

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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Connector Specifications

Connector Type	24-Pin Molex Style 43025-2400
Number of Pins	24
Pin Spacing	3x3 mm (0.118 x 0.118 in)



P2-16DA-2 Analog Output

The P2-16DA-2 Voltage Analog Output Module provides sixteen channels of $\pm 10\text{VDC}$ outputs for use with the Productivity2000 System.

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General Specifications

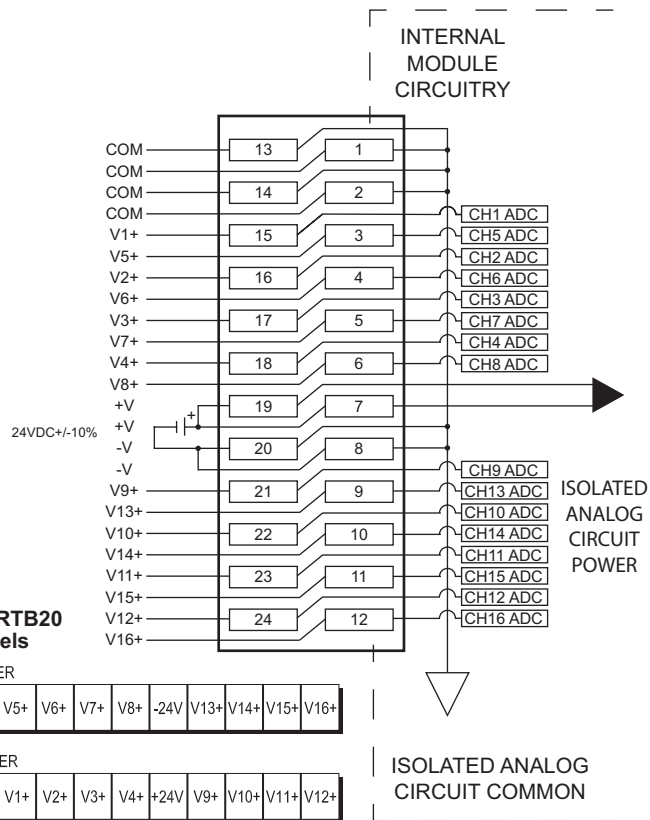
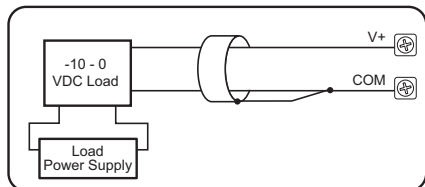
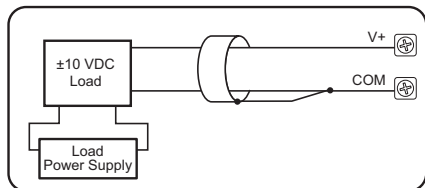
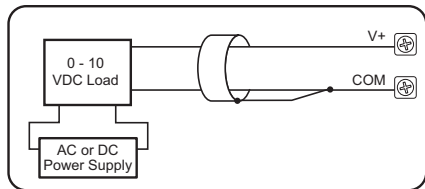
Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Altitude	2,000 meters max
Pollution Degree	2
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Overvoltage Category	II
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	> 10MΩ @ 500VDC
Heat Dissipation	6.4 W
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 ONLY. See "Wiring Options" on page 5. Must use copper conductors 75°C or equivalent.
Connector Type	24-Pin Molex Style 43025-2400
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	16
Module Signal Output Range	±10VDC
Output Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	±10VDC = 305μV/count 1 LSB = 1 count
Data Range	-32768 to 32767 counts
Output Type (sourcing/sinking)	Voltage: 10mA max current
Output Value in Fault Mode	0V
Load Impedance	≥1000Ω
Maximum Capacitive Load	0.01μF maximum
Allowed Load Type	Grounded
Maximum Inaccuracy	0.1% of range (including temperature drift)
Maximum Full Scale Calibration Error (not including offset error)	±0.025% of range maximum
Maximum Offset Calibration Error	±0.025% 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)	±16 LSB maximum (±0.025% of full scale) Monotonic with no missing codes
Output Stability and Repeatability	±10 LSB after 10 minute warm-up (typical)
Output Ripple	0.05% of full scale
Output Setting Time	300μs max, 5μs min (full scale change)
All Channel Update Rate	3ms
Maximum Continuous Overload	Outputs current limited to 40mA typical. Continuous overloads on multiple output can damage the module.
Type of Output Protection	0.1μF Transient Suppressor
External DC Power Required	24VDC (-20% / +25%), 265mA

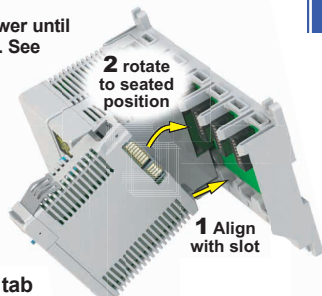
Voltage Output Circuits



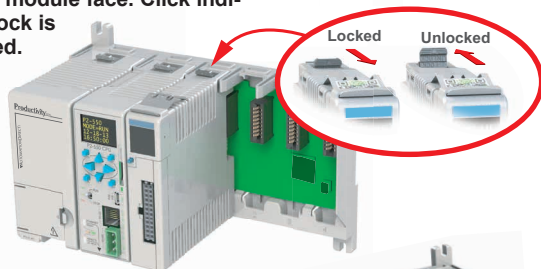
Module Installation

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 ZIPLink wiring system.



QR Code



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

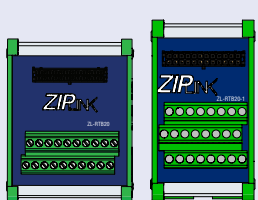
Caution: If possible, remove field power prior to proceeding. If not, then **EXTREME** care **MUST** be taken to prevent damage to the module, or even personal injury due to a short circuit from the live terminal block.

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 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-CBL24
ZL-P2-CBL24-1
ZL-P2-CBL24-2

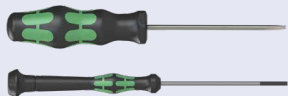
2 Terminal Block with pigtail cable



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

ZL-P2-CBL24-1P
ZL-P2-CBL24-2P

3 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 P2-16DA-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*.

P2-16DA

16CH, 16-BIT, VOLTAGE, ANALOG OUTPUT

Automatic Module Verification
 No Verification and Enable Hot Swap

Point	User Tagname	Stop Mode Value
1	AOS32-0.1.10.1	0
2	AOS32-0.1.10.2	0
3	AOS32-0.1.10.3	0
4	AOS32-0.1.10.4	0
5	AOS32-0.1.10.5	0
6	AOS32-0.1.10.6	0
7	AOS32-0.1.10.7	0
8	AOS32-0.1.10.8	0
9	AOS32-0.1.10.9	0
10	AOS32-0.1.10.10	0
11	AOS32-0.1.10.11	0
12	AOS32-0.1.10.12	0

Status Bit	User Tagname
Module Failed	MST-0.1.10.25
Missing 24V	MST-0.1.10.26

Linear Scaling

The Scale (Linear) function can be used to:

- 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.

The screenshot shows the 'Scale (Linear) (SCL)' dialog box with the following settings:

- Input: Level Transmitter
- Output: Tank Level
- In Min: 200
- In Max: 12500
- Out Min: 0
- Out Max: 65535

A callout box contains the text: "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".

Below the callout is a graph showing a linear relationship. The x-axis is labeled 'min' and 'max', and the y-axis is labeled 'min' and 'max'. A blue line starts at the bottom-left corner (min, min) and goes to the top-right corner (max, max). Red dashed lines indicate the mapping from the input range to the output range.

Non-Linear Scaling

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

The screenshot shows the 'Scale (Non-Linear) (SCLN)' dialog box with the following settings:

- Input: Level Transmitter
- Output: Tank Level

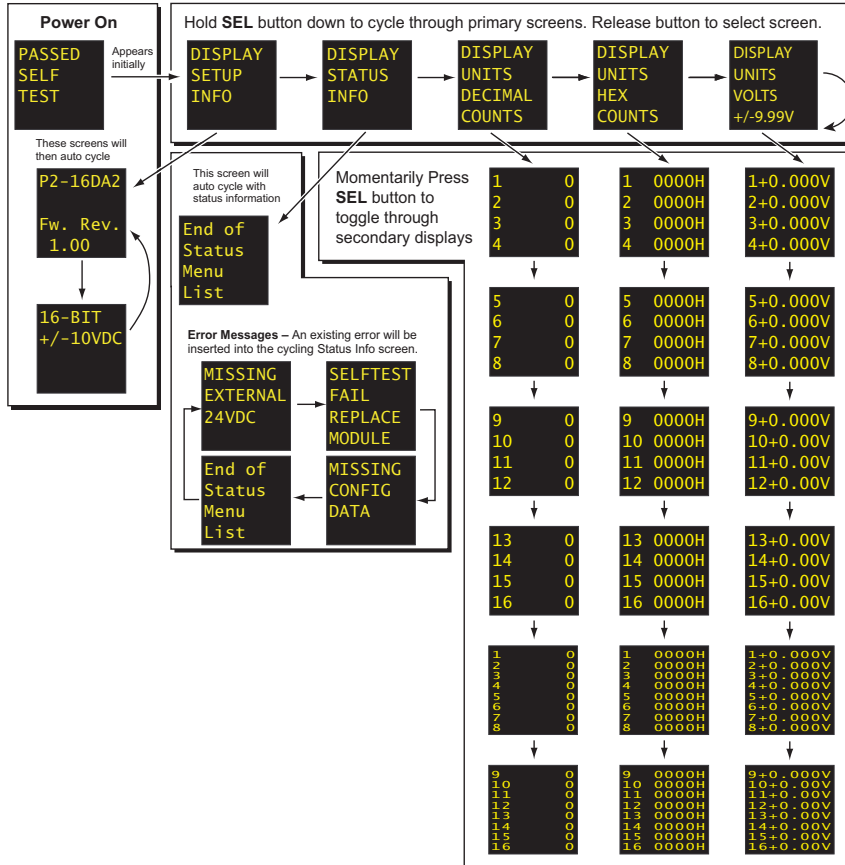
A table in the dialog shows the mapping of input values to desired outputs:

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

A callout box contains the text: "Select the minimum and maximum values of the raw input signal. These values will relate to the minimum and maximum scaled values.".

Below the callout is a graph showing a non-linear relationship. The x-axis is labeled 'min' and 'max', and the y-axis is labeled 'min' and 'max'. A blue curve starts at the bottom-left corner (min, min) and goes to the top-right corner (max, max). Red dashed lines indicate the mapping from the input range to the output range.

OLED Panel Display



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