

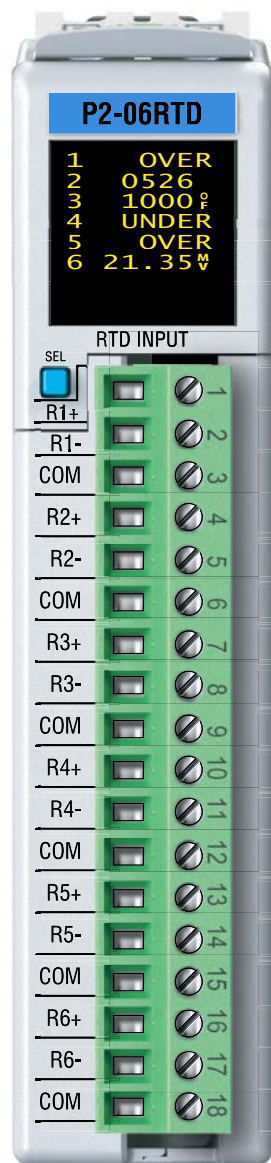
Analog Input Modules

P2-06RTD

\$00?v7:

RTD Analog Input

The P2-06RTD input module provides six differential channels for receiving RTD and resistance input signals.



Terminal block
included

RTD Input Specifications

Input Channels	6 Differential	
Max. Common Mode Voltage	5VDC	
Data Format	Floating Point	
Common Mode Rejection	-90dB min. @ DC, -150dB min. @ 50/60 Hz	
Absolute Maximum Ratings	Fault protected input, $\pm 50V$	
Internal Resolution	16-bit, $\pm 0.1^{\circ}C$ or $^{\circ}F$ (up to 100Hz filter)	
Input Ranges (RTD Types)	Pt100 Pt1000 JPt100 10 Ω Cu. 25 Ω Cu. 120 Ω Ni.	-200 $^{\circ}C$ /850 $^{\circ}C$ (-328 $^{\circ}F$ /1562 $^{\circ}F$) -200 $^{\circ}C$ /595 $^{\circ}C$ (-328 $^{\circ}F$ /1103 $^{\circ}F$) -100 $^{\circ}C$ /450 $^{\circ}C$ (-148 $^{\circ}F$ /842 $^{\circ}F$) -200 $^{\circ}C$ /260 $^{\circ}C$ (-328 $^{\circ}F$ /500 $^{\circ}F$) -200 $^{\circ}C$ /260 $^{\circ}C$ (-328 $^{\circ}F$ /500 $^{\circ}F$) -80 $^{\circ}C$ /260 $^{\circ}C$ (-112 $^{\circ}F$ /500 $^{\circ}F$)
RTD Linearization	Automatic	
Excitation Current (all ranges)	200 μA	
Accuracy vs. Temperature	$\pm 5PPM$ per $^{\circ}C$ (maximum)	
Full Scale Calibration	$\pm 1^{\circ}C$	
Offset Calibration Error	± 1 count (negligible)	
Linearity Error (end to end)	$\pm 0.5^{\circ}C$ maximum, $\pm 0.01^{\circ}C$ typical, Monotonic with no missing codes	
Maximum Inaccuracy	$\pm 1^{\circ}C$ maximum (excluding RTD error) (including temperature drift)	
Warm-up Time	2 minutes for $\pm 0.2\%$ repeatability	
Sample Duration (Single channel update rate)	Dependent on digital Filter Settings – 488ms @ 10Hz, 88ms @ 50Hz, 75ms @ 60Hz, 56ms @ 100Hz, 48ms @ 250Hz	
Filter Characteristics	Digital filter cutoff frequencies: 10Hz, 50Hz, 60Hz, 100Hz, or 250Hz	
All Channel Update Rate	Single channel update rate times the number of enabled channels	
Open Circuit Detection Time	Positive full scale reading within 2s	
Conversion Method	Sigma-Delta	
External DC Power Required	None	

Terminal Block Included. Not Compatible with ZIPLink.
Warranty: Thirty-day money-back guarantee.
Two-year limited replacement. (See www.productivity2000.com for details).

Analog Input Modules

P2-06RTD (cont'd)

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)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Heat Dissipation	300mW
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 system
Field Wiring	Removable terminal block (included). The P2-06RTD module is not compatible with the ZIPLink wiring system.
Connector Type (included)	18-position removable terminal block
Weight	90g (3.2 oz)
Agency Approvals**	UL508 File E139594, Canada & USA CE (EN61131-2*)

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

Removable Terminal Block Specifications		
Part Number	P2-RTB	P2-RTB-1
Number of positions	18 screw terminals (Included)	18 push release terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) 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 mm ²) Solid/stranded conductor 3/64 in (1.2 mm) insulation max. 19/64 in (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver Width	0.1 in. (2.5 mm) maximum	NA
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N·m)	N/A

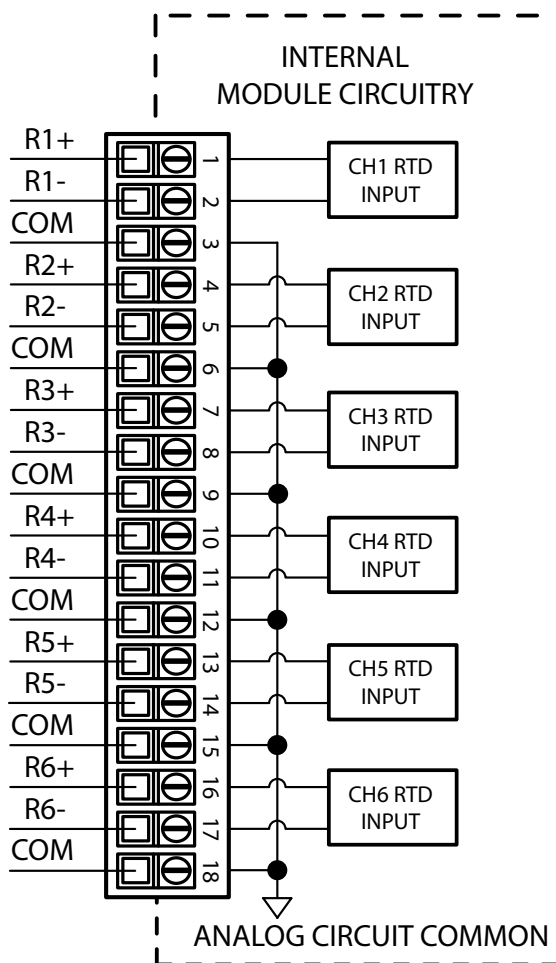
* Recommended screw driver: P/N TW-SD-MSL-1.

Diagnostics	
Module Diagnostics Failure	1 bit per module
Module Not Ready	1 bit per module
Channel Burn-out (RTD only)	1 bit per channel
Under-range (RTD only)	1 bit per channel
Over-range	1 bit per channel

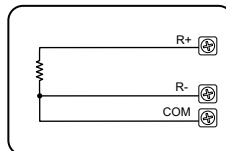
Analog Input Modules

P2-06RTD (cont'd)

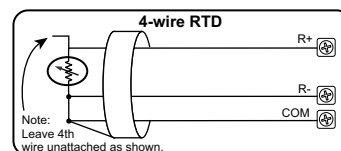
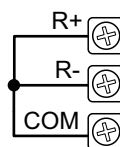
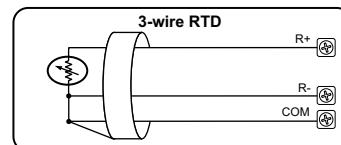
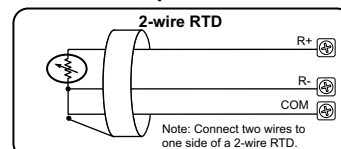
Resistance Input Specifications	
Internal Resolution	16 bit, .0015% of full scale range in ohms (up to 100Hz filter)
Resistance Input Ranges and CPU Resolution	0–10,000Ω, Resolution 1Ω
	0–6,250Ω, Resolution 0.1Ω
	0–3,125Ω, Resolution 0.1Ω
	0–1,562.5Ω, Resolution 0.1Ω
	0–781.25Ω, Resolution 0.1Ω
	0–390.625Ω, Resolution .01Ω
	0–195.3125Ω, Resolution .01Ω
Accuracy vs. Temperature	±25PPM per °C (maximum)
Full Scale Calibration	±0.02% of full scale range
Offset Calibration Error	±0.0015% of full scale range in ohms
Linearity Error (end to end)	±0.0015% of full scale range maximum at 25°C, Monotonic with no missing codes
Maximum Inaccuracy	±0.10% of full scale range



Resistance Input



RTD Input Circuits



Notes:

For maximum accuracy follow these guidelines.

1. For 2-wire RTD, attach third wire to module common.
2. R+, R-, and COM wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
3. Do not use cable shield as sensing wire.
4. When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield at both ends.
5. For maximum accuracy jumper unused inputs to common

I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in a Productivity2000 system. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number [P2-FILL](#)).

Discrete Input Modules

Productivity2000 Discrete Input Modules			
Part Number	Number of Inputs	Description	Price
P2-08SIM	8	Input Simulator Module	\$0?uc:
P2-08ND3-1	8	Sinking/Sourcing 12-24 VDC	\$1o98:
P2-16ND-TTL	16	Sinking/Sourcing	\$,-067!i:
P2-16ND3-1	16	Sinking/Sourcing 24V AC/DC	\$01o99:
P2-32ND3-1	32	Sinking/Sourcing 12-24 VDC	\$01o9a:
P2-08NE3	8	Sinking/Sourcing 24V AC/DC	\$0?v3:
P2-16NE3	16	Sinking/Sourcing 12-24 VDC	\$00?v4:
P2-32NE3	32	Sinking/Sourcing 24V AC/DC	\$,00,96:
P2-08NAS	8	AC Isolated 100-120 VAC	\$,012d[:
P2-16NA	16	AC 100-240 VAC	\$00?v5:

Specialty Modules

Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
P2-HSI	2	High-Speed Input	\$00?vg:
P2-HSO**	2	High-Speed Output	\$00?vh:
P2-02HSC	2	High-Speed Counter	\$04n54:
P2-04PWM	4	Pulse-Width Modulation	\$04n55:
P2-SCM	4 ports	Serial Communications Module	\$00?uy:

** ZIPLink required.

Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
P2-04DA	4	Analog Output (Voltage/Current)	\$00?u?:
P2-04DA-1	4	Analog Output (Current)	\$04n56:
P2-04DA-2	4	Analog Output (Voltage)	\$04n57:
P2-04DAL-1*	4	Analog Output (Current)	\$012e1:
P2-04DAL-2*	4	Analog Output (Voltage)	\$012e2:
P2-08DA-1	8	Analog Output (Current)	\$,00?u,:
P2-08DA-2	8	Analog Output (Voltage)	\$00?v0:
P2-08DAL-1*	8	Analog Output (Current)	\$,00,ep:
P2-08DAL-2*	8	Analog Output (Voltage)	\$,00,eq:
P2-16DA-1	16	Analog Output (Current)	\$00?v1:
P2-16DA-2	16	Analog Output (Voltage)	\$00?v2:
P2-16DAL-1*	16	Analog Output (Current)	\$,00,es:
P2-16DAL-2*	16	Analog Output (Voltage)	\$,00,et:

* Low resolution analog modules without OLED display.

Discrete Output Modules

Productivity2000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
P2-08TD1S	8	Isolated Sinking	\$12ga:
P2-08TD2S	8	Isolated Sourcing	\$12gb:
P2-15TD1	15	Sinking	\$12d#:
P2-15TD2	15	Sourcing	\$,12d!:
P2-08TD1P	8	Sinking Protected	\$0?v8:
P2-08TD2P	8	Sourcing Protected	\$0?v9:
P2-16TD-TTL	16	Sourcing	\$,067!h:
P2-16TD1P	16	Sinking Protected	\$00?va:
P2-16TD2P	16	Sourcing Protected	\$00?vb:
P2-32TD1P	32	Sinking Protected	\$012d?:
P2-32TD2P	32	Sourcing Protected	\$,012d,:
P2-08TAS	8	Isolated AC	\$012g9:
P2-16TA	16	100-240 VAC Output	\$00?vc:
P2-06TRS	6	Isolated Relay	\$,067!e:
P2-08TRS	8	Isolated Relay	\$0?vd:
P2-16TR	16	Relay	\$,00?vf:

Analog Input Modules

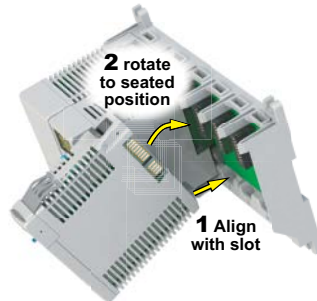
Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
P2-04AD	4	Analog Input (Voltage/Current)	\$00?uv:
P2-04AD-1	4	Analog Input (Current)	\$04n52:
P2-04AD-2	4	Analog Input (Voltage)	\$04n53:
P2-08AD-1	8	Analog Input (Current)	\$,00?u[:
P2-08AD-2	8	Analog Input (Voltage)	\$00?u,:
P2-08ADL-1*	8	Analog Input (Current)	\$,00,ek:
P2-08ADL-2*	8	Analog Input (Voltage)	\$,-00,el:
P2-16AD-1	16	Analog Input (Current)	\$00?u#:
P2-16AD-2	16	Analog Input (Voltage)	\$,00?u!:
P2-16ADL-1*	16	Analog Input (Current)	\$,00,en:
P2-16ADL-2*	16	Analog Input (Voltage)	\$,00,eo:
P2-06RTD	6	Analog RTD Input	\$00?v7:
P2-08NTC	8	Analog Thermocouple Input	\$,0118,:
P2-08THM	8	Analog Thermistor Input	\$00?v6:

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P2-8AD4DA-1	8/4	Analog Input/Output (Current)	\$00?uz:
P2-8AD4DA-2	8/4	Analog Input/Output (Voltage)	\$,00?uj:

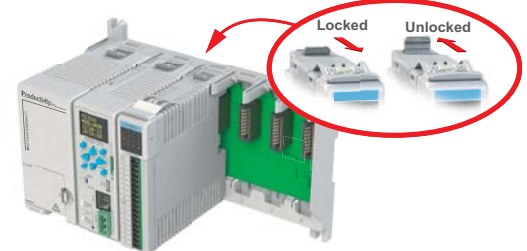
I/O Module Installation Procedure

WARNING: DO NOT APPLY FIELD POWER UNTIL THE FOLLOWING STEPS ARE COMPLETED. SEE HOT-SWAP PROCEDURE FOR EXCEPTIONS.

Step One: Align module catch with base slot and module into connector.



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



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



WARNING: EXPLOSION HAZARD – DO NOT CONNECT OR DISCONNECT CONNECTORS OR OPERATE SWITCHES WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS. DO NOT HOT-SWAP MODULES UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS.