1-800-633-0405 **Productivity3000® Overview**

Bases

Four bases are available, with 3, 5, 8, and 11 slots.



Productivity3000 Bases		
Part Number	Description	Price
P3-03B	3-slot base	\$200.00
P3-05B	5-slot base	\$231.00
P3-08B	8-slot base	\$288.00
P3-11B	11-slot base	\$344.00

Power Supplies

Two power supplies are available; one accepts 100–240 VAC input and one accepts 24-48 VDC input.



Productivity3000 Power Supplies		
Part Number	Description	Price
P3-01AC	Power supply (100–240 VAC)	\$227.00
P3-01DC	Power supply (24–48 VDC)	\$237.00

CPU Modules

Three CPU modules are currently available.

P3-550 CPU P3-550E CPU Ø

- 1		
	P3-530 CPU	
	USB OUT EXP IVO OUT	

P3-RX REMOTE SLAVE

G

Productivity3000 CPU Modules		
Part Number	Description	Price
P3-550	CPU module	Retired
P3-550E	CPU module	\$750.00
P3-530	CPU module	\$735.00

Expansion and Remote Slave Modules

One local expansion module and one remote slave module is available.



Productivity3000 Expansion, Remote Slave Modules		
Part Number	Description	Price
P3-EX	Expansion module	\$125.00
P3-RX	Remote slave module	\$499.00

1-800-633-0405 Productivity3000® Overview

Discrete I/O Modules

Seven discrete input and fourteen discrete output modules are available.



Analog I/O Modules

Six analog input, seven analog output, and two analog input/output modules are available.



Specialty Modules

The three specialty modules available provide high-speed capabilities and additional serial communication ports.



Discrete Input Modules		
Part Number	Description	Price
P3-16SIM	Input Simulator	\$214.00
P3-08ND3S	Isolated Sinking / Sourcing Input	\$109.00
P3-16ND3	Sinking/Sourcing Input	\$162.00
P3-32ND3	Sinking/Sourcing Input	\$218.00
P3-64ND3	Sinking/Sourcing Input	\$284.00
P3-08NAS	Isolated AC Input	\$136.00
P3-16NA	AC input	\$167.00

Discrete Output Modules		
Part Number	Description	Price
P3-08TD1S	Isolated Sinking Output	\$164.00
P3-08TD2S	Isolated Sourcing Output	\$169.00
P3-16TD1	Sinking Output	\$175.00
P3-16TD2	Sourcing Output	\$180.00
P3-32TD1	Sinking Output	\$228.00
P3-32TD2	Sourcing Output	\$218.00
P3-64TD1	Sinking Output	\$319.00
P3-64TD2	Sourcing Output	\$289.00
P3-08TAS	Isolated AC Out	\$212.00
P3-16TA	AC Output	\$225.00
P3-08TRS	Isolated Relay Output	\$187.00
P3-08TRS-1	Isolated Relay Output	\$194.00
P3-16TR	Relay Output	\$190.00
P3-16TD3P	Sinking/Sourcing Protected Output	Retired

Analog Input Modules		
Part Number	Description	Price
P3-04ADS	Isolated Analog Input	\$724.00
P3-08AD	Analog Input	\$393.00
P3-16AD-1	Analog Current Input	\$535.00
P3-16AD-2	Analog Voltage Input	\$524.00
P3-08RTD	Analog RTD Input	\$581.00
P3-08THM	Analog Thermocouple	\$736.00

Analog Input/Output Modules		
Part Number Description Price		
P3-8AD4DA-1	Analog Input/Output	\$598.00
P3-8AD4DA-2	Analog Input/Output	\$617.00

Specialty Modules		
Part Number	Description	Price
P3-HSI	High-Speed Pulse Input	\$563.00
P3-HSO	High-Speed Output	\$587.00
P3-SCM	Serial Communications Module	\$475.00

Analog Output Modules		
Part Number	Description Price	
P3-04DA	Analog Output	\$449.00
P3-08DA-1	Analog Current Output	\$779.00
P3-08DA-2	Analog Voltage Output	\$725.00
P3-06DAS-1	Isolated Analog Current Output	Retired
P3-06DAS-2	Isolated Analog Voltage Output	Retired
P3-16DA-1	Analog Current Output	\$929.00
P3-16DA-2	Analog Voltage Output	\$911.00

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1-800-633-0405 **Productivity3000[®] Overview**







Select and order your I/O modules. At the same time, select and order your **ZIP**Link wiring system or removable terminal blocks.





6. Select your PC-to-CPU programming cable. You will need a standard USB or Ethernet cable for programming, depending on the CPU selected and communications port (USB or Ethernet) chosen.



7. Select tools, wire, and provide power.







1-800-633-0405 Programming Software

PG-PGMSW * FREE * (\$495 value)

Free online download!

Productivity Suite is user-friendly programming software designed to allow quick and easy programming of ladder logic programs for the Productivity3000[®] CPU.

The online help file provides information that will help you get acquainted with the software quickly.

PC Requirements

For Productivity Suite software and hardware system requirements please visit our web site for the minimum system requirements: <u>https://support.</u> automationdirect.com/downloads.html

Programming Cable

You will need a standard USB or Ethernet cable for programming, depending on whether you use the USB (<u>P3-550</u>) or Ethernet (<u>P3-530</u> and <u>P3-550(E)</u>) programming port.

We recommend using a USB programming cable (<u>P3-550</u> only); just plug it in and it works. We sell A-to-B USB cables in various lengths:

- <u>USB-CBL-AB3</u> (3ft)
- <u>USB-CBL-AB6</u> (6ft)
- USB-CBL-AB10 (10ft)
- <u>USB-CBL-AB15</u> (15ft)

Or where possible use an Ethernet Cable:

• CAT5E STP (3ft to 50ft lengths available at www.automationdirect.com)



Main window

The Main Window is displayed when the program opens. It is divided into Menus, Toolbars, and Windows that work together to make project development as simple as possible.



1-800-633-0405

Bases

- P3-03B \$200.00
- P3-05B \$231.00
- P3-08B \$288.00
- P3-11B \$344.00

The P3-03B, P3-05B, P3-08B, and P3-11B are 3, 5, 8, and 11-slot, local, expansion, and remote I/O bases.

See Dimensions and Installation for base dimensions.



Base Specifications		
Input or Output Modules per Base	3, 5, 8, or 11	
Power Supply Slots	1 (<u>P3-01AC</u> or <u>P3-01DC</u>)	
CPU Slots	1 (P3-550(E)/530, P3-RX and P3-EX compatible)	
Module Types Supported	Discrete, analog and specialty	
Module Placement Restrictions	None. Any I/O module may be installed in any I/O slot without power supply budget or module type restrictions.	
I/O Module Hot Swap Support	Yes. (All discrete and analog modules can be software enabled for Hot Swap operation)	
Module Keying	Electronic to slot	
Maximum Number of Local Bases	5	

General Specifications			
Operating Temperature	0°C– 60°C (32°F–140°F)		
Storage Temperature	-20°C–70°C (-4°F–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	2.5 W		
Weight	P3-03B: 1.365 lbs (21.8 oz.), 619g P3-05B: 1.658 lbs (26.5 oz.), 752g P3-08B: 2.158 lbs (34.5 oz.), 978g P3-11B: 2.682 lbs (42.9 oz.), 1216g		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

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

Base Configuration



1-800-633-0405 **Power Supplies**

P3-01AC \$227.00

There are two power supplies available; both provide isolated 24VDC, 5VDC, and 3.3 VDC to the Productivity3000 bases.

The P3-01AC input power supply requires power from an external 100–240 VAC source.

The <u>P3-01DC</u> input power supply requires power from an external 24-48 VDC source.

No Power Budgeting

No power budgeting is required with either power supply. Any combination of I/O modules may be installed in any slots without power budget considerations.



AC Input Power Supply

WARNING !: EXPLOSION HAZARD -SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.



Note: This device cannot be Hot Swapped.

P3-01AC User	Specifications	
Input Voltage Range (Tolerance)	100 to 240 VAC (-15% / +10%)	
Rated Operating Frequency	50 to 60 Hz with ± 5% tolerance	
Maximum Input Power	72W	
Cold Start Inrush Current	12A 3ms	
Maximum Inrush Current (Hot Start)	12A 3ms	
Input Fuse Protection (Internal)	Micro fuse 250V, 2A, slow blow Non-replaceable	
Efficiency	83%	
Output	24VDC @ 1.4 A (±10%) 5VDC @ 2.1 A (±5%) 3.3 VDC @ 6.1 A (±5%)	
Maximum Output Power	57W Combined	
Heat Dissipation	17W	
Isolated User 24VDC Output	None	
Output Protection for Over Current, Over Voltage, and Over Temperature	Self resetting for all three voltage outputs to base	
Under Input Voltage Lock-out	55–65 VAC	
Over Input Voltage Lock-out	265–280 VAC	
Input Transient Protection	Varistor, plus input choke and filter	
Operating Design Life	10 years at full load at 40°C ambient and 5 vears at 60°C ambient	

P3-01AC General Specifications			
Operating Temperature	0°C–60°C (32°F–140°F),		
Storage Temperature	-20°C-70°C (-4°F-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)		
Enclosure Type	Open equipment		
Voltage Withstand (dielectric)	1900 VDC applied for 2s		
Insulation Resistance	>10MV @ 500VDC		
Module Location	Power supply slot in any local, expansion, or remote base in a Productivity3000® System.		
Weight	345g (12.1 oz)		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

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

Terminal Block Specifications			
Number of Positions	4 Screw Terminals		
Pitch	0.3 inch (7.62 mm)		
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid Conductor 22–14 AWG (0.324 to 2.08 sq. mm) Stranded Conductor 3/64 inch (1.2 mm) insulation maximum		
Screw Driver Width	1/4 inch (6.5mm) maximum		
Screw Size	M3 size		
Screw Torque	7–9 inch-pounds (0.882 - 1.02 N·m)		

Power Supplies

P3-01DC \$237.00

There are two power supplies available; both provide isolated 24VDC, 5VDC, and 3.3 VDC to the Productivity3000 bases.

The <u>P3-01AC</u> input power supply requires power from an external 100–240 VAC source.

The <u>P3-01DC</u> input power supply requires power from an external 24–48 VDC source.

No Power Budgeting

No power budgeting is required with either power supply. Any combination of I/O modules may be installed in any slots without power budget considerations.



DC Input Power Supply

WARNING!: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.



P3-01DC User Specifications			
Input Voltage Range (Tolerance)	24 to 48 VDC (-15% / +20% at 55°C) 24 to 48 VDC (-10% / +20% at 60°C)		
Maximum Input Ripple	< ±5%		
Maximum Input Power	67W		
Cold Start Inrush Current	10.5 A, 210µS @ 24VDC		
Maximum Inrush Current (Hot Start)	10.5A, 210µS @ 24VDC		
Input Fuse Protection (Internal)	Micro fuse 250V, 4A, Slow blow Non-replaceable		
Input Reverse Polarity Protection	Yes		
Output	F1 Rev. or lower: 24VDC @ 1.4A (±10%) 5VDC @ 2.1A (± 5%) 3.3 VDC @ 6.1A (± 5%)	F2 Rev. or higher: 24VDC @ 1A (±10%) 5VDC @ 2.0A (± 5%) 3.3 VDC @ 6.09A (± 5%)	
Maximum Output Power	57W Combined		
Heat Dissipation	14W		
Isolated User 24VDC Output	None		
Output Protection for Over Current, Over Voltage and Over Temperature	Self resetting for all three voltage outputs to base		
Under Input Voltage Lock- out	< 19.8 VDC		
Over Input Voltage Lock-out	None		
Input Transient Protection	Varistor, plus input choke and filter		
Operating Design Life	10 years at full load at 40°C ambient and 5 years at 60°C ambient		

P3-01DC General Specifications			
Operating Temperature	0°C– 60°C (32°F–140°F)		
Storage Temperature	-20°C-70°C (-4°F-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)		
Enclosure Type	Open equipment		
Voltage Withstand (dielectric)	750VDC applied for 2s		
Insulation Resistance	>10MV @ 500VDC		
Module Location	Power supply slot in any local, expansion, or remote base in a Productivity3000® System.		
Weight	558g (19.7 oz)		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

Terminal Block Specifications			
Number of Positions 4 Screw Terminals			
Pitch	0.3 inch (7.62 mm)		
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid Conductor 22–14 AWG (0.324 to 2.08 sq. mm) Stranded Conductor 3/64 inch (1.2 mm) insulation maximum		
Screw Driver Width	1/4 inch (6.5 mm) maximum		
Screw Size	M3 size		
Screw Torque	7–9 inch-pounds (0.882 - 1.02 N⋅m)		

1-800-633-0405 **Power Supplies**

Power Supply Installation



Step One:

Locate the left most socket in the base.

Step Two:

Insert the Power Supply at a 45° angle into the notch located at the top of the base and rotate down until seated in socket.



Step Three:

Snap the two retaining tabs into the locked position.

Power Connections

P3-01AC Productivity







Grounding

A good common ground reference (earth ground) is essential for proper operation of the Productivity $3000^{\ensuremath{\circledast}}$ system. One side of all control circuits, power circuits and the ground lead must be properly connected to earth ground by either installing a ground rod in close proximity to the enclosure or by connecting to the incoming power system ground. There must be a singlepoint ground (i.e. copper bus bar) for all devices in the enclosure that require an earth ground.

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.

CPU Modules

P3-550 Retired

P3-550E \$750.00

The P3-550 Standard and P3-550E are high-performance CPUs. Both have multiple communications ports which support USB, Ethernet and serial devices. Both provide a 4-line x 10-character LCD, remote I/O capability and the P3-550 has a USB programming port.

Each Productivity3000[®] system requires one CPU module be mounted in the controller slot on the first base of the local base group. The CPU stores and executes the user's program.

The system can be expanded with the <u>P3-RX</u> or <u>P3-EX</u> module when using the <u>P3-550(E)</u> CPUs. The local, expansion, and remote I/O (P3-550(E) only) are assigned preconfigured or user-defined tag names which can be easily referenced in the ladder logic program.

NOTE: A replacement LCD display is available for <u>P3-550</u> and <u>P3-550E</u>. Order Part number <u>P3-LCD</u>.

P3-LCD \$75.00

CPU Status Indicators			
PWR	Green LED is illuminated when power is on		
RUN	Green LED is illuminated when CPU is in RUN mode		
CPU	Red LED is illuminated during power on reset, power down, or watch-dog time-out.		



CPU Run/Stop Switch		
RUN position	Executes user program, run-time edits possible	
STOP position	Does not execute user program, normal program load position	

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CPU Modules

P3-530 \$735.00

The P3-530 Basic is a high-performance CPU. Several communications ports support Ethernet and serial devices.

Each Productivity3000[®] system requires one CPU module mounted in the controller slot in the first base of the local base group. The CPU stores and executes the user's program.

The system can be expanded with the <u>P3-EX</u> module when using the <u>P3-530</u> CPU. The local I/O are assigned preconfigured or userdefined tagnames which can be easily referenced in the ladder logic program.



CPU Status Indicators		
PWR	Green LED is illuminated when power is on	
RUN	Green LED is illuminated when CPU is in RUN mode	
CPU	Red LED is illuminated during power on reset, power down, or watch-dog time-out.	



CPU Run/Stop Switch		
RUN position	Executes user program, run-time edits possible	
STOP position	Does not execute user program, normal program load position	

CPU Modules Specifications (see notes below)

CPU Specifications	P3-550	P3-550E	P3-530	
User Memory	50MB (Includes program, data and documentation)		25MB (Includes program, data and documentation)	
Memory Type	Flash and Battery Backed RAM			
Retentive Memory	Models C3 and earlier: 100K Models D and later: 492K	492K		
Scan Time	600µs (3K Boolean, 1K I/O)			
Display	LCD, 4x10 characters, backlit, 8 control buttons; LCD characters are 5x7 with a dot pitch of 0.45 mm; 2.25 mm x 3.15 mm		N/A	
	USB IN: Programming, Monitoring, Debug, Firmware	N/A	_	
	ETHERNET: (10/100 Mbps Ethernet) Programming, Monitoring, Debug, Firmware, Email SMTP Client, Modbus TCP Client (32 slaves) and Server (32 masters), EtherNet/IP Scanner (128 Scanner connections) and Adapter (16 connections)		ETHERNET: (10/100 Mbps Ethernet) Programming, Monitoring, Debug, Firmware, Email SMTP Client, Modbus TCP Client (32 slaves) and Server (32 masters)	
Communications	REMOTE I/O: (10/100 Mbps Ethernet) 16 RX Remote Base Groups, and 32 GS EDRV100 (GS Drives)		N/A	
	USB OUT: (2.0) Data Logging and Project Transfer using pen drive (USB-FLASH recommended)		USB OUT: (2.0) Data Logging using pen drive (USB-FLASH recommended)	
	EXP I/O OUT: (2.0 Proprietary) 4 P3-EX Local Expansion Bases			
	RS-232: (RJ12, 1200–115.2k baud) Modbus RTU, ASCII full or half duplex			
	RS-485: Removable Terminal Included, (1200–115.2k baud) ASCII, Modbus			
Hardware Limits of System	17 Base Groups 1 Local (<u>P3-550</u>) + 16 Remote (P3-RX) 5 Bases per Base Group 1 <u>P3-550</u> or <u>P3-RX</u> + 4 Expansion (<u>P3-EX</u>) 85 Bases Total 1 (CPU) + 16 (Remote) + 68 (Expansion) 59,840 Hardware I/O Points (All 64-point I/O Modules) 32 GS Series Drives as Remote I/O		5 Bases Total 1 <u>P3-530</u> + 4 Expansion (<u>P3-EX</u>) 3,520 Hardware I/O Points (All 64-point I/O Modules)	
Instruction Types	Application FunctionsData HandlingProgram ControlArray FunctionsDrum SequencersString FunctionsCounters/TimersMath FunctionsSystem FunctionsCommunicationsPIDContacts		Coils High Speed I/O	
Real Time Clock Accuracy	±5s per day typical at 25°C ±15s per day maximum at 60°C	±5s per day typical at 25°C ambient: 1sec/day* ±15s per day maximum at 60°C ambient:2sec/day*	±5s per day typical at 25°C ±15s per day maximum at 60°C	

*Revision B and higher.



NOTES:



1. To utilize the 492K of retentive memory in the P3-550(E) rev. D or later CPU, you must use Productivity3000® software version 1.0.7.XX and firmware version 1.1.13.XX or later.

2. When using the <u>P3-530</u> CPU, you must use Productivity3000 software version 1.0.7.XX and firmware version 1.1.13.XX or later. 3. For EtherNet/IP support in the <u>P3-550</u> CPU, you must use ProductivitySuite software version 1.10.0.11 or later and firmware version 1.1.15.97 or later

4. For EtherNet/IP support in the <u>P3-550E</u> CPU, you must use ProductivitySuite software version 2.2.0.XX or later.

1-800-633-0405 CPU Modules

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F)	
Storage Temperature	-20°C–70°C (-4°F–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	7W	
Enclosure Type	Open equipment	
Module Location	Controller slot in the local base in a Productivity3000 system	
Weight	260g (9oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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

NOTE: When using the P3-550E CPU, you must use Productivity Suite software version 2.2.0.XX or later.

P3-550(E)/P3-530 Product Comparison				
СРИ	P3-550	<u>P3-550E</u>	<u>P3-530</u>	
LCD Display				
USB Prog/Mon Port				
Ethernet Port				
EtherNet/IP Protocol				
Remote Expansion Port				
USB Memory Stick Port				
USB Local Expansion Port				
RS-232 RJ12 Port		8		
RS-485 Port				
User Memory	50 MB	50 MB	25 MB	

1-800-633-0405 CPU Modules

LCD Message Display P3-550(E)

The P3-550(E) CPUs incorporates a 4-line x 10-character LCD Display for system alarms and information or for displaying user-defined messages.

LCD control buttons located beneath the display allow the user to navigate through a menu, and arrow buttons allow for configuration of time and date settings.

For user-defined messages, the display is configured using the Productivity Suite Programming Software. An LCD Page instruction allows the user to program text into user-defined tags and display the messages based on the ladder execution.

STATION 32 SCHEDULED LOCK-OUT FOR MAINT.
P3-550 CPU MENU ESC SEL ENT

Display Page (LCD)			
Use Structure v			
) All D	isplays		
ODisp	lay Name CPU-DISPLAY 🗸		
Line 1	· · · · · · · · · · · · · · · · · · ·		
Line 2	 … 		
Line 3			
Line 4	✓ …		
Show Instruction Comment			
Monitor OK Cancel Help			

CPU Installation

S the based the

Step One:

Locate the two sockets next to the power supply; the CPU will be inserted into this location.

Battery (Optional)

A battery is included with some CPUs, but is not installed. The battery can be installed to retain the Time and Date along with any Tagname values that are set up as retentive.

The battery is not needed for program backup.

Battery (Ontional)		
D2- BAT-1	Coin type, 3.0V Lithium battery, 560mA, battery number CR2354	

Step One:









Step Two:

Insert the CPU at a 45° angle into the notch located at the top of the base and rotate down until seated.



Step Three: Snap retaining tab into the locked position.

WARNINGI: 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.

¹⁻⁸⁰⁰⁻⁶³³⁻⁰⁴⁰⁵ For CPU Modules - Communications

Port Specifications

The <u>P3-550(E)</u> and <u>P3-530</u> CPUs have several communications ports. The following pages list specifications and pinout diagrams for these ports.



P3-550



Mating face of USB type B female

Pin #	Signal
1	+5
2	–Data
3	+Data
4	GND

USB IN Port (<u>P3-550</u> only)

Used exclusively for connecting to a PC running the Productivity Suite programming software.

USB Type B Slave Input Specifications		
Port Name	USB IN	
Description	Standard USB 2.0 Slave input for programming and online monitoring, with built-in surge protection. Not compatible with older full speed USB devices.	
Transfer Rate	480 Mbps	
Port Status LED	Green LED is illuminated when LINK is established to programming software.	
Cables	USB Type A to USB Type B: 3ft cable part # <u>USB-CBL-AB3</u> 6ft cable part # <u>USB-CBL-AB6</u> 10ft cable part # <u>USB-CBL-AB10</u> 15ft cable part # <u>USB-CBL-AB15</u>	

Remote I/O Port (P3-550(E))

RJ-45 style connector used for connecting to a Remote I/O network consisting of <u>P3-RX</u> Remote Slaves and/or <u>GS-EDRV100</u> units with GS drives.



Ethernet Port

RJ-45 style connector used for:

- Connection to a PC running the Productivity Suite programming software
- EtherNet/IP Scanner (CPU is the originator, up to 128 connections, max 32 devices) *P3-550(E)
- EtherNet/IP Adapter (CPU is the target, up to 16 connections, max 4 devices) *P3-550(E)
- Modbus TCP Client connections (Modbus requests sent from the CPU)
- Modbus TCP Server connections (Modbus requests received by the CPU)
- Outgoing E-mail

	Crossover Cable		10/BA
TD+ 1 TD- 2 RD+ 3 4 5 RD- 6 7 8	ORWHT GRNWHT OR GRNWHT GRNWHT BLU BLUWHT BLUBH GRN OR BRNWHT BRNWHT BRN BRNWHT	1 TD+ 2 TD- 3 RD+ 4 5 6 RD- 7 8	8
RJ45	Patch (Straight-through) Cable	RJ45	
TD+ 1 TD- 2 RD+ 3 4 5 RD- 6 7 8	OR/WHT OR/WHT OR OR GRNWHT GRNWHT BLU ELU BLUWHT BLUWHT BRWWHT BRNWHT BRNWHT BRNWHT BRNWHT BRNWHT BRNWHT BRNWHT	1 TD+ 2 TD- 3 RD+ 4 5 6 RD- 7 8	1 2
RJ45	I	RJ45	8-pin F



Ethernet Specifications			
Port Name	ETHERNET	REMOTE I/O P3-550(E)	
Description	Standard transformer isolated Ethernet port with built-in surge protection for programming, online monitoring, Email (SMTP client), EtherNet/IP Scanner/ Adapter and Modbus/TCP client/server connections (fixed IP or DHCP).		
Transfer Rate	10/100 Mbps		
Port Status LED	Green LED illuminated when network LINK is established. Yellow LED is illuminated when port is active (ACT).		
Cables	Use a Patch (straight through) cable when a switch or hub is used. Use a Crossover cable when a switch or hub is not used. (Cables available at automationdirect.com)		

¹⁻⁸⁰⁰⁻⁶³³⁻⁰⁴⁰⁵ For CPU Modules - Communications

Port Specifications



USB OUT Port

Used for data logging ($\underline{P3-530}$) or data logging and project transfers ($\underline{P3-550}(E)$) to and from a USB-FLASH Pen Drive.

EXP I/O OUT Port

USB port used only for Expansion I/O connections to local <u>P3-RX</u> modules in a Productivity3000 base with I/O.

USB Type A Master Output Specifications			
Port Name	USB OUT	EXP I/O OUT	
Description	Standard USB 2.0 Master output for connection to high-speed Flash drive (Sandisk SDCZ4-2048-A10 recommended) for data logging (<u>P3-550(E)/P3-530</u>) or program transfer (<u>P3-550(E)</u> only), with built-in surge protection. Not compatible with older full speed USB devices. A 0.5 m male-to-female "port extender" cable is included to assist with Flash drive connection.	Proprietary USB 2.0 Master output for connection to up to four <u>P3-EX</u> local expansion bases, with built-in surge protection.	
Transfer Rate	480 Mbps		
Port Status LED	Green LED is illuminated when LINK is established to connected device		
Cables	None required	USB Type A to USB Type B: 6ft. cable part # <u>P3-EX-CBL6</u> (included with <u>P3-EX</u> module)	

USB OUT	Pin #	Signal
	1	+5
	2	– Data
	3	+ Data
	4	GND

Mating face of USB type A female

Cable Options

EXP I/O OUT	Pin #	Signal
	1	Reset
	2	– Data
	3	+ Data
	4	GND

RS-232 Specifications		
Port Name	RS-232	
Description	Non-isolated RS-232 DTE port connects the CPU as a Modbus/ ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection.	
Data Rates	Selectable,1200, 2400, 9600, 19200, 33600, 38400, 57600, and 115200 bps.	
+5V Cable Power Source	210mA maximum at 5V, \pm 5%. Reverse polarity and overload protected.	
TXD	RS-232 Transmit output	
RXD	RS-232 Receive input	
RTS	Handshaking output for modem control.	
GND	Logic ground	
Maximum Output Load (TXD/RTS)	3kV, 1,000pf	
Minimum Output Voltage Swing	±5V	
Output Short Circuit Protection	±15mA	
Port Status LED	Green LED is illuminated when active for TXD, RXD and RTS	

ETHERNET

RS-232 Port

P3-530

- RJ-12 style connector used for: • Modbus RTU Master connections
- Modbus RTU Slave connections
- ASCII full or half duplex communications
- Custom Protocol Incoming and Outgoing communications



Modular Connector

Pin #	Signal	
1	GND	Logic Ground
2	+5V	210 mA Maximum
3	RXD	RS-232 Input
4	TXD	RS-232 Output
5	RTS	Request to Send
6	GND	Logic Ground

FA-ISOCON for converting RS-232 to isolated RS-485

1-800-633-0405 For CPU Modules - Communications

Port Specifications

RS-485 Port

A 3-pin removable terminal block used for:

- Modbus RTU Master connections
- Modbus RTU Slave connections
- ASCII Incoming and Outgoing communications
- Custom Protocol Incoming and Outgoing communications

Removable connector included.



RS-485 Port Specifications			
Port Name	RS-485		
Description	Non-isolated RS-485 port connects the CPU as a Modbus/ ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active.		
Data Rates	Selectable, 1200, 2400, 9600, 19200, 33600, 38400, 57600, and 115200 bps.		
TXD + /RXD +	RS-485 transceiver high		
TXD-/RXD-	RS-485 transceiver low		
GND	Logic ground		
Input Impedance	19kV		
Maximum load	50 transceivers, 19kV each, 60V termination		
Output Short Circuit Protection	±250mA, thermal shut-down protection		
Electrostatic Discharge Protection	±8kV per IEC1000-4-2		
Electrical Fast Transient Protection	±2kV per IEC1000-4-4.		
Minimum Differential Output Voltage	1.5 V with 60V load		
Fail safe inputs	Logic high input state if inputs are unconnected		
Maximum Common Mode Voltage	-7.5 V to 12.5 V.		
Port Status LED	Green LED illuminated when active for TXD and RXD		
Cable Options	Q8302-1 (cut to length) or Belden 9841 equivalent		



Pin #	Signal
G	GND
-	TXD-/RXD-
+	TXD+/RXD+

*Removable connector included.

	P STOP	<u>3-530</u>
ETHERNET	RS-232	
USB OUT	- (00) RS-485	
		J

Terminal Block Specifications		
Number of Positions	3	
Pitch	5mm	
Wire Range	28–12 AWG Solid Conductor 30–12 AWG Stranded Conductor	
Screw Driver Width	1/8 inch (3.175mm) maximum	
Screw Size	M2.5	
Screw Torque	4.5 lb·in (0.51 N·m)	

P3-EX Expansion Module

P3-EX \$125.00

The P3-EX high-performance expansion module provides local I/O expansion to a CPU or Remote I/O. Includes 6-foot USB expansion cable.



A 6-foot USB cable is included with the <u>P3-EX</u> module (Replacement cable: part number <u>P3-EX-CBL6</u>).

The system can have up to 68 expansion bases by adding four expansion bases at the CPU base and four expansion bases per Remote I/O Slave (up to 16 slaves). Each expansion base uses the <u>P3-EX</u> expansion module for USB-based I/O bus connectivity.



1-800-633-0405 **P3-EX Expansion Module**





WARNINGI: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Expansion Module Status Indicators			
PWR	Green LED is illuminated when power is on.		
RUN	Green LED is illuminated when not in reset. Reset occurs during power-up, a watchdog timeout, or an expansion cable is disconnected.		
ERR	Red LED is illuminated when a USB fault is detected.		
LNK	Green LED is illuminated when a USB link is established.		

Module Specifications			
Mounting Location	Controller slot of expansion base		
Expansion Connectors	1 USB 2.0 Type A, 1 USB 2.0 Type B		
Maximum Number of Expansion Modules per CPU or Remote Slave	4		
Maximum Distance Between Modules	15 feet		
Status Indicators	PWR - Green LED is illuminated when power is on. RUN - Green LED is illuminated when not in reset. Reset occurs during power-up, a watchdog timeout, or if an expansion cable is disconnected. ERR - Red LED is illuminated when a USB fault is detected. LINK - Green LED is illuminated when a USB link is established.		
I/O Capabilities Max. Number of I/O per CPU System Max. Number of Expansion I/O Bases	59,840 (CPU Base with 4 Expansion Bases plus 16 Remote Bases with 4 Expansion Bases per Remote, with 11 64-point I/O modules per base) 68 (4 per CPU, 4 per Remote Base)		
Module Setup	Automatic hardware verification		
Expansion I/O Addressing	Automatic via Tag Names		
USB Cables	6 foot: P3-EX-CBL6 (USB Type A to USB Type B)		

	General Specifications	
Operating Temperature	0°C– 60°C (32°F–140°F)	
Storage Temperature	-20°C–70°C (-4°F–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)	
leat Dissipation 1W		
Enclosure Type	Open equipment	
Module Location	Controller slot in a local expansion base in a Productivity3000 system	
Weight	194g (6.24 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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

1-800-633-0405 **P3-EX Expansion Module**

Port Specifications

Exp I/O Port Specifications			
Port Name	EXP I/O IN	EXP I/O OUT	
Description	Proprietary USB 2.0 Slave input for connection with a CPU, Remote Slave, or preceding <u>P3-EX</u> Expansion base. The <u>P3-EX</u> Expansion Module includes the 6 foot USB cable <u>P3-EX-CBL6</u> .	Proprietary USB 2.0 Master output for connection with the next <u>P3-EX</u> expansion base. Includes built-in surge protection.	
Transfer Rate	480 Mbps		
Port Status LED	Green LED is illuminated when LINK is established to connected device		
Cables	USB Type A to USB Type B: 6ft. cable part no. <u>P3-EX-CBL6</u>		

Installation Procedure



Step One:

Locate the two sockets next to the Power Supply.

Step Two Insert P3-EX at a 45° angle into the notch located at the

top of the base and rotate down until seated.

Step Three

Snap retaining tab into the locked position.

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.



Mating face of USB type B female



Mating face of USB type A female



P3-RX \$499.00

The P3-RX is a high-performance Remote Slave module (for use with <u>P3-550</u> CPU-based systems only). It has several communications ports which support USB Expansion I/O, Ethernet Remote I/O and serial devices.

Up to 16 Remote Slaves can be connected to a single CPU for a remote I/O network.

> P3-RX REMOTE SLAVE



Rack with CPU Module

Add up to 16 Remote Base Groups using P3-RX Remote Slave modules and up to 32 GS Drives on the Remote I/O Ethernet Network (P3-550(E) only).

Add up to 4 bases to each group using P3-EX expansion modules with USB connections.



Remote Slave Specifications (for P3-550(E))		
Mounting Location	Controller slot	
Display	No LCD display	
Communications	USB IN: N/A REMOTE I/O: (10/100 Mbps Ethernet) 1 <u>P3-550</u> EXP I/O OUT: (2.0, Type A, Proprietary) 4 <u>P3-EX</u> Local Expansion Bases RS-232: (RJ12, 1200–115.2k bps) ASCII, Modbus RS-485: (Removable Terminal Included, 1200–115.2k baud) ASCII, Modbus	
<i>Max. Number of Ethernet Remote I/O Bases</i>	16	
<i>Max. Number of Expansion I/O Bases</i>	68 (4 per CPU, 4 per Remote Base)	
Max. Number of I/O per CPU System	59,840 (CPU Base with 4 Expansion Bases plus 16 Remote Bases with 4 Expansion Bases per Remote, with 11 64-point I/O modules per base)	

Remote I/O Module	P3-RX
LCD Display	N/A
USB Prog/Mon Port	N/A
Remote Port (in)	2
USB Local Expansion Port	2
RS-232 RJ12 Port	2
RS-485 Port	

P3-RX Product

General Specifications			
Operating Temperature	0°C-60°C (32°F-140°F)		
Storage Temperature	-20°C-70°C (-4°F-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	4W		
Enclosure Type Open equipment			
Module Location	Controller slot in a remote base in a Productivity3000 system		
Weight	260g (9 oz)		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

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

WARNINGI: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

IMPORTANT!

Note: This device cannot be Hot Swapped.



NOTE: When using the P3-RX, you must use Productivity3000® software version 1.0.7.XX and firmware version 1.1.13.XX or later.

Front Panel



Status Indicators

RX Status Indicators			
PWR	Green LED is backlit when power is on		
RUN	Green LED is backlit when CPU has valid project file with RS configured.		
CPU	Red LED is backlit during power on reset, power down, or watch-dog time-out.		

PWR RUN CPU

Setting the Remote Slave Address

Each Remote Slave must have a unique address between 1 and 99. The address is set using the two rotary switches located on the face of the module, X10 for setting the tens units and X1 for setting the ones unit.

For example, to set a remote slave address to 21, turn the X10 arrow until it points at number 2 and the X1 arrow until it points at number 1.

IMPORTANT NOTES:

- The factory setting of 00 is not a valid address.
- Address selection must be set prior to power-up.
- Slave addresses are only read on power-up.
- If there are duplicate slave addresses on the same network, a critical error will occur.

It is also necessary to configure the remote addresses using the Productivity Suite Programming Software.

This can be done automatically by first going online with a Productivity3000 system that has slave modules installed, go to Hardware Configuration and select the Read Configuration (1) button. The CPU will automatically read the addresses of the remote slaves and add them to the configuration.





1-800-633-0405 Remote Slave Module

Port Specifications

The <u>P3-RX</u> has several communications ports. The following pages have specifications and pin-out diagrams for these ports.



Remote I/O Port

Isolated Ethernet Port with built-in surge protection for connection to <u>P3-550</u> CPU Remote I/O Master port.

Remote I/O Port Specifications				
Description	Proprietary transformer isolated Ethernet Port with built-in surge protection for connection to CPU Remote I/O Master port.			
Transfer Rate	10/100 Mbps			
Port Status LEDs	Green LED is illuminated when network LINK is established. Yellow LED backlit when port is active (ACT).			
Cables	Use a Patch (straight-through) cable when a switch or hub is used. Use a Crossover cable when a switch or hub is not used. (Cables available at automationdirect.com)			

Crossover Cable







EXP I/O OUT Port

USB 2.0 (Type A) Master output for connection to up to four <u>P3-EX</u> local expansion bases, with built-in surge protection.

EXP I/O OUT Specifications			
Description	Proprietary USB 2.0 (Type A) Master output for connection with up to four P3-RX local expansion bases, with built-in surge protection.		
Transfer Rate	480 Mbps		
Port Status LED	Green LED is illuminated when LINK is established to connected device		
Cables	USB Type A to USB Type B. The <u>P3-EX</u> Expansion Module includes a 6 foot USB cable, part number <u>P3-EX-CBL6</u> .		



Pin #	Signal
1	Reset
2	– Data
3	+ Data
4	GND

P3-EXC

RS-232 Serial Port

Non-isolated RS-232 DTE port connects the $\underline{P3-RX}$ as a Modbus or ASCII master or slave to a peripheral device.

RS-232 Specifications					
Description	Non-isolated RS-232 DTE port connects the <u>P3-RX</u> as a Modbus or ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection.				
Data Rates	Selectable,1200, 2400, 9600, 19200, 33600, 38400, 57600, and 115200 baud.				
+5V Cable Power Source	210mA maximum at 5V, ±5%. Limited by self-resetting current limiting device. Reverse polarity protected.				
TXD	RS-232 Transmit output				
RXD	RS-232 Receive input				
RTS	Handshaking output for modem control.				
GND	Logic ground				
Maximum Output Load (TXD/RTS)	3kV, 1,000pf				
Minimum Output Voltage Swing	±5V				
Output Short Circuit Protection	±15mA				
Port Status LED	Green LED is illuminated when active for TXD, RXD and RTS				
Cable Options	FA-ISOCON for converting RS-232 to isolated RS-485				

6		RTS
1		QXL
1		RXD
	Carlin D 140 Farm	

6-pin RJ12 Female Modular Connector

Pin #	Signal		
1	GND Logic Ground		
2	+5V 210 mA Maximur		
3	RXD RS-232 Input		
4	TXD RS-232 Output		
5	RTS	Request to Send	
6	GND Logic Ground		

1-800-633-0405 **Remote Slave Modules**

RS-485 Serial Port

Non-isolated RS-485 port connects the P3-RX as a Modbus or ASCII master or slave to a peripheral device.(Removable connector included.)

RS-485 Specifications			
Description	Non-isolated RS-485 port connects the <u>P3-RX</u> as a Modbus or ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active.		
Data Rates	Selectable, 1200, 2400, 9600, 19200, 33600, 38400, 57600, and 115200 bps.		
TXD+/RXD+	RS-485 transceiver high		
TXD-/RXD-	RS-485 transceiver low		
GND	Logic ground		
Input Impedance	19kV		
Maximum load	50 transceivers, 19kV each, 60V termination		
Output Short Circuit Protection	±250mA, thermal shut-down protection		
Electrostatic Discharge Protection	±8kV per IEC1000-4-2		
Electrical Fast Transient Protection	±2kV per IEC1000-4-4.		
Minimum Differential Output Voltage	1.5 V with 60V load		
Fail safe inputs	Logic high input state if inputs are unconnected		
Maximum Common Mode Voltage	-7.5 V to 12.5 V.		
Port Status LED	Green LED is illuminated when active for TXD and RXD		
Cable Options	Q8302-1 (cut to length) or Belden 9841 equivalent		





Step One:

Locate the two sockets next to the power supply; the module will be inserted into this location.



Step Three:

Snap retaining tab into the locked position.

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.



Pin #	Signal
G	GND
-	TXD-/RXD-
+	TXD+/RXD+
	Pin # G - +

*Removable connector included.

Terminal Block Specifications			
Number of Positions	3		
Pitch	5mm		
Wire Range	28–12 AWG Solid Conductor 30–12 AWG Stranded Conductor		
Screw Driver Width 1/8 inch (3.175 mm) maximu			
Screw Size	M2.5		
Screw Torque	4.5 lb∙in (0.51 N⋅m)		

2

RS-485



Step Two:

Insert <u>P3-RX</u> at a 45 angle into the notch located at the top of the base and rotate down until seated.

1-800-633-0405 Dimensions and Installation

It is important to review and understand the installation requirements for your Productivity3000® system. Your knowledge of these requirements will help ensure that your system operates within its environmental and electrical limits.

Plan for Safety

This catalog should never be used as a replacement for the product inserts and user manual. Each base, CPU, power supply, I/O module, remote slave, and expansion module comes with a product insert. You can purchase, download for free, or view online the Productivity3000 user manual (P3-USER-M). These documents, along with the software help files, contain important safety information that must be followed.

The system installation should comply with all appropriate electrical codes and standards.

Enclosures

Your selection of a proper enclosure is important to ensure safe and proper operation of your Productivity3000 system. Applications for the Productivity3000 system vary and may require additional hardware considerations. The minimum considerations for enclosures include:

- Conformance to electrical standards
- Protection from the elements in an industrial environment
- Common ground reference
- Maintenance of specified ambient temperature
- Access to the equipment
- Security or restricted access
- Sufficient space for proper installation and maintenance of the equipment

Mounting Position

Mount the bases horizontally, as shown in the illustration, to provide proper ventilation. Do not mount the bases vertically, upside down, or on a flat horizontal surface.



Dimensions and Installation

Mounting Clearances

Provide a minimum clearance of 2 inches (50mm) between the bases and all sides of the enclosure. Allow extra door clearance for operator panels and other door mounted items. There should be a minimum of 3 inches (76mm) clearance between the base and any wire duct, and a minimum of 7.2 inches (183mm) from base to base in a multiple base installation.

Grounding

A good common ground reference (earth ground) is essential for proper operation of the Productivity3000[®] system. One side of all control circuits, power circuits and the ground lead must be properly connected to earth ground by either installing a ground rod in close proximity to the enclosure or by connecting to the incoming power system ground. There must be a single-point ground (i.e. copper bus bar) for all devices in the enclosure that require an earth ground.

Temperature Considerations

The Productivity3000 system should be installed within the operating temperature specifications as listed in this document. If the temperature deviates above or below the specification, measures such as cooling or heating the enclosure should be taken to maintain the specification.

Power Considerations

The Productivity3000 system is designed to be powered by 110/220 VAC or 24/48 VDC via one of the Productivity3000 power supplies. The Productivity3000 has achieved CE certification without requiring EMF/RFI line noise filters on the AC power supply. Please review the "EU Directives" document, located in the User Manual or at www.automationdirect.com/ productivity/p3000, for applications which require CE Compliance.

Base Dimensions



Base Installation

Using Mounting Rails

The Productivity3000[®] bases can be secured to the cabinet using mounting rails. You should use rails that conform to DIN EN standard 50 022. We offer a complete line of DIN rail, DIN*nectors* and DIN rail mounted apparatus. These rails are approximately 35mm high, with a depth of 7.5 mm. If you mount the base on a rail, you should also consider using end brackets on each side of the base. The end brackets help keep the base from sliding horizontally along the rail. This helps minimize the possibility of accidentally pulling the wiring loose.

If you examine the bottom of the base, you'll notice retaining clips. To secure the base to a DIN rail, place the base onto the rail and gently push up on the retaining clips. The clips lock the base onto the rail.

To remove the base, pull down on the retaining clips, slightly lift up the base, and pull it away from the rail.







1-800-633-0405 Wiring I/O Modules

There are two available methods for wiring most I/O modules: The **ZIP**Link wiring system or hand wiring to the optional removable I/O module terminal blocks.

Note: The high-density 32-point and 64-point I/O module design requires the use of the **ZIP**Link wiring system. Thermocouple and RTD modules are not compatible with the **ZIP**Link system and are shipped with the optional terminal blocks included.

ZIPLinks Wiring Systems

For wiring I/O modules, we strongly recommend using pre-wired **ZIP**Links wiring systems, which eliminate the need for hand wiring modules to terminal blocks.

See the selection matrix guide on the following pages.



ZIPLink Module

Removable Terminal Blocks

For most I/O modules you can also purchase a removable terminal block (part no. <u>P3-RTB</u>).

Note: <u>P3-RTB</u> supplied with thermocouple and RTD modules. <u>P3-RTB</u> not compatible with 32-point and 64-point I/O modules.









Terminal Block Removal





Wiring Solutions

Wiring Solutions using the **ZIP**Link wiring system

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end or terminating wires at only one end. Prewired cables keep

installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the **ZIP**Link System ranging from

Solution 1: Productivity Series I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a **ZIP**Link connector module used in conjunction with a prewired **ZIP**Link cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.

PLC I/O-to-**ZIP**Link Connector Modules that are ready for field termination, options for connecting to third party devices, GS, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of **ZIP**Link modules are provided with **ZIP**Link cables. See the following solutions to help determine the best **ZIP**Link system for your application.

Using the PLC I/O Modules to **ZIP**Link Connector Modules selector tables located in this section,

- 1. Locate your I/O module/PLC.
- 2. Select a **ZIP**Link Module.
- 3. Select a corresponding **ZIP**Link Cable.



Solution 2: Productivity Series I/O Modules to ZIPLink Connector Modules

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the **ZIP**Link Pigtail Cables. **ZIP**Link Pigtail Cables are prewired to an I/O terminal block with colorcoded pigtail with soldered-tip wires on the other end.

Using the I/O Modules to 3rd Party Devices selector tables located in this section,

- 1. Locate your PLC I/O module.
- 2. Select a **ZIP**Link Pigtail Cable that is compatible with your 3rd party device.



Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to PLCs and SureServo, SureStep, Stellar Soft Starter and AC drives. Add a **ZIP**Link communications module to quickly and easily set up a multi-device network.

Using the Drives Communication selector tables located in this section,

- 1. Locate your Drive and type of communications.
- 2. Select a **ZIP**Link cable and other associated hardware.





Wiring Solutions

Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with DirectLOGIC, CLICK, and Productivity3000 CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15pin and 25-pin D-sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the Serial Communications Cables selector table located in this section,

- 1. Locate your connector type
- 2. Select a cable.



Solution 5: Specialty ZIPLink Modules

For additional application solutions, **ZIP**Link modules are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the **ZIP**Link Specialty Modules selector table located in this section,

- 1. Locate the type of application.
- 2. Select a **ZIP**Link module.



Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible **ZIP**Link Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Using the Universal Connector Modules and Pigtail Cables table located in this section,

- 1. Select module type.
- 2. Select the number of pins.
- 3. Select cable.



CPU I/O Modules to ZIPLink Connector Modules - Productivity3000®

Productivity3000 CPU Input Module ZIPLink Selector				
CP	CPU		ZIPLink	
Input Module	# of Terms	Component	Module Part No.	Cable Part No.
P3-08NAS	20	Feedthrough		ZL-P3-CBL20 *
P3-08ND3S	20	Feedthrough		
P3-16NA	20	Feedthrough	ZL-RIDZU	ZL-P3-CBL20-1L ZL-P3-CBL20-2L
D2 16ND2	20	Feedthrough		
P3-10ND3		Sensor	ZL-LTB16-24-1	
P3-32ND3	40	Feedthrough	ZL-RTB40	ZL-CBL40 ZL-CBL40-1 ZL-CBL40-2
		Sensor	ZL-LTB32-24-1	
P3-64ND31	40	Feedthrough	ZL-RTB40	
		Sensor	ZL-LTB32-24-1	

Productivity3000 CPU Analog In Module ZIPLink Selector				
CP	U	ZIPLink		
Analog Module	# of Terms	Component	Module	Cable
P3-04ADS	20	Feedthrough		
P3-08AD	20	Feedthrough		ZL-P3-CBL20
P3-16AD-1	20	Feedthrough	<u>ZL-RIBZU</u>	ZL-P3-CBL20-1L
P3-16AD-2	20	Feedthrough		
<u>P3-08RTD</u> ²	Matched Only	See Note 2		
<u>P3-08THM</u> 2	T/C Wire Only	See Note 2		
<u>P3-04DA</u>	20	Feedthrough		
P3-08DA-1	20	Feedthrough		
P3-08DA-2	20	Feedthrough		
P3-06DAS-1	20	Feedthrough		
P3-06DAS-2	20	Feedthrough	ZL-RTB20	ZL-P3-CBL20-1L ZL-P3-CBL20-2L
P3-16DA-1	20	Feedthrough		
P3-16DA-2	20	Feedthrough		
P3-8AD4DA-1	20	Feedthrough		
P3-8AD4DA-2	20	Feedthrough		

Productivity3000 CPU Specialty Module ZIPLink Selector					
CI	PU		ZIPLink		
Input Module	# of Terms	Component	Module Part No.	Cable Part No.	
P3-HSI				ZL-CBL40-S	
РЗ-НЅО	40	Feedthrough	ZL-RTB40	ZL-CBL40-1S ZL-CBL40-2S	



Note: **ZIP**Link Connector Modules specifications follow the Compatibility Matrix tables. **ZIP**Link Cables specifications are at the end of this **ZIP**Link section.

Productivity3000 CPU Output Module ZIPLink Selector					
CF	าบ	ZIPLink			
Output Module	# of Terms	Component	Module Part No.	Cable Part No.	
P3-08TAS	20	Feedthrough		ZL-P3-CBL20 *	
P3-08TD1S	20	Feedthrough		ZL-P3-CBL20-1L	
P3-08TD2S	20	Feedthrough		ZL-P3-CBL20-2L	
P3-08TRS	20	Feedthrough	ZL-RTB20		
D2 1674	20	Feedthrough			
P3-101A	20	Fuse			
		Feedthrough			
P3-16TD1	20	Fuse	ZL-RFU204		
		Relay (sinking)	ZL-RRL16-24-1	ZL-P3-CBL20	
		Feedthrough	ZL-RTB20	ZL-P3-CBL20-1	
P3-16TD2	20	Fuse	ZL-RFU204	ZL-P3-CBL20-2	
		Relay (sourcing)	ZL-RRL16-24-2		
P3-16TR 20		Feedthrough	ZL-RTB20		
		Fuse	ZL-RFU204		
D2 00TDC 13	20	Feedthrough	ZL-RTB20		
<u>r 3-001113-1</u>	20	Fuse	ZL-RFU204		
D2 22TD1	10	Feedthrough	ZL-RTB40		
F 3-321D1	40	Fuse	ZL-RFU40 ⁴		
פחדפי נים	10	Feedthrough	ZL-RTB40		
F 3-32102	40	Fuse	ZL-RFU404	ZL-CBL40	
D2 6/TD11	10	Feedthrough	ZL-RTB40	ZL-CBL40-1	
<u>r 3-041 D 1</u>	70	Fuse	ZL-RFU404	ZL-CBL40-2	
P3_6/TD21	10	Feedthrough	ZL-RTB40		
<u>r 3-041 DZ</u> '	40	Fuse	ZL-RFU404		
P3-16TD3P	40	Feedthrough	ZL-RTB40		

* Select the cable length by replacing the * with: Blank = 0.5m, -1 = 1.0m, or -2 = 2.0m.

1 The P3-64ND3, P3-64TD1 and P3-64TD2 modules have two 32-point connectors and require two ZIPLink cables and two ZIPLink connector modules.

2 These modules are not supported by the ZIPLink wiring system.

3 The P3-08TRS-1 output module is derated not to exceed 2A per point

maxiumum when used with the ZIPLink wiring system.

4 Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



1-800-633-0405

A variety of discrete, analog and specialty I/O modules are available for use in local, expansion, and remote I/O bases. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number <u>P3-FILL</u>).

Discrete Input Modules

Productivity3000 Discrete Input Modules			
Part Number	Number of Inputs	Number of Description	
P3-16SIM	16	Input Simulator Module	\$214.00
P3-08ND3S	8	Isolated Sinking/Sourcing DC Input	\$109.00
P3-16ND3	16	Sinking/Sourcing DC Input	\$162.00
P3-32ND3	32	Sinking/Sourcing DC Input	\$218.00
P3-64ND3	64	Sinking/Sourcing DC Input	\$284.00
P3-08NAS	8	Isolated AC Input	\$136.00
P3-16NA	16	AC Input	\$167.00

*ZIPLink required.

Analog I/O Modules

Productivity3000 Analog Input Modules				
Part Number	Number of Channels	Description	Price	
P3-04ADS	4	Isolated Analog Input	\$724.00	
P3-08AD	8	Analog Input	\$393.00	
P3-16AD-1	16	Analog Input (Current)	\$535.00	
P3-16AD-2	16	Analog Input (Voltage)	\$524.00	
P3-08RTD	8	Analog RTD Input	\$581.00	
P3-08THM	8	Analog Thermocouple Input	\$736.00	

Productivity3000 Analog Output Modules

Part Number	Number of Channels	Description	Price
P3-04DA	4	Analog Output	\$449.00
P3-08DA-1	8	Analog Output (Current)	\$779.00
P3-08DA-2	8	Analog Output (Voltage)	\$725.00
P3-06DAS-1	6	Isolated Analog Output (Current)	Retired
P3-06DAS-2	6	Isolated Analog Output (Voltage)	Retired
P3-16DA-1	16	Analog Output (Current)	\$929.00
P3-16DA-2	16	Analog Output (Voltage)	\$911.00

Productivity3000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P3-8AD4DA-1	8/4	Analog Input/Output (Current)	\$598.00
P3-8AD4DA-2	8/4	Analog Input/Output (Voltage)	\$617.00

Specialty Modules

Productivity3000 Specialty Modules				
Part Number	Number of Channels	lumber of Channels Price Price		
P3-HSI	2	High-Speed Pulse Input	\$563.00	
P3-HSO*	2	High-Speed Output	\$587.00	
P3-SCM	4 ports	Serial Communications Module	\$475.00	

*ZIPLink required.

Discrete Output Modules

Productivity3000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
P3-08TD1S	8	Isolated Sinking Output	\$164.00
P3-08TD2S	8	Isolated Sourcing Output	\$169.00
P3-16TD1	16	Sinking Output	\$175.00
P3-16TD2	16	Sourcing Output	\$180.00
P3-32TD1*	32	Sinking Output	\$228.00
P3-32TD2*	32	Sourcing Output	\$218.00
P3-64TD1*	*64	Sinking Output	\$319.00
P3-64TD2*	*64	Sourcing Output	\$289.00
P3-08TAS	8	Isolated AC Output	\$212.00
P3-16TA	16	AC Output	\$225.00
P3-08TRS	8	Isolated Relay Output	\$187.00
P3-08TRS-1	8	Isolated Relay Output	\$194.00
P3-16TR	16	Relay Output	\$190.00
P3-16TD3P*	16	Sinking/Sourcing Protected Output	Retired

*ZIPLink required.

Module Installation Procedure



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

Step One: Align circuit card with slot and press firmly to seat module into connector.

Step Two: Pull top and bottom locking tabs toward module face. Click indicates lock is engaged.



Step Three: Attach field wiring using optional terminal block or **ZIP**Link wiring system and install cover.





To install or remove terminal block cover, press middle to flex cover.



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.

1-800-633-0405 Input Simulator / Filler Module

P3-16SIM \$214.00

Input Simulator Module

The P3-16SIM Input Simulator module provides 16 toggle switches to simulate input devices.



Input Specifications		
Inputs per Module 16 Internal switches		
OFF to ON Response	Max. 20ms	
ON to OFF Response	Max. 20ms	
Status Indicators	Logic Side (16 points)	

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C-70°C (-4°F-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	0.25 W	
Enclosure Type	Open equipment	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000® System.	
Weight	120g (4.23 oz)	
Agency Approvals UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

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

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

P3-FILL \$33.50

Filler Module

The P3-FILL filler module protects unused I/O module slots in the base.



DC Input Modules

P3-08ND3S \$109.00

Isolated Sinking/Sourcing Input The P3-08ND3S DC Input Module provides eight 12-24 VDC sinking or sourcing isolated inputs.



We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.



WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Input Specifications			
Inputs per Module		8 (sinking / sourcing)	
Operating Voltage Range	CE	12–24 VDC (±10%)	
(Tolerance)	UL	12-24 VDC (±10%)	
Peak Voltage		26.4 VDC	
Input Current (Typical)		5mA @ 12VDC 11mA @ 24VDC	
Maximum Input Current @ Te	emp	12.5 mA @ 60° C (26.4 VDC)	
Input Impedance		2.2 kV @ 12–24 VDC	
ON Voltage Level		> 10VDC	
OFF Voltage Level		< 3VDC	
Minimum ON Current		4mA	
Maximum OFF Current		2mA	
OFF to ON Response		2ms max.; typical 1ms	
ON to OFF Response		2ms max.; typical 1ms	
Status Indicators		Logic Side (8 points)	
Terminal Type (not included)		20-position removable terminal block	
Commons		8 Isolated (1 point / common)	

General Specifications	
Operating Temperature	0°C- 60°C (32°F-140°F)
Storage Temperature	-20°C–70°C (-4°F–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)
Field to Logic Side Isolation	1500 VAC applied for 1 minute
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	2.81 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Weight	80g (2.82 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

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

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	
P3-08ND3S (cont'd)





P3-16ND3 \$162.00

Sinking/Sourcing Input

The P3-16ND3 DC Input Module provides sixteen 12-24 VDC sinking or sourcing inputs with four isolated commons.



We recommend using prewired **ZIP**Link



Input Specifications Inputs per Module 16 (sinking / sourcing) **Operating Voltage Range** CE 12-24 VDC (±10%) (Tolerance) UL 12-24 VDC (±10%) Peak Voltage 26.4 VDC 5mA@ 12VDC Input Current (Typical) 11mA @ 24VDC Maximum Input Current @ Temp 12.5 mA @ 60° C (26.4 VDC) Input Impedance 2.2 kV @ 12-24 VDC **ON Voltage Level** > 10VDC OFF Voltage Level < 3VDC Minimum ON Current 4mA Maximum OFF Current 2mA OFF to ON Response 2ms max.; typical 1ms ON to OFF Response 2ms max.; typical 1ms Status Indicators Logic Side (16 points) Terminal Type (not included) 20-position removable terminal block Commons 4 Isolated (4 points / common)

General Specifications		
Operating Temperature	<i>mperature</i> 0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	5.61 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Weight	80g (2.82 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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

Removable Terminal Block Specifications			
Description	Part No. P3-RTB; 20 screw terminals		
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.		
Screw Driver Width	1/4 inch (6.5 mm) maximum		
Screw Size	M3 size		
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.		

WARNING: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

cables and connection modules. See Wiring Solutions. Terminal block cover included. If you wish

to hand-wire your module, a removable terminal block is sold separately. Order part

number P3-RTB.

P3-16ND3 (cont'd)



P3-32ND3 \$218.00

Sinking/Sourcing Input

The P3-32ND3 DC Input Module provides thirty-two 24 VDC sinking or sourcing inputs with four isolated commons.



See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.



WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Input Specifications		
Inputs per Module		32 (sinking / sourcing)
Operating Voltage Range	CE	24VDC (±10%)
(Tolerance)	UL	24VDC (±10%)
Peak Voltage		26.4 VDC
Input Current (Typical)		5mA @ 24VDC
Maximum Input Current @ Temp		6mA @ 60° C (26.4 VDC)
Input Impedance		4.7 kV @ 24VDC
ON Voltage Level		> 18VDC
OFF Voltage Level		< 8VDC
Minimum ON Current		3.5 mA
Maximum OFF Current		2mA
OFF to ON Response		2ms max.; typical 1ms
ON to OFF Response		2ms max.; typical 1ms
Status Indicators		Logic Side (32 points)
Connector Type		40-pin IDC
Commons		4 Isolated (8 points / common)

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	5.96 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	120g (4.23 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

Connector Specifications		
Connector Type IDC style header with latch, Omron XG4A-4034		
Number of Pins	40 point	
Pitch	0.1 in. (2.54 mm)	

P3-32ND3 (cont'd)

Wiring Diagrams



*Denotes key location of all associated ZIPLink cables.

P3-64ND3 \$284.00

Sinking/Sourcing Input

The P3-64ND3 DC Input Module provides sixty-four 24 VDC sinking or sourcing inputs with eight isolated commons.



See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.



Input Specifications		
Inputs per Module		64 (sinking / sourcing)
Operating Voltage Range	CE	24VDC (± 10%)
(Tolerance)	UL	24VDC (± 10%)
Peak Voltage		26.4 VDC
Input Current (Typical)		2.7 mA @ 24VDC
Maximum Input Current @ Temp		3.5 mA @ 60° C (26.4 VDC)
Input Impedance		8.2 kV @ 24VDC
ON Voltage Level		> 18VDC
OFF Voltage Level		< 8VDC
Minimum ON Current		2mA
Maximum OFF Current		1.1 mA
OFF to ON Response		2ms max.; typical 1ms
ON to OFF Response		2ms max.; typical 1ms
Status Indicators		Logic Side (32 points x 2)
Connector Type		Two 40-pin IDC
Commons		8 Isolated (8 points / common)

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	6.91W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	170g (6.0 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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

Connector Specifications		
Connector Type IDC style header with latch, Omron XG4A-4034		
Number of Pins	40 point x 2	
Pitch	0.1 in. (2.54 mm)	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

P3-64ND3 (cont'd)

Wiring Diagrams



*Denotes key location of all associated ZIPLink cables



P3-08NAS

\$136.00

AC Isolated Input

The P3-08NAS AC Isolated Input Module provides eight 100–240 VAC isolated inputs.

1 2 3 4	c (UL) us € €
5 6 7 8	Terminal block sold
100-240VAC INPUT	separately; terminal
P3-08NAS	block cover included
100-240V~7.0-20.0mA 50-60Hz	with module.
	P3-0BNAS ○ 1 ○ 2 ○ 2 ○ 2 ○ 2 ○ 2 ○ 2 ○ 3 ○ 6 ○ 6 ○ 6 ○ 6 ○ 6 ○ 6 ○ 7 ○ 6 ○ 7 ○ 8 ○ 8 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○ 0 ○

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Innut Oncelling			
input specifications			
Inputs per Module		8	
Operating Voltage Range	CE	100–240 VAC (± 20%)	
(Tolerance)	UL	100–240 VAC (± 20%)	
AC Frequency		47–63 Hz	
Input Current (Typical)		8.5 mA @ 100VAC (50Hz) 10mA @ 100VAC (60Hz) 17mA @ 240VAC (50Hz) 20mA @ 240VAC (60Hz)	
Maximum Input Current @ Temp		26mA @ 60° C (288VAC)	
Input Impedance		15kV (50Hz), 12kV (60Hz)	
ON Voltage Level		> 70VAC	
OFF Voltage Level		< 20VAC	
Minimum ON Current		5mA	
Maximum OFF Current		2mA	
OFF to ON Response		< 10ms	
ON to OFF Response		< 25ms	
Status Indicators		Logic side (8 points)	
Terminal Type (not included)		20-position removable terminal block	
Commons		8 Isolated (1 point / common)	

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	4.38 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Weight	95g (3.35 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

P3-08NAS (cont'd)



P3-16NA

\$167.00

AC Input The P3-16NA AC Input Module provides sixteen 100–240 VAC isolated inputs with four isolated commons.



We recommend using prewired *ZIP*Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Input Specifications		
Inputs per Module		16
Operating Voltage Range	CE	100–240 VAC (± 20%)
(Tolerance)	UL	100–240 VAC (± 20%)
AC Frequency		47–63 Hz
Input Current (Typical)		8.5 mA @ 100VAC (50Hz) 10mA @ 100VAC (60Hz) 17mA @ 240VAC (50Hz) 20mA @ 240VAC (60Hz)
Maximum Input Current @ Temp		26 mA @ 60° C (288VAC)
Input Impedance		15kV (50Hz), 12kV (60Hz)
ON Voltage Level		> 70VAC
OFF Voltage Level		< 20VAC
Minimum ON Current		5mA
Maximum OFF Current		2mA
OFF to ON Response		< 10ms
ON to OFF Response		< 25ms
Status Indicators		Logic side (16 points)
Terminal Type (not included)		20-position removable terminal block
Commons		4 Isolated (4 points / common)

General	General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),		
Storage Temperature	-20°C–70°C (-4°F–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)		
Field to Logic Side Isolation	1500VAC applied for 1 minute		
Insulation Resistance	>10MV @ 500VDC		
Heat Dissipation	8.76 W		
Enclosure Type	Open equipment		
Module Keying to Backplane	Electronic		
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.		
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.		
Weight	95g (3.35 oz)		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non- hazardous locations only.		

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N⋅m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N⋅m). Do not overtighten screws when installing terminal block	

P3-16NA (cont'd)





P3-08TD1S \$164.00

Sinking Output

The P3-08TD1S DC Output Module provides eight 6-27 VDC sinking outputs with four isolated commons.



We recommend using prewired *ZIP*Link cables and connection modules. See Wiring Solutions.



Output Specifications Outputs per Module 8 (sinking) CE 6.25-24 VDC (-15% / + 20%) **Operating Voltage Range** (Tolerance) UL 6-27 VDC (-15% / + 10%) Maximum Output Current @ Temp 2A / point, 4A / common @ 60°C Minimum Output Current 0.4 mA Maximum Leakage Current 0.3 mA @ 30VDC On Voltage Drop 0.4 VDC @ 2A Maximum Inrush Current 4A for 10ms, per point OFF to ON Response m 1ms ON to OFF Response m 1ms Terminal Type (not included) 20-position removable terminal block Status Indicators Logic Side (8 points) External 24 V Error Indicator Logic Side (4 points) Commons 4 Isolated (2 points / common) External DC Power required 24 VDC ±10%, 30mA

Note: FLT (fault) indicates the absence of 24VDC at a V1, V2, V3, or V4 terminal.

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	7.69 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Weight	110g (3.88 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtichten screws when installing terminal block	

Solutions. Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

number P3-RTB.

P3-08TD1S (cont'd)

- Shown rating in figure is an operating voltage
- Each C1 terminal is connected inside the module.
- Each C2 terminal is connected inside the module.
- Each C3 terminal is connected inside the module.
- Each C4 terminal is connected inside the module.







P3-08TD2S \$169.00

Sourcing Output

The P3-08TD2S DC Output Module provides eight 6–27 VDC sourcing outputs with four isolated commons.



We recommend using prewired *ZIP*Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.



General Specifications	
Operating Temperature	0°C– 60°C (32°F–140°F),
Storage Temperature	-20°C–70°C (-4°F–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)
Field to Logic Side Isolation	1500VAC applied for 1 minute
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	8.46 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Weight	110g (3.88 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

P3-08TD2S (cont'd)

Wiring Diagrams



Each V1 is connected inside the module. Each V2 is connected inside the module. Each V3 is connected inside the module. Each V4 is connected inside the module.



\$175.00

P3-16TD1

Sinking Output

The P3-16TD1 DC Output Module provides sixteen 6-27 VDC sinking outputs with two isolated commons.



We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications		
Outputs per Module		16 (sinking)
Operating Voltage Range	CE	6.25–24 VDC (-15% / + 20%)
(Tolerance)	UL	6–27 VDC (-15% / + 10%)
Maximum Output Current @	Тетр	0.5 A / point, 4A / common @ 60°C
Minimum Output Current		0.4 mA
Maximum Leakage Current		0.3 mA @ 30 VDC
On Voltage Drop		0.12 VDC @ 0.5 A
Maximum Inrush Current		2A for 10ms
OFF to ON Response		m 1ms
ON to OFF Response		m 1ms
Terminal Type (not included)		20-position removable terminal block
Status Indicators		Logic Side (16 points)
External 24 V Error Indicator		Logic Side (2 points)
Commons		2 Isolated (8 points / common)
External DC Power required		24VDC ±10%, 30mA

Note: FLT (fault) indicates the absence of 24VDC at V1 or V2 terminal.

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	2.41 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Weight	125g (4.41 oz)	
Agency Approvals	UL508 and UL 1604 (Certified for Canada and USA) CE (EN61131-2*) This equipment is suitable for use in Class I, Division 2/Zone 2, Groups A, B, C, and D or non-hazardous locations only.	

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

P3-16TD1 (cont'd)

Wiring Diagrams



Γ Internal module circuitry L L COM ≶ L Optical Isolator 24VDC +V ┶┞╪ 6-27VDC ╧┥╞╧┓ OUTPUT

Dual Power Source

P3-16TD2

\$180.00

Sourcing Output

The P3-16TD2 DC Output Module provides sixteen 6-27 VDC sourcing outputs with two isolated commons.



We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.



Output Specifications Outputs per Module 16 (sourcing) CE 6.25-24 VDC (-15% / + 20%) **Operating Voltage Range** (Tolerance) UL 6-27 VDC (-15% / + 10%) Maximum Output Current @ Temp 0.5 A / point, 4A / common @ 60°C Minimum Output Current 0.4 mA Maximum Leakage Current 0.3 mA @ 30VDC 0.2 VDC @ 0.5 A On Voltage Drop Maximum Inrush Current 2A for 10ms OFF to ON Response m 1ms ON to OFF Response m 2ms Terminal Type (not included) 20-position removable terminal block Status Indicators Logic Side (16 points) Commons 2 Isolated (8 points / common)

General Specifications	
Operating Temperature	0°C– 60°C (32°F–140°F),
Storage Temperature	-20°C–70°C (-4°F–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)
Field to Logic Side Isolation	1500VAC applied for 1 minute
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	5.38 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Weight	120g (4.23 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

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

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

P3-16TD2 (cont'd)





P3-16TD3P Retired

Sinking/Sourcing Protected Output The P3-16TD3P DC Output Module provides sixteen 12–24 VDC sinking or sourcing protected outputs with four internally connected commons.

Module also detects the following faults:

- 1. Missing External 24VDC
- 2. Open Load
- 3. Over Temperature
- 4. Over Load Current



See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.





NOTE: The most recent Productivity Suite software and firmware versions may be required to support new modules and new features.

Output Specifications		
Outputs per Module	16 (sinking / sourcing)	
Operating Voltage Range (Tolerance)	10.2–26.4 VDC	
Maximum Output Current	0.5 A continuous	
On Voltage Drop	0.5 VDC	
Maximum Inrush Current	Self-limited	
OFF to ON Response	0.5 ms	
ON to OFF Response	0.5 ms	
Overcurrent Trip	1.2 A min., 2.4 A max.	
Minimum Load Current to Avoid Open Load Fault Detection	113mA	
Overtemperature Shutdown	Independent each output	
Minimum Load Resistance (for open load detection)	58kV	
Status Indicators	Logic Side (16 points)	
External 24V Error Indicator	Logic Side (1 points)	
Fault Condition Indicator	Logic Side (16 points)	
Connector Type	40-pin IDC	
Commons per Module	4 (non-isolated)	
Fuses	None	
External DC Power Required	24VDC ±10% @ 85mA, Class 2 (must be >= Operating voltage)*	

*Note: Load voltage for source configuration must be less or equal to the external power voltage wired to the module. This requirement can be met by using a single power supply to provide both module's power (24V external power) and sourcing power for loads.

General Specifications		
Surrounding Air Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	5.96 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	112.83 g (3.98 oz)	
Agency Approvals	UL508 file E157382, Canada & USA CE (EN61131-2*)	

Connector Specifications		
Connector Type	IDC style header with latch, Omron XG4A-4034	
Number of Pins	40 point	
Pitch	0.1 in. (2.54 mm)	

P3-16TD3P

(cont'd)

Wiring Diagrams



*Denotes key location of all associated ZIPLink cables.



NOTE: If two separate power supplies are used to supply module control logic and output, commons from both power supplies must be connected.



NOTE: If two separate power supplies are used to supply module control logic and output, commons from both power supplies must be connected.

P3-32TD1 \$228.00

Sinking Output

The P3-32TD1 DC Output Module provides thirty-two 6-27 VDC sinking outputs with four isolated commons.







Output Specifications		
Outputs per Module		32 (sinking)
Operating Voltage Range	CE	6.25–24 VDC (-15% / + 20%)
(Tolerance)	UL	6–27 VDC (-15% / +10%)
Maximum Output Current @	Тетр	0.3 A / point, 2.4 A / common @ 60°C
Minimum Output Current		0.4 mA
Maximum Leakage Current		0.3 mA @ 30VDC
On Voltage Drop		0.3 VDC @ 0.3 A
Maximum Inrush Current		0.5 A for 10 ms
OFF to ON Response		m 0.2 ms
ON to OFF Response		m 0.3 ms
Connector Type		40-pin IDC
Status Indicators		Logic Side (32 points)
Commons		4 Isolated (8 points / common)
External DC Power Required		24VDC ±10% @ 250mA

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	10.74 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	110g (3.88 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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Connector Specifications		
Connector Type	IDC style header with latch, Omron XG4A-4034	
Number of Pins	40 point	
Pitch	0.1 in. (2.54 mm)	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.



P3-32TD1 (cont'd)

Wiring Diagrams

Dual Power Source -1 5 L L 2 6 L L -3 7 L 4 8 6-27VDC -C1 /V1 -9 /13 - L 10 14 - L 11 15 L 12 /16 L L 6-27VDC C2 /V2 17 21 L 18 /22 L -19 /23 L 20 24 L 6-27VDC -C3 /V3 -25 /29 L 26 30 L 27 31 L L -28 /32 L +|⊦ C4 V4 6-27VDC 24 VDC

Single Power Source

	-25 /29
	-26 /30
	-27 /31
	-28 /32
24 VDC + -	-C4 /V4

*Denotes key location of all associated ZIPLink cables.



P3-32TD2 \$218.00

Sourcing Output

The P3-32TD2 DC Output Module provides thirty-two 24 VDC sourcing outputs with four isolated commons.



Output Specifications		
Outputs per Module		32 (sourcing)
Operating Voltage Range	CE	24VDC (-15% / + 20%)
(Tolerance)	UL	24VDC (-20% / + 25%)
Maximum Output Current @ Temp		0.2 A / point, 1.6 A / common @ 60°C
Minimum Output Current		0.4 mA
Maximum Leakage Current		0.3 mA @ 30VDC
On Voltage Drop		0.3 VDC @ 0.2 A
Maximum Inrush Current		0.5 A for 10ms
OFF to ON Response		m 0.5 ms
ON to OFF Response		m 0.5 ms
Connector Type		40-pin IDC
Status Indicators		Logic Side (32 points)
Commons		4 Isolated (8 points / common)

General Specifications		
Operating Temperature	0°C–60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	6.69 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	110g (3.88 oz)	
Agency Approvals UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardo locations only.		

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

Connector Specifications	
Connector Type	IDC style header with latch, Omron XG4A-4034
Number of Pins	40 point
Pitch	0.1 in. (2.54 mm)

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.



P3-32TD2 (cont'd)



*Denotes key location of all associated ZIPLink cables.



\$319.00

P3-64TD1

Sinking Output

The P3-64TD1 DC Output Module provides sixty-four 6–27 VDC sinking outputs with eight isolated commons.







Output Specifications		
Outputs per Module		64 (sinking)
Operating Voltage Range	CE	6.25-24 VDC (-15% / + 20%)
(Tolerance)	UL	6-27 VDC (-15% / +10%)
Maximum Output Current @	Тетр	0.1 A / point, 0.8 A / common @ 60°C
Minimum Output Current		0.4 mA
Maximum Leakage Current		0.3 mA @ 30VDC
On Voltage Drop		0.3 VDC @ 0.1 A
Maximum Inrush Current		0.5 A for 10ms
OFF to ON Response		m 0.2 ms
ON to OFF Response		m 0.3 ms
Connector Type		Two 40-pin IDC
Status Indicators		Logic Side (32 points x 2)
Commons		8 Isolated (8 points / common)
External DC Power Required		24VDC ±10% @ 210mA

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	11.35 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	160g (5.64 oz)	
Agency Approvals UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazar locations only.		

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

Connector Specifications		
Connector Type	IDC style header with latch, Omron XG4A-4034	
Number of Pins	40 point x 2	
Pitch	0.1 in. (2.54 mm)	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.



P3-64TD1 (cont'd)

Wiring Diagrams



*Denotes key location of all associated ZIPLink cables

6-27VDC OUTPUT Internal module circuitry L T Optical COM Isolator I K 1 24VDC +V ⊣⊢ L

\$289.00

P3-64TD2

Sourcing Output

The P3-64TD2 DC Output Module provides sixty-four 24 VDC sourcing outputs with eight isolated commons.



Output Specifications			
Outputs per Module		64 (sourcing)	
Operating Voltage Range	CE	24VDC (-15% / + 20%)	
(Tolerance)	UL	24VDC (-20% / + 25%)	
Maximum Output Current @ Temp		0.1 A / point, 0.8 A / common @ 60° C	
Minimum Output Current		0.4 mA	
Maximum Leakage Current		0.3 mA @ 30VDC	
On Voltage Drop		0.6 VDC @ 0.1 A	
Maximum Inrush Current		0.5 A for 10ms	
OFF to ON Response		m 0.5 ms	
ON to OFF Response		m 0.5 ms	
Connector Type		Two 40-pin IDC	
Status Indicators		Logic Side (32 points x 2)	
Commons		8 Isolated (8 points / common)	

General Specifications			
Operating Temperature	0°C– 60°C (32°F–140°F),		
Storage Temperature	-20°C–70°C (-4°F–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)		
Field to Logic Side Isolation	1500VAC applied for 1 minute		
Insulation Resistance	>10MV @ 500VDC		
Heat Dissipation	11.57 W		
Enclosure Type	Open equipment		
<i>Module Keying to Backplane</i>	Electronic		
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.		
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.		
Weight	160g (5.64 oz)		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

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

Connector Specifications		
Connector Type IDC style header with latch, Omron XG4A-4034		
Number of Pins 40 point x 2		
Pitch	0.1 in. (2.54 mm)	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.



P3-64TD2 (cont'd)

Wiring Diagrams



1 5 L 2 6 -37 - L -4 8 L -0V1 C1 _____24VDC - 9 13 - L - 10 14 - L -- 11 | 15 - 12 | 16 - L --0V2 <u>C</u>2 * 17 21 - 18 22 - L - 19 23 20 24 - L --0V3 C3 24VDC 25 29 - [] 26 30 27 31 - L 28 32 L -0V4 C4 24VDC ┤┝

В

*Denotes key location of all associated ZIPLink cables



\$212.00

P3-08TAS

Isolated Output

The P3-08TAS AC Output Module provides eight 100-240 VAC isolated outputs with eight fused commons.



We recommend using prewired *ZIP*Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications		
Outputs per Module		8
Operating Voltage Range	(CE)	100–240 VAC (-15% / +10%)
(Tolerance)	(UL)	100–240 VAC (-20% / +20%)
Maximum Output Current @ Temp		1A / point @ 40°C 0.7 A / point @ 60°C
AC Frequency		47–63 Hz
Minimum Load (TYPE 2)		10mA
Maximum Leakage Current (TYPE 2)		4mA @ 264VDC
On Voltage Drop		1.5 VAC @ > 50mA 4.0 VAC @ < 50mA
Maximum Inrush Current		10A for 10ms
OFF to ON Response		1ms + 1/2 cycle
ON to OFF Response		1ms + 1/2 cycle
Status Indicators		Logic Side (8 points)
Error Status Indicator		Blown Fuse (one for each point)
Terminal Type (not included)		20-position removable terminal block
Commons		8 Isolated (1 point / common)
Fuses		3.15 A user replaceable fuse per common For replacement, order <u>P3-FUSE-1</u> . (Qty. 5/pkg.)

General Specifications		
Operating Temperature	0°C- 60°C (32°F-140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	12.46 W	
Enclosure Type	e Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Weight	125g (4.41 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N⋅m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N⋅m). Do not overtighten screws when installing terminal block.	

P3-08TAS (cont'd)



Replaceable Fuses

Order Part Number P3-FUSE-1 (Qty. 5 per pkg.) One spare included with module.



Wiring Diagrams





www.automationdirect.com

P3-16TA \$225.00

AC Output

The P3-16TA AC Output Module provides sixteen 100–240 VAC outputs with two isolated fused commons.



We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications		
Outputs per Module		16
Operating Voltage Range	(CE)	100-240 VAC (-15% / +10%)
(Tolerance)	(UL)	100-240 VAC (-20% / +20%)
AC Frequency		47–63 Hz
Maximum Output Current @ Temp (Type 2)		0.5 A / point, 4A / common @ 60° C
Minimum Load (TYPE 2)		10mA
Maximum Leakage Current (TYPE 2)		4mA @ 264VDC
On Voltage Drop		1.5 VAC @ > 50mA 4.0 VAC @ < 50mA
Maximum Inrush Current		10A for 10ms
OFF to ON Response		1ms + 1/2 cycle
ON to OFF Response		1ms + 1/2 cycle
Status Indicators		Logic Side (16 points)
Error Status Indicator		Blown Fuse (one for each common)
Terminal Type (not included)		20-position removable terminal block
Commons		2 Isolated (8 points / common)
Fuses		6.3 A user replaceable fuse per common For replacement, order P3-FUSE-2. (Qty. 5/pkg.)

General Specifications		
Operating Temperature	0°C- 60°C (32°F-140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1500VAC applied for 1 minute	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	12.69 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Weight	125g (4.41 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

Removable Terminal Block Specifications		
Description	Part No. <u>P3-RTB;</u> 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

P3-16TA (cont'd)



Relay Output Modules

P3-08TRS

\$187.00

Isolated Relay Output

The P3-08TRS Isolated Relay Output Module provides eight 1.75 A relay outputs with eight fused commons and blown fuse indicators.



Typical Relay Life		
Voltage & Type of Load	Load Current 2A	
30VDC Resistive	150K	
30VDC Solenoid	75K	
120VAC Resistive	210K	
120VAC Solenoid	140K	
240VAC Resistive	150K	
240VAC Solenoid	100K	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.



Output Specifications				
Outputs per Module		8		
Operating Voltage Range (Tolerance)	(CE)	6.25–24 VDC (-15% / + 20%) 6–240 VAC (-15% / + 10%)		
	(UL)	6–27 VDC (-15% / + 10%) 6–240 VAC (-10% / + 10%)		
Output type		Relay, form A (SPST)		
AC Frequency		47–63 Hz		
Maximum Output Current @ Temp		1.75 A per point @ 60°C for both AC and DC		
Minimum Load Current		5mA @ 5VDC		
Maximum Inrush Current		4A for 10ms		
OFF to ON Response		m 10ms		
ON to OFF Response		m 10ms		
Status Indicators		Logic Side (8 points)		
Error Status Indicator		Blown Fuse (one for each point)		
Terminal Type (not included)		20-position removable terminal block		
Commons		8 Isolated (1 point / common)		
Fuses		3.15 A user replaceable fuse per common For replacement, order <u>P3-FUSE-1</u> . (Qty. 5/pkg.)		

General	Specifications
Operating Temperature	0°C-60°C (32°F-140°F),
Storage Temperature	-20°C–70°C (-4°F–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)
Field to Logic Side Isolation	1500VAC applied for 1 minute
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	3.04 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Weight	135g (4.76 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

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

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

1-800-633-0405 Relay Output Modules

P3-08TRS (cont'd)

Wiring Diagrams



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OUTPUT

1-800-633-0405 Relay Output Modules

P3-16TR \$190.00

Relay Output

The P3-16TR Relay Output Module provides sixteen 1.25 A relay outputs with two isolated fused commons.



Typical Relay LifeVoltage & Type of LoadLoad Current 1.25A30VDC Resistive240K30VDC Solenoid110K120VAC Resistive320K120VAC Solenoid210K240VAC Resistive240K240VAC Resistive240K240VAC Solenoid140K

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.



Output Specifications				
Outputs per Module		16		
Operating Voltage Range (Tolerance)	(CE)	6.25–24 VDC (-15% / + 20%) 6–240 VAC (-15% / + 10%)		
	(UL)	6–27 VDC (-15% / + 10%) 6–240 VAC (-10% / + 10%)		
Output type		Relay, form A (SPST)		
AC Frequency		47–63 Hz		
Maximum Output Current @ Temp		1.25 A / point, 6.3 A / common @ 60°C for both AC and DC		
Minimum Load Current		5mA @ 5VDC		
Maximum Inrush Current		4A for 10ms		
OFF to ON Response		m 10ms		
ON to OFF Response		m 10ms		
Status Indicators		Logic Side (16 points)		
Error Status Indicator		Blown Fuse (one for each common)		
Terminal Type (not included)		20-position removable terminal block		
Commons per module		2 Isolated (8 point / common)		
Fuses		6.3 A user replaceable fuse per common For replacement, order <u>P3-FUSE-2</u> . (Qty. 5/pkg.)		

General Specifications			
Operating Temperature	0°C– 60°C (32°F–140°F),		
Storage Temperature	-20°C-70°C (-4°F-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)		
Field to Logic Side Isolation	1500VAC applied for 1 minute		
Insulation Resistance	>10MV @ 500VDC		
Heat Dissipation	3.93 W		
Enclosure Type	Open equipment		
Module Keying to Backplane	Electronic		
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.		
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.		
Weight	160g (5.64 oz)		
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.		

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	
1-800-633-0405 Relay Output Modules

P3-16TR (cont'd)

Wiring Diagrams







Relay Output Modules

P3-08TRS-1 \$194.00

Isolated Relay Output

The P3-08TRS-1 High-Current Isolated Relay Output Module provides eight 5A relay outputs with eight fused commons.



Output Derating



All 8 outputs on, 100% duty cycle allowed.

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

CONNECTION SYSTEMS	\langle

	Output	Specifications
Outputs per Module		8 relays (non-latching)
Commons per Module		8 (isolated)
Operating Voltage	(CE)	6.25–24 VDC (-15% / +20%) 6–240 VAC (-15% / +10%)
(Tolerance)	(UL)	5–30 VDC (-0% / +10%) 5–240 VAC (-0% / +10%)
Output Type		4 Form C (SPDT-NO/NC), 4 Form A (SPST-NO)
AC Frequency		47–63 Hz
On Voltage Drop		Minimal (90 mV max for fuse at 10A)
Max Output Current @ Temperature (Resistive)*		6.3 A at 23°C, 5.0 A at 60°C For both AC and DC
Maximum Leakage Current		Minimal (5µA for TVS diode)
Minimum Load		10mA @ 5VDC
Maximum Inrush Current		12A
External DC Required		None
OFF to ON Response		10ms
ON to OFF Response		5ms (Excluding NO bounce)
Terminal Type (not incl	uded)	20-position removable terminal block
Status Indicators		Logic side
Fuses		6.3 A user replaceable fuse per common For replacement, order P3-FUSE-2 (5/Pkg.)
Dielectric Strength (Between normally open and normally closed contacts on the same relay)		1500VAC @ 1 min, logic to output and isolated output to output, 750VAC @ 1 min, between contacts on same relay (Same as 1800VAC @ 1 sec and 900VAC @ 1 sec)
Transient Voltage Suppression (Bi-directional TVS diode)		482V clamp at 1.25 A peak pulse current
Mechanical Life Expectancy		>100,000 at 30 operations per minute

Typical Relay Life*		
Voltage & Type of Load	Operating Current	Operations
24VDC Resistive	6.3 A	600,000
24VDC Solenoid	0.2 A	1,000,000
120VAC Resistive	6.3 A	600,000
120VAC Resistive	3 A	1,000,000
120VAC Solenoid	0.5 A	500,000
240VAC Resistive	6.3A	450,000
240VAC Resistive	3 A	600,000
1/4 HP Motor	1.5 x FLA (motor)	30,000

*Ratings are for normally-open contacts. Normally-closed contacts have 1/2 the current handling capability.

Removable Terminal Block Specifications		
Description	Part No. <u>P3-RTB;</u> 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in b (0.882–1.02 N⋅m) Self-jacking screws - 2.7–3.6 in b (0.3–0.4 N⋅m). Do not overtighten screws when installing terminal block.	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

P3-08TRS-1 (cont'd)

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500 VDC	
Heat Dissipation	3W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	286g (10.08 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	



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





Outputs NO1 – NO4



P3-04ADS \$724.00

Isolated Voltage/Current Analog Input The P3-04ADS Isolated Voltage/Current Analog Input Module provides four isolated channels for receiving \pm 10 VDC, 0 to 5 VDC, 0 to 10 VDC and 0 to 20mA signals.



Terminal block sold separately; terminal block cover included with module.

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2. For the latest prices, please check AutomationDirect.com.

Input	Specifications
Input Channels	4 Channel-to-Channel Isolated
Module Signal Input Ranges*	±10VDC, 0–5 VDC, 0–10 VDC, 0–20 mA
Resolution	15 bit + sign
Value of LSB (least significant bit)	±10V = 305µV, 16-bit 0–5V = 152µV, 14-bit 0–10V = 305µV, 15 bit 0–20mA = 0.610 µA, 14-bit
Data Range	0 to 65535 counts unipolar -32768 to +32767 counts bipolar
Isolated Loop Pwr for Ext. Xmitters	20–30 VDC, current limited to < 30mA
Input Type	Differential
Common Mode Rejection Ratio	-75dB min. @ DC, -500kHz
Maximum Continuous Overload	±31mA., current input ±100V, voltage input
Input Impedance	250kV ±5% voltage input 250V ±0.1% ¼W. current input
Filter Characteristics	Active low pass, -3dB @ 30Hz, -10dB @ 55Hz
Sample Duration Time	1.28 ms per channel (does not include ladder scan time)
All Channel Update Rate	5.2 ms
Open Circuit Detection Time	Zero reading within 1s
Conversion Method	Successive Approximation
Accuracy vs. Temperature	±25 PPM / °C max
Maximum Inaccuracy	0.1% of range voltage, 0.2% of range current (including temperature drift)
Linearity Error (End to End)	±0.025% of range maximum, Monotonic with no missing codes
Input Stability and Repeatability	±0.02% of range maximum after 10 min.
Full Scale Calibration Error (not including Offset)	±0.05% of range maximum
Offset Calibration Error	±0.05% of range maximum
Max Crosstalk	-96 dB 1 LSB
Channel to Channel Isolation	900VDC applied for 1s
Recommended Fuse (external)	Edison S500-32-R, 0.032A fuse on current inputs only
External DC Power Required	NONE for the module
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*Select any two ranges via hardware jumpers. Range setting is for channels 1 and 3; and channels 2 and 4.

General Specifications	
Operating Temperature	0°C- 60°C (32°F-140°F),
Storage Temperature	-20°C-70°C (-4°F-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)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	2.6 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Terminal Type (not included)	20-position removable terminal block
Weight	61g (2.14 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous Iccations only

P3-04ADS (cont'd)

Wiring Diagrams



1-800-633-0405 **Analog Input Modules**

P3-08AD \$393.00

Voltage/Current Input

The P3-08AD Voltage/Current Analog Input Module provides 8 channels for receiving ±10VDC, ±5VDC, 0 to 5 VDC, 0 to 10VDC, and 0 to 20mA signals.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N⋅m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N⋅m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Input Specifications	
Input Channels	8
Module Signal Input Ranges	±10VDC, ±5VDC, 0–5 VDC, 0–10 VDC, 0–20mA
Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	1 LSB = 1 count ±10V = 305µV ±5V = 152µV 0–5V = 76µV 0–10V = 152µV 0–20mA = 0.305 µA
Data Range	0 to 65535 counts unipolar -32768 to +32767 counts bipolar
Maximum Continuous Overload	±31mA, current input ±100V, voltage input
Input Impedance	1MV ±10% voltage input 250V ±0.1% 1/4 W. current input
Hardware Filter Characteristics	Low pass 1st order, -3dB@48Hz
Sample Duration Time	455µs per channel (does not include ladder scan time)
All Channel Update Rate	4ms
Open Circuit Detection Time	Zero reading within 1s (current input only)
Conversion Method	Successive approximation
Accuracy vs. Temperature	±10PPM / °C maximum
Maximum Inaccuracy	0.1% of range voltage, 0.2% of range current (including temperature drift)
Linearity Error (end to end)	±0.01% of range max., ±10V & ±5V ±0.015% of range max., 0–10 V, 0–5 V & 0–20 mA Monotonic with no missing codes
Input Stability and Repeatability	±0.035% of range (after 10 min. warmup)
Full Scale Calibration Error (not including offset)	±0.1% of range maximum
Offset Calibration Error	±0.065% of range maximum
Max Crosstalk	-96dB
Recommended Fuse (external)	Edison S500-32-R, .032A fuse on current inputs only
External DC Power Required	24VDC (-20% / + 25%) 33mA

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	1.1 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	105g (3.73 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

P3-08AD (cont'd)

Wiring Diagrams





\$535.00

P3-16AD-1

Current Analog Input

The P3-16AD-1 Current Analog Input Module provides sixteen channels for receiving current sinking 0 to 20mA input signals.



Terminal block sold separately; terminal block cover included with module.

WARNING: Explosion hazard – Substitution of components may impair suitability for Class I, Division 2.

Removable Terminal Block Specifications		
Description	Part No. <u>P3-RTB;</u> 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.



Input S	pecifications
Input Channels	16 sinking
Module Signal Input Range	0–20mA
Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	0–20mA = 305µA per count (1 LSB = 1 count)
Data Range	0–65535 counts
Input Type	Single-ended (1 common)
Maximum Continuous Overload	±31mA
Input Impedance	250V ±0.1% ¼W
Filter Characteristics	Low Pass, -3dB @ 100Hz
Sample Duration Time	7ms per channel (does not include ladder scan time)
All Channel Update Rate	112ms
Open Circuit Detection Time	Zero reading within 1s
Conversion Method	Successive approximation
Accuracy vs. Temperature	±25PPM / °C maximum
Maximum Inaccuracy	0.1% of range (including temperature drift)
Linearity Error (end to end)	±10 LSB maximum (±0.015% of range) Monotonic with no missing codes
Input Stability and Repeatability	±10 LSB
Full Scale Calibration Error (not including offset)	±10 LSB maximum (±0.015% of range)
Offset Calibration Error	±10 LSB maximum
Max Crosstalk	-76dB, ±10 LSB
Recommended Fuse (external)	Edison S500-32-R, 0.032 A fuse
External DC Power Required	24VDC (-20% / + 25%) 20mA

Gen	eral Specifications
Operating Temperature	0°C– 60°C (32°F–140°F),
Storage Temperature	-20°C–70°C (-4°F–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)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	2.1 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Terminal Type (not included)	20-position removable terminal block
Weight	105g (3.73 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

P3-16AD-1 (cont'd)

Wiring Diagrams



1-800-633-0405 **Analog Input Modules**

\$524.00

P3-16AD-2

Voltage Analog Input The P3-16AD-2 Voltage Analog Input Module provides sixteen channels for receiving 0 to 10 VDC signals.



Terminal block sold separately; terminal block cover included with module.

Remov	vable Terminal Block Specifications
Description	Part No. P3-RTB; 20 screw terminals
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.
Screw Driver Width	1/4 inch (6.5 mm) maximum
Screw Size	M3 size
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.
WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS
MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Input Channels	16
Module Signal Input Range	0–10 VDC
Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	0–10 VDC = 152µV per count (1 LSB = 1 count)
Data Range	0 to 65535 counts
Input Type	Single-ended (one common)
Maximum Continuous Overload	±100V
Input Impedance	250kV (typical)
Filter Characteristics	Low Pass, -3dB @ 100Hz
Sample Duration Time	7ms per channel (does not include ladder scan time)
All Channel Update Rate	112ms
Open Circuit Detection Time	Zero reading within 1s
Conversion Method	Successive approximation
Accuracy vs. Temperature	±25 PPM / °C maximum
Maximum Inaccuracy	0.1% of range (including temperature drift)
Linearity Error (end to end)	±10 LSB maximum (±0.015% of range) Monotonic with no missing codes
Input Stability and Repeatability	±10 LSB
Full Scale Calibration Error (not including offset)	±10 LSB maximum (±0.015% of range)
Offset Calibration Error	±10 LSB maximum
Max Crosstalk	-76dB, 10 LSB
External DC Power Required	24VDC (-20% / + 25%), 41mA maximum

Input Specifications

Genera	I Specifications
Operating Temperature	0°C– 60°C (32°F–140°F),
Storage Temperature	-20°C–70°C (-4°F–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)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	1.4 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Terminal Type (not included)	20-position removable terminal block
Weight	105g (3.73 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non- hazardous locations only.

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P3-16AD-2 (cont'd)

Wiring Diagrams





1-800-633-0405 **Analog Input Modules**

\$581.00

P3-08RTD

RTD Analog Input The P3-08RTD input module provides eight differential channels for receiving RTD and resistance input signals.

cŲLus ⊂€ **Patent-pending LCD** gives access to field signal values, as well as module and signal faults. DATA RTD INPUT P3-08RTD SEL 100 CU10 CU25 NI120 \tilde{z} 5 P3compatible with ZIPLink.

Terminal Block P3-RTB and Cover included. Not

Remova	ble Terminal Block Specifications
Description	Part No. P3-RTB; 20 screw terminals
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.
Screw Driver Width	1/4 inch (6.5 mm) maximum
Screw Size	M3 size
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtichten screws when installing terminal block

RTD Inp	ut Specifications
Input Channels	8 Differential
Max. Common Mode Voltage	5VDC
Data Format	Floating Point
Common Mode Rejection	-90dB min. @ DC, -150dB min. @ 50/60Hz
Absolute Maximum Ratings	Fault protected input, ±50V
Internal Resolution	16-bit, ± 0.1°C or °F (up to 100Hz filter)
Input Ranges (RTD Types)	Pt100 -200°C/850°C (-328°F/1562°F) Pt1000 -200°C/595°C (-328°F/1103°F) JPt100 -100°C/450°C (-148°F/842°F) 10V Cu. -200°C/260°C (-328°F/500°F) 25V Cu. -200°C/260°C (-328°F/500°F) 120V Ni. -80°C/260°C (-112°F/500°F)
RTD Linearization	Automatic
Excitation Current (all ranges)	200µA
Accuracy vs. Temperature	±5PPM per °C (maximum)
Full Scale Calibration	±1°C
Offset Calibration Error	±1 count (negligible)
Linearity Error (end to end)	±0.5°C maximum, ±0.01°C typical, Monotonic with no missing codes
Maximum Inaccuracy	±1°C maximum (excluding RTD error) (including temperature drift)
Warm-up Time	2 minutes for ±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

Resistance	Input Specifications
Internal Resolution	16-bit, .0015% of full scale range in ohms (up to 100Hz filter)
Resistance Input Ranges and CPU Resolution	0–10,000V, Resolution 1V 0–6,250V, Resolution 0.1 V 0–3,125V, Resolution 0.1 V 0–1,562.5 V, Resolution 0.1 V 0–781.25 V, Resolution 0.1 V 0–390.625 V, Resolution 0.01 V 0–195.3125 V, Resolution 0.01 V
Accuracy vs. Temperature	±25PPM per °C (maximum)
Full Scale Calibration	± 0.02% of full scale range
Offset Calibration Error	\pm 0.0015% of full scale range in ohms
Linearity Error (end to end)	\pm 0.0015% of full scale range maximum at 25°C, Monotonic with no missing codes
Maximum Inaccuracy	± 0.10% of full scale range

Dia	agnostics
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

P3-08RTD (cont'd)

Ge	eneral Specifications
Operating Temperature	0°C– 60°C (32°F–140°F),
Storage Temperature	-20°C–70°C (-4°F–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	0.33 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (included). The P3-08RTD module is not compatible with the ZIP Link wiring system.
Terminal Type	20-position removable terminal block (included)
Weight	107.8 g (3.79 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

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

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.













Notes for maximum accuracy:

- 1. For 2-wire RTD, attach third wire to module common.
- 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.
- When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
- 5. Jumper unused inputs to common.



T/C Input Specifications

± 1.25 V

>5M ohms

Automatic

Automatic

270ms

2.16 s

Sigma-Delta

±50PPM / °C maximum

±1°C maximum (±0.5 °C typical),

Monotonic with no missing codes

30 Minutes for ±1°C Repeatability

(including temperature drift)

10-15 secs, 20 secs max.

±3°C Max (excluding thermocouple error)

2 minutes to reach voltage specifications

16-bit, ± 0.1°C or °F

8 differential

Floating point

100dB @ DC and 130dB @ 60Hz

Fault-protected inputs to ±50VDC

Type J -190° to 760°C (-310° to 1400°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 C 65° to 2320°C (149° to 4208°F)

Type B 529° to 1820°C (984° to 3308°F); Type N -70° to 1300°C (-94° to 2372°F);

Type E -210° to 1000°C (-346° to 1832°F); Type K -150° to 1372°C (-238° to 2502°F);

Input channels

Input Impedance

Maximum Ratings

Common Mode Range

Common Mode Rejection

Thermocouple Input Ranges

Cold Junction Compensation

Thermocouple Linearization

Accuracy vs. Temperature

Linearity Error

Warm-up Time

Maximum Inaccuracy

Sample Duration Time

Conversion Method

All Channel Update Rate

Open Circuit Detection Time

Data Format

Resolution

1-800-633-0405 **Analog Input Modules**

P3-08THM

Thermocouple Analog Input

The P3-08THM Thermocouple Input Module provides eight differential channels for receiving thermocouple and voltage input signals.



\$448.00

Terminal Block P3-RTB and Cover included. Not compatible with ZIPLink.

ONE It Specifications 0-39.0625 mVDC, ±39.0625 mVDC, ±78.125 mVDC, 0.455 mVDC,
ut Specifications 0-39.0625 mVDC, ±39.0625 mVDC, ±78.125 mVDC, 0.456.5 mVDC,
ut Specifications 0-39.0625 mVDC, ±39.0625 mVDC, ±78.125 mVDC, 0.456.25 mVDC,
0-39.0625 mVDC, ±39.0625 mVDC, ±78.125 mVDC,
±156.25 mVDC, 0–1250 mVDC
0.05% @ 0° - 60°C, typical 0.04% @ 25°C
0.06% @ 25°C
0.05% @ 0° - 60°C, typical 0.03% @ 25°C
0.2% @ 0° 60°C turical 0.06% @ 25°C
r

Configuration/Diagnostics	
Burn-out Detection Enable/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

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

* Use shielded, twisted thermocouple wire that matches the thermocouple type.

1-800-633-0405 **Analog Input Modules**

P3-08THM (cont'd)

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	0.36 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (included). The P3-08THM module is not compatible with the ZIP Link wiring system.	
Terminal Type	20-position removable terminal block (included)	
Weight	150g (5.3 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	



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

WARNING: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.



NOTES:

1. Connect shield to thermocouple signal/ground only. Do not connect to both ends. TC+ linput,



- TC-3. With grounded thermocouples, take precautions to prevent having a voltage potential between thermocouple tips. A voltage of 1.25 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.



P3-04DA \$449.00

Voltage/Current Analog Output The P3-04DA Voltage/Current Analog Output Module provides four channels of ± 10 VDC or 4–20 mA sink/source selectable outputs.



Terminal block sold separately; terminal block cover included with module.

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part

number P3-RTB.



Output Specifications		
Output Channels	4	
Module signal output range	±10V or 4–20 mA sink or source selectable each channel	
Signal Resolution	16-bit	
Resolution Value of LSB (least significant bit)	±10V = 305μV/ count 4–20mA = 0.244 μA/ count 1 LSB = 1 count	
Data Range	0–65535 counts uni-polar and -32768 to +32767 counts bi-polar	
Output Type	Voltage outputs sourcing/sinking at 10mA max, or Current outputs sink or source at 20mA max.	
Output Value in Fault Mode	Voltage outputs 0V or 0mA current outputs	
Load Impedance (Minimum External Power Supply)	>1000V voltage outputs)(19.2–30 VDC) 0–755V Sinking, 0–600V Sourcing (19.2 VDC) 0–875V Sinking, 0–700V Sourcing (21.6 VDC) 0–1000V Sinking, 0–855V Sourcing (24.0 VDC) 0–1110V Sinking, 0–970V Sourcing (26.4 VDC) 0–1350V Sinking, 0–1150V Sourcing (30VDC)	
Maximum Capacitive Load	0.01 µF maximum voltage outputs	
Maximum Inductive Load	1mH maximum current outputs	
Allowed Load Type	Grounded	
Maximum Inaccuracy (% of range)	0.1% voltage, 0.1% current (including temperature drift)	
Maximum Full Scale Calibration Error (not including offset error)	±0.025% of range maximum voltage outputs ±0.025% of range maximum current outputs	
Accuracy vs. Temperature	±25PPM/°C max. f.s. calibration change (±0.0025% of range / °C)	
Max Crosstalk	-80dB, 6 LSB	
Linearity Error (End to End)	±16 LSB maximum (±0.025% of full scale) Monotonic with no missing codes	
Output Stability and Repeatability	±10 LSB after 10 minute warm-up (typical)	
Output Ripple	0.05% of Full Scale	
Output Settling Time	0.3 ms max., 5µs min. (full scale change)	
All Channel Update Rate	0.6ms	
Maximum Continuous Overload	Voltage Outputs current limited to 35mA typical. Current Outputs open circuit protected	
Type of Output Protection	15VDC Peak Output Voltage Current outputs current limited to ≤20mA	
Output Signal (power-up, -down)	0V voltage outputs, 0mA current outputs	
External DC Power Required	94mA voltage operation 4 channels 126mA current operation 4 channels 24VDC -20% / + 25%	

Removable Terminal Block Specifications		
Description Part No. <u>P3-RTB</u> ; 20 screw terminals		
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width 1/4 inch (6.5 mm) maximum		
Screw Size M3 size		
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

P3-04DA (cont'd)

General Specifications	
Operating Temperature	0°C- 60°C (32°F-140°F),
Storage Temperature	-20°C-70°C (-4°F-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)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	2.6 W voltage outputs 3.4 W current outputs
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Terminal Type (not included)	20-position removable terminal block
Weight	105g (3.73 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

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

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.





1-800-633-0405 **Analog Output Modules**

P3-08DA-1 \$779.00

Current Analog Output

The P3-08DA-1 Current Analog Output Module provides eight channels of 4 to 20mA sourcing outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description Part No. <u>P3-RTB;</u> 20 screw terminals		
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width 1/4 inch (6.5 mm) maximum		
Screw Size M3 size		
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N⋅m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N⋅m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications	
Output Channels (commons)	8
Module Signal Output Range	4–20mA
Output Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	4–20mA = 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	0–570V (19.2 VDC) 0–690V (21.6 VDC) 0–810V (24.0 VDC) 0–930V (26.4 VDC) 0–1100V (30.0 VDC) Minimum Load 0V @ 0-45°C 125V @ 45-60°C
Maximum Inductive Load	1mH
Allowed Load Type	Grounded
Maximum Inaccuracy	0.1% of range (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	± 25 PPM/ °C maximum full-scale calibration change (± 0.0025% of range / °C)
Max Crosstalk	-96 dB, 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 min. warm-up (typical)
Output Ripple	0.05% of full scale
Output Settling Time	0.3 ms max., 5µs min. (full scale change)
All channel Update Rate	0.6 ms
Maximum Continuous Overload	Outputs open circuit protected
Type of Output Protection	Electronically current limited to 20mA or less
Output Signal at Power-up and Power-down	4mA
External DC Power Required	24VDC (-20% / + 25%), 180mA

General Specifications		
Operating Temperature	0°C- 60°C (32°F-140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	4.7 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	105g (3.73 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

P3-08DA-1 (cont'd)



Current Source Output Circuit



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

P3-08DA-2 \$725.00

Voltage Analog Output

The P3-08DA-2 Voltage Analog Output Module provides eight channels of ± 10 VDC sinking/sourcing outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.



Output Specifications	
Output Channels	8
Module Signal Output Range	±10VDC
Output Signal Resolution	16-bit
Resolution Value of LSB	±10V = 305µv/count
(least significant bit)	1 LSB = 1 count
Data range	-32768 to +32767
Output Type (sourcing/sinking)	Voltage (10mA max current)
Output Value in Fault Mode	0V
Load Impedance	M 1000V
Maximum Capacitive Load	0.01 µF maximum
Allowed Load Type	Grounded
Maximum Inaccuracy	0.1% of range (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	± 25 PPM/ °C maximum 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 LSB after 10 min. warm-up (typical)
Output Ripple	0.05% of full-scale
Output Settling Time	0.3 ms max., 5µs min. (full scale change)
All Channel Update Rate (typical)	0.6 ms
Maximum Continuous Overload	Outputs current limited to 40mA typical Continuous overloads on multiple outputs can damage the module.
Type of Output Protection	0.1 µf Transient Suppressor
Output Signal (power-up, -down)	0V
External DC Power Required	24VDC (-20% / + 25%), 120mA

General Specifications	
Operating Temperature	0°C- 60°C (32°F-140°F),
Storage Temperature	-20°C-70°C (-4°F-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)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	3.3 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.
Terminal Type (not included)	20-position removable terminal block
Weight	105g (3.73 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

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

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

P3-08DA-2 (cont'd)



Voltage Output Circuits







P3-06DAS-1 Retired

Isolated Current Analog Output

The P3-06DAS-1 Current Analog Output Module provides six channel-to-channel isolated 4–20 mA outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N⋅m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N⋅m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output	Output Specifications		
Output channels (commons)	6 (6 isolated)		
Module Signal Output Range	4–20mA		
Signal Resolution	16-bit		
Resolution Value of LSB	4–20 mA = 0.244 µA/count		
(least significant bit)	1 LSB = 1 count		
Data Range	0 to 65535 counts		
Output Type (sourcing)	Current: 20mA max (isolated)*		
Channel to AUX Power Isolation	1800VDC applied for 1.8 second (100% tested)		
Channel to Channel Isolation	900VDC applied for 1.8 second (100% tested)		
Output Value in Fault Mode	Less than 4mA		
Load Impedance	0–750V		
Maximum Inductive Load	1mH		
Allowed Load Type	Floating or Grounded		
Maximum Inaccuracy	0.1% of range		
Maximum Full Scale Calibration Error (not including offset error)	±0.065% of range maximum		
Maximum Offset Calibration Error	±0.065% of range maximum		
Accuracy vs. Temperature	± 25 PPM/ °C maximum full scale calibration change (± 0.0025% of range / °C)		
Max Crosstalk (DC, 50Hz, 60Hz)	-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	±16 LSB after 10 min. warm-up (typical)		
Output Settling Time	0.3 ms maximum, 5µs minimum (full scale change)		
All Channel Update Rate	0.6 ms		
Type of Output Protection	Electronically current limited to 20mA or less		
Output Signal (power-up, -down)	Less than or equal to 4mA***		
External DC Power Required	24VDC (-20% / + 25%), 250mA		

*Module generates isolated loop power for each channel

**To achieve maximum crosstalk per spec, isolation must be maintained, all commons have to be separated

***Less than 4mA, if the module is not configured or in the RESET stage

General Specifications	
Operating Temperature	0°C- 60°C (32°F-140°F),
Storage Temperature	-20°C-70°C (-4°F-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)
Field to Logic Side Isolation	1800VDC applied for 1.8 seconds (100% tested)
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	3.38 W
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See "Wiring I/O Modules".
Terminal Type (not included)	20-position removable terminal block
Weight	108.8 g (3.82 oz)
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.

P3-06DAS-1 (cont'd)



Current Output Circuits



NOTES: 1. Shield connected to signal source common. 2. Isolated analog outputs can work with sinking and sourcing field devices.

P3-06DAS-2 Retired

Isolated Voltage Analog Output

The P3-06DAS-2 Voltage Analog Output Module provides six channel-to-channel isolated ±10VDC outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications		
Output channels	6 (6 isolated)	
Module Signal Output Range	±10V	
Signal Resolution	16-bit	
Resolution Value of LSB	16-bit Resolution	
(least significant bit)	$\pm 10V = 305\mu V$	
Data Range	-32768 to +32767 counts	
Output Type (sourcing/sinking)	Voltage (10mA max current)	
Channel to AUX Power Isolation	1800VDC applied for 1.8 second (100% tested)	
Channel to Channel Isolation	900VDC applied for 1.8 second (100% tested)	
Output Value in Fault Mode	0V	
Load Impedance	M1000V	
Maximum Capacitive Load	0.01 μF maximum	
Allowed Load Type	Floating or grounded	
Maximum Inaccuracy	±0.1% of range	
Maximum Full Scale Calibration Error (not including offset error)	±0.065% of range maximum voltage	
Maximum Offset Calibration Error	±0.065% of range maximum	
Accuracy vs. Temperature	±25PPM/°C maximum f.s. calibration change (±0.0025% of range / °C)	
Maximum 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 LSB after 10min warm-up (typical)	
Output Ripple	0.01% of full scale	
Output Settling Time	0.100 µs max, 40µs min.(full scale change)	
All Channel Update Rate	1.05 ms	
Maximum Continuous Overload	Outputs current limited to 15mA typical	
Type of Output Protection	15VDC Peak Output Voltage	
Output Signal (power-up, -down)	0V	
External DC Power Required	24VDC (-20% / + 25%), 287mA	

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VDC applied for 1.8 seconds (100% tested)	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	5.8 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	108.8 g (3.82 oz.)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

1-800-633-0405 Analog Output Modules



P3-06DAS-2 (cont'd)



P3-16DA-1 \$929.00

Current Analog Output

The P3-16DA-1 Current Analog Output Module provides sixteen channels of 4–20 mA sourcing outputs.

cŲLus ⊂€ **Patent-pending LCD** gives access to field signal values, as well as module and signal faults. ANALOG OUTPUT P3-16DA-1 SEL 5 P3-16DA-1 Î 18-C COM + ₁₉ A ΗL 4-20mA

Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications		
Output Channels	16 (non-isolated)	
Module Signal Output Range	4–20mA	
Output Signal Resolution	16-bit	
Resolution Value of LSB (least significant bit)	4–20mA = 0.244 µA/count 1 LSB = 1 count	
Data Range	0 to 65535 counts	
Output Value in Fault Mode	Less than 4mA	
Load Impedance (Minimum External Power Supply)	0–570V (19.2 VDC) 0–690V (21.6 VDC) 0–810V (24.0 VDC) 0–930V (26.4 VDC) 0–1100V (30.0 VDC) Minimum Load 0V 0–45°C, 125V 45–60°C, ambient	
Maximum Inductive Load	1 mH	
Allowed Load Type	Grounded	
Maximum Inaccuracy	0.1% of range (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	$\pm 25 \text{PPM/ }^\circ\text{C}$ maximum full scale calibration change (± 0.0025% of range / $^\circ\text{C})$	
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 LSB after 10 min. warm-up (typical)	
Output Ripple	0.05% of full scale	
Output Settling Time	0.3 ms max., 5µs min. (full scale change)	
All Channel Update Rate	0.6 ms	
Maximum Continuous Overload	Outputs open circuit protected	
Type of Output Protection	Electronically current limited to 20mA or less	
Output Signal at Power-up and Power-down	4mA	
External DC Power Required	24VDC (-20% / + 25%), 356mA	

General Specifications		
Operating Temperature	0°C-60°C (32°F-140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	9.0 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use <i>ZIP</i> Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	105g (3.73 oz)	
Agency Approvals	UL508 and UL1604 (Certified for Canada and USA) CE (EN61131-2:2003) This equipment is suitable for use in Class I, Division 2/Zone 2, Groups A, B, C, and D or non-hazardous locations only.	

P3-16DA-1 (cont'd)



Current Source Output Circuit



NOTE: Shield is connected to common at the source device.

P3-16DA-2 \$911.00

Voltage Analog Output

The P3-16DA-2 Voltage Analog Output Module provides sixteen channels of ± 10 VDC outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. <u>P3-RTB;</u> 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Output Specifications		
Output Channels	16	
Module Signal Output Range	±10VDC	
Output Signal Resolution	16-bit	
Resolution Value of LSB	±10V = 305µV/count	
(least significant bit)	1 LSB = 1 count	
Data Range	-32768 to +32767	
Output type (sourcing/sinking)	Voltage (10mA max current)	
Output Value in Fault Mode	0V	
Output Impedance	0.2 V typical	
Load Impedance	M 1000V	
Maximum Capacitive Load	0.01 μF maximum	
Allowed Load Type	Grounded	
Maximum Inaccuracy	0.1% of range (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	± 25 PPM/ °C maximum f.s. 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 LSB after 10 min. warm-up (typical)	
Output Ripple	0.05% of full scale	
Output Settling Time	0.3 ms max, 5µs min. (full scale change)	
All Channel Update Rate	0.6 ms	
Maximum Continuous Overload	Outputs current limited to 40mA typical Continuous overloads on multiple outputs can damage the module.	
Type of Output Protection	0.1 µF Transient Suppressor	
External DC Power Required	24VDC (-20% / + 25%), 252mA	

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C-70°C (-4°F-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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	6.4 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	105g (3.73 oz)	
Agency Approvals	UL508 and UL1604 (Certified for Canada and USA) CE (EN61131-2*) This equipment is suitable for use in Class I, Division 2/Zone 2, Groups A, B, C, and D or non-hazardous locations only.	

P3-16DA-2 (cont'd)



Voltage Output Circuits







Analog Input/Output Modules

P3-8AD4DA-1 \$598.00

Current Analog Input/Output

The P3-8AD4DA-1 Current Analog Input/ Output Module provides eight channels of current sinking 0–20 mA inputs and four channels of current sourcing 4–20 mA outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in·lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in·lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block.	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.



Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number <u>P3-RTB</u>.



Note 1: The Input Resolution of Fine returns 16-bit resolution. Medium and Coarse are 14 and 12-bit respectively. The 12 and 14-bit input values are scaled to 0-65535. Note 2: Valid when all channels are set for the same Input Resolution.

Output Specifications		
Outputs per module	4 (1 common)	
Module signal output range	4–20mA	
Output Signal resolution	16-bit	
Resolution Value of LSB	0.244 µA/count	
(least significant bit)	1 LSB = 1 count	
Data Range	0-65535 counts	
Output Type	Current sourcing, 20mA max	
Output Value in Fault Mode	m 4mA	1
Load Impedance (Minimum Ext. Power Supply)	0-480V (19.2 VDC) 0-600V (21.6 VDC) 0-715V (24.0 VDC)	0-840V (26.4 VDC) 0-1010V (30.0 VDC)
Maximum Inductive Load	1mH	
Allowed Load Type	Grounded	
Maximum Inaccuracy	±0.1% of range	
Maximum Full Scale Calibration Error (not including offset error)	±0.065% of full scale	
Maximum Offset Calibration Error	±0.065% of full scale	
Accuracy vs. Temperature	±15PPM/ °C maximum full sc 0.025% of range / °C)	ale calibration change (±
Maximum Crosstalk	-96dB	
Linearity Error (end to end)	±0.015% of range maximum Monotonic with no missing cod	des
Output Stability and Repeatability	±0.015% after 10 min. warm-u	ıp typical
Output Ripple	0.01% of Full Scale at 50/60 H	łz
Output Settling Time	Rising Time 200µs; Falling Time 135µs; (full scale change)	
All Channel Update Rate	3.55 ms	
Maximum Continuous Overload	Outputs open circuit protected	
Type of Output Protection	Electronically current limited to	20mA or less
Output Signal (power-up, -down)	m 4mA	

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tPR3-102

Analog Input/Output Modules

P3-8AD4DA-1 (cont'd)

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	3.8 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use <i>ZIPL</i> ink wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	106.9 g (3.76 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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



Note: This module includes input and output channels. Before connecting field wiring, verify that you are connecting to the appropriate terminals.

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Current Input Circuits



An Edison S500-32-R 0.032A fast-acting fuse is recommended for all current loops.

tPR3-103

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1-800-633-0405 **Analog Input/Output Modules**

P3-8AD4DA-2 \$617.00

Voltage Analog Input/Output The P3-8AD4DA-2 Voltage Analog Input/ Output Module provides eight channels of 0-5 VDC and 0-10 VDC inputs and four channels of 0-5 VDC and 0-10 VDC outputs.



Terminal block sold separately; terminal block cover included with module.

Removable Terminal Block Specifications		
Description	Part No. P3-RTB; 20 screw terminals	
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid / stranded conductor 3/64 in. (1.2 mm) insulation maximum USE COPPER CONDUCTORS , 60°C or equivalent.	
Screw Driver Width	th 1/4 inch (6.5 mm) maximum	
Screw Size	M3 size	
Screw Torque	Field terminals - 7–9 in lb (0.882–1.02 N·m) Self-jacking screws - 2.7–3.6 in lb (0.3–0.4 N·m). Do not overtighten screws when installing terminal block	

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

Terminal block cover included. If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P3-RTB.



Input Specifications		
Input channels	8 inputs (1 common)	
Input ranges	0–5V, 0–10V	
Signal resolution	12–16-bit, depending on input resolution	
0-5 V Input Resolution & Update Rate See Note 1	Fine: 7.1 ms, 76µV, 16-bit Medium: 1.78 ms, 305µV, 14-bit Coarse: 444µs, 1.22 mV, 12-bit	
0-10 V Input Resolution & Update Rate See Note 1	Fine: 7.1 ms, 152µV, 16-bit Medium: 1.78 ms, 610µV, 14-bit Coarse: 444µs, 2.44 mV, 12-bit	
Data Range	0-65535 counts	
Maximum continuous overload	±100V, voltage input	
Input impedance	1MV (± 10%) voltage input	
Hardware Filter Characteristics	Low pass 1st order, -3dB @ 80Hz	
All Channel Update Rate See Note 2	Fine: 56.8 ms Medium: 14.24 ms Coarse: 3.55 ms	
Conversion Method	Successive Approximation	
Accuracy vs. Temperature	±15PPM / °C maximum	
Maximum Inaccuracy	0.1% of range	
Linearity Error (end to end)	±0.015% of range maximum Monotonic with no missing codes	
Input Stability and Repeatability	± 0.025% of range (after 10 min. warm up)	
Full Scale Calibr. Error (minus offset)	±0.05% of range maximum	
Offset Calibration Error	±0.05% of range maximum	
Max Crosstalk	-96dB	
External DC Power Required	24VDC (-20% / + 25%), 90mA maximum	

Note 1: The Input Resolution of Fine returns 16-bit resolution. Medium and Coarse are 14 and 12-bit respectively. The 12 and 14-bit input values are scaled to 0-65535. Note 2: Valid when all channels are set for the same Input Resolution.

Output Specifications		
Output channels	4 (1 common)	
Output ranges	0–10V, 0–5V	
Output Signal resolution	16-bit	
Resolution Value of LSB (least significant bit)	0–5V = 76µV/count 0–10V = 152µV/count 1 LSB = 1 count	
Data Range	0-65535 counts	
Output Type	Voltage sourcing/sinking at 10mA max.	
Output Value in Fault Mode	0V	
Load Impedance	M1125V	
Maximum capacitive load	0.01 µF maximum	
Allowed Load Type	Grounded	
Maximum Inaccuracy	0.1% of range	
Maximum Full Scale Calibration Error (not including offset error)	±0.065% of range maximum	
Maximum Offset Calibration Error	±0.065% of range maximum	
Accuracy vs. Temperature	± 25 PPM/ °C maximum full scale calibration change (± 0.0025% of range / °C)	
Max Crosstalk	-96dB	
Linearity Error (end to end)	0.015% of full scale Monotonic with no missing codes	
Output Stability and Repeatability	±0.015% after 10 min. warm-up typical	
Output Ripple	0.01% of Full Scale at 50/60 Hz	
Output Settling Time	0.5 ms max, 5µs min. (full scale change)	
All Channel Update Rate	5ms	
Maximum Continuous Overload	Outputs current limited to 15mA typical	
Type of Output Protection	15VDC peak output voltage	
Output Signal (power-up, -down)	0V	

Analog Input/Output Modules

P3-8AD4DA-2 (cont'd)

General Specifications		
Operating Temperature	0°C– 60°C (32°F–140°F),	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500 VDC	
Heat Dissipation	2.5 W	
Enclosure Type	Open equipment	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Removable terminal block (not included). Use ZIP Link wiring system or optional terminal block. See Wiring Solutions.	
Terminal Type (not included)	20-position removable terminal block	
Weight	105g (3.73 oz)	
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.	

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

WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.



Voltage Input Circuits



Voltage Output Circuits



Note: This module includes input and output channels. Before connecting field wiring, verify that you are connecting to the appropriate terminals.

Specialty Modules

P3-HSI \$563.00

High-Speed Pulse Input The P3-HSI is a high-speed pulse (1MHz) input module that has both differential and single ended inputs. This module accepts Pulse/Direction and Quadrature signals on each of the two independent input channels. It also provides four general purpose high-speed inputs and four general purpose 5–24 VDC 0.5 amp, outputs.



Ge	General Specifications	
Module Type	Intelligent	
Modules per Base	11 Max	
I/O Points Used	None, mapped directly to tags in CPU	
Surrounding Air Temperature	0°C-60°C (32°F-140°F)	
Storage Temperature	-20°C–70°C (-4°F–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)	
Field to Logic Side Isolation	1800VAC applied for 1s	
Insulation Resistance	>10MV @ 500VDC	
Heat Dissipation	5.76 W	
Enclosure Type	Open equipment	
Emissions	EN61000-6-4 (Conducted and radiated RF emissions)	
Module Keying to Backplane	Electronic	
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.	
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.	
Weight	113.4 g (4oz)	
Agency Approvals	UL508 file E157382, Canada & USA CE (EN61131-2*)	

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

Power Specifications	
External Power	24VDC +10%/-15%, Class 2
Maximum Voltage	26.4 VDC
Minimum Voltage	20.4 VDC
Current Consumption Excluding Outputs	47mA
Maximum Current Consumption Total of the 4 Status Outputs	2A

Connector Specifications	
Connector Type IDC style header with latch, Omron XG4A-4034	
Number of Pins 40 point	
Pitch	0.1 in. (2.54 mm)

See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.





NOTE: The most recent Productivity Suite software and firmware versions may be required to support new modules and new features.

1-800-633-0405 **Specialty Modules** P3-HSI (cont'd)

Single Ended (5-24V) Input Specifications	
Status Input	Single ended inputs (8 pts: 1A, 1B, 1Z, 2A, 2B, 2Z, 3IN, 4IN)
Isolation	Each input is isolated from other circuits
Input Volts Range	5–24 VDC
Input Volts Maximum	±34 VDC, limited by protection
Input Impedance	1kV min., 5kV max.
Inputs Rated Current	5–24 VDC, 16mA 5.2 mA typ. @ 5VDC 22mA max. @ 34VDC
Input Minimum ON Voltage	4.5 VDC
Input Maximum OFF Voltage	2.0 VDC
Input Minimum ON Current	5.0 mA
Input Maximum OFF Current	1.4 mA
OFF to ON Response Time	1A, 1B, 2A, 2B: 0.48 ms 1Z, 2Z, 3IN, 4IN: 6ms
ON to OFF Response Time	1A, 1B, 2A, 2B: 0.48 ms 1Z, 2Z, 3IN, 4IN: 6ms
Max. Input Frequency	1A, 1B, 2A, 2B: 200kHz* 1Z, 2Z, 3IN, 4IN: 200kHz*

* Inputs are not limited to this speed but single ended signals are not usually reliable above 200kHz due to cabling capacitance.

Status Inputs



Differential (5V) Input Specifications		
Pulse Inputs	Differential inputs (6 pts: 1A, 1B, 1Z, 2A, 2B, 2Z)	
Isolation	Each input is isolated from other circuits	
Input Signal Type, per Channel Select	Differential	
Input Volts	5VDC	
Input Volts Maximum	±5.6 VDC, limited by protection	
Input Impedance	200V min., 500V max.	
Inputs Rated Current	5VDC, 15mA (8mA typ., 15mA max.)	
Input Minimum ON Voltage	3.0 VDC	
Input Maximum OFF Voltage	1.0 VDC	
Input Minimum ON Current	5.0 mA	
Input Maximum OFF Current	2.0 mA	
OFF to ON Response Time	1A, 1B, 2A, 2B: 0.48 ms 1Z, 2Z, 3IN, 4IN: 6ms	
ON to OFF Response Time	1A, 1B, 2A, 2B: 0.48 ms 1Z, 2Z, 3IN, 4IN: 6ms	
Max. Input Frequency	1A, 1B, 2A, 2B: 1MHz 1Z, 2Z, 3IN, 4IN: 300kHz*	

Status Output Specifications		
Status Outputs	4 Outputs	
Output Signal Type, per Output	Current Sinking	Current Sourcing
Operating Voltage1	5–24 VDC	5–24 VDC1
Output Volts Maximum	36VDC	26.4 VDC1
Output Current Maximum	500mA	500mA
Overcurrent Protection	Short circuit detect and current limit with automatic retry for each output	
Output Self Limiting Current	1.2 to 2.4 amps	
Max. Inrush Current	Self limited	
Output Voltage Drop	0.7 VDC @ 0.5 A	0.7 VDC @ 0.5 A
Thermal Protection	Independent over-temperature protection each output	
Output Voltage Clamp During Inductive Switching	+45VDC	-20VDC
Maximum OFF to ON Response	25ms2	
Maximum ON to OFF Response	25ms2	

Notes:

1. Operating voltage of current sourcing outputs must be no greater than external power.

2. Measured at 5VDC operating voltage, 0.5 A load curent.



Note: The voltage difference between the input pairs must be between 3–5.6 volts. * The Z pulse input (1Z & 2Z) is capable of capturing a 1 MHz wide pulse for the purpose of resetting an encoder count but a 3 microsecond pause (300kHz) is required between pulses.

Status Outputs

Specialty Modules

P3-HSI (cont'd)

5V Encoder Inputs

To prevent damage to P3-HSI 5V inputs, do not exceed 6.8 V or 30mA on inputs 1A, 1A, 1B, 1B, 1Z, 1Z, 2A, 2A, 2B, 2B, 2Z, & 2Z.



24V Encoder Inputs


P3-HSI (cont'd)





Specialty Modules

\$587.00

P3-HSO

High-Speed Output

The P3-HSO is a high-speed pulse (1MHz) output module that supports Pulse/ Direction, Up/Down and Quadrature pulse output on each of the two independent output channels. It has both line driver and open drain outputs. Additionally, it has six general purpose high-speed inputs and four general purpose outputs. Simple move, velocity move, and additional high level instructions make it easy to implement the application's motion profile.



General Specifications			
Module Type	Intelligent		
Modules per Base	11 Max		
I/O Points Used	None, mapped directly to tags in CPU		
Surrounding Air Temperature	0°C-60°C (32°F-140°F)		
Storage Temperature	-20°C–70°C (-4°F–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)		
Field to Logic Side Isolation	1800VAC applied for 1s		
Insulation Resistance	>10MV @ 500VDC		
Heat Dissipation	6.26 W		
Enclosure Type	Open equipment		
Emissions	EN61000-6-4 (Conducted and radiated RF emissions)		
Module Keying to Backplane	Electronic		
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.		
Field Wiring	Use ZIP Link wiring system. See Wiring Solutions.		
Weight	114g (4oz.)		
Agency Approvals	UL508 file E157382, Canada & USA CE (EN61131-2*)		

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

Power Specifications			
External Power	24VDC +10%/-15%, Class 2		
Maximum Voltage	26.4 VDC		
Minimum Voltage	20.4 VDC		
Current Consumption Excluding Outputs	130mA		
Maximum Current Consumption Total of the 4 Status Outputs	2A		

Connector Specifications		
Connector Type IDC style header with latch, Omron XG4A-4034		
Number of Pins 40 point		
Pitch	0.1 in. (2.54 mm)	

See Wiring Solutions for part numbers of **ZIP**Link cables and connection modules required with this I/O module.





NOTE: The most recent Productivity Suite software and firmware versions may be required to support new modules and new features.

P3-HSO (cont'd)

Status Input Specifications			
Status Input	6 inputs		
Isolation	Each status input is individually isolated from all other circuits		
Input Volts Range	5–24 VDC		
Input Volts Maximum	± 34VDC, limited by protection		
Input Impedance	1kV min., 5kV max.		
Inputs Rated Current	5–24 VDC, 16mA 5.2 mA typ. @ 5VDC 22mA max. @ 34VDC		
Input Minimum ON Voltage	4.5 VDC		
Input Maximum OFF Voltage	2.0 VDC		
Input Minimum ON Current	5.0 mA		
Input Maximum OFF Current	1.4 mA		
OFF to ON Response Time	4ms		
ON to OFF Response Time 4ms			

Status Output Specifications			
Status Outputs	4 Outputs		
Output Signal Type, per Output	Current Sinking	Current Sourcing	
Operating Voltage1	5–24 VDC	5–24 VDC1	
Output Volts Maximum	36VDC	26.4 VDC1	
Output Current Maximum	500mA	500mA	
Overcurrent Protection	Short circuit detect, overcurrent shutdown1		
Output Self Limiting Current	1.2 to 2.4 amps		
Max. Inrush Current	Self limited		
Output Voltage Drop	0.7 VDC @ 0.5 A 0.7 VDC @ 0.5 A		
Thermal Protection	Independent overtemperature protection each output		
Overtemperature Shutdown	155° to 185°C (311° to 365°F)		
Temperature Shutdown Hysteresis	5° to 15°C (41° to 59°F)		
Output Voltage Clamp During Inductive Switching	+45VDC -20VDC		
Maximum OFF to ON Response	25ms2		
Maximum ON to OFF Response	aximum ON to OFF Response 25ms2		

Notes:

1. Any fault shuts off the output. Fault is indicated and output is kept off until a new move start is received.

2. Operating voltage for current sourcing outputs must be less or equal to the external power.

3. Measured at 5VDC operating voltage, 0.5 A load.

Pulse Outputs Specifications				
Pulse Outputs	2 Channels	2 Channels		
Output Pulse Type, per Channel Select	Selectable for pulse & direction, up/down or quadrature			
Output Signal Type, per Channel Select	RS-422 Line Driver Current Sinking and Sourcing	Open Drain FET Outputs Current Sinking		
Output Volts	RS-422 levels	24VDC		
Output Volts Maximum	5VDC 36VDC			
Protection for Overcurrent and Short Circuit to Power	Current limit and Thermal shutdown2	Current limit and Thermal shutdown1		
Protection Short to Ground	Yes Yes			
Overcurrent Trip Level	Output current limit ±200mA max.2	100mA minimum		
Maximum Continuous Output Current	±60mA	40mA		
Max Switching Frequency, 1m Cable	≥ 1MHz 500kHz*			
Max Switching Frequency, 10m Cable	1MHz	200kHz*		

Status Inputs



Status Outputs



Notes:

1. Any fault shuts off the output. Fault is indicated and output is kept off until a new move start is received.

2. RS-422 thermal faults auto reset after device cool down.

* Outputs are not limited to these speeds but single ended signals produced by the FETs are not usually reliable above these speeds due to cabling capacitance.

P3-HSO (cont'd)

Sinking Pulse Outputs















P3-HSO (cont'd)

Sinking I/O Wiring Diagram



Sourcing I/O Wiring Diagram



Specialty Modules

P3-SCM

\$475.00

Serial Communications Module Productivity3000 4-port serial communications module capable of Modbus, ASCII and Custom Communications Protocols. The P3-SCM is also able to power the **C-more** Micro HMI through RS-232 (Port 1 only) for use with the Productivity3000.

P3-SCM contains (4) RS-232 (RJ12) ports half or full duplex, (1) RS-485 port (4-wire terminal block) half duplex, all supporting Modbus RTU Master/Slave, ASCII In/Out and Custom Protocol up to 38.4 K baud rate.



General Specifications			
Module Type	Intelligent		
Modules per Base	Base size limited, 11 Max		
Modules per Group	11 Max		
I/O Points Used	None, mapped directly to tags in CPU		
Field Wiring Connector	4 - RJ12, 1 - 4 Position Terminal Block		
Operating Temperature	0°C– 60°C (32°F–140°F) IEC 60068-2-14 (Test Nb, Thermal Shock)		
Storage Temperature	-20°C–70°C (-4°F–158°F) IEC 60068-2-1 (Test Ab, Cold) IEC 60068-2-2 (Test Bb, Dry Heat) IEC 60068-2-14 (Test Na, Thermal Shock)		
Humidity	5 to 95% (non-condensing) IEC 60068-2-30 (Test Db, Damp Heat)		
Environmental Air	No corrosive gases permitted (EN61131-2 pollution degree 1)		
Vibration	IEC60068-2-6 (Test Fc)		
Shock	IEC60068-2-27 (Test Ea)		
Field to Logic Side Isolation	None		
Insulation Resistance	No Isolation		
Noise Immunity	NEMA ICS3-304 IEC 61000-4-2 (ESD) Impulse 1000V @ 1µS pulse IEC 61000-4-4 (FTB) RFI, (145MHz, 440MHz 5W @ 15cm) IEC 61000-4-3 (RFI)		
Emissions	EN61000-6-4 (Conducted and radiated RF emissions)		
Module Location	Any I/O slot in any local, expansion, or remote base in a Productivity3000 system.		
Weight	260g (9.17 oz)		
Agency Approvals1	UL508 file E157382, Canada & USA CE (EN61131-2007)		

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

Removable Terminal Block Specifications			
Number of Positions 4 Screw Terminals, 3.5 mm Pitch			
Wire Range 16–28 AWG Solid/Stranded Conductor "Use Copper Conductors, 75°C or Equivalent"			
Screwdriver Size TW-SD-VSL-1 (recommended)			
Screw Torque 0.4 N·m			

*Removable Terminal Connector included.



RS-485 Cable Options		
Recommended Recommend <u>Q8302-1</u> (cut to length) or Belden #9841		



NOTE: The most recent Productivity Suite software and firmware versions may be required to support new modules and new features.

P3-SCM (cont'd)

Diagnostic LEDs				
LED	Port 1	Port 2	Port 3	Port 4
RXD	Х	Х	Х	Х
TXD	Х	Х	Х	Х
RTS	Х	Х	Х	Х
CTS		Х	Х	Х
5V	Х			

1. All RS232 & RS485 LEDs reflect the actual electrical level of the signal, there is no direct firmware control of LEDs

2. RS232 LEDs RXD, TXD, RTS & CTS are turned ON when their voltage on the RS232 wire is postive.

a - This occurs when the UART I/O signal is low (GND)

- b They are turned OFF when the voltage on the RS232 wire is negative
- 3. RS485 LEDs RXD, TXD, RTS & CTS are turned ON when the UART I/O signal is low (GND)
- 4. 5V LED is ON when 5V power is good, 5V LED is OFF when 5V is shorted to ground



Port 4 LED Behavior				
Port 4	RX	ΤХ	RTS	CTS
RS232	Flickers on RXD activity, OFF when	Flickers on TXD activity, OFF when	ON when asserted, OFF	ON when asserted, OFF otherwise
RS485	idle	idle	otherwise	Always OFF

P3-SCM Configuration Options				
Configuration Item	Port 1 (RS-232)	Ports 2, 3 & 4 (RS-232)	Port 4 (when RS-485)	
Protocol Selections	Disabled, Modbus RTU, ASCII/Custom	Disabled, Modbus RTU, ASCII/Custom	Disabled, Modbus RTU, ASCII/Custom	
Data Rate, baud	1200,2400,4800, 9600,19200, 33600, & 38400	1200,2400,4800,9600,19200, 33600, & 38400	1200,2400,4800,9600,19200, 33600, & 38400	
Parity	None, Odd or Even	None, Odd or Even	None, Odd or Even	
Data Bits4	7 or 8 Bit	7 or 8 Bit	7 or 8 Bit	
RTS Off Delay Time1	None, or 0–5,000 msec	None, or 0–5,000 msec	N/A	
RTS On Delay Time1	None, or 0–5,000 msec	None, or 0–5,000 msec	N/A	
Modbus Character Timeout2	None, or 0–10,000 msec	None, or 0–10,000 msec	None, or 0–10,000 msec	
Communication Timeout (Timeout between query and response)	100–30,000 msec	100–30,000 msec	100–30,000 msec	
Response/Request Delay Time	N/A	N/A	None, or 1–5,000 msec	
Comm Heartbeat Value2	2-1,000 sec	2-1,000 sec	2–1,000 sec	
Node Address (Station)	1 to 247	1 to 247	1 to 247	
CTS	N/A	Ignore, Wait, System Input3	N/A	
Enable/Disable CTS Wait Timeout	N/A	Enable Timeout, Disable Timeout (Never Timeout)	N/A	
CTS Wait Timeout	N/A	100-999,900 msec	N/A	
RTS	On, Off, Assert During Transmit, System Output	On, Off, Assert During Transmit, System Output	N/A	
Port 4 RS-485 2-Wire Mode	N/A	N/A	Disable, Enable	
MODBUS Port Security	Read/Write, Read Only	Read/Write, Read Only	Read/Write, Read Only	

1. For "None" selection with Modbus RTU protocol, Modbus.org minimums are used. This minimum is 3.5 character times up to 19, 200 baud rate and 1.75 ms over 19,200 baud rate 2. Only applies to MODBUS messages

3. CTS signal is only provided on Ports 2, 3 & 4

4. 7-bit data is only supported with Odd or Even parity

P3-SCM (cont'd)

Port 1 RS-232 Specifications				
Port Name RS-232				
Description	Non-isolated RS-232 DTE port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection.			
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600 and 38400.			
+5V Cable Power Source	210mA maximum at 5V, ±5%. Reverse polarity and overload protected.			
TXD	RS-232 Transmit output			
RXD	RS-232 Receive input			
RTS	Handshaking output for flow control.			
GND	Logic ground			
Maximum Output Load (TXD/RTS)	3kV, 1,000pf			
Minimum Output Voltage Swing	±5V			
Output Short Circuit Protection	±15mA			
Port Status LED	Red LED is illuminated when active for TXD, RXD,RTS			

Ports 2, 3 and 4 RS-232 Specifications				
Port Name	RS-232			
Description	Non-isolated RS-232 DTE port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection.			
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600 and 38400.			
TXD	RS-232 Transmit output			
RXD	RS-232 Receive input			
RTS	Handshaking output for flow control.			
CTS	Handshaking input for flow control.			
GND	Logic ground			
Maximum Output Load (TXD/RTS)	3kV, 1,000pf			
Minimum Output Voltage Swing	±5V			
Output Short Circuit Protection	±15mA			
Port Status LED	Red LED is illuminated when active for TXD, RXD,RTS			

RS-232 Ports 1, 2, 3 and 4				
Electrical Specifications	Min	Тур	Мах	Units
Output ON (3kΩ, 1000pF Load)	5.0	5.2		Volts
Output OFF (3kΩ, 1000pF Load)		-5.2	-5.0	Volts
Output Short-Circuit Current		15		mA
Short-Circuit Duration			No Limit	Seconds
Output Resistance	300			Ohm
Input ON Threshold		1.6	2.4	Volts
Input OFF Threshold	0.6	1.2		Volts
Input Resistance	3k	5k	7k	Ohm

Port 1



Pin #		Signal
1	GND	Logic Ground
2	+5V	210 mA Maximum
3	RXD	RS-232 Input
4	TXD	RS-232 Output
5	RTS	Request to Send
6	GND	Logic Ground



Ports 2, 3 and 4 (RS-232)

6 ▲ 1			
	6-pin RJ12 Female Modular Connector		

Pin #	Signal		
1	GND	Logic Ground	
2	CTS	RS-232 Input	
3	RXD	RS-232 Input	
4	TXD	RS-232 Output	
5	RTS	RS-232 Output	
6	GND	Logic Ground	

Line Specifications for RS-232 Ports				
RS-232 Line Specifications	Options	Units		
Data Rate Setting	1200,2400,4800,9600,19200, 33600, & 38400	baud		
Data Rate Error	±2	%		
Data Bits Setting1	7 or 8	Bits		
Stop Bits Setting	1	Bits		
Parity Setting	None1, Odd or Even	Parity		
Data Transmission	Half duplex or Full duplex2	N/A		
Network	Point-to-Point	N/A		

1. 7-bit data are only supported with odd or even parity 2. Full duplex is only supported for ASCII/Custom Protocol

Port 4 (RS-485 Configuration)			
Port Name	RS-485		
Description	Non-isolated RS-485 port connects the CPU as a Modbus/ ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active		
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600 and 38400		
TXD+/RXD+	RS-485 transceiver high		
TXD-/RXD-	RS-485 transceiver low		
GND	Logic ground		
Input Impedance	19kV		
Maximum load	50 transceivers, 19kV each, 60V termination (two 120V resistors at each end)		
Output Short-Circuit Protection	±250mA, thermal shut-down protection		
Electrostatic Discharge Protection	±8kV per IEC1000-4-2		
Electrical Fast Transient Protection	±2kV per IEC1000-4-4		
Minimum Differential Output Voltage	/ 1.5 V with 60V load		
Fail safe inputs	Logic high input state if inputs are unconnected		
Maximum Common Mode Voltage	-7.5 V to 12.5 V.		
Port Status LED	Red LED illuminated when active for TXD and RXD		
Cable Options	Recommend Q8302-1 (cut to length) or Belden #9841		

RS-485 Port 4				
Electrical Specifications	Min	Тур	Мах	Units
Driver Differential Output (60Ω load)	1.5			Volts
Driver Common-Mode Output			3	Volts
Driver Short-Circuit Output Current			250	mA
Short-Circuit Duration (Thermal Shutdown)			No Limit	Seconds
Receiver Differential Input Threshold	200			mV
Receiver Common-Mode Input	-7.5		12.5	Volts
Input Resistance	12k			Ohm
<i>Termination Resistance (TB jumper wire 'T' to '+')</i>		120		Ohm
Cable Length (38400 baud max.)			1200	Meters

Port 4 (RS-485)



Line Specifications for RS-485 Port				
RS-485 Line Specifications	Options	Units		
Data Rate Setting	1200,2400,4800,9600,19200, 33600, & 38400	Baud		
Data Rate Error	+/-2	%		
Data Bits Setting1	7 or 8	Bits		
Stop Bits Setting	1	Bits		
Parity Setting	None1, Odd or Even	Parity		
Data Transmission	Half duplex	N/A		

1. 7-bit data is only supported with odd or even parity

