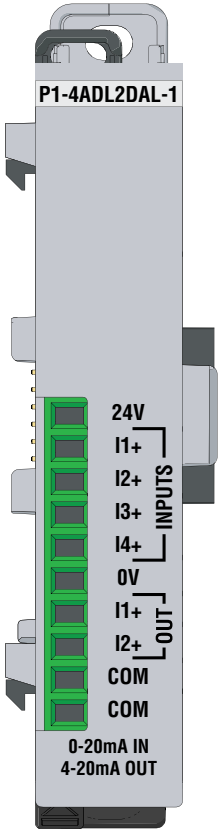
General Specifications	
Operating Temperature	0º to 60ºC (32º to 140ºF)
Storage Temperature	-20º to 70ºC (-4º to 158ºF)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	> 10MΩ @ 500VDC
Heat Dissipation	2470mW
Enclosure Type	Open Equipment
Module Location	Any I/O position in a Productivity1000 System
Field Wiring	Removable terminal block (sold separately). Use ***ZIP***Link Wiring System optional See "Wiring Options" on page 5.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity1000.com
Terminal Type (sold separately)	10-position Removable Terminal Block
Weight	60g (2.1 oz)
Agency Approvals	UL61010-2-201 file E139594, Canada & USA CE (EN61131-2 EMC and EN61010-2-201 Safety)*

*See CE Declaration of Conformance for details.



P1-4ADL2DAL-1 Analog Input/ Output

The P1-4ADL2DAL-1 Current Analog Input/Output Module provides four 13 bit input channels at 0-20 mA and two 12 bit output channels at 4-20 mA for use with the Productivity1000 system.

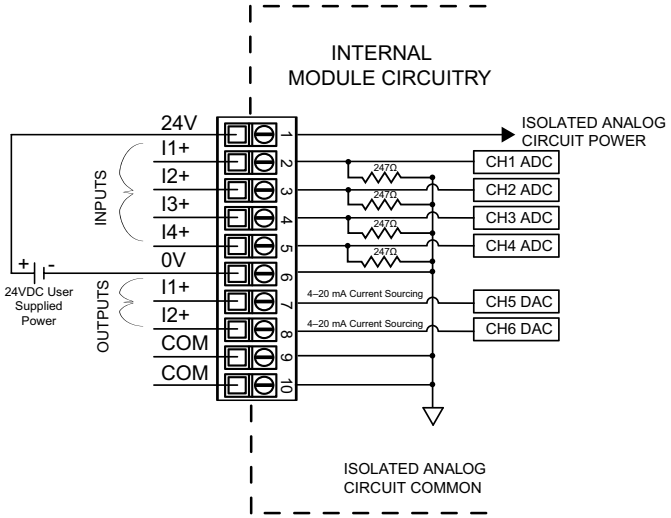
Terminal Block sold separately, (see wiring options on page 5).

Warranty: Thirty-day money-back guarantee. Two-year limited replacement. (See www.productivity1000.com for details).

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 (1LSB = 1 count)
Data Range	0–8191 counts
Input Type	Sinking, Single-ended (1 common)
Maximum Continuous Overload	±31mA
Input Impedance	247Ω, ±0.5%, 1/4W Current Input
Filter Characteristics	Low Pass, -3dB @ 120Hz
Sample Duration Time	4ms per channel (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 / ºC maximum
Maximum Inaccuracy	0.5% of range (including temperature drift)
Linearity Error (end to end)	±0.037% of range 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
Recommended Fuse (external)	Edison S500-32-R, 0.032 A fuse
External Power Supply Required	24VDC (-20% / + 25%), 140mA (Loop Power Included)

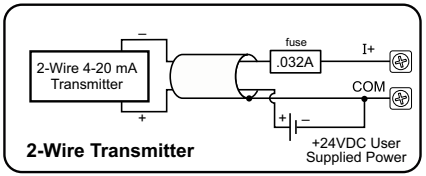
Output Specifications	
Outputs per Module	2
Output Range	4–20 mA
Signal Resolution	12-bit
Resolution Value of LSB (least significant bit)	4–20 mA = 3.9 µA / count 1 LSB = 1 count
Data Range	0–4095 counts
Output Type	Current sourcing at 20mA max
Output Value in Fault Mode	Less than 4mA
Load Impedance	0–570 Ω (19.2 VDC), 0–690 Ω (21.6 VDC), 0–810 Ω (24.0 VDC), 0–930 Ω (26.4 VDC), 0–1100 Ω (30.0 VDC) Minimum Load: 0Ω @ 0–45 °C 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

P1-4ADL2DAL-1 Schematic

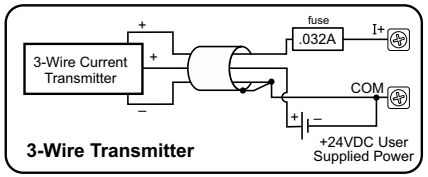


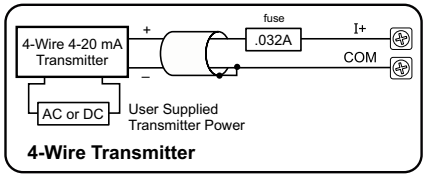
P1-4ADL2DAL-1 Wiring Diagram

Current Input Circuits



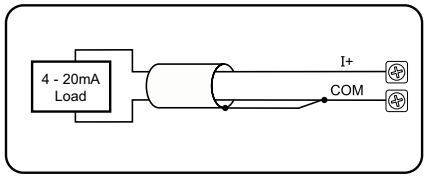
An Edison S500-32-R 0.032A fast-acting fuse is recommended for all 4-20 mA current loops.





Note: Do not connect both ends of shield.

Current Output Circuits

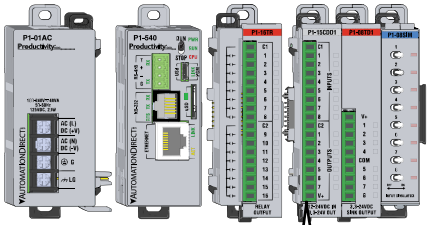


Note: Shield is connected to common at the source device.

Module Installation

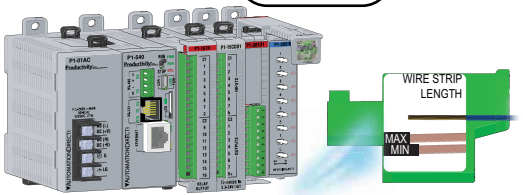
WARNING: Do not add or remove modules with field power applied.

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.

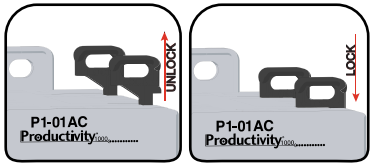


Check all latches are secure after modules are connected.

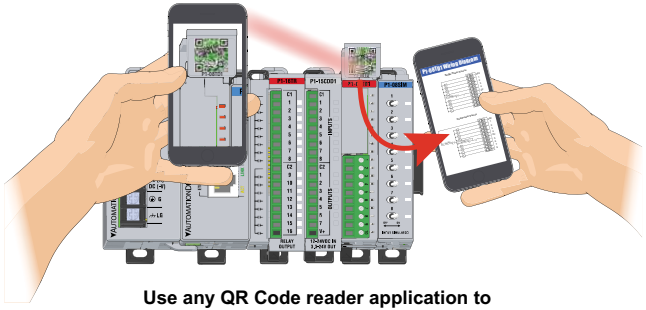
Step Two: Attach field wiring using the removable terminal block or ***ZIP***Link wiring system.



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



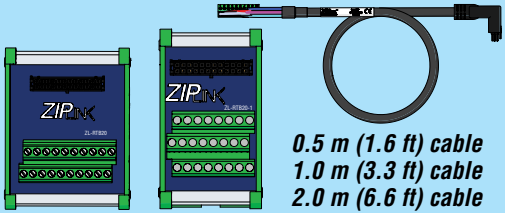
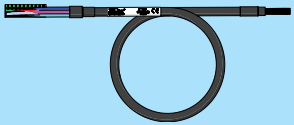
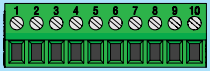
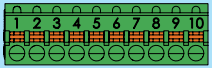
QR Code



Use any QR Code reader application to display the module's product insert.

Module Configuration

Wiring Options

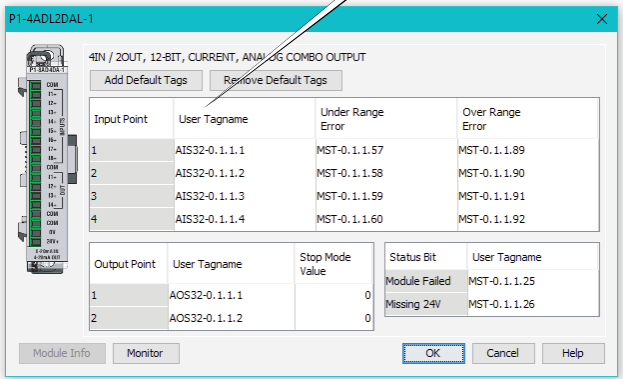
1 ***ZIP*Link Feed Through *Modules and Cables*[1]**  ***0.5 m (1.6 ft) cable*** ***1.0 m (3.3 ft) cable*** ***2.0 m (6.6 ft) cable***	ZL-RTB20 ZL-RTB20-1 ZL-P1-CBL10 ZL-P1-CBL10-1 ZL-P1-CBL10-2
2 ***Terminal Block with pigtail cable***  ***1.0 m (3.3 ft) cable*** ***2.0 m (6.6 ft) cable***	ZL-P1-CBL10-1P 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-2

1.Cable + ***ZIP***Link Module = Complete System

2. ZL-RTB-COM provides a common connection point for power or ground

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P1-4ADL2DAL-1 module into the configuration.

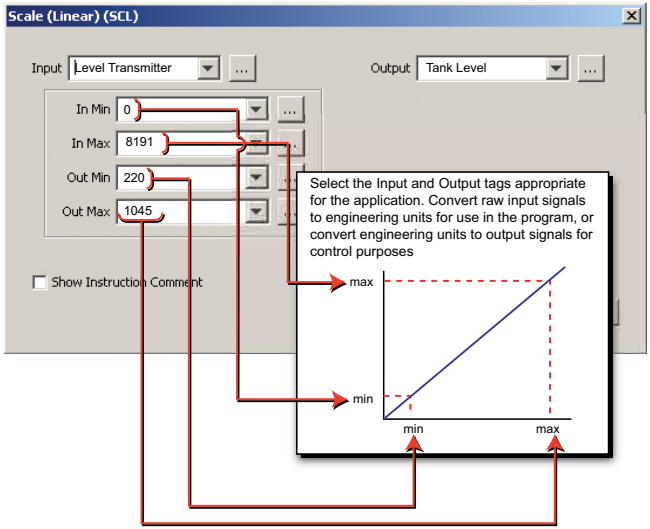
If desired, assign a *User Tagname* to each input point (channel) selected and to each *Status Bit Item*.



Linear Scaling

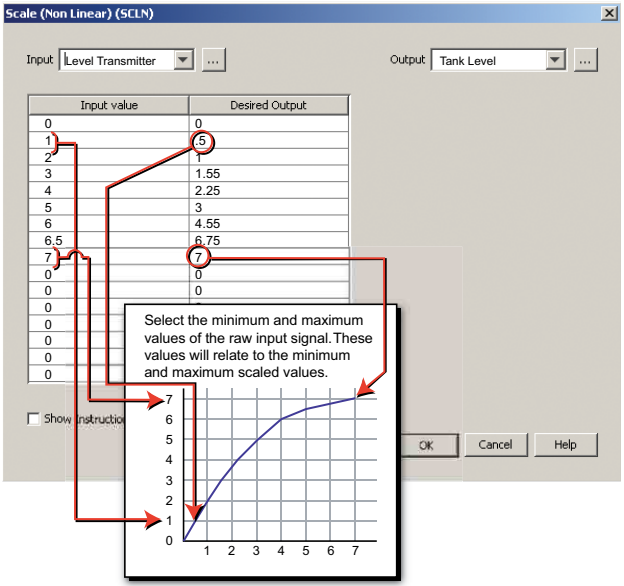
The Scale (Linear) function can be used to:

- **Convert analog field input signals from the range which is native to the analog input module to an application specific range.**
- **Make other linear conversions in ranges appropriate to the application.**



Non-Linear Scaling

The Scale (Non-Linear) function can be used for Non-Linear applications.



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 .

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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) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 1/4 in (6–7 mm) Strip Length	28–16 AWG (0.081–1.31 mm²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 19/64 in (7–8 mm) Strip Length
Conductors	"USE COPPER CONDUCTORS, 75°C" 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

Document Name	Edition/Revision	Date
P1-4ADL2DAL-1-DS	1st Edition	5/18/2018