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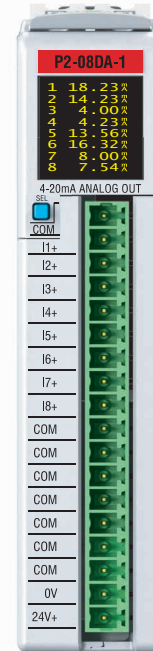
If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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AUTOMATIONDIRECT.com
Productivity 2000

P2-08DA-1

1	18.23%
2	14.23%
3	4.00%
4	4.23%
5	13.56%
6	16.32%
7	8.00%
8	7.54%

4-20mA ANALOG OUT

P2-08DA-1 Analog Output

The P2-08DA-1 Current Analog Output Module provides eight channels of 4–20 mA outputs for use with the Productivity2000 System

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

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	9000mW
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 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)

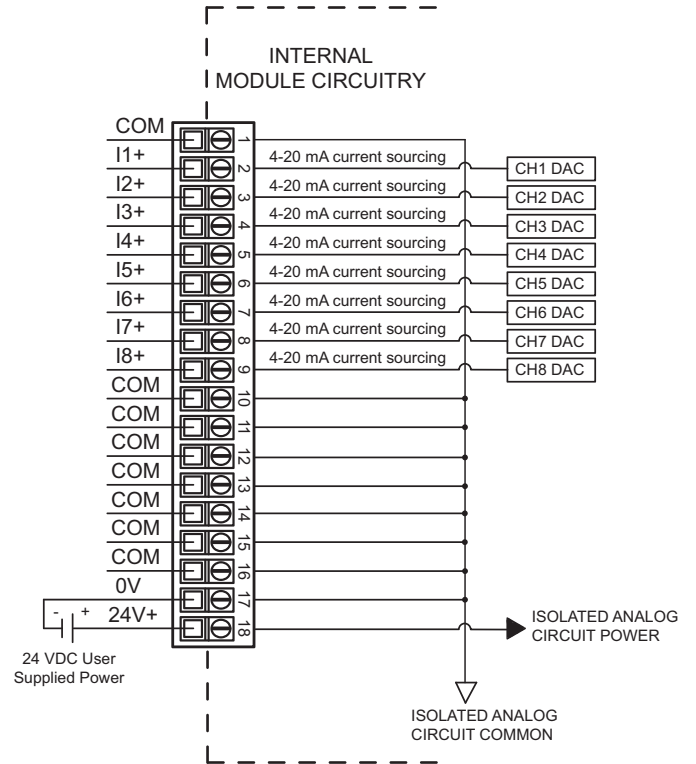*Meets EMC and Safety requirements. See the D.O.C. for details.

Output Specifications

Output Channels (Commons)	8
Module Signal Output Range	4–20 mA
Output Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	4–20 mA = 0.244 µA/count 1 LSB = 1 count
Data Range	0 to 65535 counts
Output Type (sourcing)	Current: 20mA max
Output Value in Fault Mode	Near 0mA
Load Impedance (Minimum External Power Supply)	0–570Ω (19.2 VDC) 0–690Ω (21.6 VDC) 0–810Ω (24VDC) 0–930Ω (26.4 VDC) 0–1100Ω (30VDC) Minimum Load 0–125Ω @ 0–45°C 250–715Ω @ 0–60°C
Maximum Inductive Load	1mH
Allowed Load Type	Grounded
Maximum Inaccuracy	0.1% of range (Counts TBD) (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 count 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	600µs
Maximum Continuous Overload	Outputs open circuit protected
Type of Output Protection	Electronically current limited to 20mA or less
Output Signal (power-up,-down)	4mA
External DC Power Required	24VDC (-20% / +25%) @ 220mA (Loop Power Included)

Current Source Output Circuit
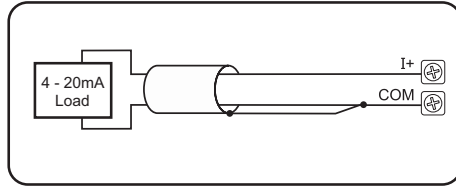
Note: Shield is connected to common at the source device.

INTERNAL
MODULE CIRCUITRY

COM	1	
I1+	2	4-20 mA current sourcing → CH1 DAC
I2+	3	4-20 mA current sourcing → CH2 DAC
I3+	4	4-20 mA current sourcing → CH3 DAC
I4+	5	4-20 mA current sourcing → CH4 DAC
I5+	6	4-20 mA current sourcing → CH5 DAC
I6+	7	4-20 mA current sourcing → CH6 DAC
I7+	8	4-20 mA current sourcing → CH7 DAC
I8+	9	4-20 mA current sourcing → CH8 DAC
COM	10	
COM	11	
COM	12	
COM	13	
COM	14	
COM	15	
COM	16	
0V	17	
24V+	18	

24 VDC User
Supplied Power

ISOLATED ANALOG
CIRCUIT POWER

ISOLATED ANALOG
CIRCUIT COMMON

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.

2 rotate to seated position

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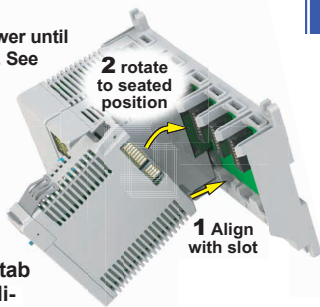
Step Two: Pull top locking tab toward module face. Click indicates lock is engaged.

Locked   Unlocked
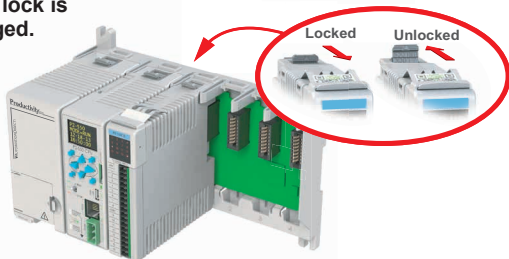
Step Three: Attach field wiring using the removable terminal block or ZIPLink wiring system.

WIRE STRIP LENGTH
MAX
MIN

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

ZIPLink Feed Through *Modules and Cables*[1]
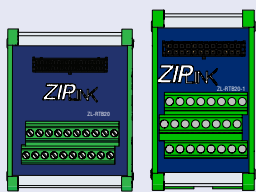
1

ZIPLINK
AUTOMATIONDIRECT®

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*

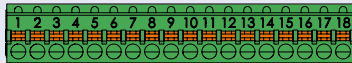**1.0 m (3.3 ft) cable** ZL-P2-CBL18-1P
2.0 m (6.6 ft) cable ZL-P2-CBL18-2P

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 P2-08DA-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.

P2-08DA-

8CH, 16-BIT, CURRENT, ANALOG OUTPUT

- ● Automatic Module Verification
- ○ No Verification and Enable Hot Swap

Add Default Tags   Remove Default Tags

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

Module Info   Monitor   OK   Cancel   Help

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.**

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

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
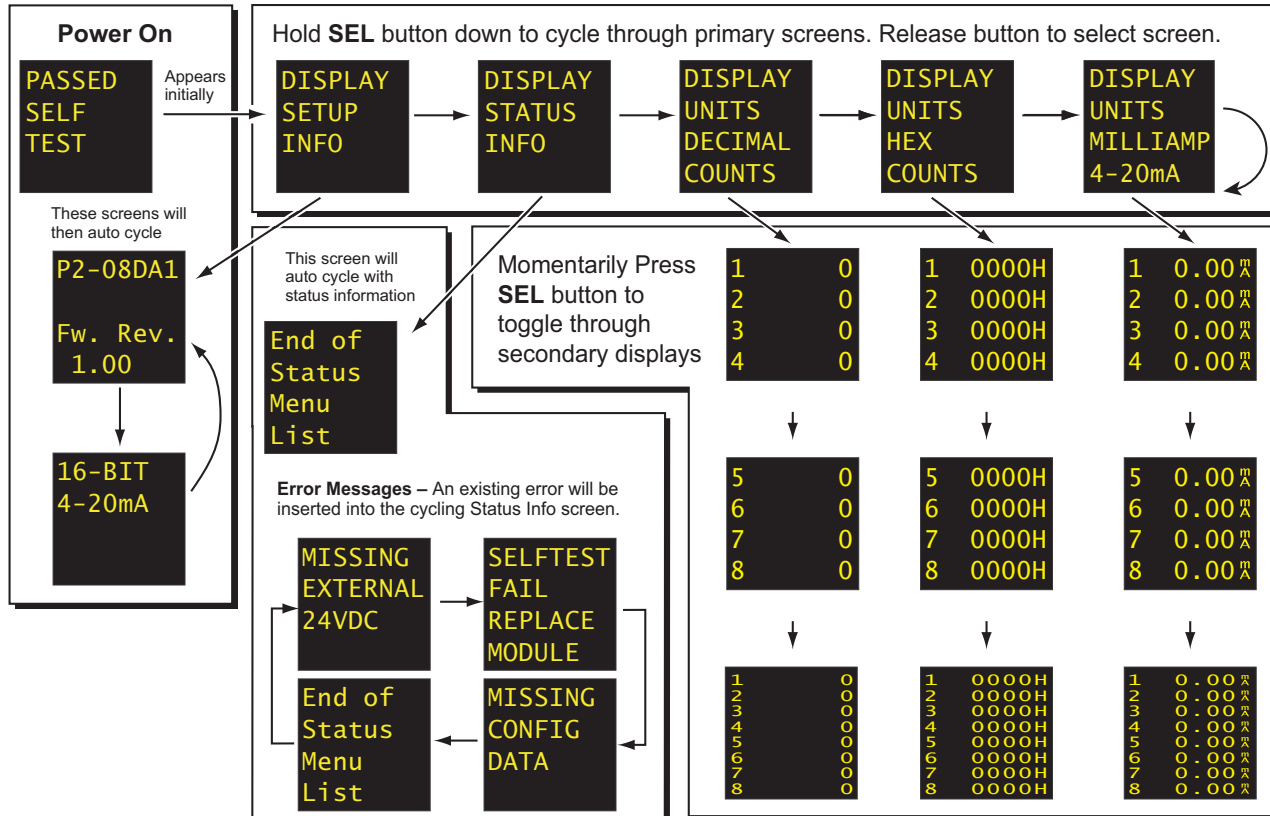

Select the minimum and maximum values of the raw input signal. These values will relate to the minimum and maximum scaled values.

OLED Panel Display

Power On

```
PASSED
SELF
TEST
```
Appears initially

These screens will then auto cycle

```
P2-08DA1

Fw. Rev.
1.00
```

```
16-BIT
4-20mA
```

Hold **SEL** button down to cycle through primary screens. Release button to select screen.

```
DISPLAY
SETUP
INFO
```

```
DISPLAY
STATUS
INFO
```

```
DISPLAY
UNITS
DECIMAL
COUNTS
```

```
DISPLAY
UNITS
HEX
COUNTS
```

```
DISPLAY
UNITS
MILLIAMP
4-20mA
```

This screen will auto cycle with status information

```
End of
Status
Menu
List
```

Error Messages – An existing error will be inserted into the cycling Status Info screen.

```
MISSING
EXTERNAL
24VDC
```

```
SELFTEST
FAIL
REPLACE
MODULE
```

```
End of
Status
Menu
List
```

```
MISSING
CONFIG
DATA
```

Momentarily Press **SEL** button to toggle through secondary displays

```
1      0
2      0
3      0
4      0
```

```
1    0000H
2    0000H
3    0000H
4    0000H
```

```
1    0.00 mA
2    0.00 mA
3    0.00 mA
4    0.00 mA
```

```
5      0
6      0
7      0
8      0
```

```
5    0000H
6    0000H
7    0000H
8    0000H
```

```
5    0.00 mA
6    0.00 mA
7    0.00 mA
8    0.00 mA
```

```
1      0
2      0
3      0
4      0
5      0
6      0
7      0
8      0
```

```
1    0000H
2    0000H
3    0000H
4    0000H
5    0000H
6    0000H
7    0000H
8    0000H
```

```
1    0.00 mA
2    0.00 mA
3    0.00 mA
4    0.00 mA
5    0.00 mA
6    0.00 mA
7    0.00 mA
8    0.00 mA
```

Document Name	Edition/Revision	Date
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