

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.

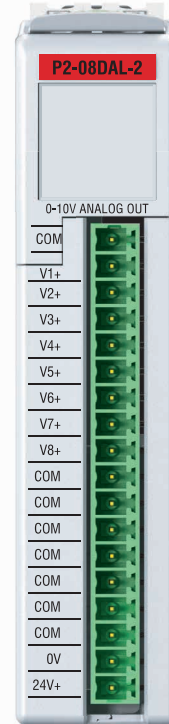
If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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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 mm ²) 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 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 19/64 in (7–8 mm) Strip Length
Conductors	*USE COPPER CONDUCTORS, 75°C* 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



P2-08DAL-2 Analog Output

The P2-08DAL-2 Low Resolution Voltage Analog Output Module provides eight channels of 0–10VDC output signals for use with the Productivity2000 system.

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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

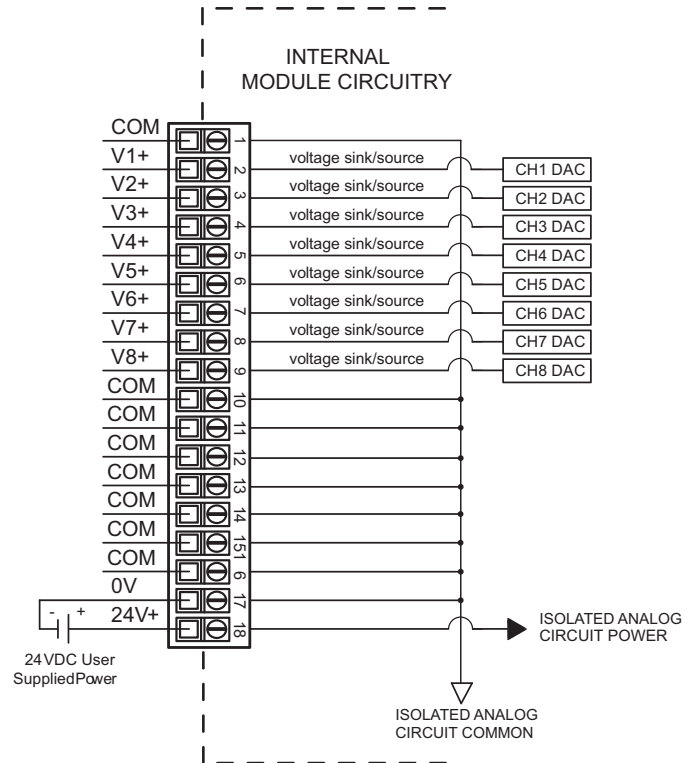
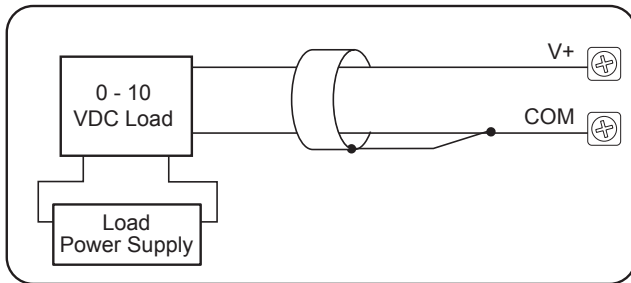
Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	> 10MΩ @ 500VDC
Heat Dissipation	3250mW
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System
Field Wiring	Use ZIP Link Wiring System or removable terminal block (not included). 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
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 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	8
Module Signal Input Range	0–10 V
Output Signal Resolution	12-bit
Resolution Value of LSB (least significant bit)	0–10 V = 2.44 mV per count 1 LSB = 1 count
Data Range	0 to 4095 counts
Output Type (Sinking/Sourcing)	Voltage:10mA max
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 (including temperature drift)
Maximum Full Scale Calibration Error (Not Including Offset)	±0.2% of range maximum
Maximum Offset Calibration Error	±0.2% of range maximum
Accuracy vs. Temperature	±75 PPM / °C maximum full-scale calibration change (±0.0025% of range / °C)
Max Crosstalk	-72dB, 1 LSB
Linearity Error (End to End)	±4 LSB maximum, (±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	300μs max., 5μs min. (full scale range)
All Channel Update Rate (typical)	1ms
Maximum Continuous Overload	Outputs current limited to 40mA typical Continuous overloads on multiple outputs can damage the module.
Type of Output Protection	0.1μF Transient Suppressor
Output Signal at Power Up and Power Down	0V
External 24VDC Power Required	24VDC (-20% / +25%), 150mA

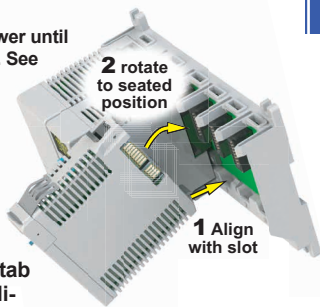
Voltage Output Circuits



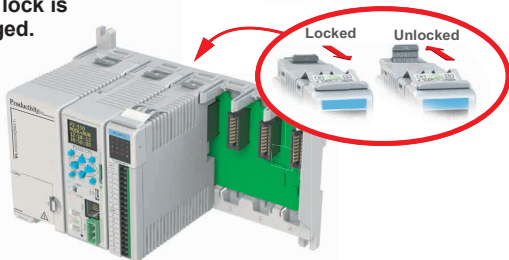
Module Installation

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.

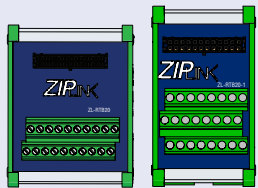
Important Hot-Swap Information

The Productivity2000 PAC supports hot-swap!

Individual modules can be taken offline, removed, and replaced while the rest of the PAC 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 ZIPLink Feed Through Modules and Cables¹



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-P2-CBL18
ZL-P2-CBL18-1
ZL-P2-CBL18-2

2 Terminal Block with pigtail cable



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

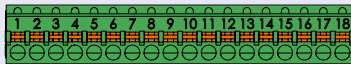
ZL-P2-CBL18-1P
ZL-P2-CBL18-2P

3 Screw Terminal Block only



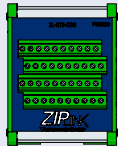
P2-RTB
(Quantity 1)

4 Spring Clamp Terminal Block only



P2-RTB-1
(Quantity 1)

5 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

Module Configuration

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P2-08DAL-2 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.

P2-08DAL-2

8CH, 12-BIT, VOLTAGE, ANALOG OUTPUT

Automatic Module Verification
 No Verification and Enable Hot Swap

Point	User Tagname	Stop Mode Value
1	AOS32-0.1.1.1	0
2	AOS32-0.1.1.2	0
3	AOS32-0.1.1.3	0
4	AOS32-0.1.1.4	0
5	AOS32-0.1.1.5	0
6	AOS32-0.1.1.6	0
7	AOS32-0.1.1.7	0
8	AOS32-0.1.1.8	0

Status Bit	User Tagname
Module Failed	MST-0.1.1.25
Missing 24V	MST-0.1.1.26

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.

Scale (Linear) (SCL)

Input: Tank Level Output: Control Valve

In Min: 220 In Max: 12500 Out Min: 0 Out Max: 4095

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	Output
min	min
max	max

Non-Linear Scaling

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

Scale (Non-Linear) (SCLN)

Input: Level Transmitter Output: Tank Level

Input value	Desired Output
0	0
1	0.5
2	1
3	1.55
4	2.25
5	3
6	4.55
6.5	6.75
7	7
8	0
9	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

Enter values for each breakpoint in the table. Each breakpoint will define a segment of the non-linear scaling.

Input	Output
0	0
1	0.5
2	1
3	1.55
4	2.25
5	3
6	4.55
6.5	6.75
7	7
8	0
9	0

Document Name	Edition/Revision	Date
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