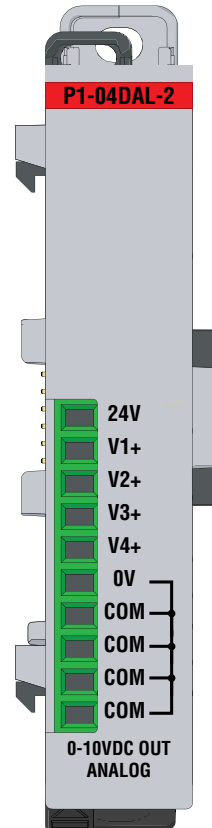


Output Specifications	
Output Channels	4
Module Signal Output Range	0–10 V
Signal Resolution	12-bit
Resolution Value of LSB (least significant bit)	0–10 V = 2.44 mV / count 1 LSB = 1 count
Data Range	0–4095 counts
Output Type	Voltage sourcing at 10mA
Output Value in Fault Mode	0V
Load Impedance	≥1000Ω
Maximum Capacitive Load	0.01 μF
Allowed Load Type	Grounded
Maximum Inaccuracy	0.5% of range
Full Scale Calibration Error	±0.2% of range
Offset Calibration Error	±0.2% of range
Accuracy vs. Temperature	±75 PPM / °C maximum full-scale calibration change (±0.0025% of range / °C)
Max Crosstalk at DC, 50/60Hz	-72dB, 1 LSB
Linearity Error (End to End)	±4 LSB max., (±0.1% of full scale) Monotonic with no missing codes
Output Stability and Repeatability	±2% LSB 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	2ms
Maximum Continuous Overload	Outputs current limited to 40mA typical Continuous overloads on multiple outputs can damage the module.
Type of Output Protection	0.1 μ Transient Suppressor
Output Signal at Power Up and Power Down	0V
External Power Supply Required	24VDC (-20% / +25%), 100mA



P1-04DAL-2 Analog Output

The P1-04DAL-2 Low Resolution Voltage Analog Output Module provides four outputs for converting digital values from 0–4095 (12-bit) to 0–10 VDC analog signals for use with the Productivity1000 system.

Output Specifications	1
General Specifications	2
Terminal Block Specifications	2
Wiring Diagram and Schematic	3
Module Installation Procedure	4
QR Code	4
Wiring Options	5
Module Configuration	5
Linear Scaling	6
Non-Linear Scaling	6
Warning	8

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).

General Specifications	
Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 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 1 second
Insulation Resistance	> 10MΩ @ 500VDC
Heat Dissipation	2000mW
Enclosure Type	Open Equipment
Module Location	Any I/O position in a Productivity1000 System
Field Wiring	Use ZIPLink Wiring System or removable terminal block (sold separately). 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
Connector Type (sold separately)	10-position Removable Terminal Block
Weight	62g (2.2 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

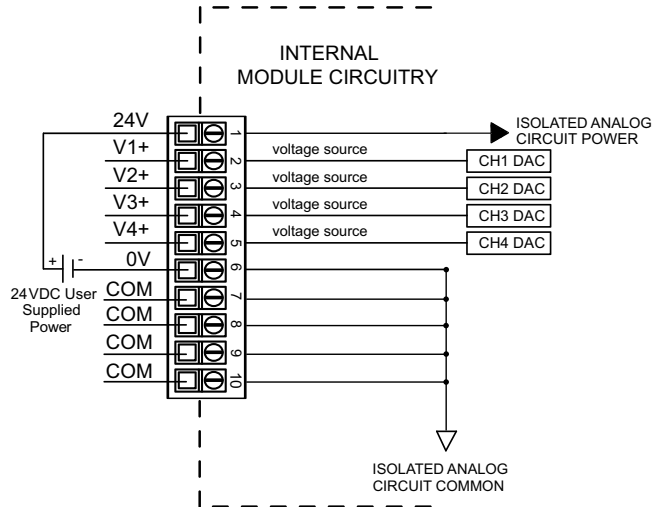
*See CE Declaration of Conformance for details.

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 mm ²) 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 mm ²) 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

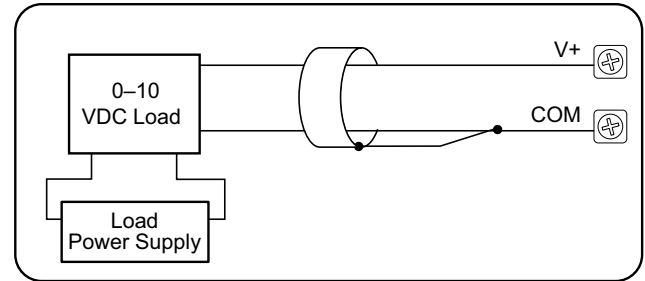
*Recommended Screw Driver TW-SD-MSL-1

P1-04DAL-2 Schematic

P1-04DAL-2 Wiring Diagram



Voltage Output Circuits

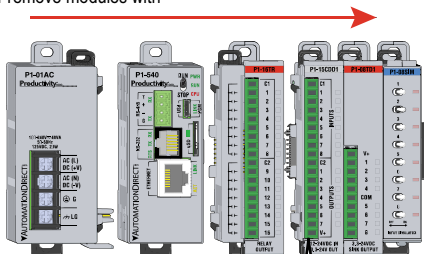


Module Installation

QR Code

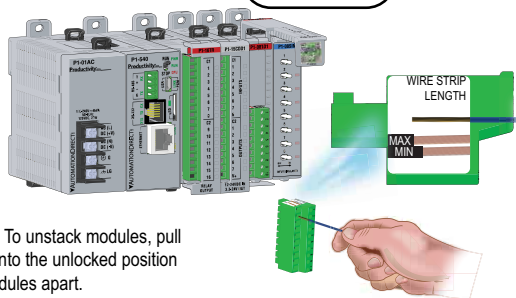
WARNING: Do not add or remove modules with field power applied.

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.

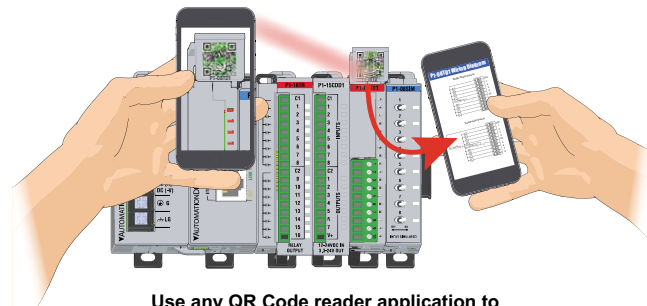
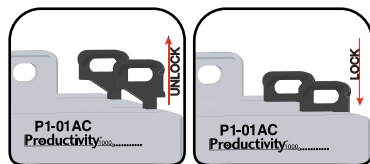


Step Two: Attach field wiring using the removable terminal block or ZIPLink wiring system.

Check all latches are secure after modules are connected.



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

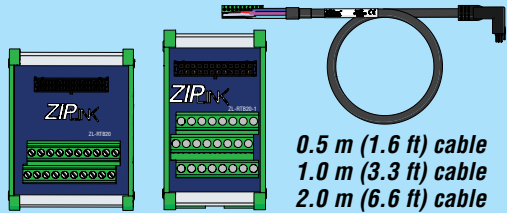


Use any QR Code reader application to display the module's product insert.

Module Configuration

Wiring Options

1 ZIPLink Feed Through Modules and Cables¹

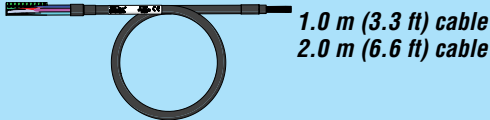


ZL-RTB20
ZL-RTB20-1

ZL-P1-CBL10
ZL-P1-CBL10-1
ZL-P1-CBL10-2

0.5 m (1.6 ft) cable
1.0 m (3.3 ft) cable
2.0 m (6.6 ft) cable

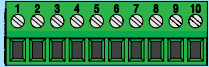
2 Terminal Block with pigtail cable



ZL-P1-CBL10-1P
ZL-P1-CBL10-2P

1.0 m (3.3 ft) cable
2.0 m (6.6 ft) cable

3 Screw Terminal Block only



P1-10RTB
(Quantity 1)

4 Spring Clamp Terminal Block only



P1-10RTB-1
(Quantity 1)

5 Accessories²



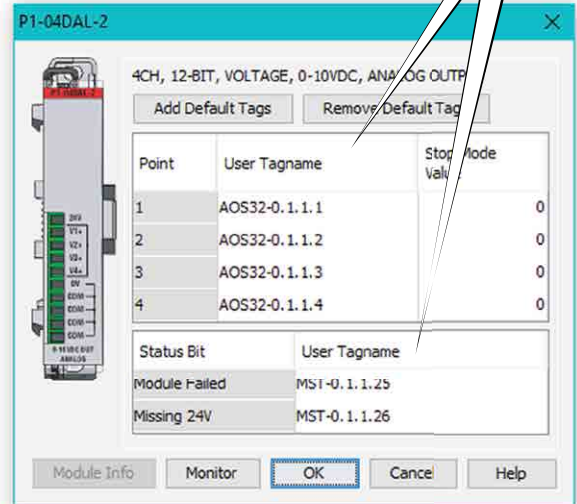
ZL-RTB-COM

TW-SD-SL-1

TW-SD-MSL-1

1. Cable + ZIPLink 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 P1-04DAL-2 module into the configuration.
If desired, assign a *User Tagname* to each output point channel selected and to each *Status Bit Item*.



Linear Scaling

The Scale (Linear) function can be used to:

- Convert an application specific range to range which is native to the analog output module.
- Make other linear conversions in ranges appropriate to the application.

Select the Input and Output tags appropriate for the application. Convert raw input signals to engineering units for use in the program, or convert engineering units to output signals for control purposes

Input value	Desired Output
0	0
1	0
2	0
3	1.55
4	2.25
5	3.07
6	4
6.5	5
7	7
0	0
0	0
0	0
0	0
0	0
0	0
0	0

Non-Linear Scaling

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

Enter actual output values for each input value break point.

Input value	Desired Output
0	0
1	0
2	0
3	1.55
4	2.25
5	3.07
6	4
6.5	5
7	7
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

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
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