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.

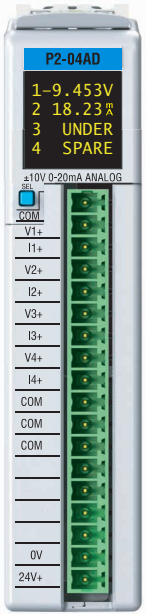
If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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



P2-04AD Analog Input

The P2-04AD Voltage/Current Analog Input Module provides four channels for receiving ±10VDC, ±5VDC, 0–5 VDC and 0–20 mA signals for use with the Productivity2000 system.

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Input Specifications 2
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Hot Swap Information 4
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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)
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	1.4 W
Overvoltage Category	II
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System
Field Wiring	Use ZIPLink Wiring System or removable terminal block (not included). See “Wiring Options” on page 5.
Connector Type (not included)	18-position removable terminal block
Weight	90g (3.2 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada & 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.

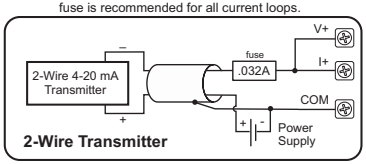
Input Specifications

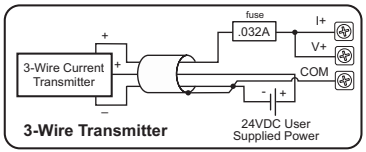
Input Channels	4
Module Signal Input Ranges	±10 VDC, ±5 VDC, 0-5 VDC, 0-10 VDC, 0-20 mA
Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	1 LSB = 1 count ±10 V = 305µV ±5 V = 152µV 0-5 V = 76µV 0-10 V = 152µV 0-20 mA = 0.305µA
Data Range	0-65535 counts unipolar -32768 to +32767 counts bipolar
Maximum Continuous Overload	±31 mA, current input ±100 V, voltage input
Input Impedance	1MΩ±10% voltage input 250Ω±0.1% 1/4 W current input
Hardware Filter Characteristics	Low Pass 1st order, -3dB @ 48Hz
Sample Duration Time	2ms per channel (does not include ladder scan time)
All Channel Update Rate	8ms
Open Circuit Detection Time	Zero reading within 1s (current input only)
Conversion Method	Successive approximation
Accuracy vs. Temperature	±10PPM / ºC maximum
Maximum Inaccuracy	0.1% of range voltage, 0.2% of range current (including temperature drift)
Linearity Error (end to end)	±0.01% of range max., ±10 V & ±5 V ±0.015% of range max., 0-10 V, 0-5 V & 0-20 mA Monotonic with no missing codes
Input Stability and Repeatability	±0.035% of range (after 10 min. warmup)
Full Scale Calibration Error	±0.2% of range maximum
Offset Calibration Error	±0.065% of range maximum
Max Crosstalk	-96dB, 1 LSB
Recommended Fuse (external)	Edison S500-32-R, 0.032A fuse on current inputs only
External DC Power Required	24VDC (-20% / +25%) 35mA

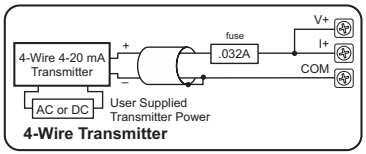
Wiring Diagram

Current Sinking Input Circuits

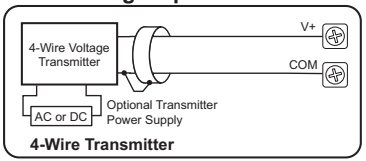
An Edison S500-32-R 0.032A fast-acting fuse is recommended for all current loops.

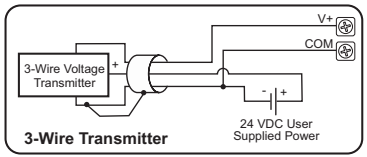




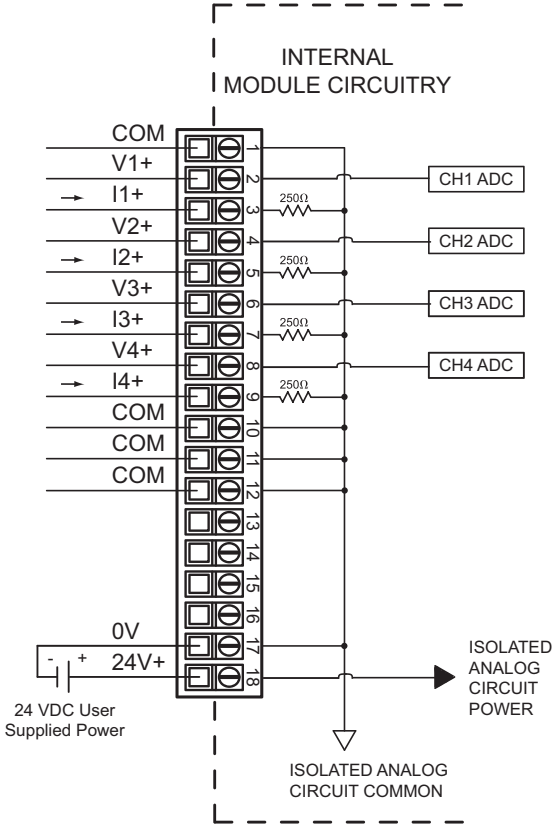


Voltage Input Circuits



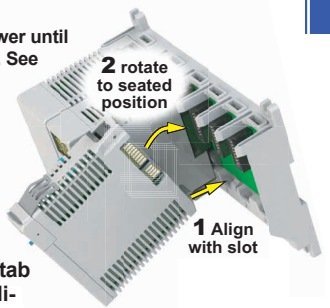


Schematic



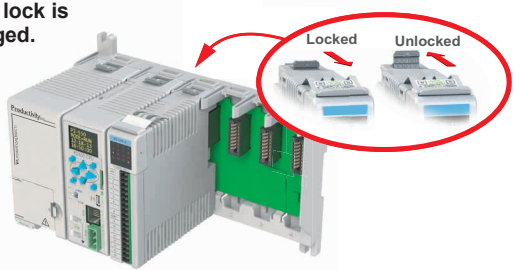
Module Installation

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

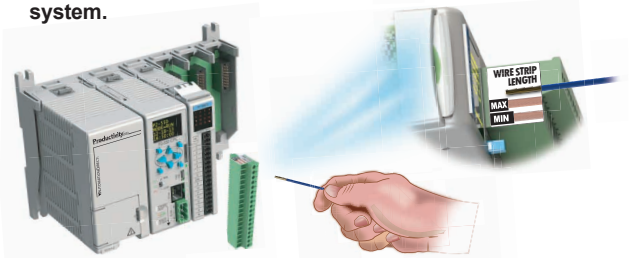


Step One: Align module catch with base slot and rotate module into connector.

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 ZIPLink wiring system.



QR Code

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

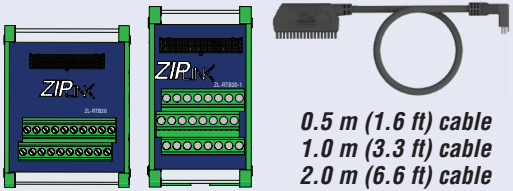
Caution: *If possible, remove field power prior to proceeding. If not, then **EXTREME** care **MUST** be taken to prevent damage to the module, or even personal injury due to a short circuit from the live terminal block.*

Important Hot-Swap Information

The Productivity2000 System 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]

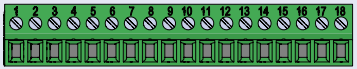


ZL-RTB20	
ZL-RTB20-1	
0.5 m (1.6 ft) cable	ZL-P2-CBL18
1.0 m (3.3 ft) cable	ZL-P2-CBL18-1
2.0 m (6.6 ft) cable	ZL-P2-CBL18-2

2 *Terminal Block with pigtail cable*

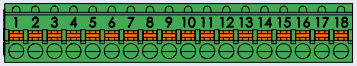
1.0 m (3.3 ft) cable	ZL-P2-CBL18-1P
2.0 m (6.6 ft) cable	ZL-P2-CBL18-2P

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

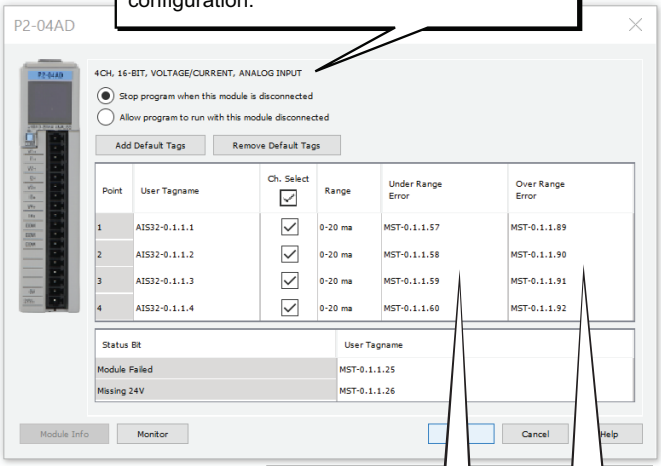
TW-SD-MSL-1

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 P2-04AD module into the base configuration.



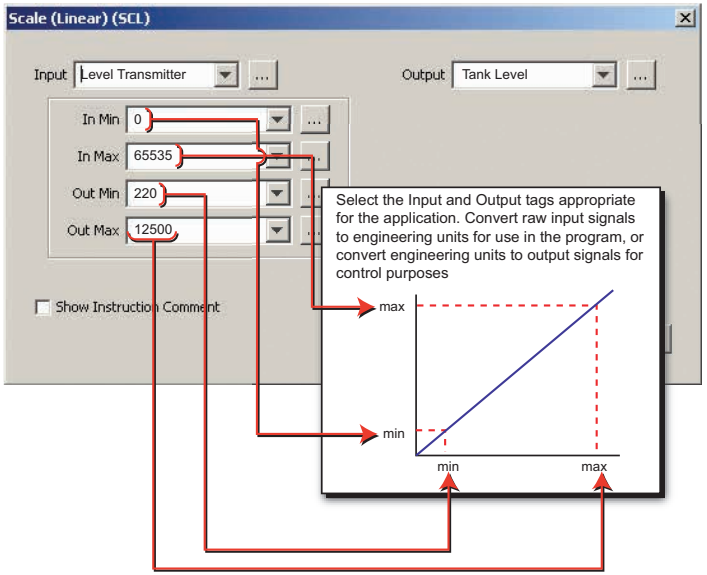
The “Under Range Error” bit for each channel activates for a signal aat range minimum ± offset error (-9.999 V, -4.999 V, 0V amd 0mA).

The “Over Range Error” bit for each channel activates at a range maximum ± gain error (9.999 V, 4.999 V, and 19.999 mA).

Linear Scaling

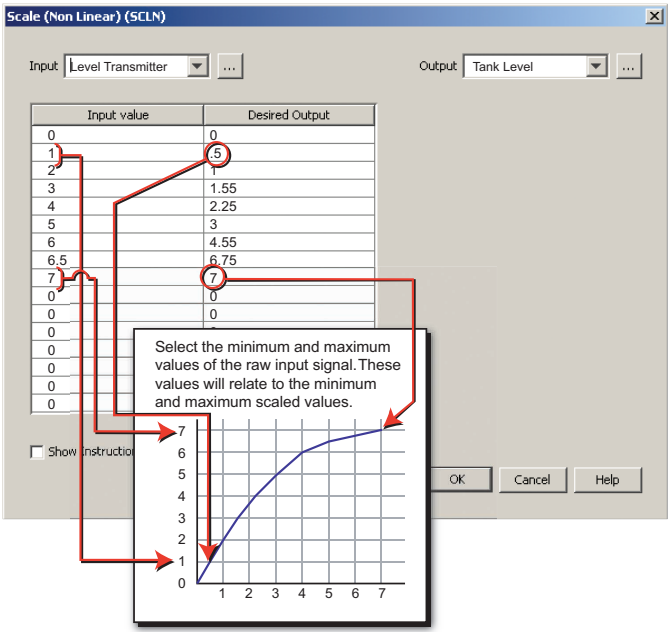
The Scale (Linear) function can be used to:

- **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.**

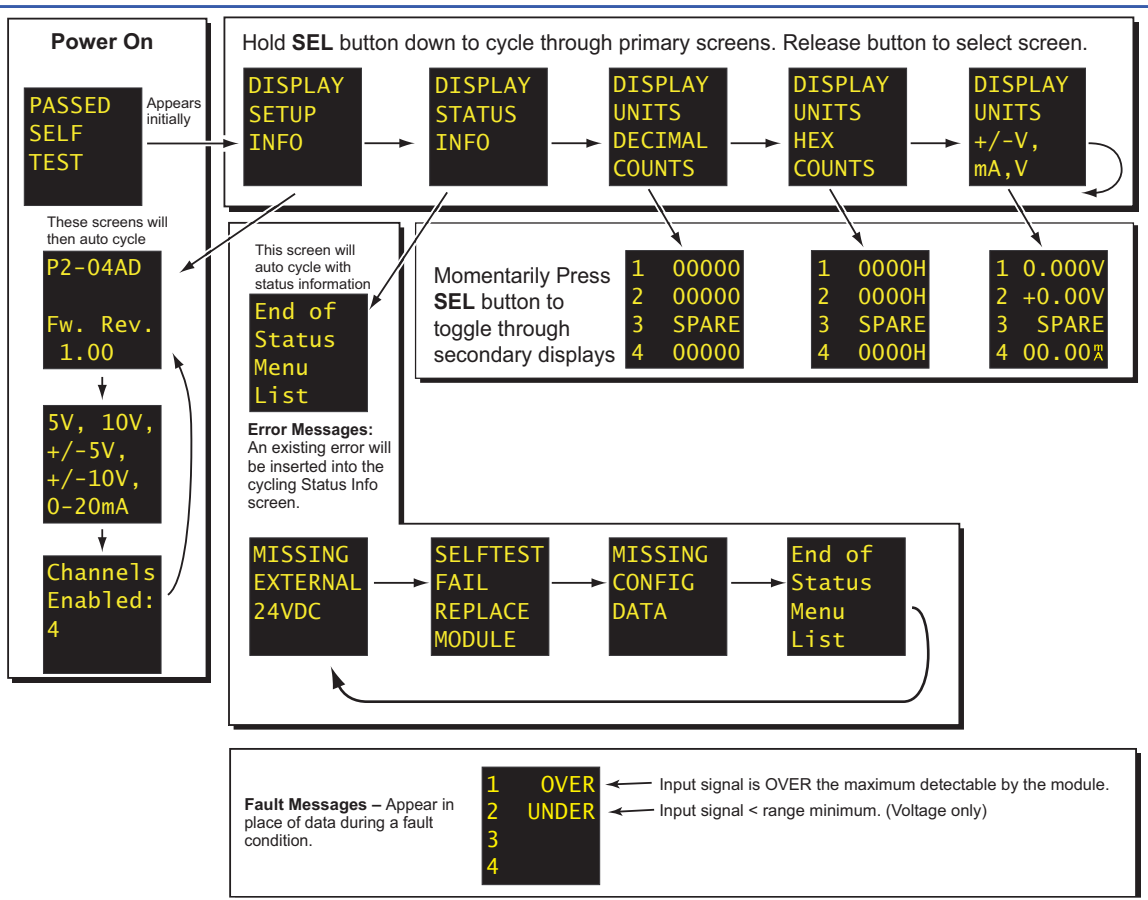


Non-Linear Scaling

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



OLED Panel Display



Diagnostic/Status

Under Range Error	1 bit per channel
Over Range Error	1 bit per channel
Module Failed	1 bit per module
Missing 24V	1 bit per module

Document Name	Edition/Revision	Date
P2-04AD-DS	2nd Ed., Rev A.	2/11/2022