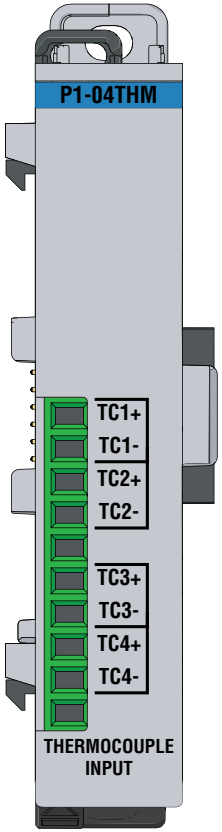
Thermocouple Input Specifications	
Input Channels	4 differential
Data Format	Floating Point
Common Mode Range	±0.5 V
Common Mode Rejection	100dB @ DC
Input Impedance	>5MΩ
Maximum Ratings	Fault Protected Inputs to ±50V
Resolution	16-bit, ±0.1 °C or °F
Thermocouple Input Ranges	Type J -190° to 760°C (-310° to 1400°F) Type E - 210° to 1000°C (-346° to 1832°F) Type K -150° to 1372°C (-238° to 2505°F) Type R 65° to 1768°C (149° to 3214°F) Type S 65° to 1768°C (149° to 3214°F) Type T -230° to 400°C (-382° to 752°F) Type B 529° to 1820°C (984° to 3308°F) Type N -70° to 1300°C (-94° to 2372°F) Type C 65° to 2320°C (149° to 4208°F)
Thermocouple Linearization	Automatic
Cold Junction Compensation	Automatic
Sample Duration Time	270ms
All Channel Update Rate	1.08 s
Open Circuit Detection Time	Within 5s
Conversion Method	Sigma-Delta
Accuracy vs. Temperature	±50ppm per °C (maximum)
Maximum Inaccuracy	±3°C maximum (excluding thermocouple error)
Linearity Error	±1°C maximum (±0.5 °C typical) Monotonic with no missing codes
Warm-up Time	30 minutes for ±1% repeatability 2 minutes to reach voltage specifications
External Power Supply Required	None



P1-04THM Analog Input

The P1-04THM Thermocouple Input Module provides four differential channels for receiving thermocouple and voltage input signals for use with the Productivity1000 system.

Terminal Block Included. Not Compatible with *ZIP*Link.
Warranty: Thirty-day money-back guarantee. Two-year limited replacement (See www.productivity1000.com for details).

General Specifications	
Operating Temperature	0º to 60ºC (32º to 140ºF)
Storage Temperature	-20º to 70ºC (-4º to 158ºF)
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
Heat Dissipation	100mW
Enclosure Type	Open Equipment
Module Location	Any I/O position in a Productivity1000 System
Field Wiring	Removable terminal block (Included). The P1-04THM is not compatible with the ***ZIP***Link Wiring System.
Connector Type (included)	10-position Removable Terminal Block
Weight	58g (2.0 oz)
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)*

*See CE Declaration of Conformance for details.

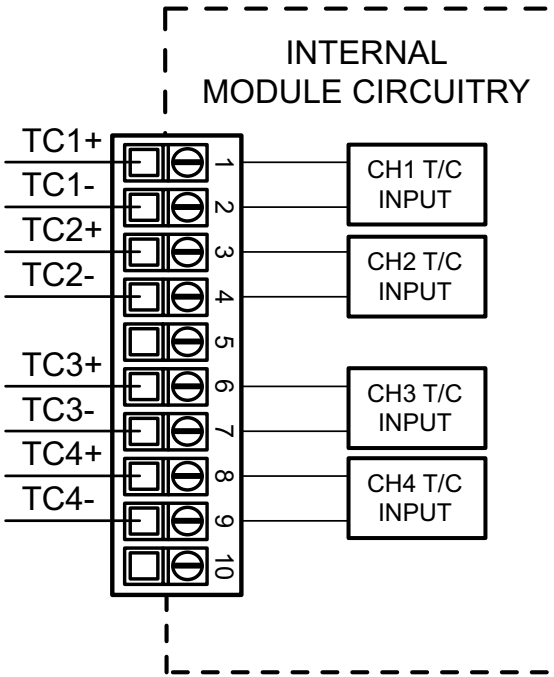
Voltage Input Specifications	
Linear mV Device Input Ranges	0–39.0625 mVDC, ±39.0625 mVDC, ±78.125 mVDC, 0–156.25 mVDC, ±156.25 mVDC, 0–1250 mVDC
Max Voltage Input Offset Error	0.05% @ 0°–60 °C, typical 0.04% @ 25°C
Max Voltage Input Gain Error	0.06% @ 25°C
Max Voltage Input Linearity Error	0.05% @ 0°–60 °C, typical 0.03% @ 25°C
Max Voltage Input Impedance	0.2% @ 0°–60 °C, typical 0.06% @ 25°C

Configuration/Diagnostics	
Burn-out Detection: High Side/Disable	1 bit per module
°C/°F (T/C Only)	1 bit per module
Module Diagnostics Failure	1 bit per module
Burn-out (on if T/C input is open – no connection between TCn+ and TCn-)	1 bit per channel
Channel Under-range (T/C only)	1 bit per channel
Channel Over-range (T/C only)	1 bit per channel

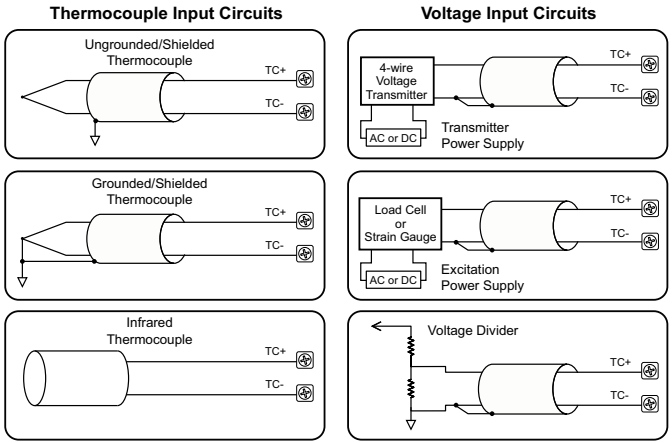
Terminal Block Specifications		
Part Number	***P1-10RTB***	***P1-10RTB-1***
Positions	10 Screw Terminals	10 Spring Clamp Terminals
Wire Range	30–16 AWG (0.051–1.31 mm²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 1/4 in (6–7 mm) Strip Length	28–16 AWG (0.081–1.31 mm²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 19/64 in (7–8 mm) Strip Length
Conductors	Use Thermocouple Extension wire for thermocouples. "USE COPPER CONDUCTORS, 75ºC" 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

P1-04THM Schematic



P1-04THM Wiring Diagram



NOTES:

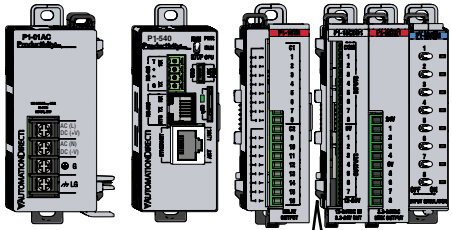
1. Connect shield to thermocouple signal/ground only. Do not connect to both ends.
2. Install jumper wire on each unused input, TC+ to TC-.

3. With grounded thermocouples, take precautions to prevent having a voltage potential between thermocouple tips. A voltage of 0.5 V or greater between tips will skew measurements.
4. Use shielded, twisted thermocouple extension wire that matches the thermocouple type. Use thermocouple-compatible junction blocks.

Module Installation

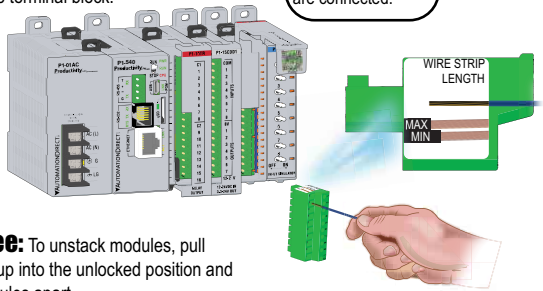
WARNING: Do not apply field power until the following steps are completed.

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.

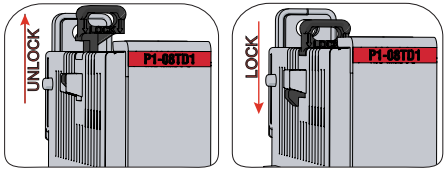


Check all latches are secure after modules are connected.

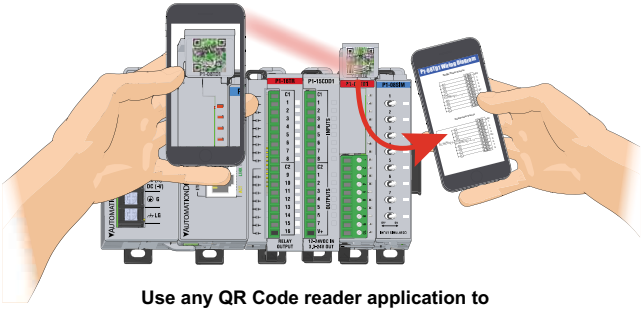
Step Two: Attach field wiring using the removable terminal block.



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

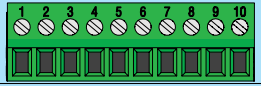
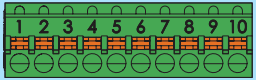


QR Code



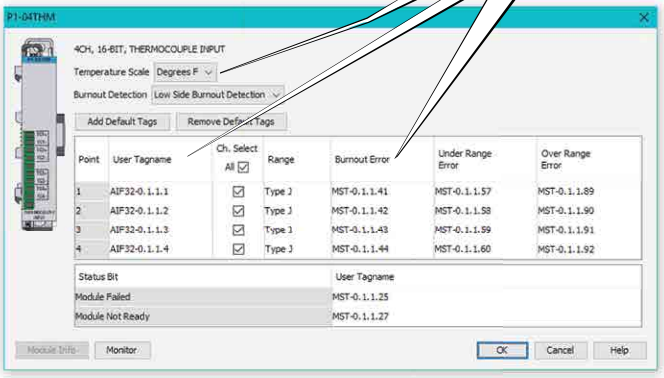
Use any QR Code reader application to display the module's product insert.

Module Configuration

Wiring Options	
1 ***Screw Terminal Block (included)*** 	P1-10RTB (Quantity 1)
2 ***Spring Clamp Terminal Block*** 	P1-10RTB-1 (Quantity 1)

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P1-04THM module into the configuration.

Specify *Temperature Scale* **and** *Burnout Detection*, **and use the drop down menu to select module range and resolution. If desired, assign a *User Tagname* to each channel selected and to each *Status Bit Item*.**



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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