| General Specifications |  |
| :---: | :---: |
| Operating Temperature | $0^{\circ}$ to $60^{\circ} \mathrm{C}$ ( $32^{\circ}$ to $140^{\circ} \mathrm{F}$ ) |
| 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 | 1800VAC applied for 1 second |
| Insulation Resistance | > 10M $\Omega$ @ 500VDC |
| Heat Dissipation | 1950mW |
| Enclosure Type | Open Equipment |
| Module Location | Any I/O position in a Productivity1000 System |
| Field Wiring | Removable terminal block (sold separately). Use ZIPLink Wiring System optional 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.productivity1000.com |
| Terminal Type (sold separately) | 10-position Removable Terminal Block |
| Weight | $60 \mathrm{~g}(2.10 \mathrm{oz})$ |
| Agency Approvals | UL61010-2-201 file E139594, Canada \& USA CE (EN61131-2 EMC and EN61010-2-201 Safety)* |



| Input Specifications |  |
| :--- | :--- |
| Inputs per Module | 4 |
| Input Range | $0-10$ VDC |
| Signal Resolution | 13 -bit |
| Resolution Value of LSB <br> (least significant bit) | $0-10 \mathrm{VDC}=1.22$ <br> (1LSB $=1$ mV per count) |
| Data Range | $0-8191$ counts |
| Input Type | Single-ended (1 common) |
| Maximum Continuous Overload | $\pm 100 \mathrm{VDC}$ |
| Input Impedance | $200 \mathrm{k} \Omega$ |
| Hardware Filter Characteristics | Low Pass, -3dB @ 100Hz |
| Sample Duration Time | 4 ms per channel <br> (does not include ladder scan time) |
| All Channel Update Rate | 20 ms |
| Open Circuit Detection Time | Zero reading within 100ms |
| Conversion Method | Successive approximation |
| Accuracy vs. Temperature | $\pm 75 P P M ~ /{ }^{\circ} \mathrm{C}$ maximum |
| Maximum Inaccuracy | $0.5 \% ~ o f ~ r a n g e ~$ <br> (including temperature dritt) |
| Linearity Error | $\pm 0.036 \%$ of range |
| Monotonic with no missing codes |  |
| Input Stability and Repeatability | $\pm 0.024 \%$ of range |
| Full Scale Calibration Error <br> (including offset) | $\pm 0.097 \%$ of range |
| Offset Calibration Error | $\pm 0.097 \%$ of range |
| Max Crosstalk at DC, 50Hz and <br> 60Hz | $\pm 0.049 \%$ of range |
| External Power Supply Required | $24 \mathrm{VDC}(-20 \% /+25 \%), 100 \mathrm{~mA}$ |
|  |  |


| Output Specifications |  |
| :---: | :---: |
| Outputs per Module | 2 |
| Output Range | 0-10 VDC |
| Signal Resolution | 12-bit |
| Resolution Value of LSB (least significant bit) | $\begin{aligned} & 0-10 \mathrm{VDC}=2.44 \mathrm{mV} / \text { count } \\ & 1 \mathrm{LSB}=1 \text { count } \end{aligned}$ |
| Data Range | 0-4095 counts |
| Output Type | Voltage @ 10mA |
| Output Value in Fault Mode | OV |
| Load Impedance | $\geq 1000 \Omega$ |
| Maximum Capacitive Load | $0.01 \mu \mathrm{~F}$ |
| Allowed Load Type | Grounded |
| Maximum Inaccuracy | 0.5\% of range |
| Full Scale Calibration Error | $\pm 0.2 \%$ of range |
| Offset Calibration Error | $\pm 0.2 \%$ of range |
| Accuracy vs. Temperature | $\pm 75 \mathrm{PPM} /{ }^{\circ} \mathrm{C}$ maximum full-scale calibration change ( $\pm 0.0025 \%$ of range $/{ }^{\circ} \mathrm{C}$ ) |
| Max Crosstalk at DC, 50/60Hz | -72dB, 1 LSB |
| Linearity Error (End to End) | $\pm 4$ LSB max., $\pm 0.1 \%$ of full scale) Monotonic with no missing codes |
| Output Stability and Repeatability | $\pm 2 \%$ LSB after 10 min. warm up (typical) |
| Output Ripple | $\pm 0.2 \%$ of full scale |
| Output Settling Time | $0.3 \mathrm{~ms} \mathrm{max.} ,\mathrm{5} \mathrm{\mu s} \mathrm{min}. \mathrm{(full} \mathrm{scale} \mathrm{range)}$ |
| All Channel Update Rate | 4 ms |
| Maximum Continuous Overload | Outputs current limited to 40 mA typical Continuous overloads on multiple outputs can damage the module. |
| Type of Output Protection | 0.1 us Transient Suppressor |
| Output Signal at Power Up and Power Down | OV |



Voltage Input Circuits


Voltage Output Circuits


Notes for maximum accuracy:

1. Jumper unused inputs to common.


## Module Installation

WARNING: Do not add or remove modules with
field power applied.

## Step One: with latch

 in "locked" position, align connectors on the side of each module and stack by pressing together. Click indicates lock is engaged.Step Two: Attach field wiring using the removable terminal block or ZIPLink wiring system.


Step Three: To unstack modules, pull locking latch up into the unlocked position and then pull modules apart.


QiB Code


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

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


ZIRI
VAUTOMATIONDIRECT
ZL-RTB20
ZL-RTB20-1

ZL-P1-CBL10
ZL-P1-CBL10-1
ZL-P1-CBL10-2

## 2 Terminal Block with pigtail cable

| 1.0 m (3.3 ft) cable <br> 2.0 m ( 6.6 ft) cable | $\begin{aligned} & \text { ZL-P1-CBL10-1P } \\ & \text { ZL-P1-CBL10-2P } \end{aligned}$ |
| :---: | :---: |
| 3 Screw Terminal Block only | P1-10RTB (Quantity 1) |
| 4 Spring Clamp Terminal Block only $\square$ | P1-10RTB-1 <br> (Quantity 1) |
| 5 <br> Accessories ${ }^{2}$ | ZL-RTB-COM <br> TW-SD-SL-1 <br> TW-SD-MSL-2 |

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


## Inear 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.


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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| Terminal Block Specifications |  |  |
| :---: | :---: | :---: |
| Part Number | P1-10RTB | P1-10RTB-1 |
| Positions | 10 Screw Terminals | 10 Spring Clamp Terminals |
| Wire Range | 30-16 AWG ( $\left.0.051-1.31 \mathrm{~mm}^{2}\right)$ <br> Solid / Stranded Conductor $3 / 64$ in ( 1.2 mm ) Insulation Max. 1/4 in ( $6-7 \mathrm{~mm}$ ) Strip Length | 28-16 AWG (0.081-1.31 mm²) Solid / Stranded Conductor $3 / 64$ in ( 1.2 mm ) Insulation Max. 19/64 in (7-8 mm) Strip Length |
| Conductors | "USE COPPER CONDUCTORS, $75^{\circ} \mathrm{C}$ " or equivalent. |  |
| Screw Driver | 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 Screw Driver TW-SD-MSL-1

| Document Name | Edition/Revision | Date |
| :--- | :--- | :--- |
| P1-4ADL2DAL-2-DS | 1st Edition | $5 / 18 / 2018$ |

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