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.

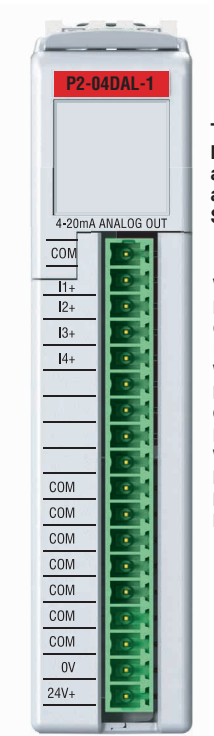
If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

This publication is based on information that was available at the time it was printed. At AutomationDirect.com® we constantly strive to improve our products and services, so we reserve the right to make changes to the products and/or publications at any time without notice and without any obligation. This publication may also discuss features that may not be available in certain revisions of the product.

Removable Terminal Block Specifications

Part Number	P2-RTB	P2-RTB-1
Number of positions	18 Screw Terminals	18 Spring Clamp Terminals
Wire Range	30 – 16 AWG (0.051 – 1.31 mm²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 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 Maximum 19/64 in (7 – 8 mm) Strip Length
Conductors	"USE COPPER CONDUCTORS, 75ºC" or equivalent.	
Screw Driver Width	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 Screwdriver TW-SD-MSL-1



P2-04DAL-1 Analog Output

The P2-04DAL-1 Low Resolution Current Output Module provides four channels for converting a digital value of 0 to 4095 (12-bit) to 4–20 mA analog signals for use with the Productivity2000 System.

Terminal Block sold separately, (see wiring options on page 5).
Warranty: Thirty-day money-back guarantee. Two-year limited replacement. (See www.productivity2000.com for details).

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	6000mW
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System
Field Wiring	Removable terminal block. 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.productivity2000.com
Terminal Type (sold separately)	18-position Removable Terminal Block
Weight	95.3 g (3.3 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)*

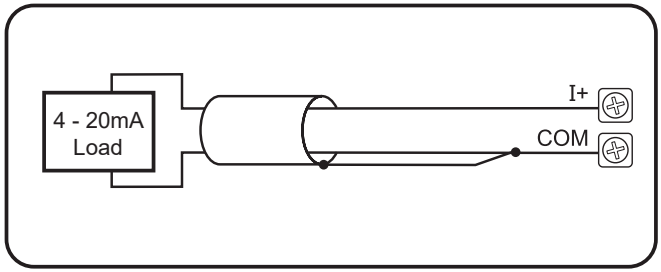
*Meets EMC and Safety requirements. See the D.O.C. for details.

Output Specifications

Output Channels	4
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 to 4095 counts
Output Type	Current sourcing @ 20mA max
Output Value in Fault Mode	Less than 4mA
Load Impedance	0–570 Ω (19.2VDC), 0–690 Ω (21.6VDC), 0–810 Ω (24.0VDC), 0–930 Ω (26.4VDC), 0–1100 Ω (30.0VDC) 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 (Including Temperature Drift)
Maximum Full Scale Calibration Error (Including Offset)	±0.2% of range minimum
Maximum 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, 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	±0.1% of full scale
Output Settling Time	0.3 ms max., 5µs min. (full scale range)
All Channel Update Rate	1ms
Maximum Continuous Overload	Electronically current limited to 20mA or less
Type of Output Protection	Outputs short circuit protected
Output Signal at Power Up and Power Down	4mA
External Power Supply Required	24VDC (-20% / +25%), 120mA (loop power included)

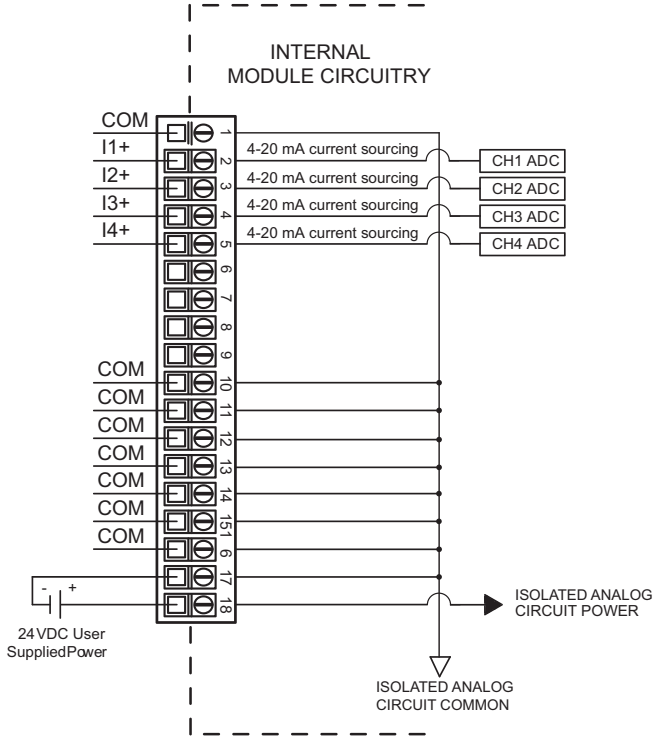
Wiring Diagram

Current Source Output Circuit



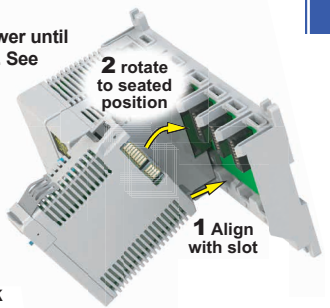
Note: Shield is connected to common at the source device.

Schematic



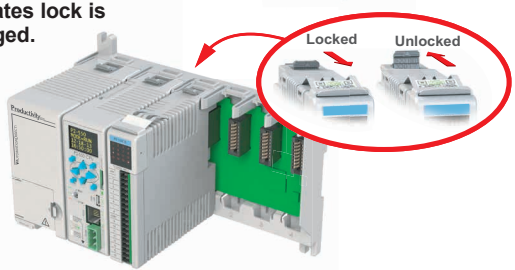
Module Installation

WARNING: Do not apply field power until the following steps are completed. See hot-swapping procedure for exceptions.

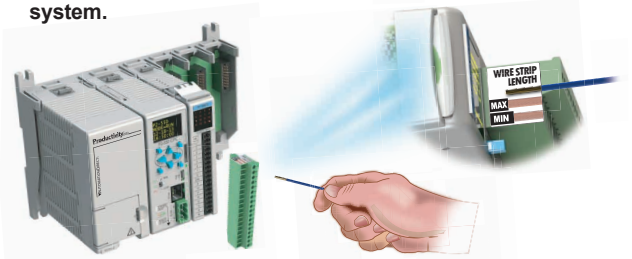


Step One: Align module catch with base slot and rotate module into connector.

Step Two: Pull top locking tab toward module face. Click indicates lock is engaged.



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



QR Code

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

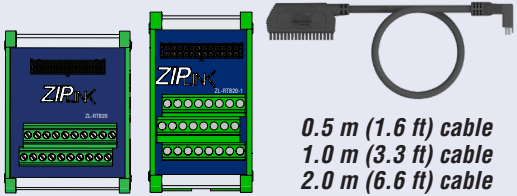
Caution: *If possible, remove field power prior to proceeding. If not, then **EXTREME** care **MUST** be taken to prevent damage to the module, or even personal injury due to a short circuit from the live terminal block.*

Important Hot-Swap Information

The Productivity2000 supports hot-swap! Individual modules can be taken offline, removed, and replaced while the rest of the system continues controlling your process. Before attempting to use the hot-swap feature, be sure to read the hot-swap topic in the programming software's help file or our online documentation at AutomationDirect.com for details on how to plan your installation for use of this powerful feature.

Wiring Options

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

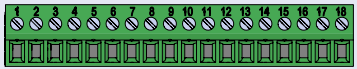


	ZL-RTB20
	ZL-RTB20-1
0.5 m (1.6 ft) cable	ZL-P2-CBL18
1.0 m (3.3 ft) cable	ZL-P2-CBL18-1
2.0 m (6.6 ft) cable	ZL-P2-CBL18-2

2 *Terminal Block with pigtail cable*

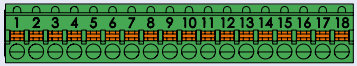
1.0 m (3.3 ft) cable	ZL-P2-CBL18-1P
2.0 m (6.6 ft) cable	ZL-P2-CBL18-2P

3 *Screw Terminal Block only*



P2-RTB
(Quantity 1)

4 *Spring Clamp Terminal Block only*



P2-RTB-1
(Quantity 1)

5 *Accessories*[2]

ZL-RTB-COM

TW-SD-SL-1

TW-SD-MSL-1

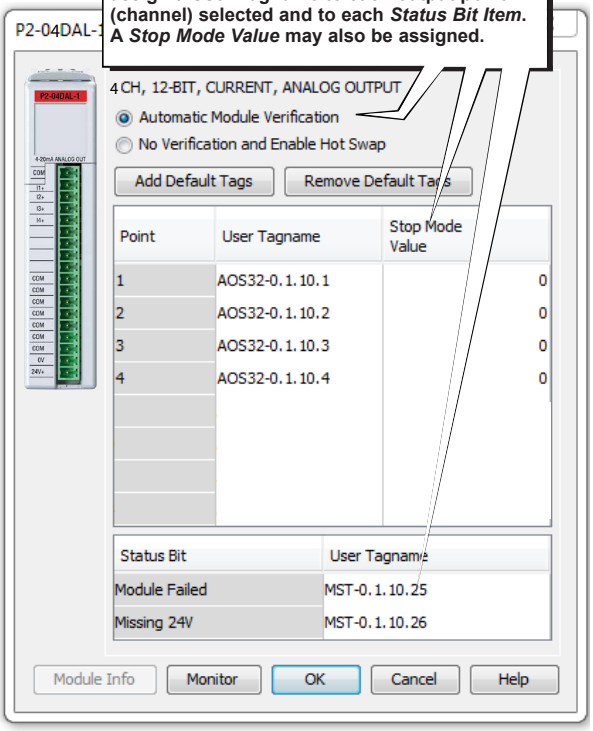
1.Cable + ***ZIP***Link Module = Complete System

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

Module Configuration

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P2-04DAL-1 module into the base configuration.

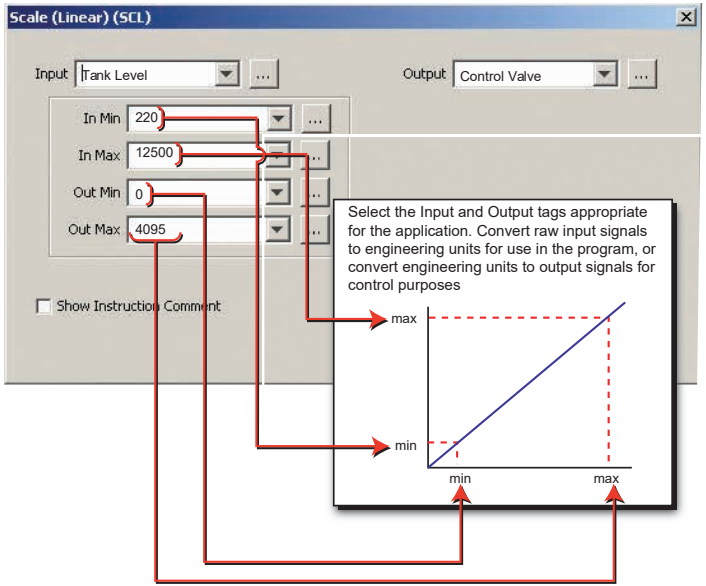
Select *Automatic Module Verification* or *No Verification and Enable Hot Swap*. If desired, assign a *User Tagname* to each output point (channel) selected and to each *Status Bit Item*. A *Stop Mode Value* may also be assigned.



Linear Scaling

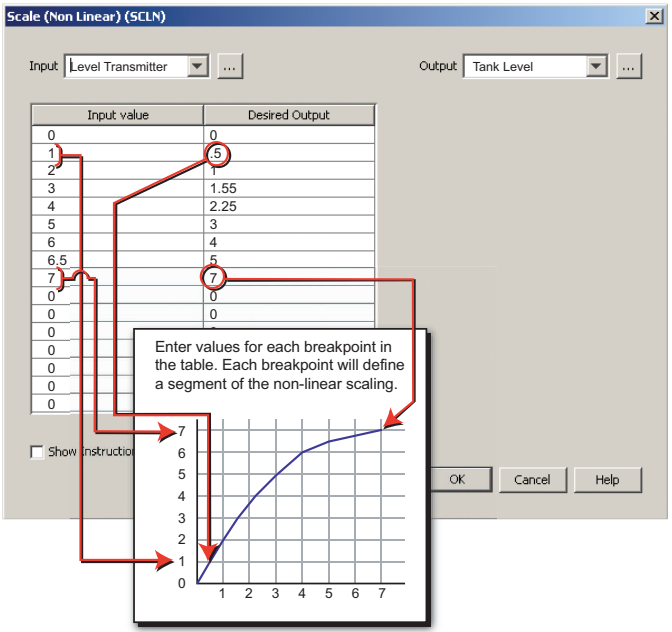
The Scale (Linear) function can be used to:

- **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.



Document Name	Edition/Revision	Date
P2-04DAL-1-DS	2nd Ed.	9/4/2019