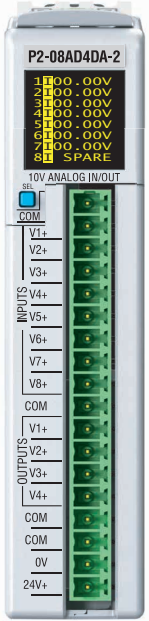
General Specifications

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	1.95 W
Enclosure Type	Open Equipment
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)*
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.
EU Directive	See the "EU Directive" topic in the Productivity2000 Help File. Information can also be obtained at: www.productivity2000.com
Connector Type (not included)	18-Position Removable Terminal Block
Weight	90g (3.2 oz)

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



P2-8AD4DA-2 Analog Input/Output

The P2-8AD4DA-2 Voltage Analog Input/Output Module provides eight channels of 0-10 VDC inputs and four channels of 0-10 VDC outputs 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).

Input Specifications

Input Channels	8 inputs (1 common)
Input Ranges	0–5 VDC, 0–10 VDC
Signal Resolution	12–16 bit, depending on input resolution
0 - 5V Input Resolution & Update Rate (See Note 1)	Fine: 7.1 ms, 76µV, 16 bit Medium: 1.78 ms, 305µV, 14 bit Coarse: 444µs, 1.22 mV, 12 bit
0 - 10V Input Resolution & Update Rate (See Note 1)	Fine: 7.1 ms, 152µV, 16 bit Medium: 1.78 ms, 610µV, 14 bit Coarse: 444µs, 2.44 mV, 12 bit
Data Range	0–65535 counts
Maximum Continuous Overload	±100V, voltage input
Input Impedance	1MΩ (±10%) voltage input
Hardware Filter Characteristics	Low pass 1st order, -3dB @ 80Hz
All Channel Update Rate (See Note 2)	Fine 56.8 ms Medium: 14.24 ms Coarse: 3.55 ms
Conversion Method	Successive approximation
Accuracy vs. Temperature	±15ppm/°C maximum
Maximum Inaccuracy	0.1% of range
Linearity Error (end to end)	±0.015% of range maximum Monotonic with no missing codes
Input Stability and Repeatability	±0.025% of range (after 10 minute warm-up)
Full Scale Calibration Error (not including offset)	±0.05% of range maximum
Offset Calibration Error	±0.05% of range maximum
Maximum Crosstalk	-96dB, 1LSB
External DC Power Required	24VDC (-20% / +25%), 130mA

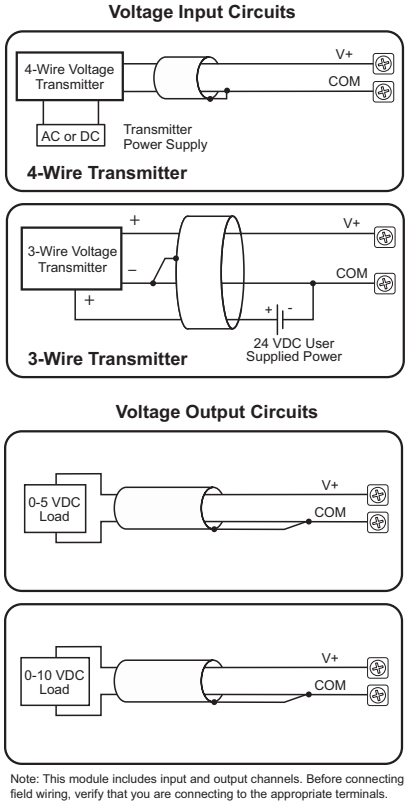
Note 1: The Input Resolution of Fine returns 16 bit resolution. Medium and Coarse are 14 and 12 bit respectively. The 12 and 14 bit input values are scaled to 0–65535.

Note 2: Valid when all channels are set for the same Input Resolution.

Output Specifications

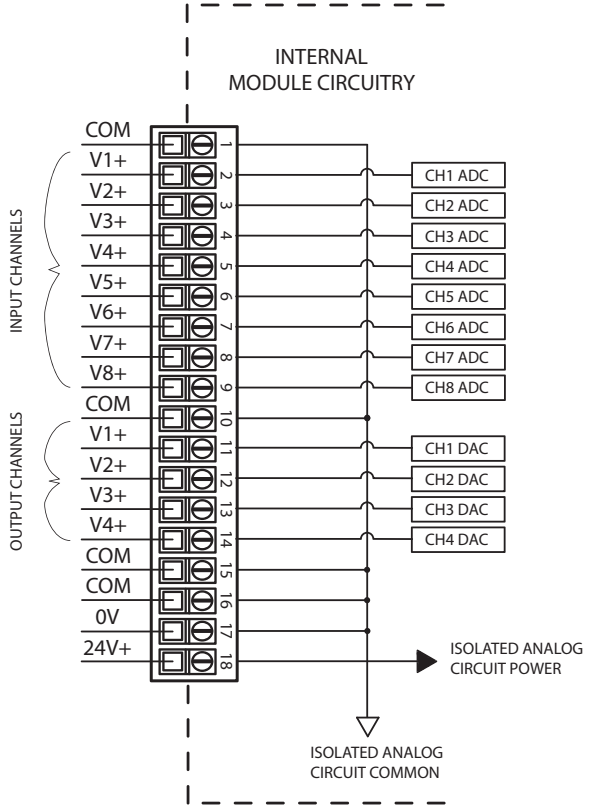
Output Channels	4 (1 common)
Module Signal Output Range	0–10 VDC, 0–5 VDC
Output Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	0–5 V = 76µV/count 0–10 V = 152µV/count 1 LSB = 1 count
Data Range	0–65535 counts
Output Type	Voltage sourcing/sinking at 10mA maximum
Output Value in Fault Mode	0V
Load Impedance	≥1.5 kΩ
Maximum Capacitive Load	0.01µF
Allowed Load Type	Grounded
Maximum Inaccuracy	0.1% of range
Maximum Full Scale Calibration Error (not including offset error)	±0.065% of range maximum
Maximum Offset Calibration Error	±0.065% of range maximum
Accuracy vs. Temperature	±25ppm/°C max full scale calibration change (±0.0025% of range/°C)
Max Crosstalk	-96dB, 1 LSB
Linearity Error (End to End)	±0.015% of full scale Monotonic with no missing codes
Output Stability and Repeatability	±0.015% after 10 minute warm-up typical
Output Ripple	0.01% of full scale at 50/60 Hz
Output Setting Time	500µs max, 5µs min (full scale change)
All Channel Update Rate	5ms
Maximum Continuous Overload	Outputs current limited to 15mA typical
Type of Output Protection	15VDC peak output voltage
Output Signal (power-up, -down)	0V

Wiring Diagram



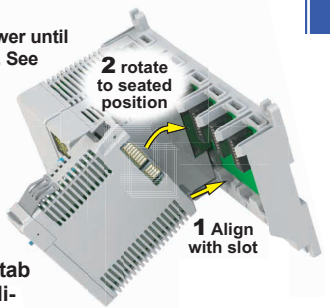
Note: This module includes input and output channels. Before connecting field wiring, verify that you are connecting to the appropriate terminals.

Schematic



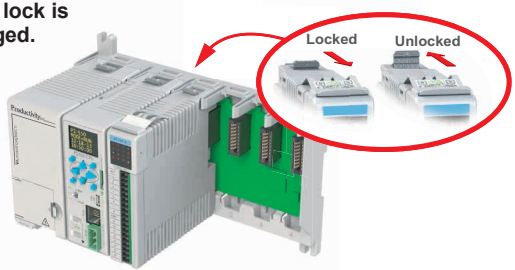
Module Installation

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

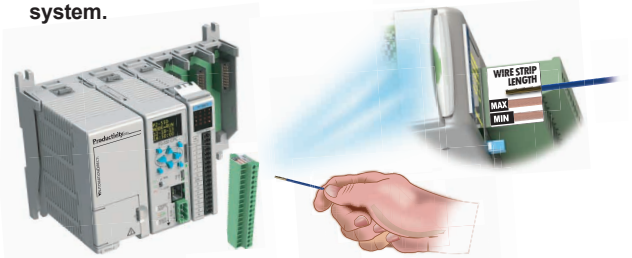


Step One: Align module catch with base slot and rotate module into connector.

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.

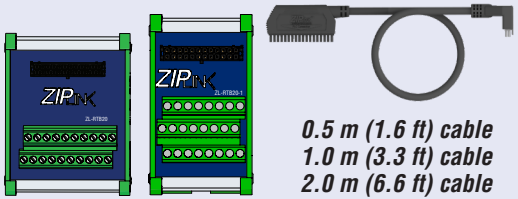
Caution: *If possible, remove field power prior to proceeding. If not, then **EXTREME** care **MUST** be taken to prevent damage to the module, or even personal injury due to a short circuit from the live terminal block.*

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]



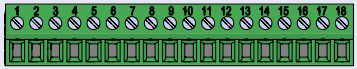
ZL-RTB20
ZL-RTB20-1

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*

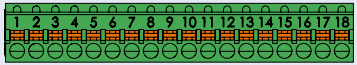
1.0 m (3.3 ft) cable ZL-P2-CBL18-1P
2.0 m (6.6 ft) cable ZL-P2-CBL18-2P

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

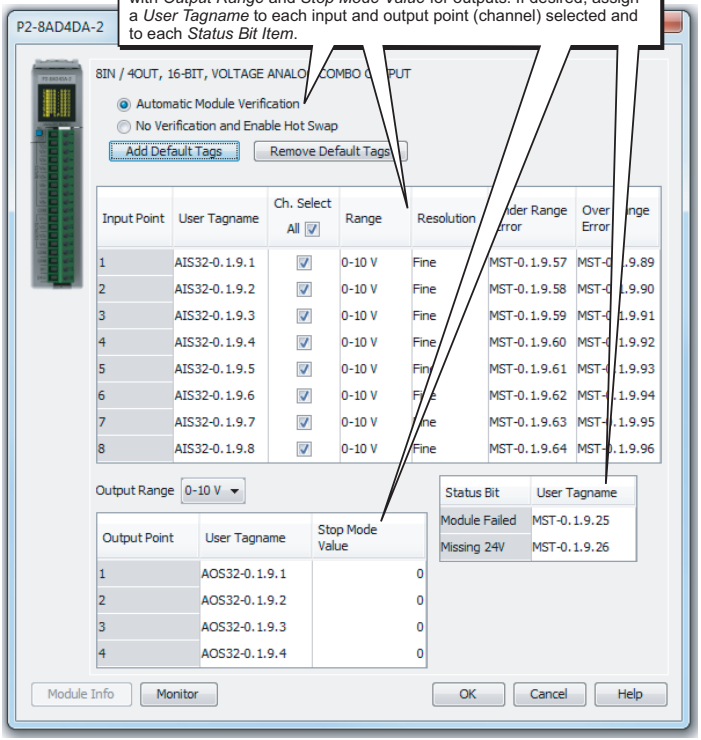
TW-SD-MSL-1

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 P2-8AD4DA-2 module into the base configuration.

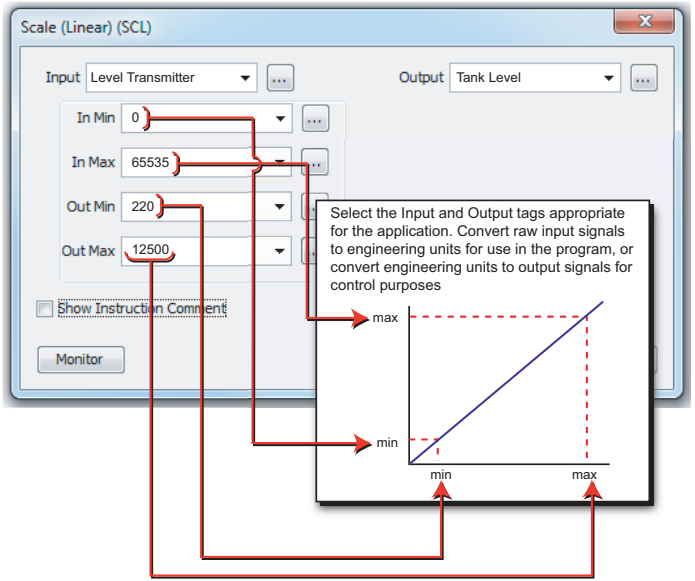
Select *Automatic Module Verification* or *No Verification and Enable Hot Swap*. Also specify *Input Range* and *Input Resolution* for inputs along with *Output Range* and *Stop Mode Value* for outputs. If desired, assign a *User Tagname* to each input and output point (channel) selected and to each *Status Bit Item*.



Linear Scaling

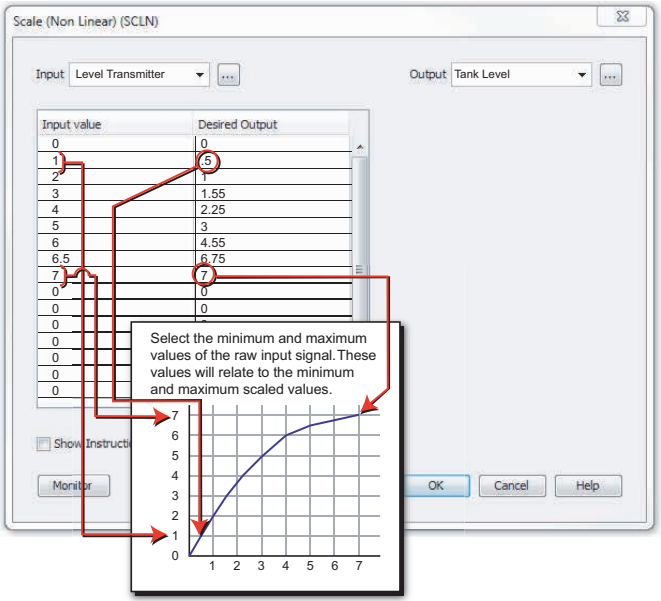
The Scale (Linear) function can be used to:

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

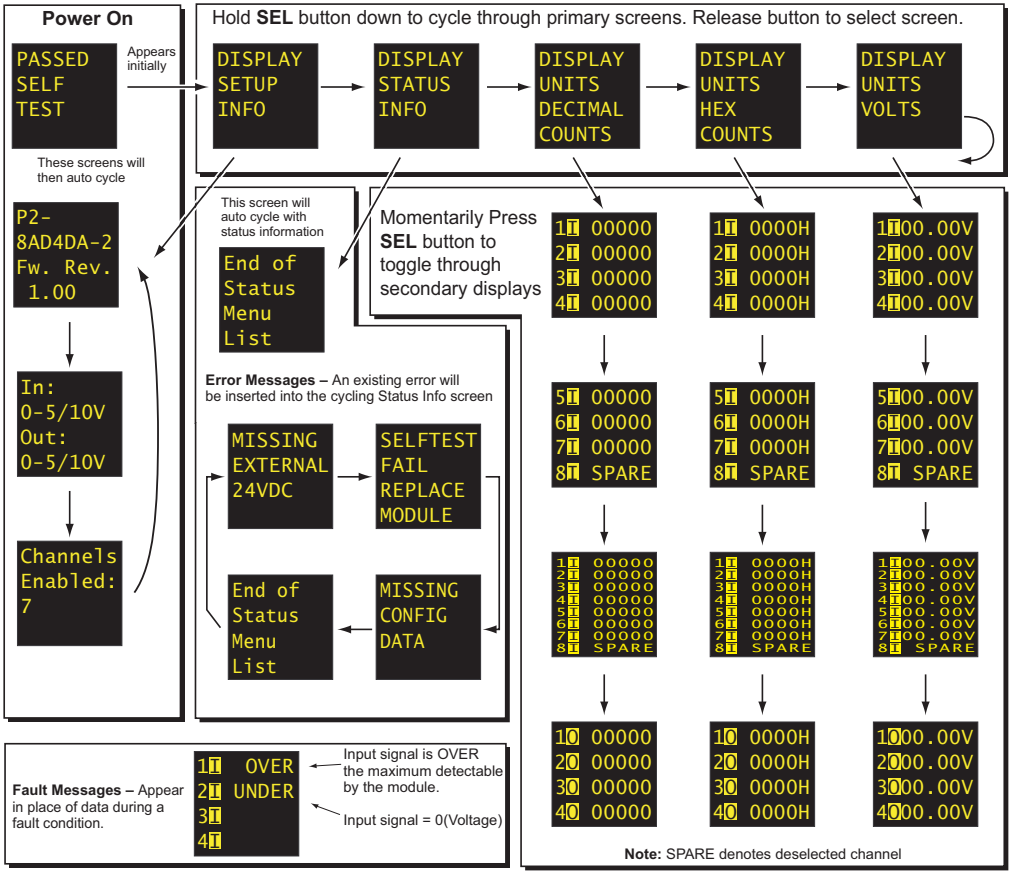


Non-Linear Scaling

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



OLED Panel Display



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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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

Document Name	Edition/Revision	Date
P2-8AD4DA-2-DS	2nd Ed.	8/20/2019