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 ${ }^{\circledR}$ 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.

Remoratile Terminal Block Suecilications

| 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) <br> Solid / Stranded Conductor <br> $3 / 64 \mathrm{in}$. ( 1.2 mm ) Insulation Maximum <br> $1 / 4$ in $(6-7 \mathrm{~mm})$ Strip Length | 28-16 AWG (0.081-1.31 mm²) <br> Solid / Stranded Conductor 3/64 in ( 1.2 mm ) Insulation Maximum 19/64 in (7-8 mm) Strip Length |
| Conductors | "USE COPPER CONDUCTORS, $75^{\circ} \mathrm{C}$ " or equivalent. |  |
| Screw Driver Width | 0.1 in (2.5 mm ) Maximum* |  |
| Screw Size | M2 | N/A |
| Screw Torque | $2.5 \mathrm{lb} \cdot \mathrm{in}(0.28 \mathrm{~N} \cdot \mathrm{~m})$ | N/A |

*Recommended Screwdriver TW-SD-MSL-1

AUTOMATIONDIRECT: Productivity:2000

## P2-04DA-1 Analog Output

## The P2-04DA-1 Current Analog Output Module provides four channels of $4-20 \mathrm{~mA}$ outputs 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).

## Gencral Suecifications

| Operating Temperature | $0^{\circ}$ to $60^{\circ} \mathrm{C}\left(32^{\circ}\right.$ to $\left.140^{\circ} \mathrm{F}\right)$ |
| :--- | :--- |
| Storage Temperature | $-20^{\circ}$ to $70^{\circ} \mathrm{C}\left(-4^{\circ}\right.$ to $\left.158^{\circ} \mathrm{F}\right)$ |
| 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 | 1800 VAC applied for 1 second |
| Insulation Resistance | $>10 \mathrm{M} \mathrm{\Omega}$ @ 500VDC |
| Heat Dissipation | 3100 mW |
| 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 <br> included). See "Wiring Options" on page 5. |
| Connector Type (not included) | 18-position removable terminal block |
| Weight | 90 g (3.2 oz) |
| Agency Approvals | UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA <br> 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.

Outhut Specifications

| Output Channels | 4 |
| :---: | :---: |
| Output Ranges | 4-20 mA |
| Signal Resolution | 16-bit |
| Resolution Value of LSB (least significant bit) | $\begin{aligned} & 4-20 \mathrm{~mA}=0.244 \mu \mathrm{~A} / \mathrm{count} \\ & 1 \mathrm{LSB}=1 \text { count } \end{aligned}$ |
| 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) | $\begin{aligned} & 0-570 \Omega(19.2 \mathrm{VDC}) \\ & 0-690 \Omega(21.6 \mathrm{VDC}) \\ & 0-810 \Omega(24 \mathrm{VDC}) \\ & 0-930 \Omega(26.4 \mathrm{VDC}) \\ & 0-1100 \Omega \text { (30VDC) } \\ & \text { Minimum Load 0-125 } \Omega @ 0-45^{\circ} \mathrm{C} \\ & \quad 250-715 \Omega @ 0-60^{\circ} \mathrm{C} \end{aligned}$ |
| Maximum Inductive Load (Current Output) | 1 mH |
| Allowed Load Type | Grounded |
| Maximum Inaccuracy | $0.1 \%$ of range (including temperature drift) |
| Maximum Full Scale Calibration Error (not including offset error) | $\pm 0.025 \%$ of range maximum |
| Maximum Offset Calibration Error | $\pm 0.025 \%$ of range maximum |
| Accuracy vs. Temperature | $\pm 25 \mathrm{ppm} /{ }^{\circ} \mathrm{C}$ max full scale calibration change ( $\pm 0.0025 \%$ of range $/{ }^{\circ} \mathrm{C}$ ) |
| Maximum Crosstalk | -96dB, 1 LSB |
| Linearity Error (End to End) | $\pm 16$ LSB maximum ( $\pm 0.025 \%$ of full scale) Monotonic with no missing codes |
| Output Stability and Repeatability | $\pm 10$ LSB after 10 minute warm-up (typical) |
| Output Ripple | 0.05\% of full scale |
| Output Setting Time | $300 \mu \mathrm{~s} \mathrm{max}, 5 \mu \mathrm{~s}$ min (full scale change) |
| All Channel Update Rate | $600 \mu \mathrm{~s}$ |
| Maximum Continuous Overload | Outputs open circuit detected |
| Type of Output Protection | Electronically current limited to 20 mA or less |
| Output Signal (power-up,-down) | 4 mA |
| External Power Supply Required | 24VDC (-20\% / +25\%) @ 120mA (Loop Power Included) |

Wiring Diagram
Schematic

## Current Output Circuits



Note: Shield is connected to common at the source of the device.


## Module Installation

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

## Step Onf: Align module

 catch with base slot and rotate module into connector.Stel TWO: Pull top locking tab toward module face. Click indicates lock is


Stel Three: Attach field wiring using the removable terminal block or ZIPLink wiring



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 hotswap 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.

## Wring Ontions

1 ZIPLink Feed Through Modules and Cables ${ }^{1}$

## ZIIRIN <br> VAUTOMATIONDIRECT

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

| 1.0 m (3.3 ft) cable <br> 2.0 m (6.6 ft) cable | $\begin{aligned} & \text { ZL-P2-CBL18-1P } \\ & \text { ZL-P2-CBL18-2P } \end{aligned}$ |
| :---: | :---: |
| 3 Screw Terminal Block only | P2-RTB <br> (Quantity 1) |
| 4 Spring Clamp Terminal Block only $\square$ <br>  | P2-RTB-1 <br> (Quantity 1) |
| 5 <br> Accessories ${ }^{2}$ | ZL-RTB-COM TW-SD-SL-1 <br> TW-SD-MSL-1 |

1.Cable + ZIPLink Module = Complete System
2. ZL-RTB-COM provides a common connection point for power or ground

Module Gonfiguration


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


## OLED Panel Display



| Document Name | Edition/Revision | Date |
| :--- | :--- | :--- |
| P2-04DA-1-DS | 1st Edition | $4 / 22 / 2020$ |

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