Bus Terminal Installation

### Bus Coupler Installation:

1. Attach a Bus Coupler by snapping it onto 35mm DIN rail and securing it into position using the DIN rail locking wheel (where applicable) located on the left side of the coupler.

### Bus Terminal Installation:

2. To add a bus terminal, insert unit onto right side of Bus Coupler using the tongue and groove at the top and bottom of the unit, pressing gently until it snaps onto the DIN rail.
- A proper connection cannot be made by sliding the units together on the DIN rail. When correctly installed, no significant gap can be seen between the attached units. Bus connection is made through the six slide contacts located on the upper right side of the units. Add up to 64 bus terminals per Bus Coupler, including a bus end terminal.

2

**Insert unit using tongue and groove molded guide and press gently until it becomes firmly seated on DIN rail.**

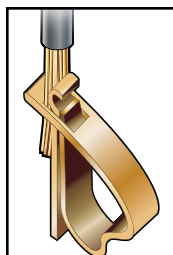
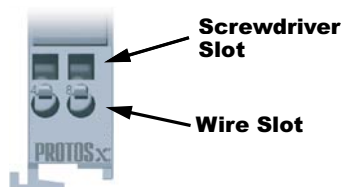
**Where applicable, rotate Locking Wheel to lock Bus Coupler**

1

**Align tab with molded guide**

### Wiring Connections

- Wire connection is made through a spring clamp style terminal. This terminal is designed for a single-conductor solid or stranded wire. Wire connection is made by firmly pushing the screwdriver into the screwdriver slot, inserting the wire into the wire slot and removing the screwdriver, locking the wire into position.



### Wiring Specifications

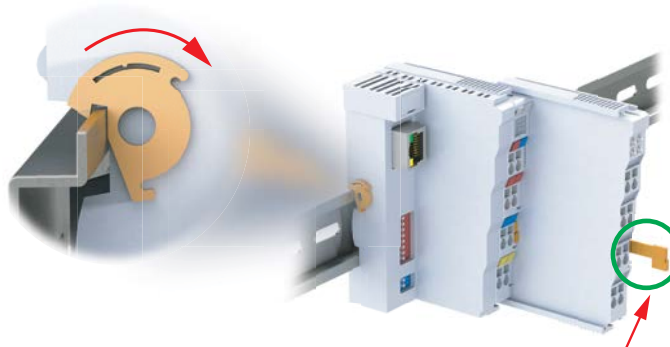
Connection Type	Spring Clamp Terminals
Wire Gauge	28–14 AWG (0.08–2.5 mm <sup>2</sup> )
Screwdriver Width	2.5 mm (0.10 in) such as P/N TW-SD-MSL-2
Wire Stripping Length	8mm

\* For Thermocouple terminals, thermocouple extension wire is recommended

## Removing Bus Coupler and Bus Terminals

- A locking mechanism prevents individual units from being pulled off. For bus terminal removal, pull the orange DIN rail release tab firmly to unlatch the unit from the rail. If attached to other terminal units, slide unit forward until released. For Bus Couplers with locking wheels, release the DIN rail locking wheel, then pull firmly on DIN rail release tab.

**Where applicable, rotate Locking Wheel to unlock Bus Coupler**



**Firmly pull DIN Rail Release Tab to unlatch unit from rail.**

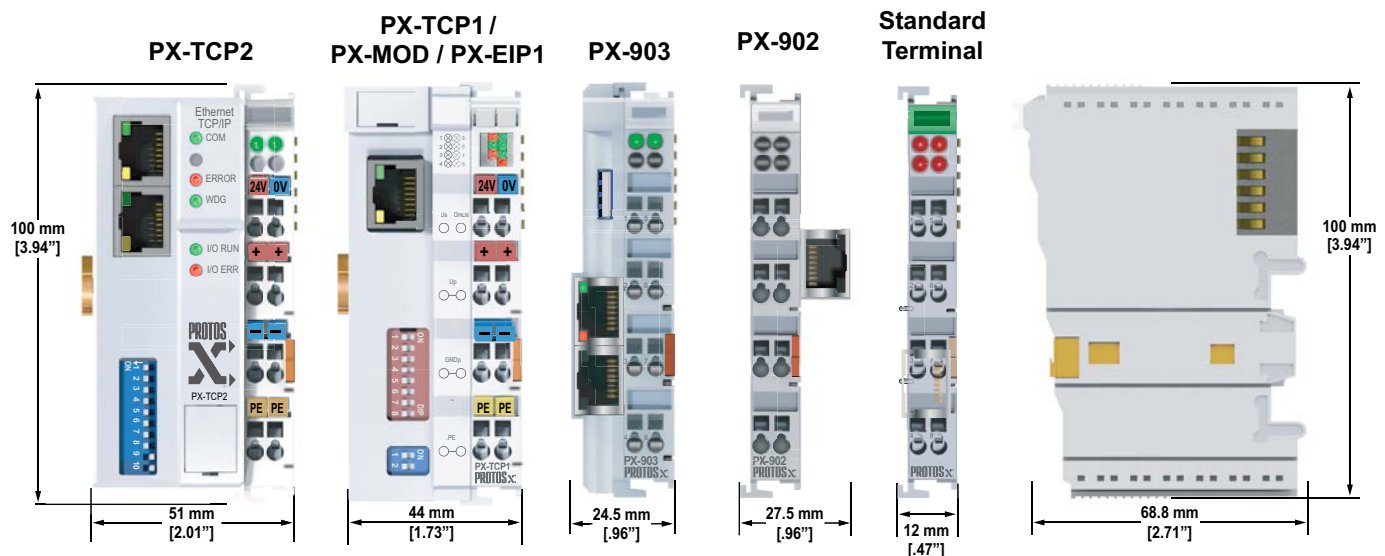
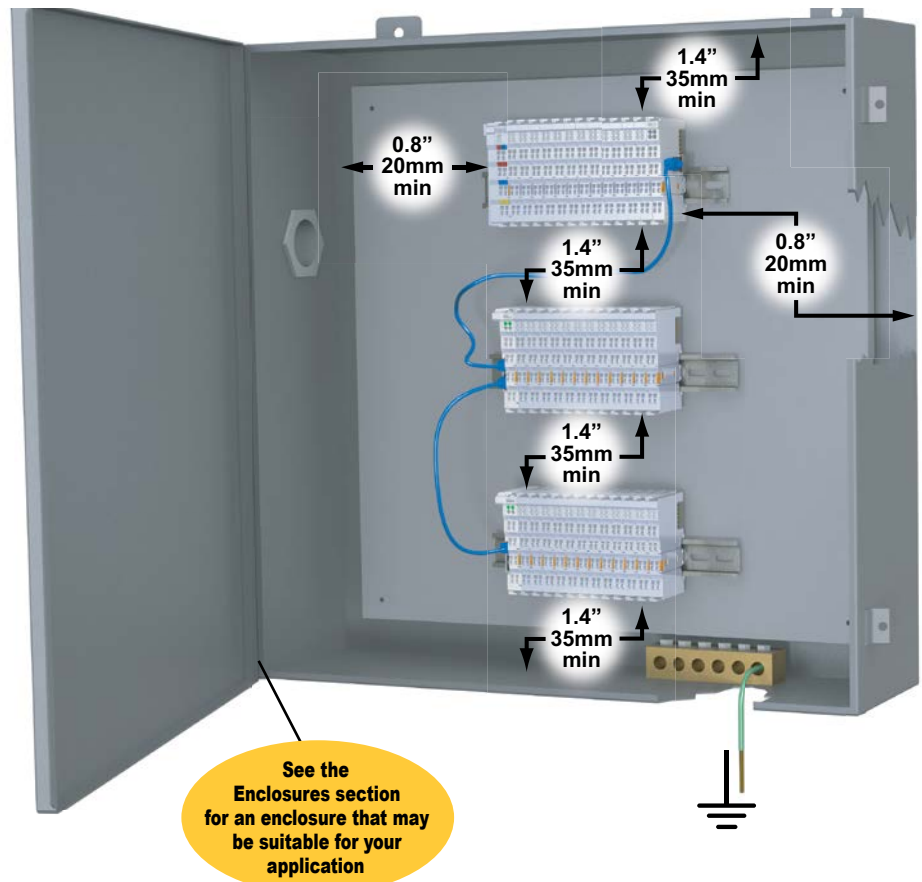


# Installation Considerations

## Terminal Dimensions and Spacing Requirements

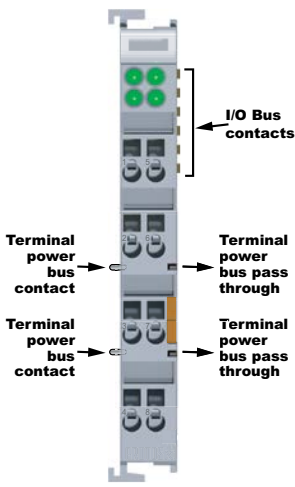
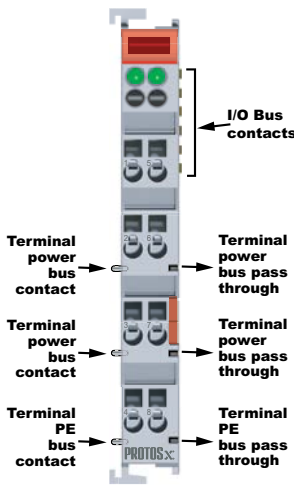
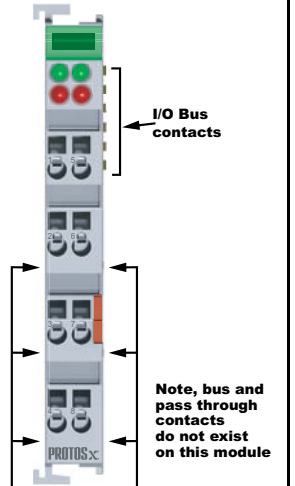
Use the following diagrams to make sure the Protos X system can be installed in your application. Protos X terminals require 35mm DIN rail for mounting; there are no orientation restrictions.

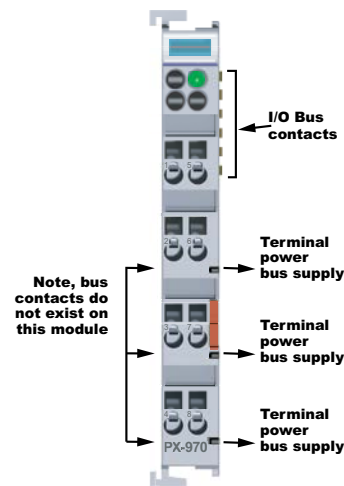
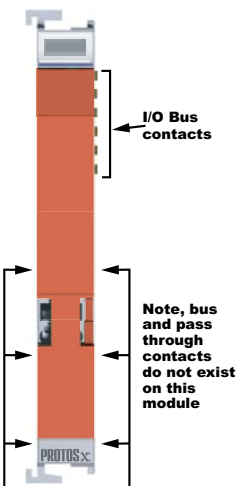
To ensure proper airflow for cooling purposes, units should be spaced, at a minimum, as shown. It is also important to check the Protos X dimensions against the conditions required for your application.



# Installation Considerations

## Terminal Types

TYPE 1	TYPE 2	TYPE 3
 <p>I/O Bus contacts</p> <p>Terminal power bus contact</p> <p>Terminal power bus pass through</p> <p>Terminal power bus contact</p> <p>Terminal power bus pass through</p>	 <p>I/O Bus contacts</p> <p>Terminal power bus contact</p> <p>Terminal power bus pass through</p> <p>Terminal power bus contact</p> <p>Terminal power bus pass through</p> <p>Terminal PE bus contact</p> <p>Terminal PE bus pass through</p> <p>PROTOSx</p>	 <p>I/O Bus contacts</p> <p>Note, bus and pass through contacts do not exist on this module</p> <p>PROTOSx</p>
<p>Type 1: This terminal passes the terminal power bus from the preceding terminal to the next terminal and therefore it must be mounted to a preceding terminal that passes bus power.</p>	<p>Type 2: This terminal passes the terminal power bus and PE from the preceding terminal to the next terminal and therefore it must be preceded by a terminal that passes both terminal power bus and PE.</p>	<p>Type 3: This terminal does not pass the terminal power bus or PE and can be preceded by any terminal, however it will interrupt the terminal power bus and PE.</p>

TYPE 4	TYPE 5
 <p>I/O Bus contacts</p> <p>Note, bus contacts do not exist on this module</p> <p>Terminal power bus supply</p> <p>Terminal power bus supply</p> <p>Terminal power bus supply</p> <p>PX-970</p>	 <p>I/O Bus contacts</p> <p>Note, bus and pass through contacts do not exist on this module</p> <p>PROTOSx</p>
<p>Type 4: This terminal requires external voltage connection and supplies the terminal power bus to terminals located to its right. The terminals to its right must support the same power bus of 120/230 VAC or 24VDC. This terminal will not pass terminal power or PE from any preceding terminals.</p>	<p>Type 5: This terminal is used to separate the terminal power bus and PE from other terminals and can be mounted next to any terminal.</p>