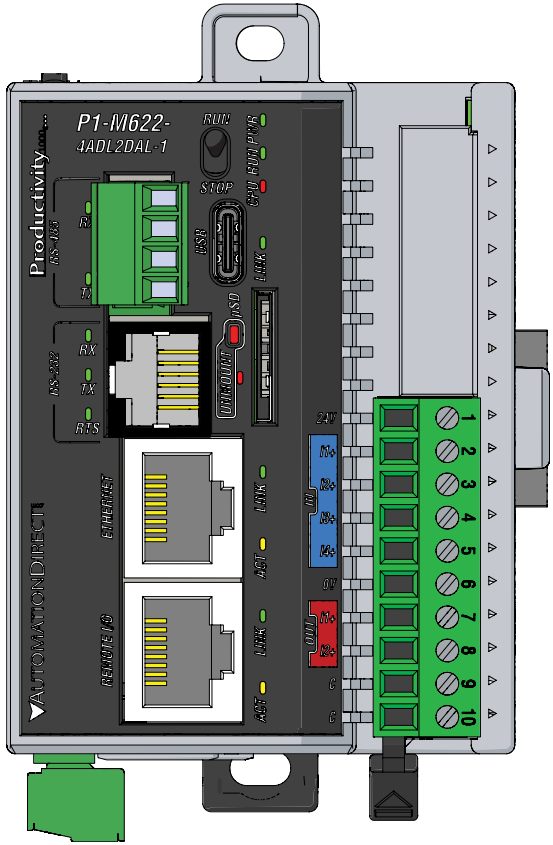



# P1-M622-4ADL2DAL-1

**The P1-M622-4ADL2DAL-1 is a P1000 CPU with 4 integrated analog current inputs and 2 analog current outputs. This PLC can be used as a stand-alone controller for small applications, or expanded with 4 additional P1000 I/O modules.**

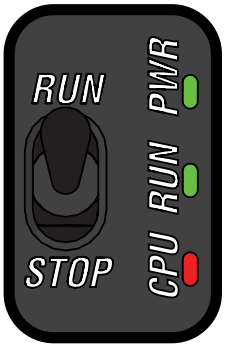


**Terminal Block sold separately, (see wiring options on page 4).**

| CPU Specifications | |
|---|---|
| ***User Memory*** | 50MB (Includes program, data and documentation) |
| ***Memory Type*** | Flash and Battery Backed RAM |
| ***Retentive Memory*** | 512KB |
| ***Scan Time*** | 1.9ms (1K Boolean, Max I/O) |
| ***External Power Required*** | 24VDC ±2% @ 2.5W plus 1.25 W per additional I/O module |
| ***Protection Circuit*** | Not built into module – Install protection element such as Edison S5601-R, Time Delay, 1A Fuse |
| ***Communications; 5 Integrated Ports*** | **USB**: Programming, Monitoring, Debug, Firmware<br>**ETHERNET**: (10/100Mbps Ethernet) Programming, Monitoring, Debug, Firmware, Email SMTP Client, Modbus TCP Client (32 Servers) and Server (16 Clients), Ethernet IP Scanner (32 Adapters) and Adapter (4 scanners) with 8 connections per device. Custom Protocol over Ethernet, ProNet, MQTT/MQTTS.<br>**REMOTE I/O**: 16 GS Drives*, 4 ProtosX TCP couplers, 4 P1-RX remote bases, 1 PS-AMC module<br>**RS-232**: (RJ12, 1200-115.2k Baud) ASCII, Modbus<br>**RS-485**: Removable Terminal Included, (1200-115.2k Baud) ASCII, Modbus RTU |
| ***Data Logging*** | MicroSD card slot |
| ***Hardware Limits of System*** | **Onboard I/O Points:** 4 0–20 mA inputs and 2 4–20 outputs<br>**Expansion I/O Point Limit:** 64 (4 modules with up to 16 points each) |
| ***Instruction Types*** | Application Functions, Array Functions, Counters/Timers, Communications, Data Handling, Drum Sequencers, Math Functions, PID, Program Control, String Functions, System Functions, Contacts, Coils, Motion Control |
| ***Real Time Clock Accuracy*** | ±2s per day at typical 25°C<br>±10s per day maximum at 60°C |

*GS drive requires communication module/ card

| CPU Status Indicators | |
|---|---|
| ***PWR*** | Green LED is illuminated when power is ON |
| ***RUN*** | Green LED is illuminated when CPU is in RUN mode |
| ***CPU*** | Red LED is illuminated during power ON reset, power down, or watch-dog time-out |




| CPU Run/Stop Switch Specifications | |
|---|---|
| ***RUN position*** | Executes user program, run-time edits possible |
| ***STOP position*** | Does not execute user program, normal program load position |

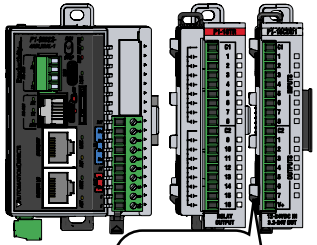
| Input Specifications | |
|---|---|
| ***Inputs per Module*** | 4 |
| ***Module Signal Input Range*** | 0–20 mA |
| ***Signal Resolution*** | 13-bit |
| ***Resolution Value of LSB (least significant bit)*** | 0–20 mA = 2.44 µA per count<br>(1LSB = 1 count) |
| ***Data Range*** | 0–8191 counts |
| ***Input Type*** | Sinking, Single-ended (1 common) |
| ***Maximum Continuous Overload*** | ±31mA |
| ***Input Impedance*** | 243Ω, ±0.5%, 1/8W Current Input |
| ***Filter Characteristics*** | Low Pass, -3dB @ 120Hz |
| ***Sample Duration Time*** | 4ms per channel<br>(does not include ladder scan time) |
| ***All Channel Update Rate*** | 20ms |
| ***Open Circuit Detection Time*** | Zero reading within 100ms |
| ***Conversion Method*** | Successive approximation |
| ***Accuracy vs. Temperature*** | ±75PPM / °C maximum |
| ***Maximum Inaccuracy*** | 0.5% of range<br>(including temperature drift) |
| ***Linearity Error (end to end)*** | ±0.037% of range<br>Monotonic with no missing codes |
| ***Input Stability and Repeatability*** | ±0.024% of range (after 10 minute warm-up) |
| ***Maximum Full Scale Calibration Error*** | ±0.098% of range |
| ***Offset Calibration Error*** | ±0.098% of range |
| ***Maximum Crosstalk at DC, 50Hz and 60Hz*** | ±0.049% of range |
| ***Protection Circuit*** | Edison S500-32-R, 0.032 A fuse |
| ***External Power Supply Required*** | 24VDC (-20% / + 25%), 140mA (Loop Power Included) |

| Output Specifications | |
|---|---|
| ***Outputs per Module*** | 2 |
| ***Output Range*** | 4–20 mA |
| ***Signal Resolution*** | 12-bit |
| ***Resolution Value of LSB (least significant bit)*** | 4–20 mA = 3.9 µA / count<br>1 LSB = 1 count |
| ***Data Range*** | 0–4095 counts |
| ***Output Type*** | Current sourcing at 20mA max |
| ***Output Value in Fault Mode*** | Less than 4mA |
| ***Load Impedance*** | 0–570 Ω (19.2 VDC), 0–690 Ω (21.6 VDC),<br>0–810 Ω (24.0 VDC), 0–930 Ω (26.4 VDC),<br>0–1100 Ω (30.0 VDC)<br>Minimum Load: 0Ω @ 0–45 °C<br>125Ω @ 45–60 °C ambient temperature |
| ***Maximum Inductive Load*** | 1mH |
| ***Allowed Load Type*** | Grounded |
| ***Maximum Inaccuracy*** | 1% of range |
| ***Full Scale Calibration Error*** | ±0.2% of range minimum |
| ***Offset Calibration Error*** | ±0.2% of range maximum |
| ***Accuracy vs. Temperature*** | ±75 PPM / °C maximum full-scale calibration change (±0.005% of range / °C) |
| ***Max Crosstalk at DC, 50Hz and 60Hz*** | -72dB, 1 LSB |
| ***Linearity Error (End to End)*** | ±4 counts max., (±0.1% of full scale) |
| ***Output Stability and Repeatability*** | ±2% counts after 10 min. warm up (typical) |
| ***Output Ripple*** | ±0.2% of full scale |
| ***Output Settling Time*** | 0.3 ms max., 5µs min. (full scale range) |
| ***All Channel Update Rate*** | 4ms (max) |
| ***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 |

# Module Installation

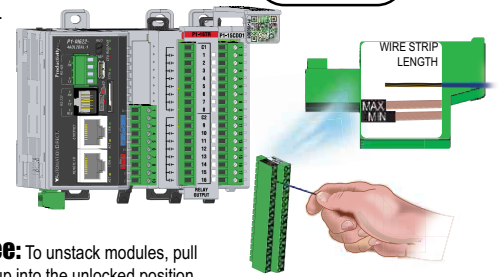
**WARNING:** Do not add or remove modules with field power applied.

**Step One:** With latch in "locked" position, align connectors on the side of each module and stack by pressing together. Click indicates lock is engaged.

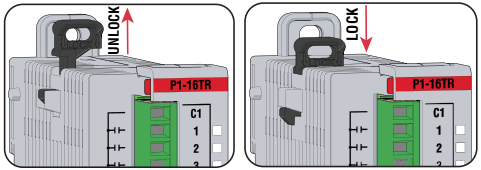


Check all latches are secure after modules are connected.

**Step Two:** Attach field wiring using the removable terminal block or ***ZIP***Link wiring system.

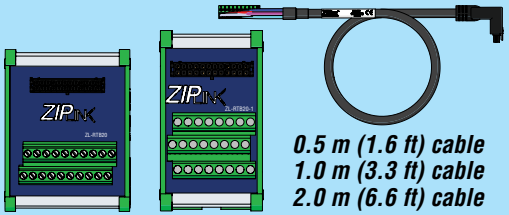



**Step Three:** To unstack modules, pull locking latch up into the unlocked position and then pull modules apart.



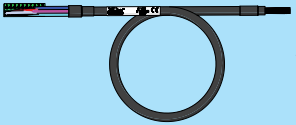

## Wiring Options

**1** ***ZIP*Link Feed Through *Modules and Cables*[1]**



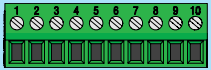
| | |
|---|---|
| *0.5 m (1.6 ft) cable* | ZL-RTB20<br>ZL-RTB20-1 |
| *1.0 m (3.3 ft) cable* | ZL-P1-CBL10<br>ZL-P1-CBL10-1 |
| *2.0 m (6.6 ft) cable* | ZL-P1-CBL10-2 |

**2** ***Terminal Block with pigtail cable***



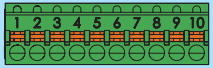
| | |
|---|---|
| *1.0 m (3.3 ft) cable* | ZL-P1-CBL10-1P |
| *2.0 m (6.6 ft) cable* | ZL-P1-CBL10-2P |

**3** ***Screw Terminal Block only***



P1-10RTB
(Quantity 1)

**4** ***Spring Clamp Terminal Block only***



P1-10RTB-1
(Quantity 1)

**5** ***Accessories*[2]**

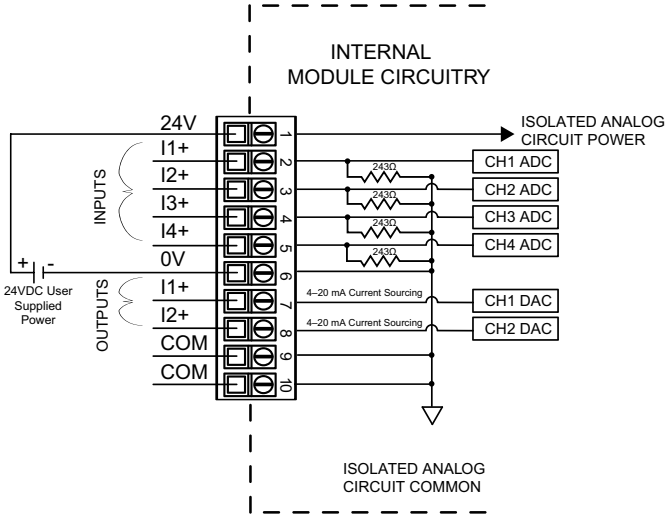
ZL-RTB-COM

TW-SD-SL-1

TW-SD-MSL-1

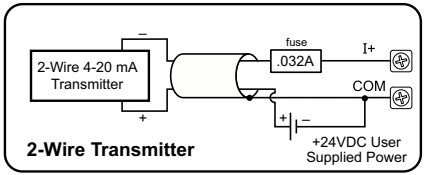
1. Cable + ***ZIP***Link Module = Complete System
2. ZL-RTB-COM provides a common connection point for power or ground

# Schematic

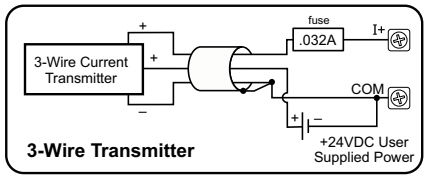


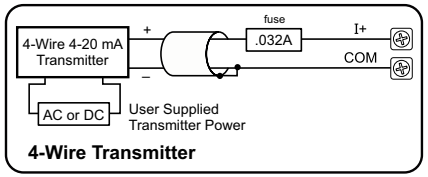

# Wiring Diagram

## Current Input Circuits



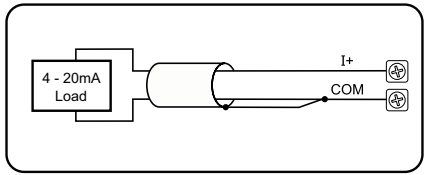

An Edison S500-32-R 0.032A fast-acting fuse is recommended for all 4-20 mA current loops.



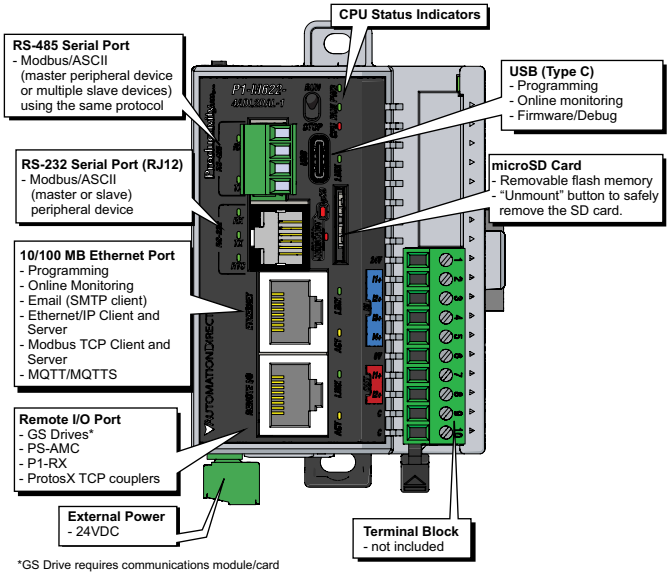

Note: Do not connect both ends of shield.

## Current Output Circuits




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

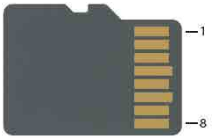
# CPU Front Panel




*GS Drive requires communications module/card
Feature availability may require current software version.

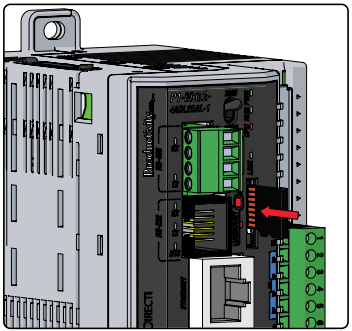
| microSD Specifications | | | | |
|---|---|---|---|---|
| ***Port Name*** | ***microSD*** | | | |
| ***Description*** | Standard microSD socket for data logging | | | |
| ***Maximum Card Capacity*** | 32GB SDHC | | | |
| ***Transfer Rate (Class 4 memory card)**** | Mbps | Minimum | Typical | Maximum |
| | Read | 14.3 | 14.4 | 14.6 |
| | Write | 4.8 | 4.9 | 5.1 |
| ***Port Status LED*** | Green LED is illuminated when card is inserted/detected | | | |

*Supported microSD MICSD-16G



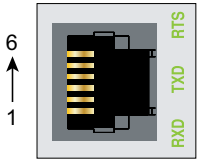

NOTE: Card not included with unit.

| Pin | SD |
|---|---|
| 1 | DAT2 |
| 2 | CD/DAT3 |
| 3 | CMD |
| 4 | VDD |
| 5 | CLK |
| 6 | VSS |
| 7 | DAT0 |
| 8 | DAT1 |



# Port Specifications

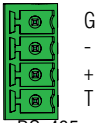
| RS-232 Specifications | |
|---|---|
| ***Port Name*** | **RS-232** |
| ***Description*** | Non-isolated RS-232 DTE port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection |
| ***Data Rates*** | Selectable,1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 |
| ***+5V Cable Power Source*** | 210mA maximum at 5V, ±5%. Reverse polarity and overload protected |
| ***TXD*** | RS-232 Transmit output |
| ***RXD*** | RS-232 Receive input |
| ***RTS*** | Handshaking output for modem control |
| ***GND*** | Logic ground |
| ***Maximum Output Load (TXD/RTS)*** | 3kΩ, 1000 pf |
| ***Minimum Output Voltage Swing*** | ±5 V |
| ***Output Short Circuit Protection*** | ±15 mA |
| ***Port Status LED*** | Green LED is illuminated when active for TXD, RXD and RTS |
| ***Cable Options*** | EA-MG-PGM-CBL<br>D2-DSCBL<br>USB-RS232-1 with D2-DSCBL<br>FA-CABKIT<br>FA-ISOCON for converting RS-232 to isolated RS-485 |



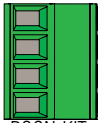
6-pin RJ12 Female Modular Connector

| Pin # | Signal | |
|---|---|---|
| 6 | GND | Logic Ground |
| 5 | RTS | RS-232 Output |
| 4 | TXD | RS-232 Output |
| 3 | RXD | RS-232 Input |
| 2 | +5V | 210mA Maximum |
| 1 | GND | Logic Ground |

| RS-485 Port Specifications | |
|---|---|
| ***Port Name*** | ***RS-485*** |
| ***Description*** | Non-isolated RS-485 port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active |
| ***Data Rates*** | Selectable, 1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 |
| ***TXD+/RXD+*** | RS-485 transceiver high |
| ***TXD-/RXD-*** | RS-485 transceiver low |
| ***GND*** | Logic ground |
| ***Input Impedance*** | 19kΩ |
| ***Termination Resistance (TB Jumper Wire "T" to "+")*** | 120Ω. To use, add a jumper between "T" and "+". Resistor is internally connected between "T" and "-'. |
| ***Maximum Load*** | 50 transceivers, 19kΩ each, 60Ω termination |
| ***Output Short Circuit Protection*** | ± 250mA, thermal shut-down protection |
| ***Electrostatic Discharge Protection*** | Contact ± 4KV, Air ± 8KV per IEC1000-4-2<br>Cable is installed for testing |
| ***Electrical Fast Transient Protection*** | ± 1KV per IEC1000-4-4 |
| ***Minimum Differential Output Voltage*** | 1.5 V with 60Ω load |
| ***Fail Safe Inputs*** | Logic high input state if inputs are unconnected |
| ***Maximum Common Mode Voltage*** | -7.5 V to 12.5 V |
| ***Port Status LED*** | Green LED illuminated when active for TXD and RXD |
| ***Cable Options*** | Go to AutomationDirect.com for RS-232 and RS-485 cables |



RS-485

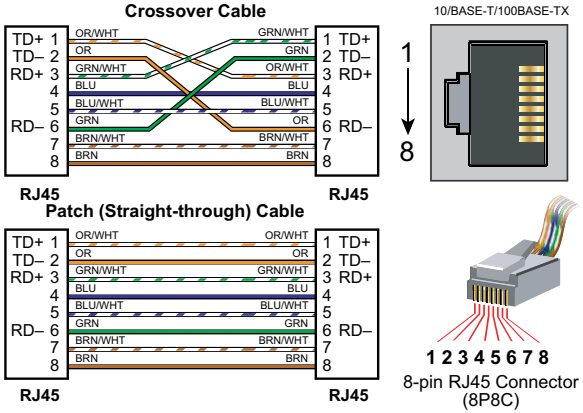

PCON-KIT

| Pin # | Signal |
|---|---|
| G | GND |
| - | TXD-/RXD- |
| + | TXD+/RXD+ |
| T | TERMINATION |

# Port Specifications

| Ethernet Specifications | | |
|---|---|---|
| ***Port Name*** | ***ETHERNET*** | ***REMOTE I/O*** |
| **Description** | Standard transformer isolated Ethernet port with built-in surge protection for programming, online monitoring and ethernet communication protocols.<br>See table on page 2 for supported devices and protocols. | Standard transformer isolated Ethernet port with built-in surge protection for connection to supported remote I/O devices.<br>See table on page 2 for supported remote I/O devices. |
| **Transfer Rate** | 10 Mbps and 100 Mbps (auto-crossover) | |
| **Port Status LED** | LINK (Amber LED) is solid when network LINK is established. ACT (Green LED) flashes when port is active. | |

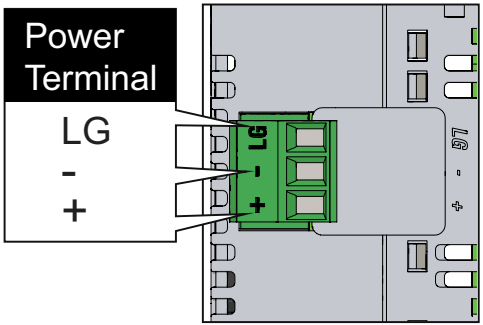
| USB-C Specifications | |
|---|---|
| ***Port Name*** | ***USB-C*** |
| ***Description*** | Standard USB-C Slave input for programming and online monitoring and firmware update with built-in surge protection. Not compatible with older full speed USB devices. |
| ***Transfer Rate*** | 480 Mbps |
| ***Port Status LED*** | Green LED is illuminated when LINK is established to programming software. |
| ***Cables*** | USB Type A to Micro USB Type C:<br>6ft cable part # USB-CBL-AC6 |



| Power Removable Terminal Block Specifications | |
|---|---|
| ***Part Number*** | PCON-KIT |
| ***Number of Positions*** | 3 Screw Terminals |
| ***Pitch*** | 3.5 mm |
| ***Wire Range*** | 28–16 AWG Solid Conductor<br>28–16 AWG Stranded Conductor |
| ***Screw Driver Width*** | 1/8 in (3.175 mm) Maximum |
| ***Screw Size*** | M2 |
| ***Screw Torque*** | 1.7 lb·in (0.4 N·m) |

| Input/Output Removable Terminal Block Specifications | | |
|---|---|---|
| ***Part Number*** | ***P1-10RTB*** | ***P1-10RTB-1*** |
| ***Positions*** | 10 Screw Terminals | 10 Spring Clamp Terminals |
| ***Wire Range*** | 30–16 AWG (0.051–1.31 mm²)<br>Solid / Stranded Conductor<br>3/64 in (1.2 mm) Insulation Max.<br>1/4 in (6–7 mm) Strip Length | 28–16 AWG (0.081–1.31 mm²)<br>Solid / Stranded Conductor<br>3/64 in (1.2 mm) Insulation Max.<br>19/64 in (7–8 mm) Strip Length |
| ***Conductors*** | "USE COPPER CONDUCTORS, 75ºC" or equivalent. | |
| ***Screw Driver*** | 0.1 in (2.5 mm) Maximum* | |
| ***Screw Size*** | M2 | N/A |
| ***Screw Torque*** | 2.5 lb·in (0.28 N·m) | N/A |

*Recommended Screw Driver TW-SD-MSL-1



| General Specifications | |
|---|---|
| ***Operating Temperature*** | 0º to 60ºC (32º to 140ºF) |
| ***Storage Temperature*** | -20º to 70ºC (-4º to 158ºF) |
| ***Humidity*** | 5 to 95% (non-condensing) |
| ***Altitude*** | 2,000 meters max |
| ***Pollution Degree*** | 2 |
| ***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 1 second |
| ***Insulation Resistance*** | > 10MΩ @ 500VDC |
| ***Heat Dissipation*** | 4.75 W |
| ***Overvoltage Category*** | II |
| ***Enclosure Type*** | Open Equipment |
| ***Module Location*** | Controller in a Productivity1000 System. |
| ***Field Wiring*** | Removable terminal block (sold separately). Use ***ZIP***Link Wiring System optional See “Wiring Options” on page 4. |
| ***Terminal Type (sold separately)*** | 10-position Removable Terminal Block |
| ***Weight*** | 168g (5.93 oz) |
| ***Agency Approvals*** | UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA<br>CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)* |

*See CE Declaration of Conformance for details.

**WARNING:** To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

***Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.***

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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| Document Name | Edition/Revision | Date |
|---|---|---|
| P1-M622-4ADL2DAL-1-DS | 1st Edition | 5/14/2025 |