

SPECIFICATIONS



CHAPTER 2

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Overview

Hardware

The Productivity® 1000 system of components is designed to combine practical PLC features in a compact and expandable design, with a simple-to-use philosophy. The Productivity1000 PLC can expand its local I/O capacity by connecting additional local I/O modules or by connecting to remote I/O through the P1-RX Remote Slave module. The Productivity1000 PLC system does not require a mounting base. The Productivity1000 PLC and I/O modules are connected together via an expansion port on the right side of the PLC case. A wide variety of I/O modules is available for flexible and optimal system configuration.

The Productivity1000 PLC is supported by the robust and powerful Productivity Suite programming software, designed with an easy-to-use instruction set that covers all applications suitable for this class of PLC. The CPU stores and executes the user-designed program.

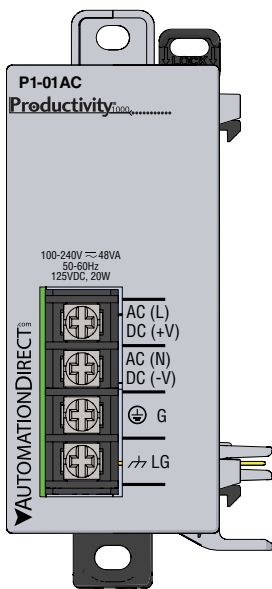


P1000 Power Supplies

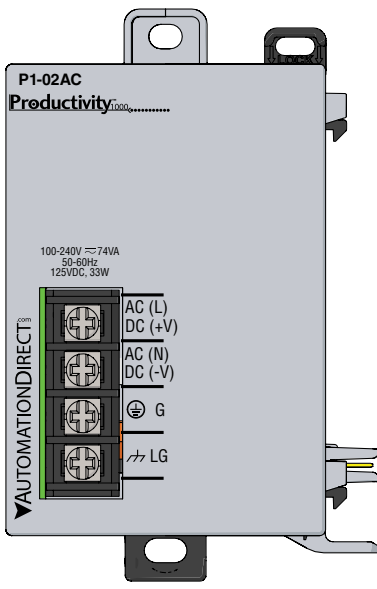
Three power supplies are available for the P1000, providing either AC or DC source power choices. P1-01AC and P1-02AC provide two choices for AC sourcing of power, 16W and 26W respectively, and the P1-01DC provides 16W power from a DC source.

P1-01AC and P1-02AC Power Supplies

These AC power supplies require an external 100–240 VAC source and provide isolated 24VDC to the Productivity1000 P1-540 or P1-550 CPU system.



P1-01AC (16W)



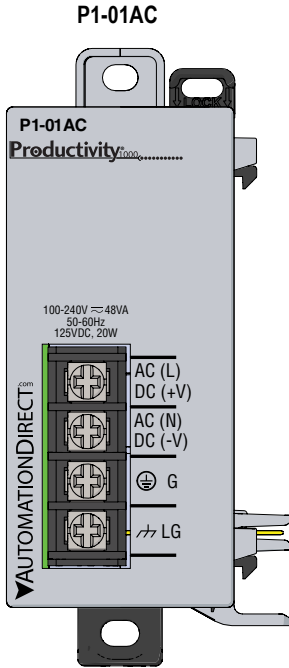
P1-02AC (26W)

Terminal Block Specifications	
Number of positions	4 screw terminals
Wire Range	22–12 AWG (0.324 to 3.31 mm²) Solid / stranded conductor 3/64 in (1.2 mm) insulation max. 1/4 in (6–7 mm) strip length
Conductors	Use copper conductors, 75°C or equivalent
Screw Driver	1/4 in (6.5 mm) maximum
Screw Size	M3
Screw Torque	7–9 lb·in (0.882–1.02 N·m)

*Recommended screw driver P/N: TW-SD-MSL-2

P1-01AC Power Supply

The P1-01AC Universal Power Supply provides isolated, 16W of power to the Productivity1000 system from an external 100–240 VAC or 125VDC source.



IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.



NOTE: P1-01AC provides 16W of power to support a CPU and up to 8 expansion modules.

User Specifications

Input Voltage Range (Tolerance)	100–240 VAC (-15% / +10%) 125VDC (-15% / +20%)
Rated Operating Frequency	50 to 60Hz with $\pm 5\%$ tolerance
Maximum Input Power	48VA (AC) 20W (DC)
Cold Start Inrush Current	21A
Maximum Inrush Current (Hot Start)	21A
Input Fuse Protection (Internal)	Micro fuse 250V, 1A Non-replaceable
Efficiency	75%
Output Voltage	24VDC, 0.67 A
Maximum Output Power	16W
Isolated User 24VDC Output	None
Output Protection for Over Current, Over Voltage, and Over Temperature	Self resetting
Under Input Voltage Lock-out	40–75 VAC - 24VDC On @ 76.15 VAC 55–99 VDC - 24VDC On @ 100.2 VDC
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
Maximum Module Count	Up to 8 modules

General Specifications

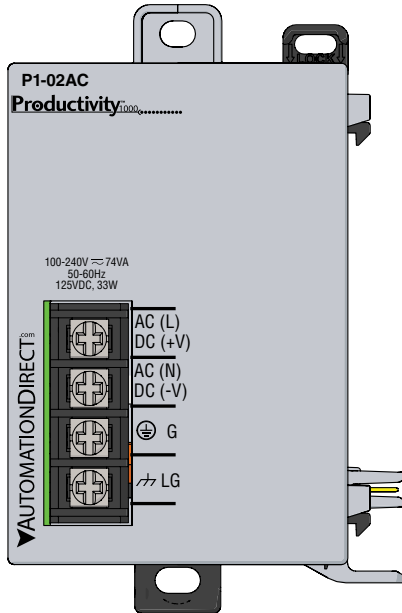
Operating Air Temperature	0°C– 60°C (32°F–140°F)
Storage Temperature	-20°C–70°C (-4°F–158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Insulation Resistance	>10M Ω @ 500VDC
Heat Dissipation	5000mW
Enclosure Type	Open equipment
Voltage Withstand (dielectric)	2100VDC applied for 2s
Module Location	Power supply latches to CPU in the module stacking Productivity1000 system.
Weight	146g (5.1 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 file E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

*See CE Declaration of Conformity for details.

P1-02AC Power Supply

The P1-02AC Universal Power Supply provides isolated, 26W power to the Productivity1000 system from an external 100–240 VAC or 125VDC source.

P1-02AC



IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.



NOTE: P1-02AC provides 26W of power to support a CPU and up to 15 expansion modules.

User Specifications

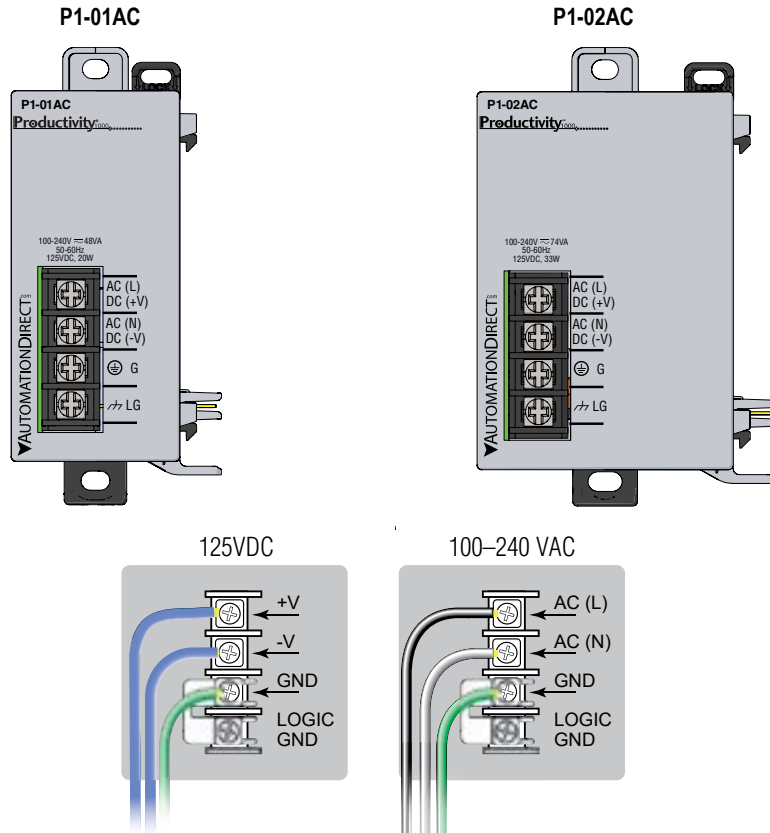
Input Voltage Range (Tolerance)	100–240 VAC (-15% / +10%) 125VDC (-15% / +20%)
Rated Operating Frequency	50 to 60Hz with $\pm 5\%$ tolerance
Maximum Input Power	74VA (AC) 33W (DC)
Cold Start Inrush Current	21A
Maximum Inrush Current (Hot Start)	21A
Input Fuse Protection (Internal)	Micro fuse 250V, 2A non-replaceable
Efficiency	81%
Output Voltage	24VDC, 1.08 A
Maximum Output Power	26W
Isolated User 24VDC Output	None
Output Protection for Over Current, Over Voltage, and Over Temperature	Self resetting
Under Input Voltage Lock-out	40–75 VAC - 24VDC On @ 76.15 VAC 55–99 VDC - 24VDC On @ 100.2 VDC
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
Maximum Module Count	Up to 15 modules

General Specifications

Operating 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)
Insulation Resistance	>10M Ω @ 500VDC
Heat Dissipation	6200mW
Enclosure Type	Open equipment
Voltage Withstand (dielectric)	2100VDC applied for 2s
Module Location	Power Supply latches to CPU in the module stacking Productivity1000 system.
Weight	164g (5.8 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

*See CE Declaration of Conformity for details.

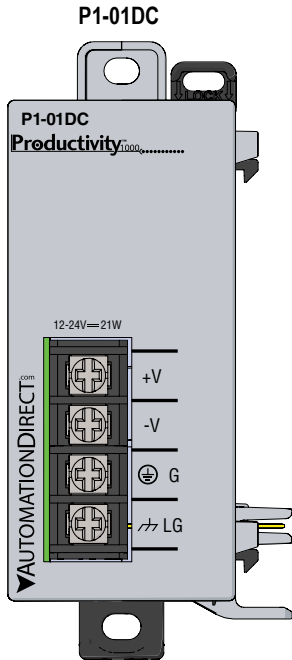
Power Connections



Grounding

A good common ground reference (earth ground) is essential for proper operation of the Productivity¹⁰⁰⁰ 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.

P1-01DC Power Supply

**IMPORTANT!****Hot-Swapping Information**

Note: This device cannot be Hot Swapped.



NOTE: P1-01DC provides 16W of power to support a CPU and up to 8 expansion modules.

P1-01DC User Specifications

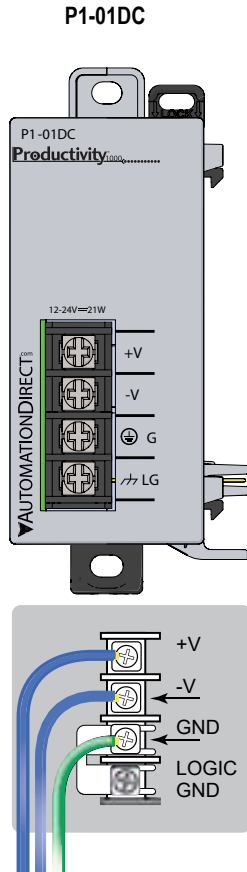
Input Voltage Range (Tolerance)	12–24 VDC (-10% / +20% at 60°C)
Maximum Input Power	21W
Cold Start Inrush Current	34A
Maximum Inrush Current (Hot Start)	34A
Input Fuse Protection (Internal)	Micro fuse 250V, 4A, non-replaceable
Efficiency	75%
Output	24VDC, 0.67 A
Maximum Output Power	16W
Isolated User 24VDC Output	None
Output Protection for Over Current, Over Voltage and Over Temperature	Positive Temperature Coefficient (PTC) resettable fuse, resets when load removed.
Under Input Voltage Lock-out	< 9VDC
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 (104°F) ambient and 5 years at 60°C (140°F) ambient
Maximum Module Count	Up to 8 modules

P1-01DC 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)
Insulation Resistance	>10MV @ 500VDC
Heat Dissipation	5W
Enclosure Type	Open equipment
Voltage Withstand (dielectric)	750VDC applied for 2s
Module Location	Power supply slot in a Productivity1000 system.
Weight	146g (5.15 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

*See the Declaration of Conformity for details.

Power Connections

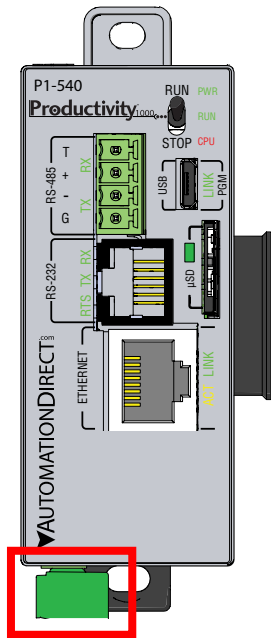


Grounding

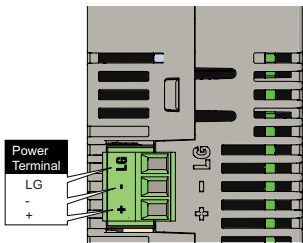
A good common ground reference (earth ground) is essential for proper operation of the Productivity1000 system. One side of all control circuits, power circuits and the ground lead must be properly connected to earth ground by either installing a ground rod in close proximity to the enclosure or by connecting 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.

Productivity® 1000 Alternate Power Supply Connection

All Productivity1000 CPUs require 24VDC input power. When using an alternative 24VDC power source, connect power supply wiring to the bottom removable terminal block as shown below. Power to the P1-RX and connected modules will be supplied by EITHER a P1 power supply module connected to the left of the P1-RX OR by an external 24VDC power supply connected to the terminals at the bottom of the CPU. Only one of these sources shall be connected.



P1-540 or P1-550



Removable connector included. Spare connectors available (part no. PCON-KIT).

Pin	Signal
LG	Ground
-	24V DC -
+	24V DC +

* Recommended fuse:
2A slow blow

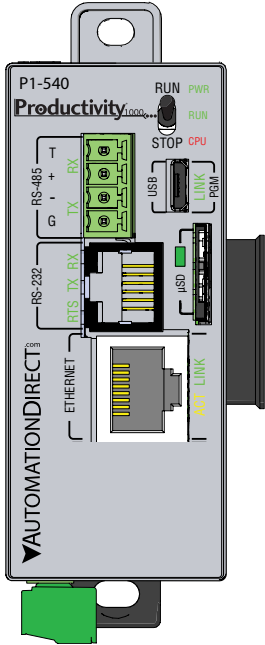
Removable Terminal Block Specifications	
Part Number	PCON-KIT (Includes power terminal block)
Number of Positions	3 screw terminals
Pitch	3.5 mm
Wire Range	28–16 AWG solid conductor 28–16 AWG stranded conductor
Screw Driver	0.125 inch (3.175 mm) maximum
Screw Size	M2
Screw Torque	1.7 lb-in (0.4 N-m)



NOTE: If you do not use a Productivity1000 power supply (P1-01AC, P1-02AC or P1-01DC), then use a power supply that has transformer isolation. Use separate 24VDC power supplies for the CPU and inductive loads to keep the CPU power clean and free of voltage spikes caused by switching solenoids, motors and relay coils.

Productivity® 1000 P1-540 CPU Module

P1-540 CPU Specifications



P1-540



IMPORTANT!

Hot-Swapping Information

Note: This device cannot be Hot Swapped.



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



NOTE: If you do not use one of the Productivity1000 power supplies (P1-01AC, P1-02AC or P1-01DC), then use a power supply that has transformer isolation. Use different 24VDC supplies for the CPU and inductive loads to keep the CPU power clean and free of voltage spikes caused by switching solenoids, motors, or relay coils.

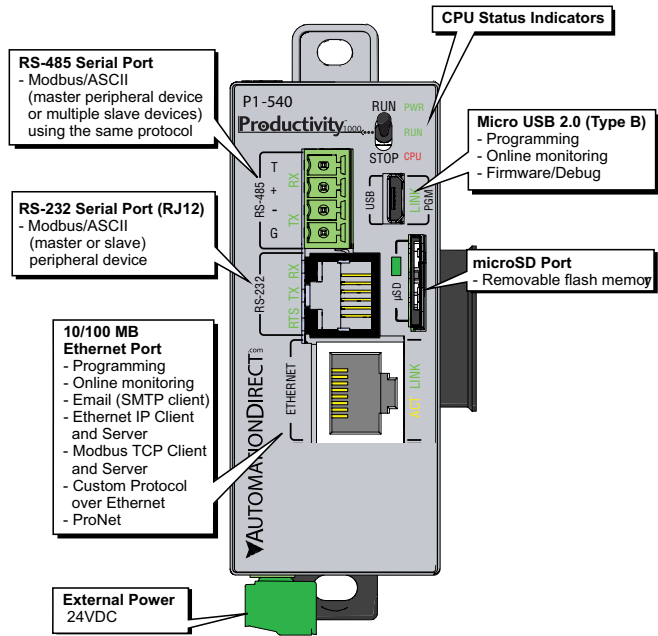
CPU Specifications			
User Memory	50MB (Includes program, data and documentation)		
Memory Type	Flash and battery-backed RAM		
Retentive Memory	500kB		
Scan Time	1.3 ms (1K Boolean, 128 I/O)		
External Power Required	24VDC $\pm 2\%$ @ 5W plus 1.25 W per additional I/O module In-Rush current 35A (see page 2-5 for power supply options) External fuse is required when using external power supply, the recommended fuse is Edison S5062-R, Time Delay, 2A Fuse (8 I/O Modules)		
Communications; 4 Integrated Ports	USB: Programming, monitoring, debug, firmware Ethernet: (10/100 Mbps Ethernet) programming, monitoring, debug, firmware, email SMTP client, MQTT, Modbus TCP Client (16 Servers) and server (16 Clients), EtherNet/IP scanner (32) and adapter (4), custom protocol over Ethernet, ProNET. RS-232: (RJ12, 1200–115.2k baud) ASCII, Modbus RS-485: Removable terminal included, (1200–115.2k baud) ASCII, Modbus RTU		
Data Logging	microSD card slot		
Hardware Limits of System	240 Hardware I/O Points: All 15 (16-point I/O modules)		
Instruction Types	<table><tr><td>Application functions Array functions Counters/timers Communications Data handling Drum sequencers Math Functions</td><td>PID Program control String functions System functions Contacts Coils</td></tr></table>	Application functions Array functions Counters/timers Communications Data handling Drum sequencers Math Functions	PID Program control String functions System functions Contacts Coils
Application functions Array functions Counters/timers Communications Data handling Drum sequencers Math Functions	PID Program control String functions System functions Contacts Coils		
Real-time Clock Accuracy	$\pm 2s$ per day typical at 25°C (77°F) $\pm 10s$ per day maximum at 60°C (140°F)		

Productivity® 1000 P1-540 CPU Module (continued)

P1-540 CPU General Specifications

General Specifications	
Operating 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)
Heat Dissipation	3810mW
Enclosure Type	Open equipment
Module Location	Controller connector on the side of the power supply in a Productivity1000 system.
Weight	136g (4.8 oz)
Agency Approvals (See CE Declaration of Conformity for details.)	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)

P1-540 Module Faceplate Layout



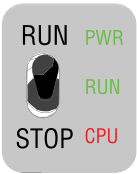
P1-540

CPU Run/Stop Switch Specifications

RUN position	Executes user program, run-time edits possible
STOP position	Does not execute user program, normal program load position

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



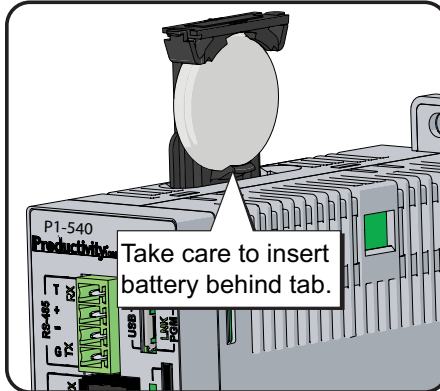
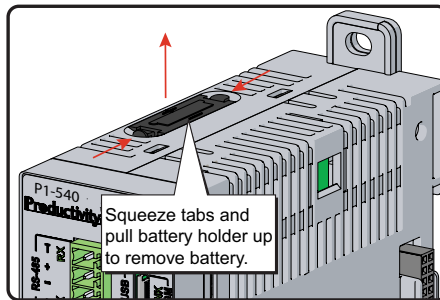
P1-540 Battery

A battery is included with some CPU modules, but is not installed. The battery may be installed in order to retain the time and date settings along with any tagname values that are set up as retentive.

Please note that the battery is not required for program backup.

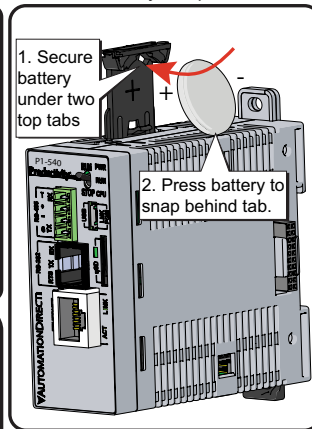
Step One:

Open battery compartment located on the top of the CPU and pull up to locked position.



Step Two:

Insert battery under top two tabs in battery compartment. Press and snap battery behind bottom tab then close the battery compartment.



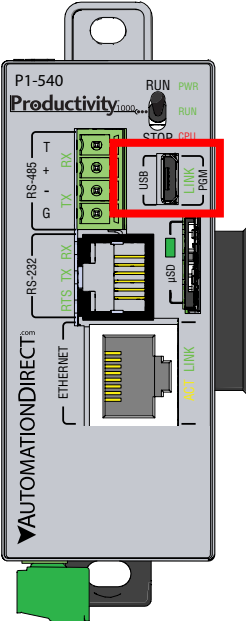
Battery (Optional)

D2-BAT-1	Coin type, 3.0 V Lithium battery, 560mA, battery number CR2354
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Note: Although not needed for program backup, an uninstalled battery is included with some CPU modules. Install this battery if you want the CPU to retain the Time and Date along with any Tagname values that you have set up as retentive.

P1-540 Communication Ports

The P1-540 CPU has several communications ports. The following pages contain the specifications and pin-out diagrams.

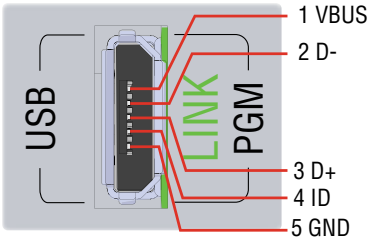


P1-540

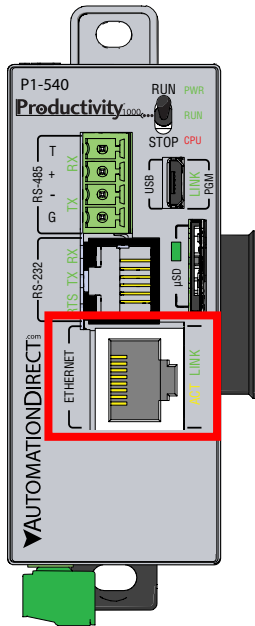
MicroUSB Programming Port

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

Micro USB Input Specifications	
Port Name	MicroUSB
Description	Standard MicroUSB Slave input for programming and on-line 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 MicroUSB Type B: 6ft cable part # USB-CBL-AMICB6 15ft cable part # USB-CBL-AMICB15



P1-540 Ethernet Port

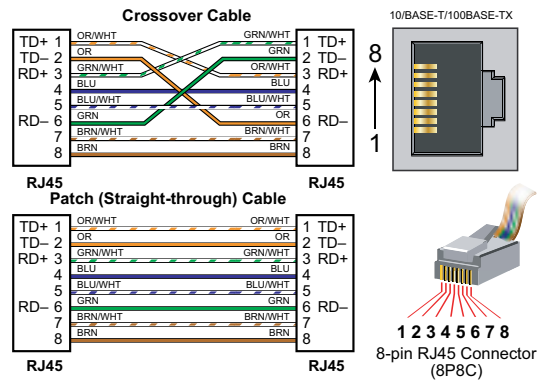


P1-540

RJ-45 style connector used for:

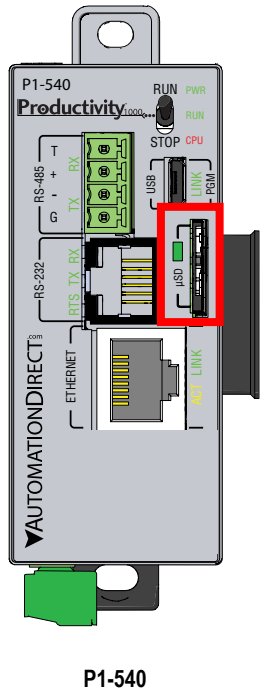
- Connection to a PC running the Productivity Suite programming software
- Modbus TCP Client connections (Modbus requests sent from the CPU)
- Modbus TCP Server connections (Modbus requests received by the CPU)
- EtherNet/IP (Client/Server)
- Custom Protocol over Ethernet
- ProNET
- Outgoing Email

Ethernet Specifications	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection for programming, online monitoring, Email (SMTP client), Modbus/TCP client/server connections (fixed IP or DHCP), EtherNet/IP scanner/apapter, custom protocol over Ethernet and ProNET connections.
Transfer Rate	10 Mbps and 100 Mbps (auto-crossover).
Port Status LED	LINK (Amber LED) is solid when network LINK is established. ACT (Green LED) flashes when port is active.



microSD Slot

Used for data logging.



P1-540

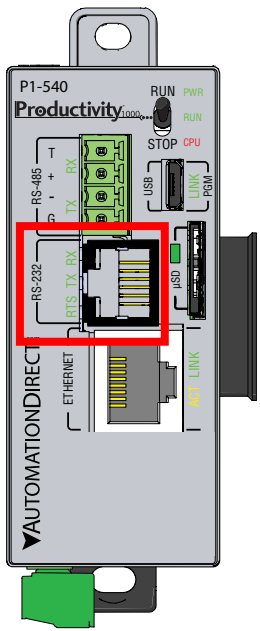
microSD Specifications				
Port Name	microSD			
Description	Standard microSD socket for data logging			
Maximum Card Capacity	32GB			
Transfer Rate (ADATA microSDHC Class 4 memory card)	Mbps	Minimum	Typical	Maximum
	Read	14.3	14.4	14.6
	Write	4.8	4.9	5.1
Port Status LED	Green LED is illuminated when card is inserted/ detected			



Pin	SD
1	DAT2
2	CD/DAT3
3	CMD
4	VDD
5	CLK
6	VSS
7	DAT0
8	DAT1

Note: Card not included with unit.

P1-540 RS-232 Port



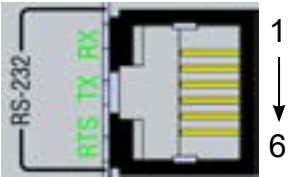
RS-232 Port

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

RS-232 Specifications

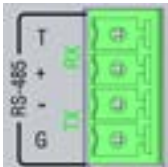
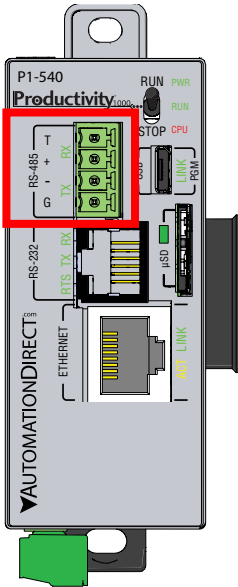
Port Name	RS-232
Description	Non-isolated RS-232 DTE port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 baud
+5V Cable Power Source	210mA maximum 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)	3k Ω , 1000pf
Minimum Output Voltage Swing	$\pm 5V$
Output Short Circuit Protection	$\pm 15mA$
Port Status LED	Green LED is illuminated when active for TXD, RXD and RTS
Cable Options	EA-MG-PGM-CBL D2-DSCBL USB-RS232-1 with D2-DSCBL FA-CABKIT FA-ISOCAN for converting RS-232 to isolated RS-485



6-Pin RJ12 Female
Modular Connector

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

P1-540 RS-485 Port



Pin	Signal
T	Termination
+	TXD+/RXD+
-	TXD-/RXD-
G	GND



Removable connector included. Spare connectors available (part no. P3-RS485CON-1).

RS-485 Port

A 4-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

RS-485 Port Specifications

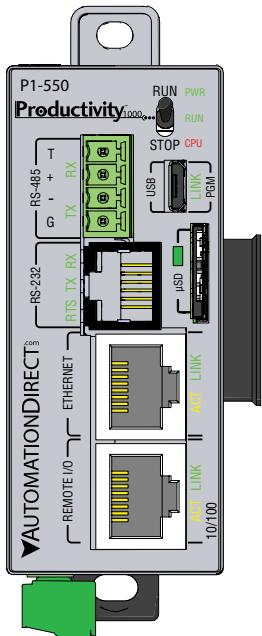
Port Name	RS-485
Description	Non-isolated RS-485 port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 baud
TXD+/RXD+	RS-485 transceiver high
TXD-/RXD-	RS-485 transceiver low
GND	Logic ground
Input Impedance	19kΩ
Maximum Load	50 transceivers, 19kΩ each, 60Ω 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 60Ω 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	L19827-XXX from AutomationDirect.com

Removable Terminal Block Specifications

Part Number	P3-RS485CON-1
Number of Positions	4 screw terminals
Pitch	3.5 mm
Wire Range	28–16 AWG solid conductor 28–16 AWG stranded conductor
Screw Driver	0.125 inch (3.175 mm) maximum
Screw Size	M2
Screw Torque	1.7 lb-in (0.4 N·m)

Productivity1000 P1-550 CPU Module

P1-550 CPU Specifications



P1-550



IMPORTANT!

Hot-Swapping Information

Note: This device cannot be Hot Swapped.

General Specifications

Operating 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)
Heat Dissipation	3810mW
Enclosure Type	Open equipment
Module Location	Controller connector on the side of the power supply in a Productivity1000 system.
Weight	130g (4.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

*See CE Declaration of Conformity for details



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

Productivity1000 P1-550 CPU Module

P1-550 CPU Specifications

CPU Specifications		
User Memory	50MB (Includes program, data and documentation)	
Memory Type	Flash and battery-backed RAM	
Retentive Memory	500kB	
Scan Time	1.5 ms (1K Boolean, 240 I/O)	
External Power Required	24VDC $\pm 2\%$ @ 5W plus 1.25 W per additional I/O module In-Rush current 35A (see page 2-5 for power supply options) External fuse is required when using external power supply, the recommended fuse is Edison S5062-R, Time Delay, 2A Fuse (8 I/O Modules) Edison S5061-R Time Delay, 1A fuse is the recommended fuse for P1-550 hardware rev A or A1 with 8 or fewer I/O modules.	
Communications; 5 Integrated Ports	USB IN: Programming, monitoring, debug, firmware Ethernet: (10/100 Mbps Ethernet) programming, monitoring, debug, firmware, Email SMTP client, Modbus TCP Client (32 Servers) and Server (16 Clients), EtherNet/IP Scanner (32 Adapters) and Adapter (4 Scanners) with 8 connections per device, Custom Protocol over Ethernet, ProNET. Remote I/O: 16 GS drives*, 4 ProtosX TCP couplers, 4 P1-RX remote bases, 1 PS-AMC module RS-232: (RJ12, 1200–115.2k baud) ASCII, Modbus RS-485: Removable terminal included, (1200–115.2k baud) ASCII, Modbus RTU	
Data Logging	microSD card slot	
Hardware Limits of System	5 Base Groups: 1 Local (P1-550) + 4 Remote (P1-RX) 752 Hardware I/O points (all local and remote 16 point I/O)**	
Instruction Types	Application functions Array functions Counters/timers Communications Data handling Drum Sequencers Math functions	PID Program Control String functions System functions Contacts Coils Motion control
Real-time Clock Accuracy	$\pm 2s$ per day typical at 25°C (77°F) $\pm 10s$ per day maximum at 60°C (140°F)	

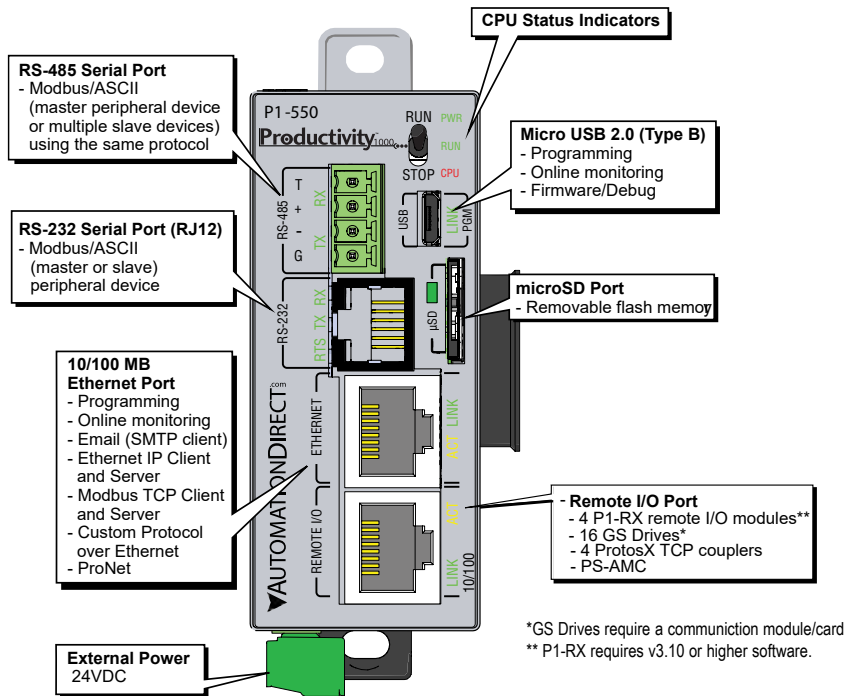
*GS Drives require a communications module/card

** If used with 26W or larger power supply.



NOTE: If you do not use a Productivity1000 power supply (P1-01AC, P1-02AC or P1-01DC), then use a power supply that has transformer isolation. Use different 24VDC supplies for the CPU and inductive loads to keep the CPU power clean and free of voltage spikes caused by switching solenoids, motors, or relay coils.

P1-550 Module Faceplate Layout

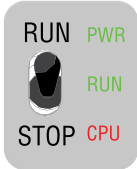


CPU Run/Stop Switch Specifications

RUN position	Executes user program, run-time edits possible
STOP position	Does not execute user program, normal program load position

CPU Status Indicators

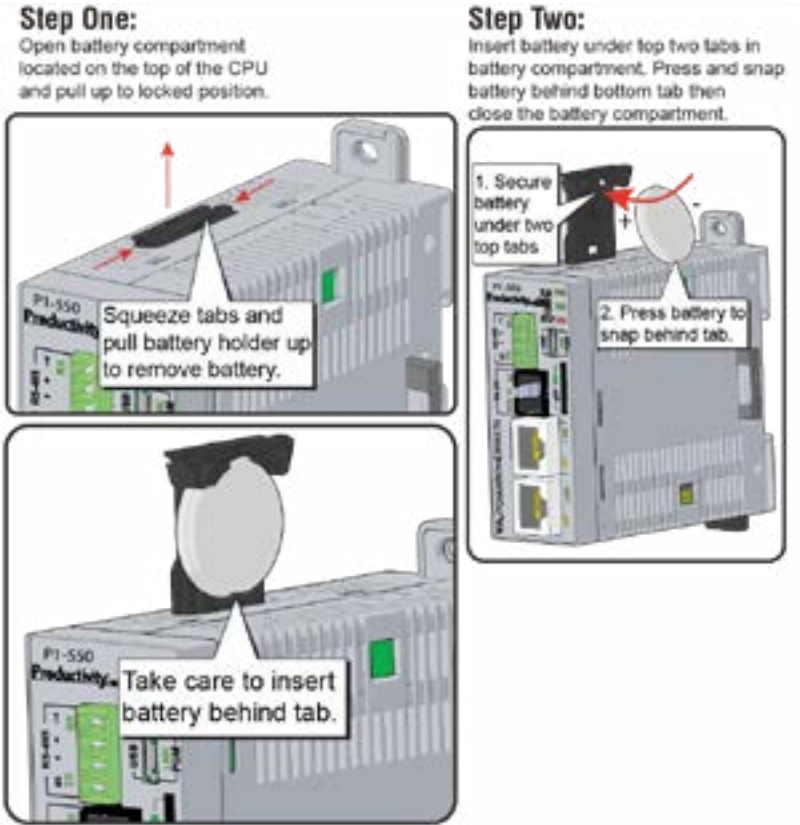
PWR	Green LED is illuminated when power is ON
RUN	Green LED is illuminated when CPU is in RUN mode
CPU	Red LED is illuminated during power ON reset, power down, or watch-dog time-out



P1-550 Battery

A battery is included with the P1-550 CPU module, but is not installed. The battery may be installed in order to retain the time and date settings along with any tagname values that are set up as retentive.

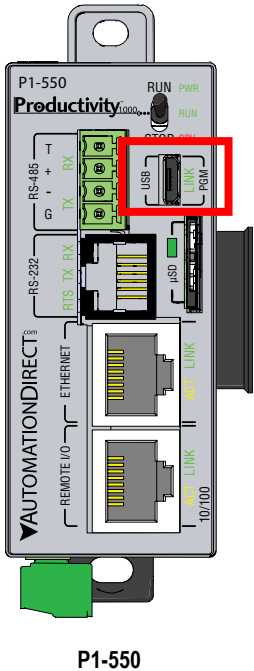
Please note that the battery is not required for program backup.



Battery (Optional)	
D2-BAT-1	Coin type, 3.0 V Lithium battery, 560mA, battery number CR2354
<i>Note: Although not needed for program backup, an uninstalled battery is included with the P1-550. Install this battery if you want the CPU to retain the Time and Date along with any Tagname values that you have set up as retentive.</i>	

P1-550 Communication Ports

The P1-550 CPU has several communications ports. The following pages contain the specifications and pin-out diagrams.

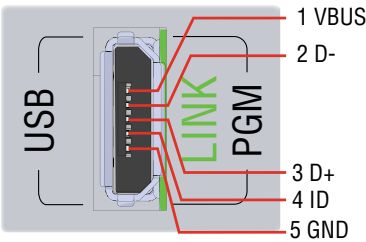


P1-550

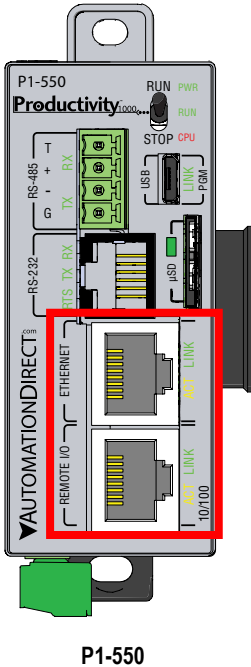
MicroUSB Programming Port

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

Micro USB Input Specifications	
Port Name	MicroUSB
Description	Standard MicroUSB Slave input for programming and on-line 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 MicroUSB Type B: 6ft cable part # USB-CBL-AMICB6 15ft cable part # USB-CBL-AMICB15



P1-550 Ethernet Port

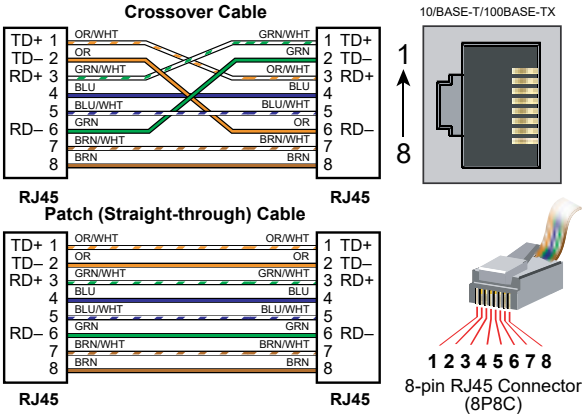


Ethernet Port

- Connection to a PC running the ProductivitySuite programming software
- Modbus TCP Client connections (Modbus requests sent from the CPU)
- Modbus TCP Server connections (Modbus requests received by the CPU)
- EtherNet/IP (Client/Server)
- Custom Protocol over Ethernet (CProE)
- ProNET
- Outgoing Email

Remote I/O:

- RJ-45 style connector used for connecting to a Remote I/O network consisting of a P1-RX, GS drives (using Ethernet communication module), ProtosX remote I/O, and/or a PS-AMC module.

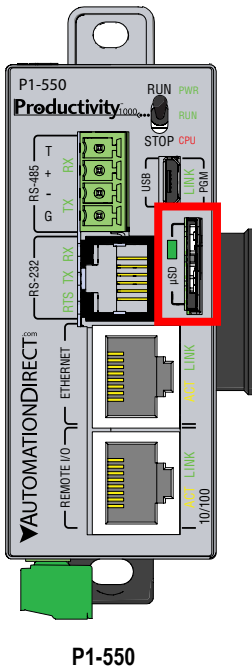


Ethernet Specifications

Port Name	Ethernet	Remote I/O
Description	Standard transformer-isolated Ethernet port with built-in surge protection for programming, online monitoring, Email (SMTP client), Modbus/TCP client/server connections (fixed IP or DHCP), EtherNet/IP Scanner/Adapter, Custom Protocol over Ethernet and ProNET connections	Standard transformer-isolated Ethernet port with built-in surge protection for connection to 16 GS Series Drives, or 4 P1-RX modules, or 4 ProtosX TCP couplers, and/or one PS-AMC module
Transfer Rate	10 Mbps (Orange LED) and 100 Mbps (Green LED) (auto-crossover)	
Port Status LED	LINK (Amber LED) is solid when network LINK is established. ACT (Green LED) flashes when port is active	

microSD Slot

Used for data logging.



P1-550

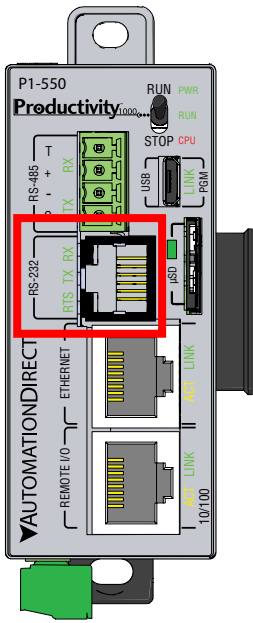
microSD Specifications				
Port Name	microSD			
Description	Standard microSD socket for data logging			
Maximum Card Capacity	32GB			
Transfer Rate (ADATA microSDHC Class 4 memory card)	Mbps	Minimum	Typical	Maximum
	Read	14.3	14.4	14.6
	Write	4.8	4.9	5.1
Port Status LED	Green LED is illuminated when card is inserted/detected			



Pin	SD
1	DAT2
2	CD/DAT3
3	CMD
4	VDD
5	CLK
6	VSS
7	DAT0
8	DAT1

Note: Card not included with unit.

P1-550 RS-232 Port

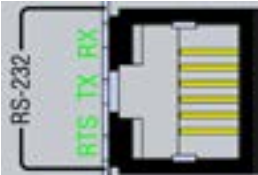


RS-232 Port

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

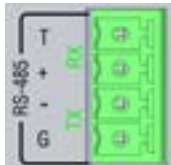
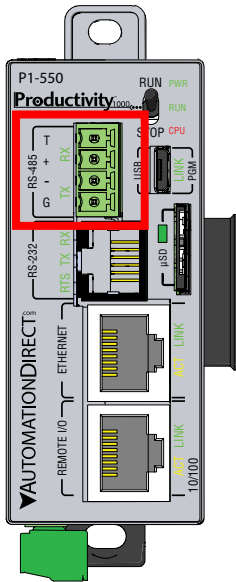
RS-232 Specifications	
Port Name	RS-232
Description	Non-isolated RS-232 DTE port connects the CPU as a Modbus/ ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 baud
+5V Cable 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)	3k Ω , 1000pf
Minimum Output Voltage Swing	$\pm 5V$
Output Short Circuit Protection	$\pm 15mA$
Port Status LED	Green LED is illuminated when active for TXD, RXD and RTS
Cable Options	EA-MG-PGM-CBL D2-DSCBL USB-RS232-1 with D2-DSCBL FA-CABKIT FA-ISOCON for converting RS-232 to isolated RS-485



6-Pin RJ12 Female Modular Connector

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

P1-550 RS-485 Port



Pin	Signal
T	Termination
+	TXD+/RXD+
-	TXD-/RXD-
G	GND



Removable connector included. Spare connectors available (part no. PCON-KIT).

RS-485 Port

A 4-pin removable terminal block used for the following:

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

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, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 baud
TXD+/RXD+	RS-485 transceiver high
TXD-/RXD-	RS-485 transceiver low
GND	Logic ground
Input Impedance	19kΩ
Termination Resistance (TB Jumper wire "T" to "+")	120Ω
Maximum Load	50 transceivers, 19kΩ each, 60Ω 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 60Ω 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	L19827-XXX from AutomationDirect.com

Removable Terminal Block Specifications

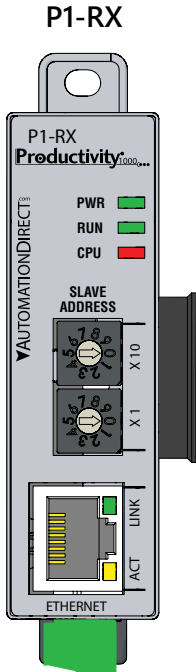
Part Number	PCON-KIT
Number of Positions	4 screw terminals
Pitch	3.5 mm
Wire Range	28–16 AWG solid conductor 28–16 AWG stranded conductor
Screw Driver	0.125 inch (3.175 mm) maximum
Screw Size	M2
Screw Torque	1.7 lb-in (0.4 N-m)

Remote Slave Module

P1-RX Remote Slave Module

The P1-RX is a high performance Remote Slave module. The P1-RX may be connected to a P1-550 CPU or a P2000 CPU for a remote I/O network.

- P1000 CPUs support up to four P1-RX remote slaves.
- Each P1-RX module supports up to eight I/O modules.



IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.



Remote Slave Specifications

Communications	Remote I/O: (10/100M bps Ethernet)
Max. Number of Ethernet Remote I/O Bases	4 - P1000 CPU (with Remote I/O Ethernet port) 8 - P2000 CPU (with Remote I/O Ethernet port)
Max. Number of I/O per CPU System	P1000 - 512 (4 slaves, 8 slots each, 16 point I/O) P2000 - 1024 (8 slaves, 8 slots each, 16 point I/O)
Max. I/O Modules per P1-RX	8 Modules
External Power Required	24VDC±2% @ 5W plus 1.25 W per additional I/O module. (See page 2-5 for power supply options) External fuse is required when using external power supply, the recommended fuse is: Edison S5061-R, Time Delay, 1A Fuse (8 I/O Modules)

General Specifications

Operating Temperature	0°–60°C (32°–140°F)
Storage Temperature	-20°–70°C (-4°–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	1670W
Enclosure Type	Open equipment
Weight	82g (2.9 oz)
Agency Approvals	UL 61010 and UL 61010-2-201 file E139594, Canada & USA CE (EN61131-2 EMC, EN6 1010-1 and EN61010-2-201 Safety)*

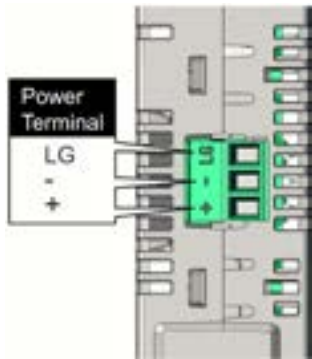
*See CE Declaration of Conformance for details.

Status Indicators

RX Status Indicators

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

P1-RX Power Terminal



P1-RX
Bottom View

Removable Terminal Block Specifications	
Part Number	PCON-KIT
Number of Positions	3 screw terminals
Pitch	3.5 mm
Wire Range	28–16 AWG solid conductor 28–16 AWG stranded conductor
Screw Driver	0.125 inch (3.175 mm) maximum
Screw Size	M2
Screw Torque	1.7 lb-in (0.4 N-m)

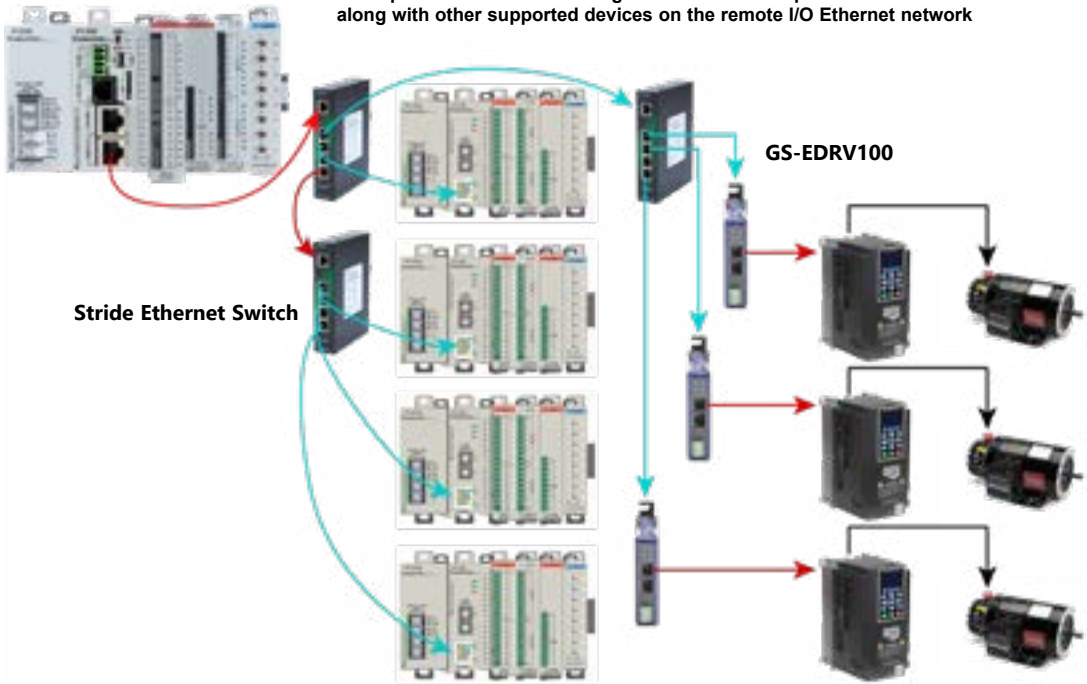
NOTE: See page 2-5 for power supply options. Power to the P1-RX and connected modules will be supplied by EITHER a P1 power supply module connected to the left of the P1-RX OR by an external 24VDC power supply connected to the terminals at the bottom of the CPU. Only one of these sources shall be connected.

Pin	Signal
LG	Ground
–	24V DC –
+	24V DC +

Removable connector included. Spare connectors available (part no. PCON-KIT).

P1-RX Remote I/O Example

Add up to 8 remote bases using P2000 CPUs and up to 4 remote bases for P1-550 along with other supported devices on the remote I/O Ethernet network



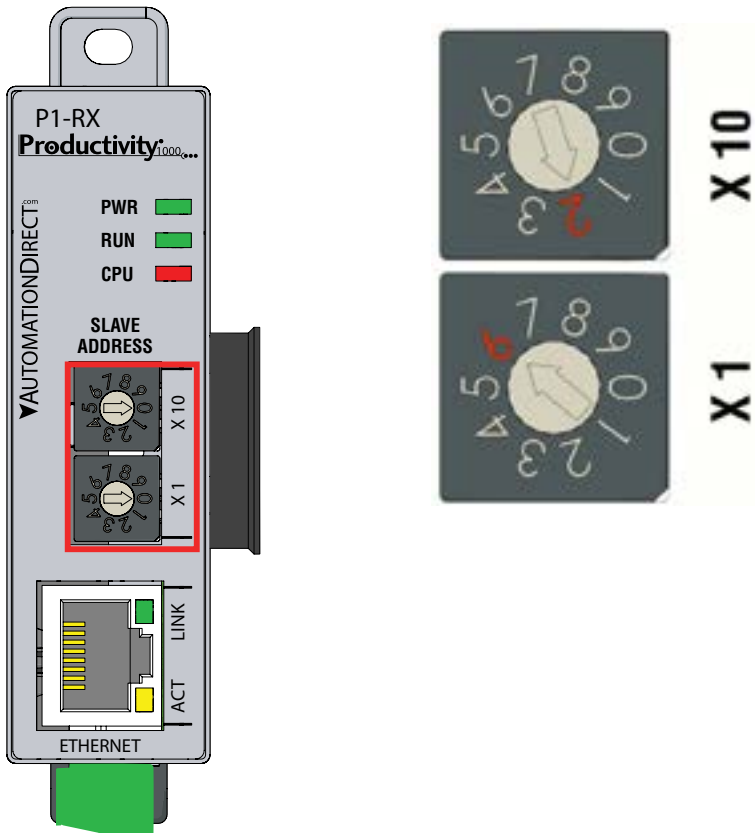
P1-RX Setting Remote Slave Address

Each Remote Slave must have a unique address between 1 and 99. The address is set using the two rotary switches located in the base; X10 for setting the tens digit and X1 for setting the ones digit.

For example, to set a remote slave address to 26, turn the X10 arrow until it points at the number 2 and the X1 arrow until it points at the number 6.

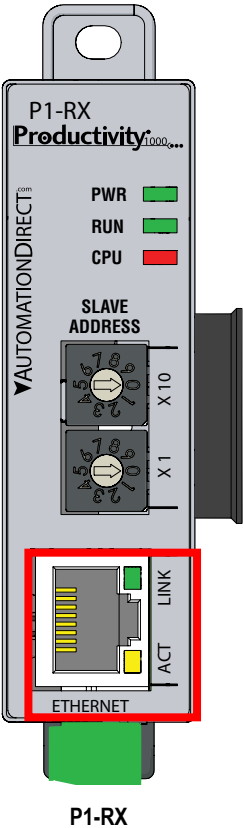
IMPORTANT NOTES:

- The factory setting of 00 is not a valid address for the Remote Slave.
- Address selection must be set prior to power-up.
- Slave addresses are read only on power-up.
- If there are duplicate P1-RX slave addresses on the same network, a critical error will be displayed on the CPU.

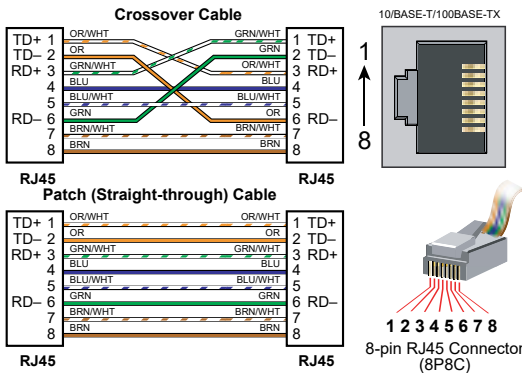


P1-RX Remote I/O Port

Isolated Ethernet Port with built-in surge protection for connection to the CPU Remote I/O Master port.



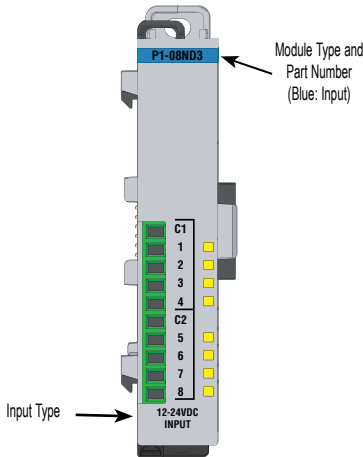
Remote I/O Port Specifications	
Port Name	Ethernet
Description	Proprietary transformer isolated Ethernet Port built-in surge protection for connection to CPU Remote I/O Master port.
Transfer Rate	10/100 Mbps
Port Status LEDs	Green LED is illuminated when network LINK is established. Yellow LED is backlit when port is active (ACT).
Cables	Auto crossover port allows use of a straight-through or crossover cable



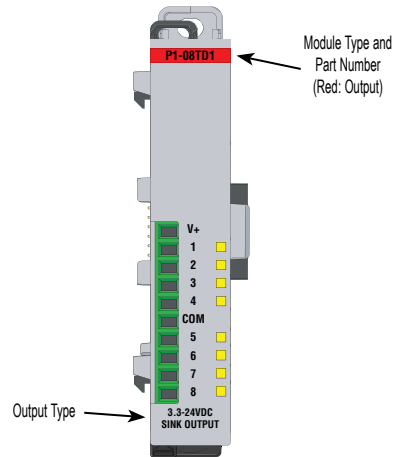
I/O Modules Overview

A variety of discrete and analog I/O modules are available for use in the P1000 system. Each I/O module is identified as an "Input", "Output", or "Input/Output" module on its front panel using the color coding scheme listed below. See the following pages for discrete I/O module specifications and Chapter 3 for analog I/O modules and Chapter 4 for specialty module specifications.

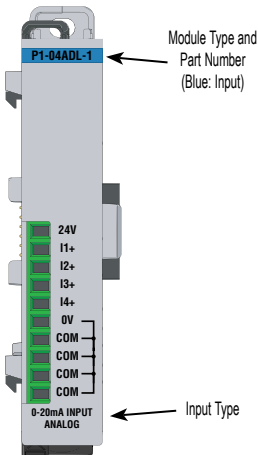
Discrete Input Modules



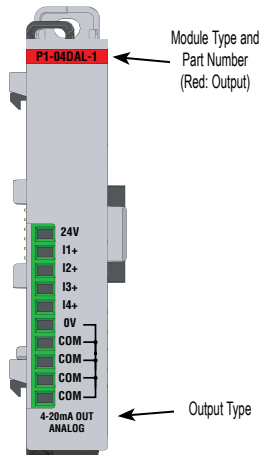
Discrete Output Modules



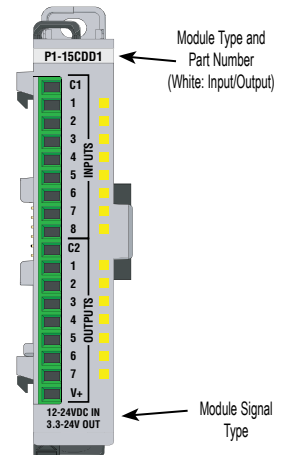
Analog Input Modules



Analog Output Modules

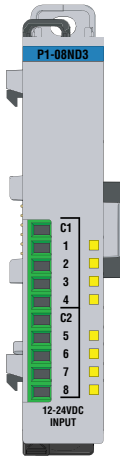


Discrete Input/Output Modules



Discrete I/O Modules

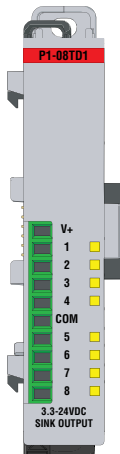
Discrete Input Modules



Productivity1000 Discrete Input Modules

Part Number	Number of Inputs	Description	See Page
P1-08SIM	8	Input Simulator Module	2-37
P1-08ND-TTL	8	Sinking/Sourcing 3–5 VDC Input	2-38
P1-08ND3	8	Sinking/Sourcing 12–24 VDC Input	2-41
P1-16ND3	16	Sinking/Sourcing 12–24 VDC Input	2-44
P1-08NE3	8	Sinking/Sourcing 24V AC/DC	2-47
P1-16NE3	16	Sinking/Sourcing 24V AC/DC	2-50
P1-08NA	8	AC Isolated 100–240 VAC	2-53

Discrete Output Modules

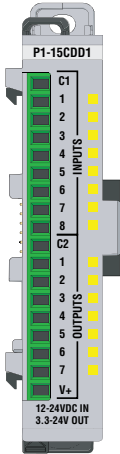


Productivity1000 Discrete Output Modules

Part Number	Number of Outputs	Description	See Page
P1-08TD-TTL	8	Sourcing DC Output	2-56
P1-08TD1	8	Sinking DC Output	2-59
P1-08TD2	8	Sourcing DC Output	2-62
P1-15TD1	15	Sinking DC Output	2-65
P1-15TD2	15	Sourcing DC Output	2-68
P1-08TA	8	AC Output	2-71
P1-04TRS	4	Isolated Relay Output	2-74
P1-08TRS	8	Isolated Relay Output	2-77
P1-16TR	16	Relay Output	2-80

Discrete Combo I/O Modules

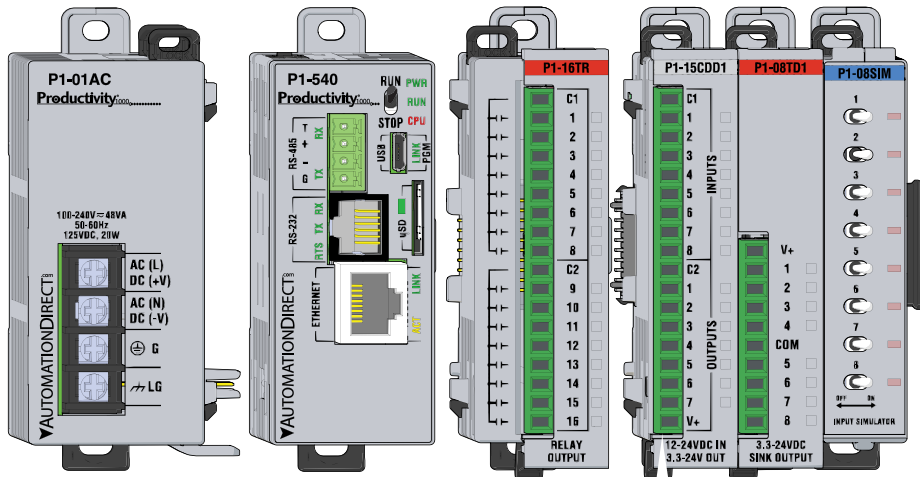
Discrete Combo Input/Output Modules



Productivity1000 Discrete Combo Modules				
Part Number	Inputs	Outputs	Description	See Page
P1-15CDD1	8	7	Input: Sinking/Sourcing; Output: Sinking	2-80
P1-15CDD2	8	7	Input: Sinking/Sourcing; Output: Sourcing	2-83
P1-16CDR	8	8	Input: Sinking/Sourcing; Output: Relay	2-86

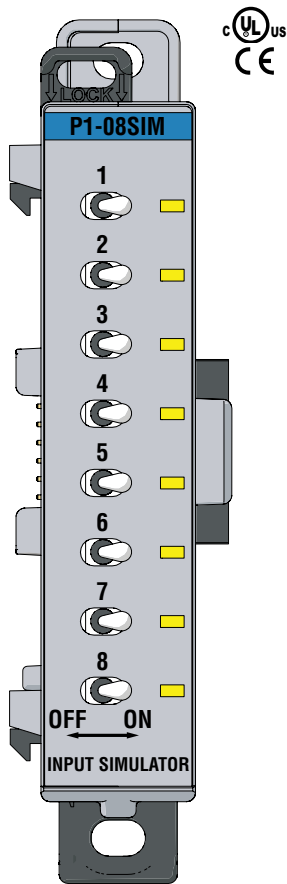
I/O Modules Installation

A variety of discrete and analog I/O modules can be added to the P1000 PLC to create a custom control system. To add an I/O module (verify field power is not energized), with the latch in “locked” position, align connectors on the side of each module and press together. An audible click indicates the module lock is engaged. Verify each connecting module tab is firmly in the locked position.



P1-08SIM Input Simulator Module

The P1-08SIM Input Simulator Module provides 8 toggle switches to simulate input devices.



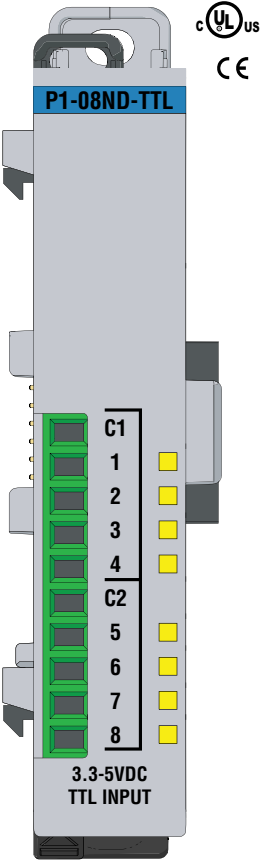
Input Specifications	
Inputs per Module	8 Internal switches
OFF to ON Response	Max. 20ms
ON to OFF Response	Max. 20ms
Status Indicators	Logic Side (8 points)

General Specifications	
Operating 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)
Heat Dissipation	200mW
Enclosure Type	Open equipment
Module Location	Any I/O slot in a Productivity® 1000 system.
Weight	70g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformity for details. See the D.O.C. for details.

P1-08ND-TTL DC Input

The P1-08ND-TTL Input Module provides eight inputs for TTL level devices for use with the Productivity1000 system.



Input Specifications	
Inputs per Module	8 (sinking/sourcing)
Rated Voltage	3.3 - 5 VDC
Operating Voltage Range	3.3 - 5 VDC $\pm 10\%$
Input Current	6mA @ 3.3 VDC 8mA @ 5VDC
Maximum Input Current	8mA @ 5.5 VDC
Input Impedance	820 Ω
Minimum ON Current	1.4 mA
Maximum OFF Current	1mA
ON Voltage Level	> 2.2 VDC
OFF Voltage Level	< 0.8 VDC
OFF to ON, ON to OFF Response	2ms maximum, 1ms typical
Status Indicators	Logic Side (8 points)
Commons	2 (4 points/common)

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

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

Terminal blocks sold separately



NOTE: Module shown with flip-up finger-safe terminal cover removed for clarity.

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



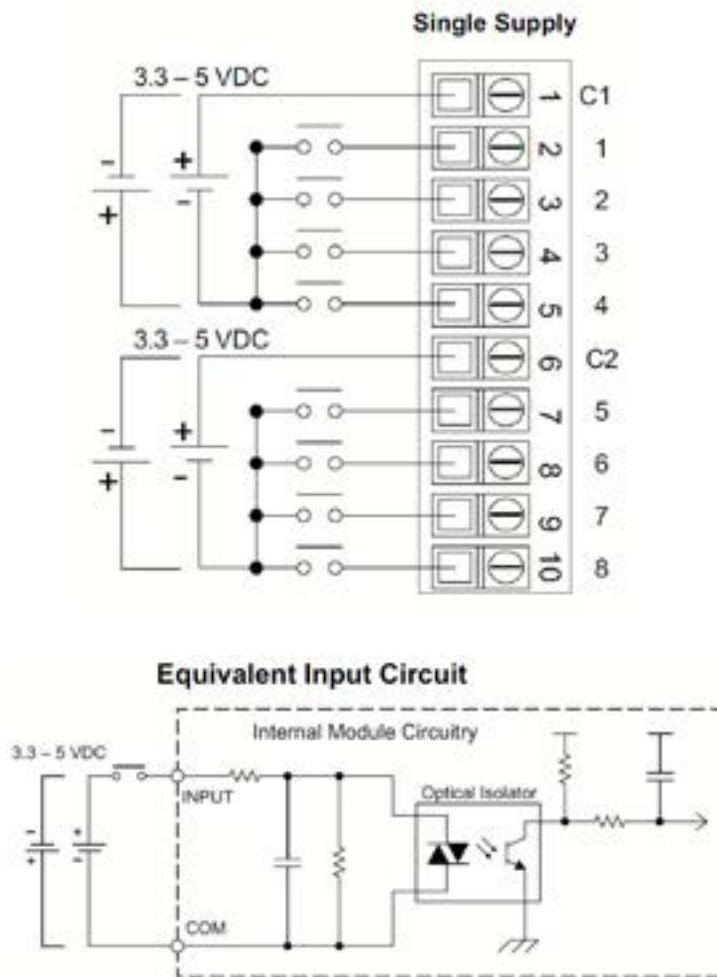
P1-08ND-TTL DC Input (continued)

General Specifications	
Operating 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)
Altitude	2,000 meters max.
Pollution Degree	2
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Overvoltage Category	II
Field to Logic Side Isolation	1800VDC applied for 1s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	220mW
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O position in a Productivity®1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	10-position removable terminal block
Weight	55g (1.9 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformity for details.

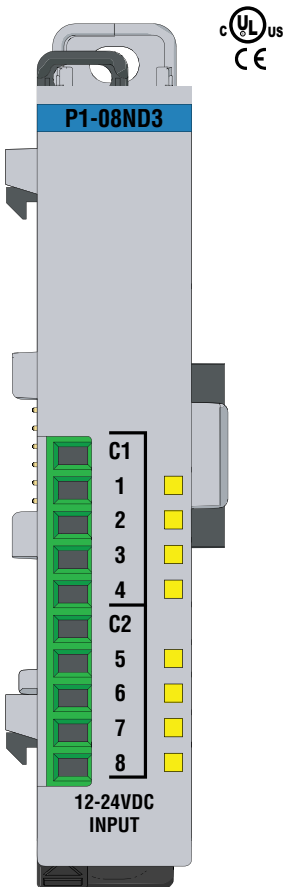
P1-08ND-TTL DC Input (continued)

Wiring Diagrams



P1-08ND3 Sinking/Sourcing DC Input

The P1-08ND3 Input Module provides eight inputs for switches and other devices connected to ground or supplies ranging from 12–24 VDC for use with the Productivity1000 system.



Input Specifications	
Inputs per Module	8 (Sink/Source)
External 24VDC Power Required	12–24 VDC
Input Voltage Range	10.2–26.4 VDC
Input Current	3.5 mA @ 12VDC 8.4 mA @ 24VDC
Maximum Input Current	10mA @ 26.4 VDC
Input Impedance	3kΩ
Minimum ON Current	1.4 mA
Maximum OFF Current	1mA
ON Voltage Level	> 9.5 VDC
OFF Voltage Level	< 4.5 VDC
OFF to ON, ON to OFF Response	2ms Maximum, 1ms Typical
Status Indicators	Logic Side (8 points)
Commons	2 (4 points/common)

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



P1-08ND3 Sinking/Sourcing DC Input (continued)

General Specifications	
Operating 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	>10M Ω @ 500 VDC
Heat Dissipation	2000mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity1000 system.
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	10-position removable terminal block
Weight	85g (3oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See the Declaration of Conformity for details.

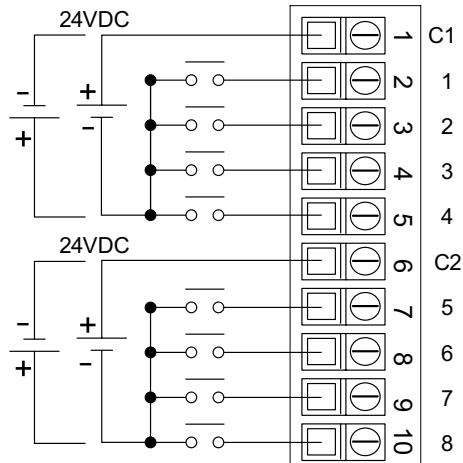
Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

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

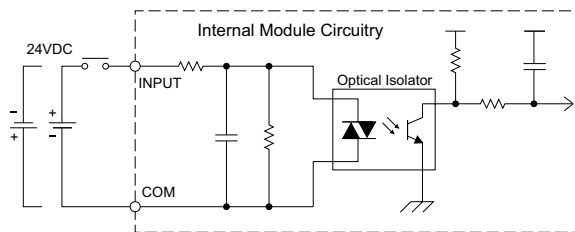
P1-08ND3 Sinking/Sourcing DC Input (continued)

Wiring Diagrams

Single Supply

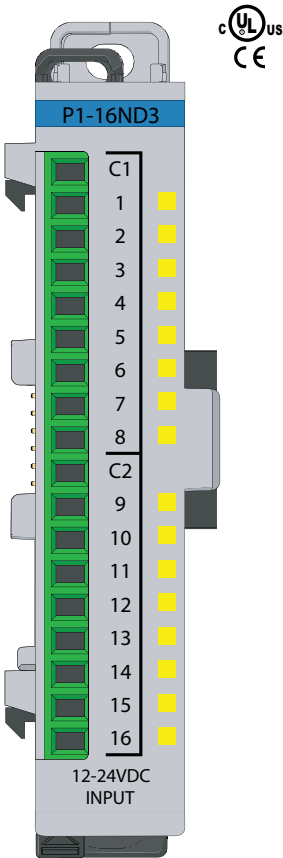


Equivalent Input Circuit



P1-16ND3 Sinking/Sourcing DC Input

The P1-16ND3 Input Module provides sixteen 12–24 VDC sink/source inputs with two isolated commons for use with the Productivity1000 system.



Input Specifications	
Inputs per Module	16 (Sink/Source)
Rated Voltage	12–24 VDC
Operating Voltage Range	10.2–26.4 VDC, max 30VDC
Input Current	3.5 mA @ 12VDC 7.5 mA @ 24VDC
Maximum Input Current	10mA @ 26.4 VDC
Input Impedance	3kΩ
Minimum ON Current	2mA
Maximum OFF Current	1.6 mA
ON Voltage Level	>9VDC
OFF Voltage Level	<4.5 VDC
OFF to ON, ON to OFF Response	2ms Maximum, 1ms typical
Status Indicators	Logic Side (16 points)
Commons	2 (8 points/common) isolated

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1



P1-16ND3 Sinking/Sourcing DC Input (continued)

General Specifications	
Operating 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	3500mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity® 1000 system.
Field Wiring	Use ZIP Link wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Terminal Type (sold separately)	18-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

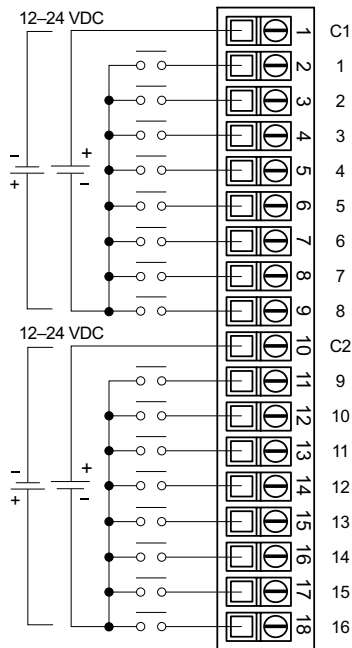
* See CE Declaration of Conformance for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

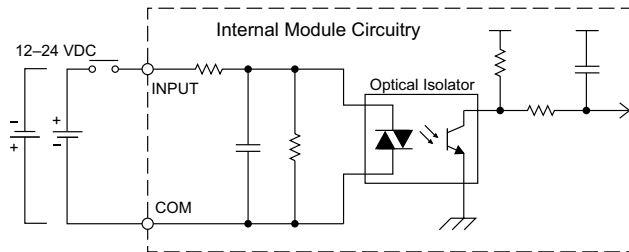
* Recommended screw driver: P/N TW-SD-MSL-1.

P1-16ND3 Sinking/Sourcing DC Input (continued)

Wiring Diagrams

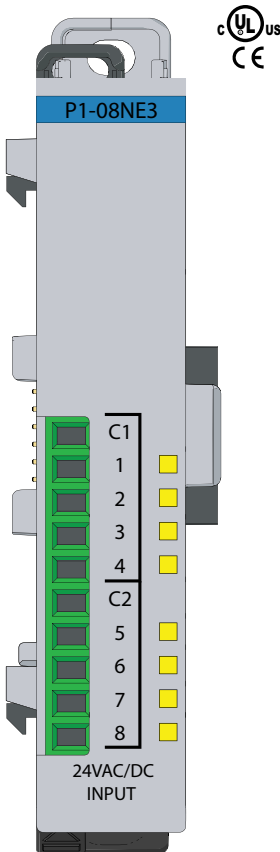


Equivalent Input Circuit



P1-08NE3 AC/DC Sinking/Sourcing Input

The P1-08NE3 AC/DC Input Module provides eight 24 VAC/VDC sink/source inputs with two isolated commons for use with the Productivity1000 system.



Input Specifications	
Inputs per Module	8 (Sink/Source)
Voltage Range	24 VAC/VDC
Operating Voltage Range	20.4–27.6 VAC/VDC, Max. 27.6 VAC, 30VDC
AC Frequency	47–63 Hz
Input Current (Typical)	8mA @ 24 VAC/VDC
Maximum Input Current	10mA @ 27.6 VAC/VDC
ON Voltage Level	>9.5 VDC, >8VAC
OFF Voltage Level	<4.5 VDC, <4VAC
Minimum ON Current	2.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	AC: 10ms DC: 6ms > max
ON to OFF Response	AC: 20ms DC: 10ms > max
Status Indicators	Logic Side (8 points)
Commons	2 (4 points/common) isolated

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



P1-08NE3 AC/DC Sinking/Sourcing Input, (continued)

General Specifications	
Operating 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	>10M Ω @ 500VDC
Heat Dissipation	1800mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity1000 system.
Field Wiring	Use ZIPLink wiring system or optional terminal block (not included). See “Wiring Options” in Chapter 5.
Connector Type (Sold separately)	10-position removable terminal block
Weight	70g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

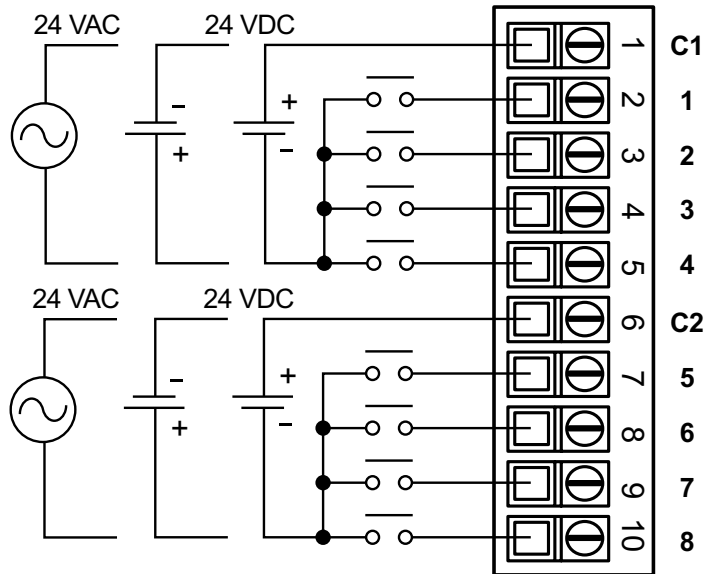
* See CE Declaration of Conformance for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

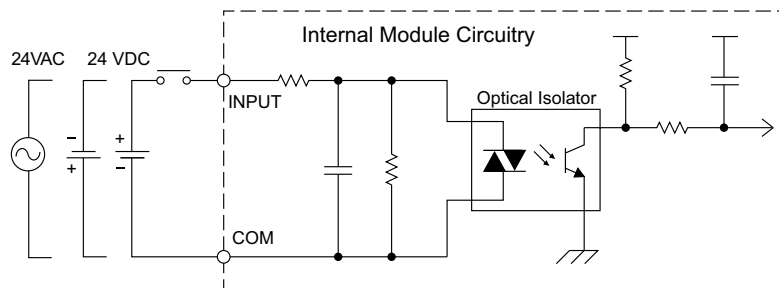
* Recommended screw driver: P/N TW-SD-MSL-1.

P1-08NE3 AC/DC Sinking/Sourcing Input, (continued)

Wiring Diagrams

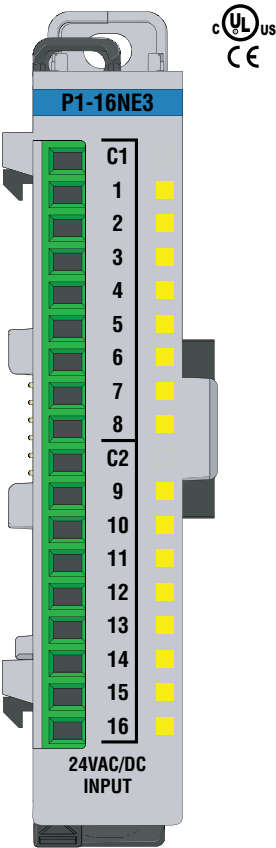


Equivalent Input Circuit



P1-16NE3 AC/DC Sinking/Sourcing Input

The P1-16NE3 AC/DC Input Module provides sixteen 24VAC or VDC sink/source inputs with two isolated commons for use with Productivity1000 system.



Input Specifications	
Inputs per Module	16 (Sink/Source)
Rated Voltage	24 VAC/VDC
Operating Voltage Range	20.4–27.6 VAC/VDC; Max 30 VAC/VDC
AC Frequency	47–63 Hz
Input Current	3.4 mA @ 24 VAC/VDC
Maximum Input Current	10mA @ 30 VAC/VDC
ON Voltage Level	>12VDC, > 9VAC
OFF Voltage Level	<10.5 VDC, < 9VAC
Minimum ON Current	2.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	DC: 6ms > max AC: 10ms
ON to OFF Response	DC: 10ms > max AC: 20ms
Status Indicators	Logic side (16 points)
Commons per Module	2 (8 points/common) isolated

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1



P1-16NE3 AC/DC Sinking/Sourcing Input, (continued)

General Specifications	
Operating 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	>10M Ω @ 500VDC
Heat Dissipation	2000mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity1000 system.
Field Wiring	Use ZIP Link wiring system or optional terminal block (not included). See "Wiring Options" in Chapter 5.
Connector Type (not included)	18-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

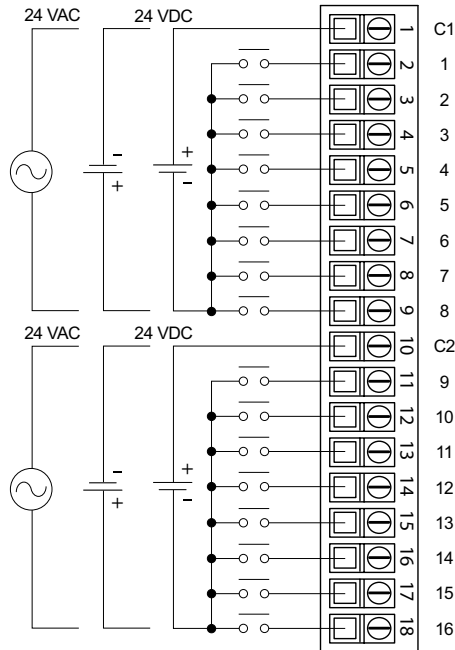
* See the Declaration of Conformity for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

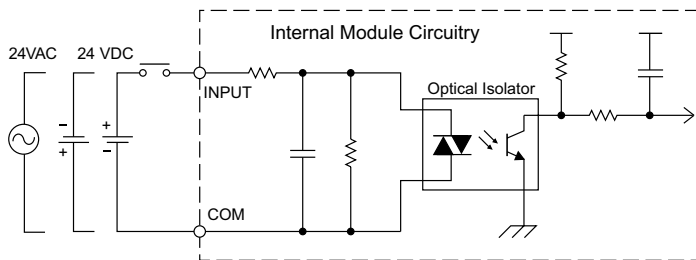
* Recommended screw driver: P/N TW-SD-MSL-1.

P1-16NE3 AC/DC Sinking/Sourcing Input, (continued)

Wiring Diagrams

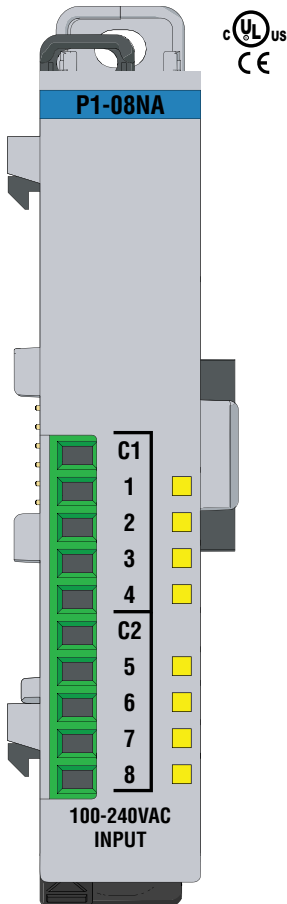


Equivalent Input Circuit



P1-08NA AC Input

The P1-08NA AC Input Module provides eight 100–240 VAC inputs for use with the Productivity1000 system.



Input Specifications	
Inputs per Module	8
Rated Voltage	100–240 VAC
Input Voltage Range	80–288 VAC
AC Frequency	47–63 Hz
Input Current (Typical)	7mA @ 100VAC (50Hz) 8.5 mA @ 100VAC (60Hz) 14.2 mA @ 240VAC (50Hz) 17mA @ 240VAC (60Hz)
Maximum Input Current @ Temp	26mA @ 60°C (288VAC)
Input Impedance	15kΩ (50Hz), 12kΩ (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)
Commons per Module*	2 Isolated (4 points/common) @ 120VAC 2 Non-isolated @ 240VAC

* C1 and C2 must be jumpered together by an external wire during 240VAC applications.

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



P1-08NA AC Input, (continued)

General Specifications	
Operating 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	1800mW
Enclosure Type	Open equipment
Module Location	Any I/O slot in a Productivity1000 system.
Field Wiring	Use ZIP Link wiring system or optional terminal block (not included). See “Wiring Options” in Chapter 5.
Terminal Type (Sold separately)	10-position removable terminal block
Weight	70g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

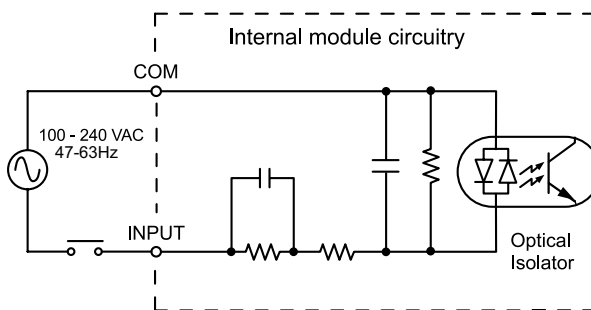
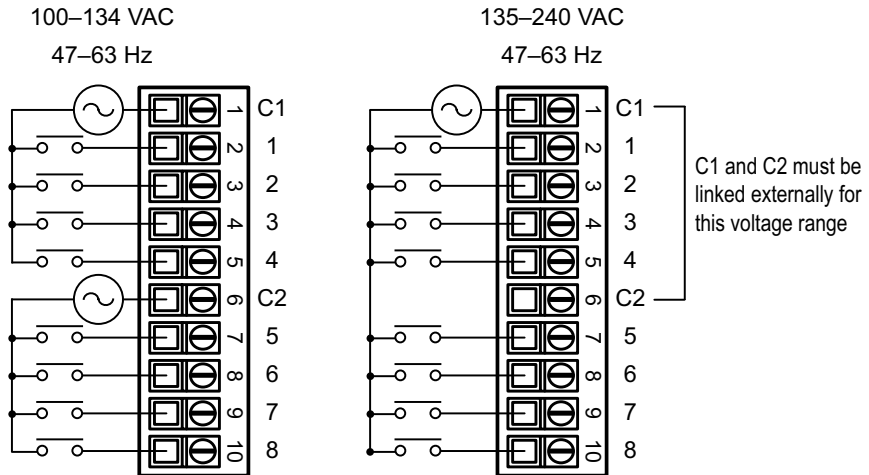
* See CE Declaration of Conformance for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

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

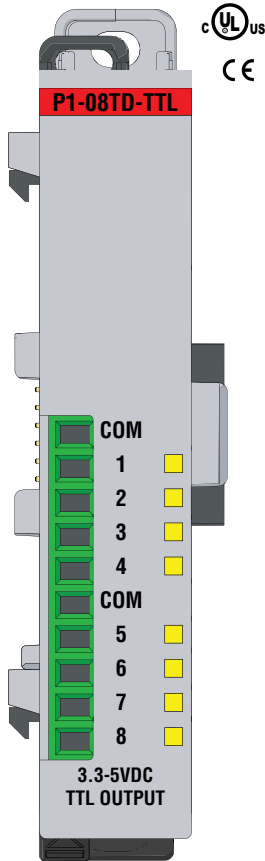
P1-08NA AC Input, (continued)

Wiring Diagrams



P1-08TD-TTL DC Output

The P1-08TD-TTL Output Module provides eight sourcing outputs to control TTL level loads for use with the Productivity1000 system.



Output Specifications	
Outputs per Module	8 sourcing
Output Type	TTL Driver
Rated Voltage	5V
Operating Voltage Range	5V $\pm$ 2%
Minimum Output Current	0 μ A
Maximum Output Current	20mA per point or 100mA total
On Voltage Drop	0.2 V @ max. load
OFF to ON, ON to OFF Response	$\leq$ 0.5 ms
Status Indicators	Logic Side (8 points)
Commons	2, no isolation
Maximum Applicable Fuse	None
External Power Supply Required	None

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

Terminal blocks sold separately

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



NOTE: Module shown with flip-up finger-safe terminal cover removed for clarity.

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



P1-08TD-TTL DC Output (continued)

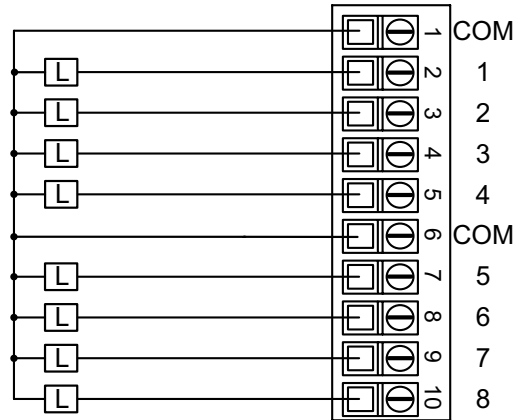
General Specifications	
Operating Air Temperature	0°C– 60°C (32°F–140°F)
Storage Temperature	-20°C–70°C (-4°F–158°F)
Humidity	5 to 95% (non-condensing)
Altitude	2,000 meters max.
Pollution Degree	2
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Overvoltage Category	II
Field to Logic Side Isolation	1750VDC applied for 5s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	1010mW
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O position in a Productivity®1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See “Wiring Options” in Chapter 5.
Connector Type (sold separately)	10-position removable terminal block
Weight	64g (2.2 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformity for details.

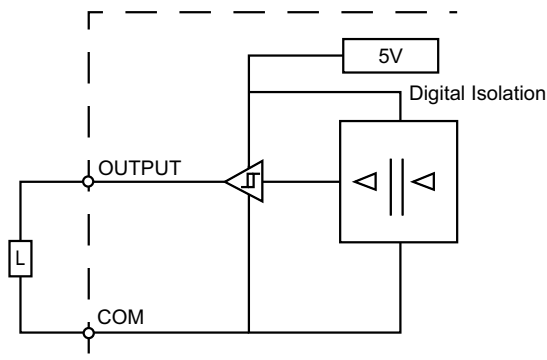
P1-08TD-TTL DC Output (continued)

Wiring Diagrams

Single Power Source

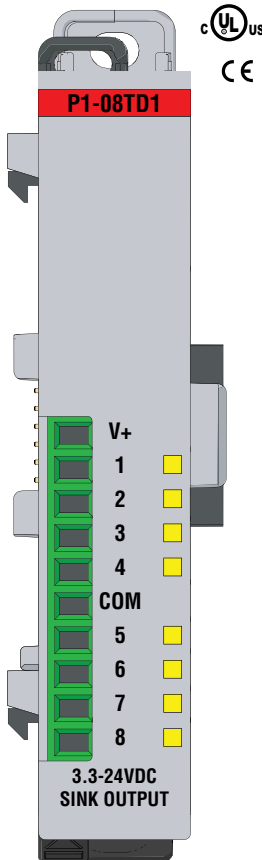


INTERNAL MODULE



P1-08TD1 Sinking DC Output

The P1-08TD1 DC Output Module provides eight outputs that sink up to 1A per output from loads powered by 3.3–24 VDC supplies for use with the Productivity1000 system.



Output Specifications

Outputs per Module	8 sinking
Output Type	N-channel MOSFET, open drain
Rated Voltage	3.3–24 VDC
Operating Voltage Range (Tolerance)	2.9–26.4 VDC
Maximum Output Current	1A per point
Minimum Load Current	1mA
Maximum Leakage Current	0.3 mA @ 26.4 VDC
On Voltage Drop	0.2 VDC @ 1A
Maximum Inrush Current	4A for 50ms, 6A for 10ms
OFF to ON, ON to OFF Response	≤0.5 ms
Status Indicators	Logic Side (8 pins)
Commons	1 non-isolated
Maximum Applicable Fuse	8A
External Power Supply Required	12–24 VDC (–15%/+20%), 22mA

Removable Terminal Block Specifications

Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

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

Terminal blocks sold separately



NOTE: Module shown with flip-up finger-safe terminal cover removed for clarity.

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



P1-08TD1 Sinking DC Output (continued)

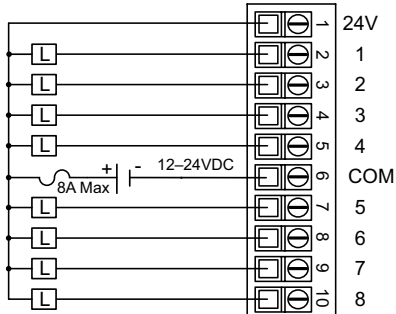
General Specifications	
Operating Air Temperature	0°C– 60°C (32°F–140°F)
Storage Temperature	-20°C–70°C (-4°F–158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	1800mW
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O position in a Productivity@1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See “Wiring Options” in Chapter 5.
Connector Type (sold separately)	10-position removable terminal block
Weight	60g (2.1 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformity for details.

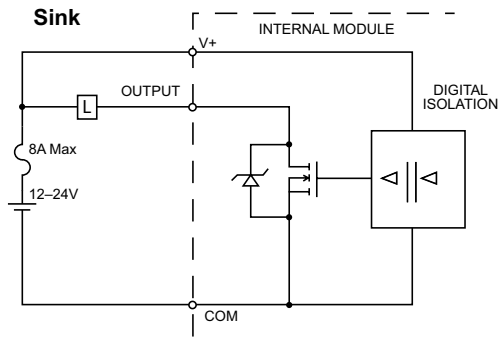
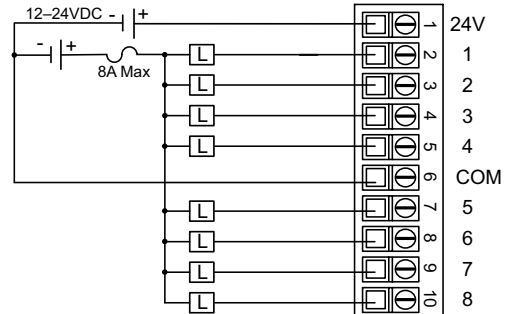
P1-08TD1 Sinking DC Output (continued)

Wiring Diagrams

Single Power Source

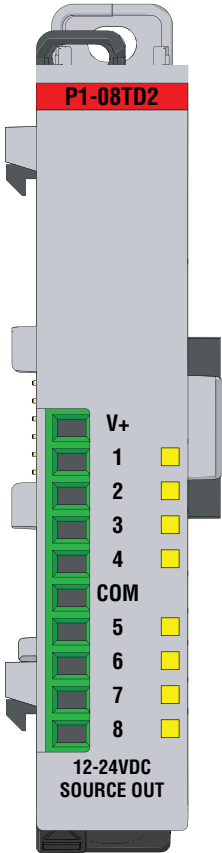


Dual Power Source



P1-08TD2 Sourcing DC Output

The P1-08TD2 DC Output Module provides eight non-isolated outputs that source up to 1A per output from a 12–24 VDC supply for use with the Productivity® 1000 system.



Output Specifications

Outputs per Module	8 sourcing
Voltage Rating	12–24 VDC
Operating Voltage Range	10.2–28.8 VDC
Output Type	P-channel MOSFET, open source
Maximum Output Current	1A per point
Minimum Load Current	1mA
Maximum Leakage Current	0.3 mA @ 28.8 VDC
On Voltage Drop	0.2 VDC @ 1A
Maximum Inrush Current	4A for 50ms, 6A for 10ms
OFF to ON, ON to OFF Response	0.5 ms
Status Indicators	Logic Side (8 points)
Commons	1 non-isolated
Maximum Applicable Fuses	8A
External Power Supply Required	12–24 VDC (–15%/+20%) @ 22mA

Removable Terminal Block Specifications

Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

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

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1.



P1-08TD2 Sourcing DC Output (continued)

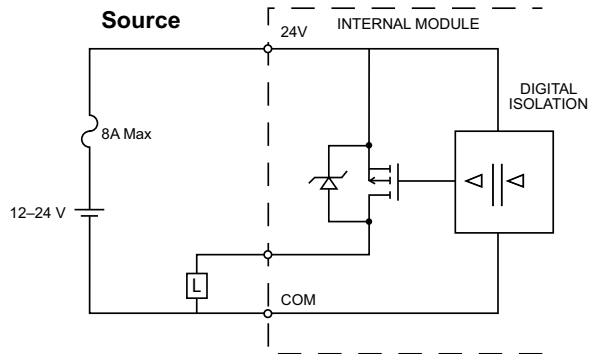
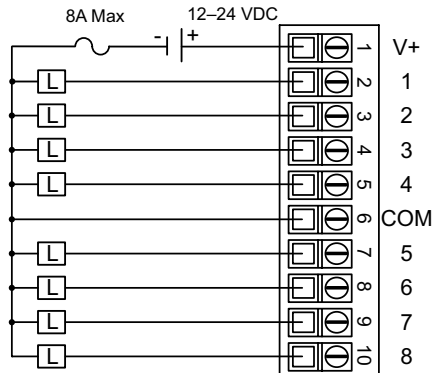
General Specifications	
Operating Air Temperature	0°C– 60°C (32°F–140°F)
Storage Temperature	-20°C–70°C (-4°F–158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	2600mW
Enclosure Type	Open equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O position in a Productivity1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	10-position removable terminal block
Weight	58g (2.1 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformity for details.

P1-08TD2 Sourcing Output (continued)

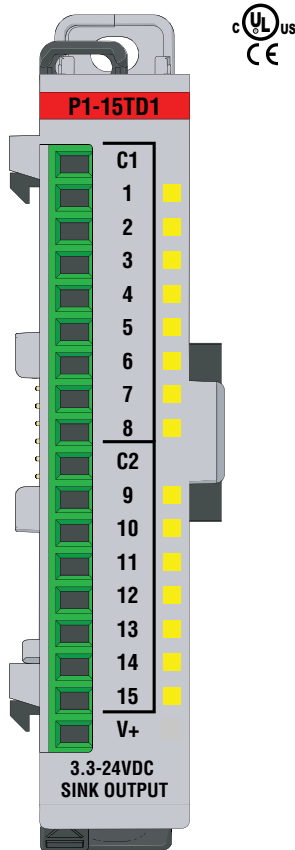
Wiring Diagrams

Single Power Source



P1-15TD1 Sinking DC Output

The P1-15TD1 DC Output Module provides fifteen outputs that sink up to 1A per point from loads powered by 3.3–24 VDC for use with the Productivity1000 system.



Output Specifications

Outputs per Module	15 sinking
Output Type	N-channel MOSFET, open drain
Rated Voltage	3.3–24 VDC
Operating Voltage Range (Tolerance)	2.9–26.4 VDC
Maximum Output Current	1A per point / 8A per common
Minimum Load Current	1mA
Maximum Leakage Current	0.3 mA @ 30VDC
On Voltage Drop	0.2 VDC @ 1A
Maximum Inrush Current	4A for 50ms, 6A for 10ms
OFF to ON, ON to OFF Response	≤0.5 ms
Status Indicators	Logic Side (15 points)
Commons	2 non-isolated
Maximum Applicable Fuse	8A
External Power Supply Required	12–24 VDC (-15%/+20%), 22mA

Removable Terminal Block Specifications

Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

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

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.



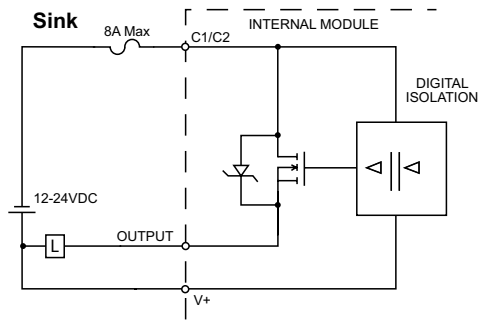
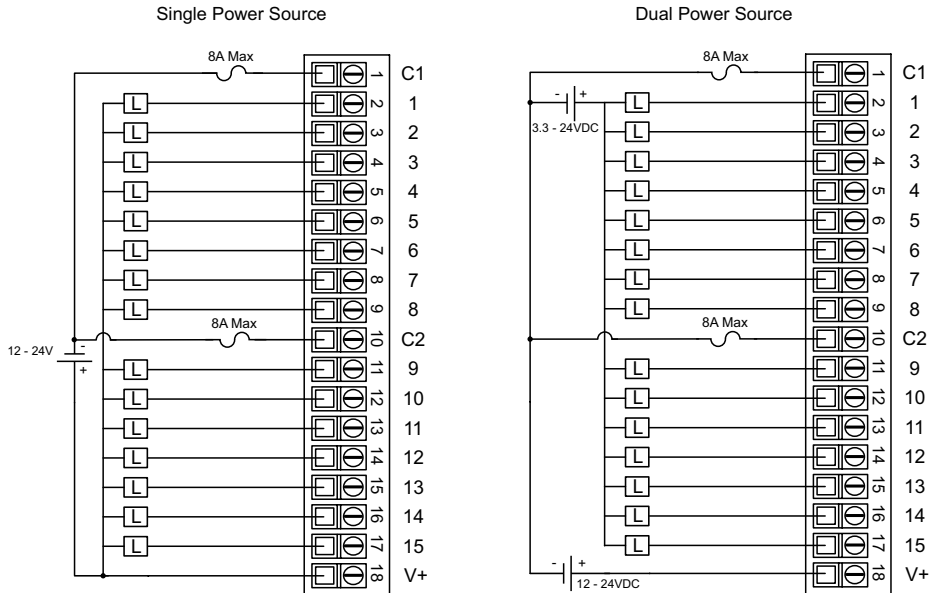
P1-15TD1 Sinking DC Output (continued)

General Specifications	
Operating 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	>10MΩ @ 500VDC
Heat Dissipation	1800mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See “Wiring Options” in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformance for details.

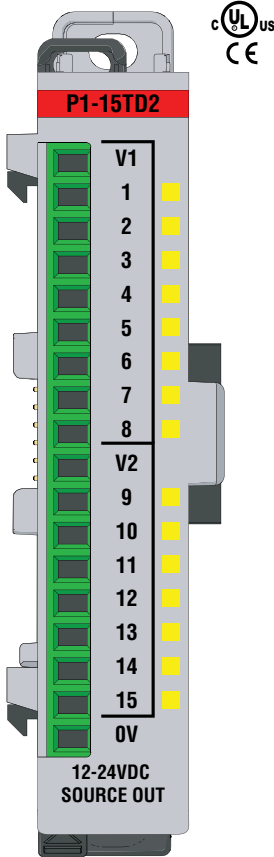
P1-15TD1 Sinking Output (continued)

Wiring Diagrams



P1-15TD2 Sourcing DC Output

The P1-15TD2 DC Output Module provides fifteen 12–24 VDC outputs that source up to 1A per point to loads connected to ground by for use with the Productivity1000 system.



Output Specifications	
Outputs per Module	15 sourcing
Voltage Rating	12–24 VDC
Operating Voltage Range	10.2–26.4 VDC, Max 30VDC
Output Type	P-channel MOSFET, open source
Maximum Output Current	1A per point/8A per common
Minimum Load Current	1mA
Maximum Leakage Current	0.3 mA @ 26.4 VDC
On Voltage Drop	0.2 VDC @ 1A
Maximum Inrush Current	4A for 50ms, 6A for 10ms
OFF to ON, ON to OFF Response	0.5 ms
Status Indicators	Logic Side (15 points)
Commons	1 non-isolated
Maximum Applicable Fuses	8A
External Power Supply Required	12–24 VDC (-15%/+20%) @ 22mA

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

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

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.



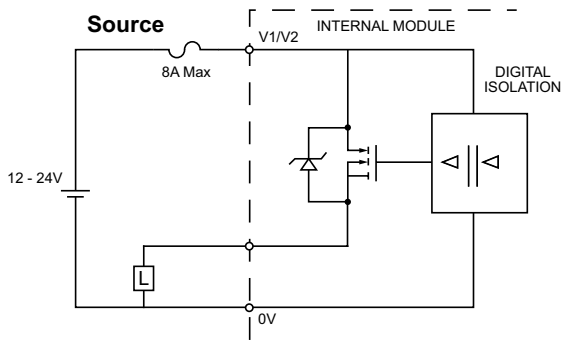
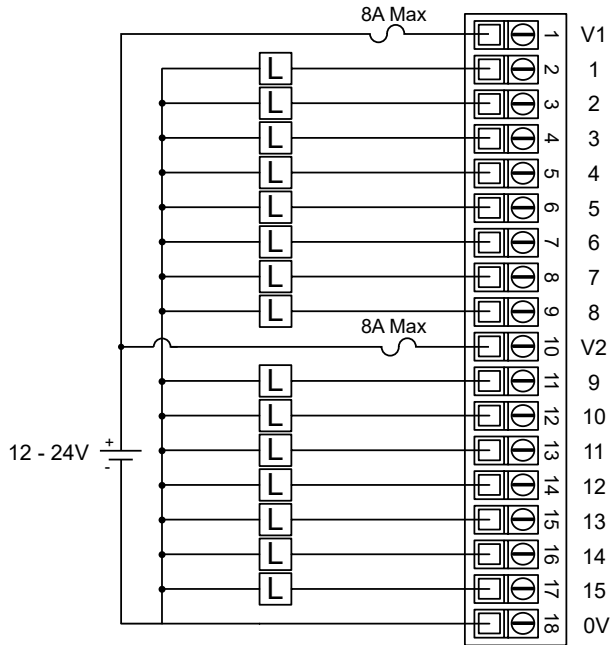
P1-15TD2 Sourcing DC Output (continued)

General Specifications	
Operating 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)
Overvoltage Category	II
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	4000mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformance for details.

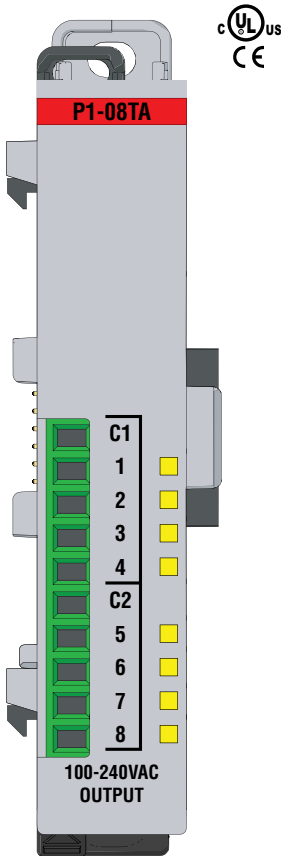
P1-15TD2 Sourcing Output (continued)

Wiring Diagrams



P1-08TA AC Output

The P1-08TA AC Output Module provides eight 100–240 VAC outputs for use with the Productivity1000 system.



Output Specifications	
Outputs per Module	8
Rated Voltage	100–240 VAC
Operating Voltage Range	80–288 VAC
AC Frequency	47–63 Hz
Maximum Output Current	0.5 A / point, 4A /common @ 55°C 0.3 A / point, 2.4 A / common @*60C
Minimum Load Current	10mA
Maximum Leakage Current	4mA @ 264VAC
On Voltage Drop	1.5 VAC @ >50mA 4.0 VAC @ <50mA
Maximum Inrush Current	6A for 10ms
OFF to ON, ON to OFF Response	1ms + 1/2 cycle
Status Indicators	Logic Side (8 points)
Commons per Module	2 Isolated (4 point / common) @ 120VAC 2 Non-isolated @ 240VAC
Maximum Applicable Fuse	8A

* C1 and C2 must be jumpered together by an external wire during 240VAC applications.

Terminal blocks sold separately

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P1-10RTB or P1-10RTB-1



P1-08TA AC Output, (continued)

General Specifications	
Operating 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	1400mW
Enclosure Type	Open equipment
Module Location	Any I/O slot in a Productivity1000 system.
Field Wiring	Use ZIPLink wiring system or optional terminal block (not included). See "Wiring Options" in Chapter 5.
Connector Type (Sold separately)	10-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

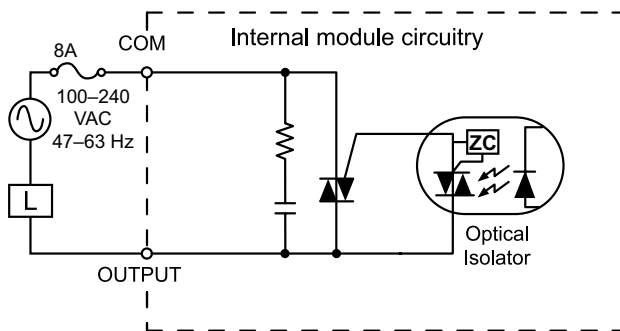
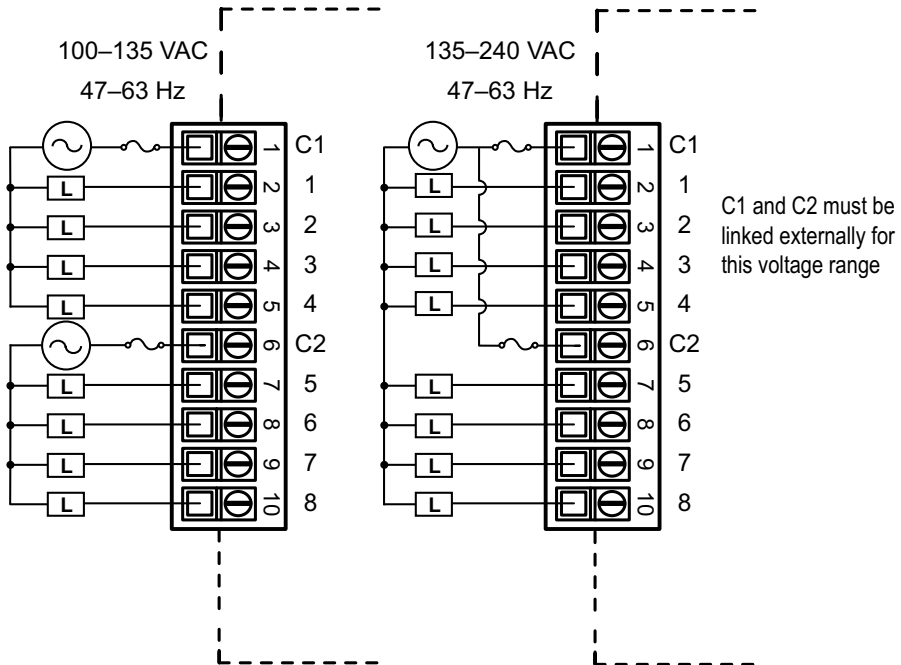
* See CE Declaration of Conformance for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

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

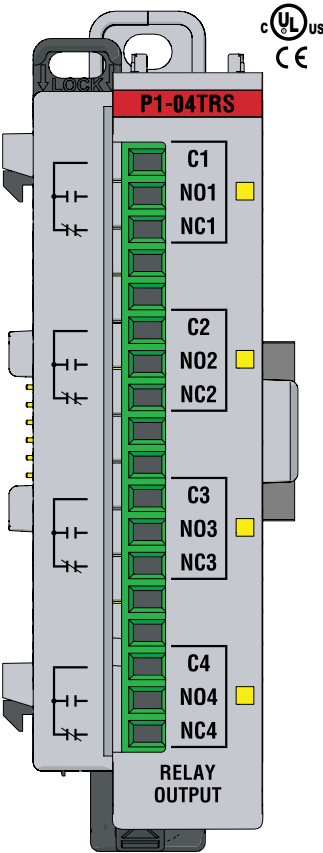
P1-08TA AC Output, (continued)

Wiring Diagrams



P1-04TRS Isolated Relay

The P1-04TRS high-current isolated relay output module provides four, 7A surge protected outputs. The P1-04TRS offers both normally open and normally closed relay contacts for use with the Productivity® 1000 system.



Removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.

Output Specifications	
Outputs per Module	4
Rated Voltage	30VDC 100–240 VAC
Operating Voltage Range	5–30 VDC 5–264 VAC
Output type	4 Relays, FORM C (SPDT)
AC Frequency	47–63 Hz
Maximum Output Current	7A @ 50°C 6A @ 60°C
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	7A for 10ms
OFF to ON Response	<10ms
ON to OFF Response	<10ms
Status Indicators	Logic Side (4 points)
Commons	4 Isolated (1 point / common)
Protection Circuit	10A Max. Not built into module - Install protection elements such as an external fuse.

Removable Terminal Block Specifications		
Part Number	P2-RTB	P2-RTB-1
Number of Positions	18 screw terminals	18 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N·m)	N/A

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



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

P1-04TRS Isolated Relay (continued)

General Specifications	
Operating Air Temperature	0°C to 60°C (32°F to 140°F),
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	5 to 95% (non-condensing)
Altitude	2,000 meters max.
Pollution Degree	2
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	3000VAC applied for 5 seconds 1100VAC applied for 1 minute
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	3800mW
Overvoltage Category	II
Enclosure Type	Open equipment
Module Keying	Electronic
Module Location	Any I/O position in a Productivity1000 system
Field Wiring	Use removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	120g (4.23 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

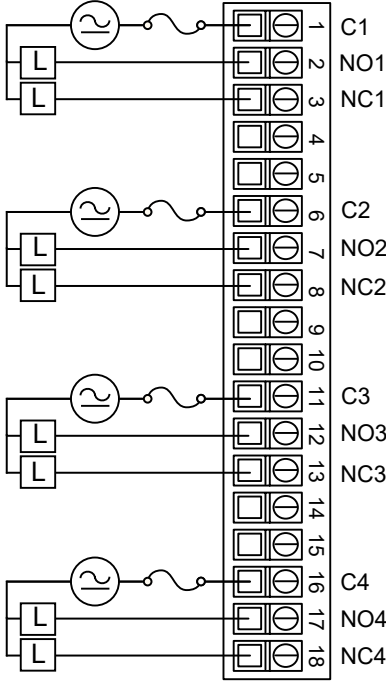
* See CE Declaration of Conformity for details.

Typical Relay Life	
Voltage & Type of Load	Operations at 6A Load Current
30VDC Resistive	100,000
30VDC Solenoid	100,000
120VAC Resistive	100,000
120VAC Solenoid	100,000
240VAC Resistive	100,000
240VAC Solenoid	100,000

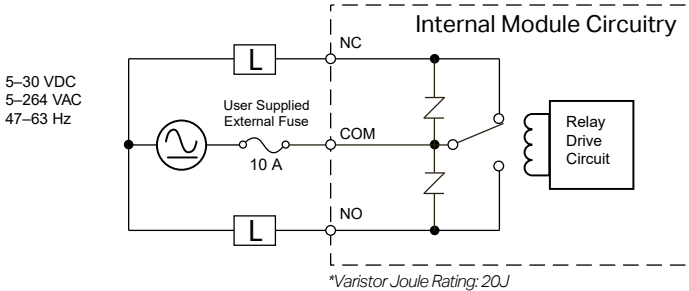
P1-04TRS Isolated Relay (continued)

Wiring Diagrams

5–30 VDC
5–264 VAC
47–63 Hz

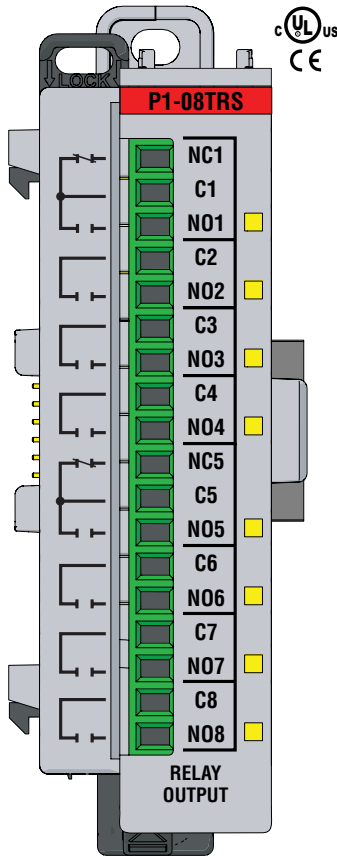


Equivalent Output Circuit



P1-08TRS Isolated Relay

The P1-08TRS high-current isolated relay output module provides eight, 3A surge protected outputs. The P1-08TRS offers both normally open and normally closed relay contacts for use with the Productivity® 1000 system.



Terminal blocks sold separately

Output Specifications

Outputs per Module	8
Rated Voltage	6.25–30 VDC 6–120 VAC
Operating Voltage Range	5.1–28.8 VDC 5.1–132 VAC
Output type	6 Relays, FORM A (SPST) 2 Relays, FORM C (SPDT)
AC Frequency	47–63 Hz
Maximum Output Current	3A / point @ 60°C for both AC and DC 2A / point if used with ZIPLink Cable
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	<10ms
ON to OFF Response	<10ms
Status Indicators	Logic Side (8 points)
Commons	8 Isolated (1 point / common)
Maximum Applicable Fuse	8A Max

Removable Terminal Block Specifications

Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

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

We recommend using pre-wired **ZIPLink** cables and connection modules. See Chapter 5.

If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.



P1-08TRS Isolated Relay (continued)

General Specifications	
Operating 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	>10MΩ @ 500VDC
Heat Dissipation	3000mW
Enclosure Type	Open equipment
Module Keying	Electronic
Module Location	Any I/O position in a Productivity1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	112g (4oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

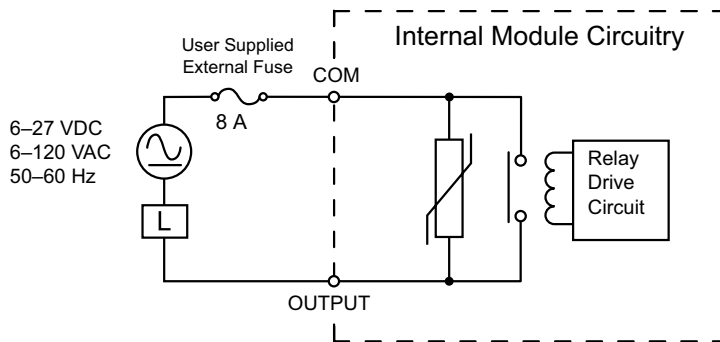
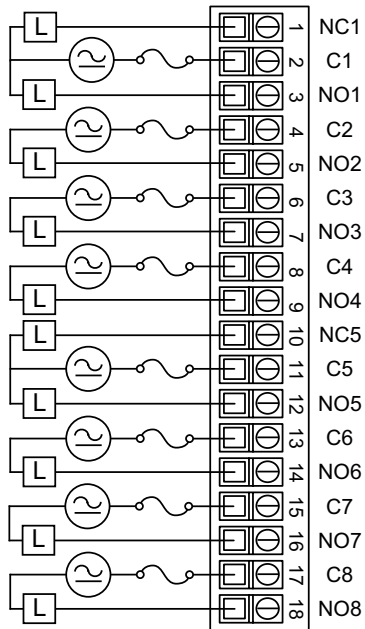
* See CE Declaration of Conformity for details.

Typical Relay Life	
Voltage & Type of Load	Operations at 4A Load Current
30VDC Resistive	100,000
30VDC Solenoid	100,000
120VAC Resistive	100,000
120VAC Solenoid	100,000

P1-08TRS Isolated Relay (continued)

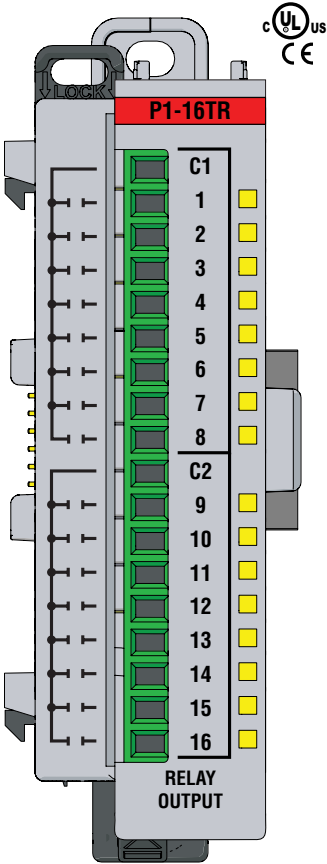
Wiring Diagrams

6–27 VDC
6–120 VAC
50–60 Hz



P1-16TR Relay Output

The P1-16TR Relay Output Module provides sixteen 2A outputs with two isolated commons for use with the Productivity® 1000 system.



Output Specifications	
Outputs Channels	16
Rated Voltage	6.25–30 VDC, 6–120 VAC
Operating Voltage Range	5–30 VDC, 5–144 VAC
Output Type	Relay, FORM A (SPST)
AC Frequency	47–63 Hz
Maximum Output Current	2A / point, 8A / common for both AC and DC 2A / point, 4A / common if used with ZIPLink Cable
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	5A for 10ms
OFF to ON, ON to OFF Response	≤10ms
Status Indicators	Logic Side (16 points)
Commons	2 Isolated (8 point / common)
Maximum Applicable Fuse	8A

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

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

Terminal blocks sold separately

We recommend using pre-wired **ZIPLink** cables and connection modules. See Chapter 5.
If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.



P1-16TR Relay Output (continued)

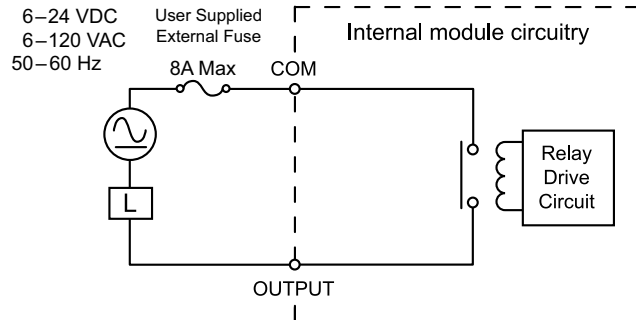
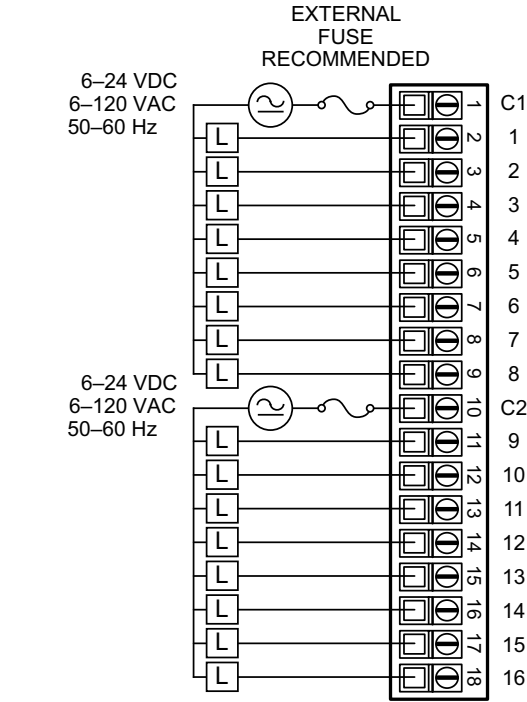
General Specifications	
Operating Air Temperature	0°C–60°C (32°F–140°F)
Storage Temperature	-20°C–70°C (-4°F–158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	3000mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity1000 system.
Field Wiring	Use ZIP Link wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	91g (3.2 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

* See CE Declaration of Conformity for details.

Typical Relay Life	
Voltage & Type of Load	Operations at 1A Load Current
30VDC Resistive	100,000
30VDC Solenoid	100,000
120VAC Resistive	100,000
120VAC Solenoid	100,000

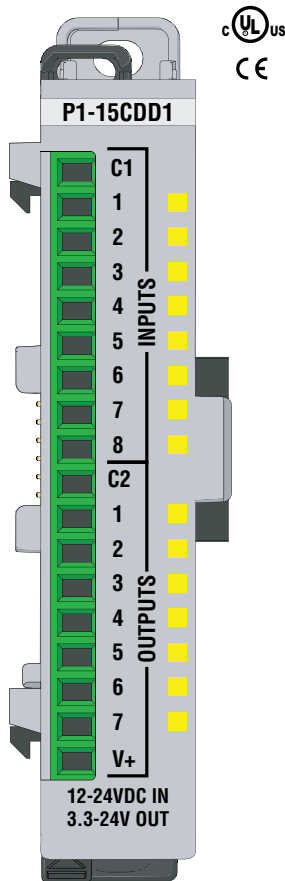
P1-16TR Relay Output (continued)

Wiring Diagrams



P1-15CDD1 Input/Output

The P1-15CDD1 Input/Output Module provides eight 12–24 VDC inputs plus seven outputs that sink up to 1A per output for loads connected to 3.3–24 VDC supplies for use with the Productivity1000 system.



Terminal blocks sold separately

Input Specifications

Inputs	8 (sink/source)
Rated Voltage	12–24 VDC
Operating Voltage Range	10.2–26.4 VDC, Max. 30VDC
Input Current	8.4 mA @ 24VDC
Maximum Input Current	10mA @ 26.4 VDC)
Input Impedance	3kΩ
ON Voltage Level	>9VDC
OFF Voltage Level	<4.5 VDC
Minimum ON Current	1.4 mA
Maximum OFF Current	1mA
OFF to ON, ON to OFF Response	2ms Max, 1ms Typical
Status Indicators	Logic Side (8 points)
Commons	1 (8 points/common)

Output Specifications

Outputs per Module	7 sinking
Rated Voltage	3.3–24 VDC
Operating Voltage Range	2.9–26.4 VDC
Maximum Output Current	1A per point
Minimum Load Current	1mA
Maximum Leakage Current	0.3 mA @ 26.4 VDC
On Voltage Drop	0.2 VDC @ 1A
Maximum Inrush Current	4A for 50ms, 6A for 10ms
OFF to ON, ON to OFF Response	≤ 0.5 ms
Status Indicators	Logic Side (7 points)
Commons	1 (7 points/common)
Maximum Applicable Fuse	8A
External Power Supply Required	12–24 VDC (-15%/+20%) @ 22mA

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1



P1-15CDD1 Input/Output (continued)

General Specifications	
Operating 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)
Altitude	2,000 meters, max.
Pollution Degree	2
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1s
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	1800mW
Overvoltage Category	II
Enclosure Type	Open equipment
Module Location	Any I/O slot in any Productivity1000 system.
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

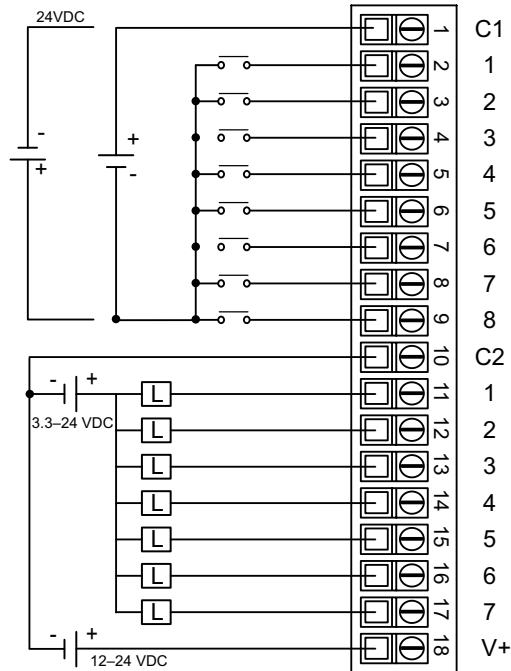
* See CE Declaration of Conformity for details..

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N·m)	N/A

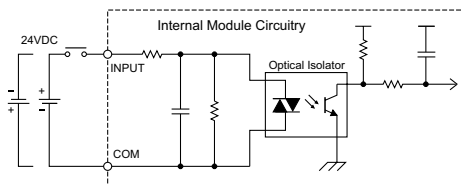
* Recommended screw driver: P/N TW-SD-MSL-1

P1-15CDD1 Input/Output (continued)

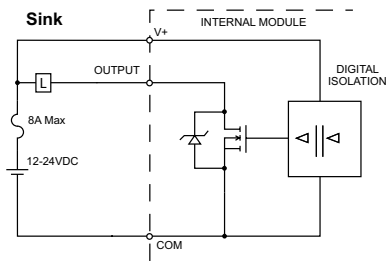
Wiring Diagrams



Typical Input Circuit

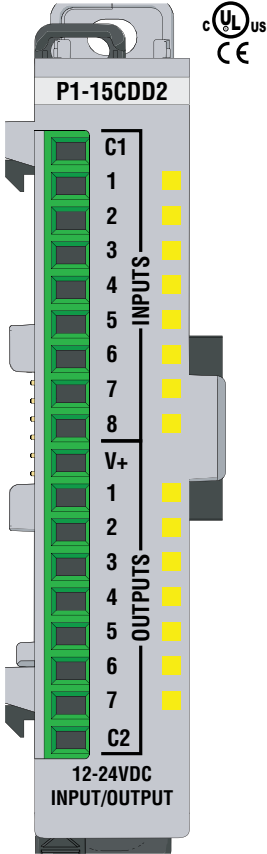


Typical Output Circuit



P1-15CDD2 Input/Output

The P1-15CDD2 Input/Output Module provides eight 12–24 VDC inputs plus seven 12–24 VDC outputs that source up to 1A per output to loads connected to ground for use with the Productivity1000 system.



Terminal blocks sold separately

Input Specifications	
Inputs per Module	8 (Sinking/Sourcing)
Rated Voltage	12–24 VDC
Operating Voltage Range	10.2–26.4 VDC, Max 30VDC
Input Current	8.4 mA @ 24VDC
Maximum Input Current	10mA @ 28.8 VDC)
Input Impedance	3kΩ
Minimum ON Current	1.4 mA
Maximum OFF Current	1mA
ON Voltage Level	>9VDC
OFF Voltage Level	<4.5 VDC
OFF to ON, ON to OFF Response	2ms Max, 1ms Typical
Status Indicators	Logic Side (8 points)
Commons	1 (8 points/common)

Output Specifications	
Outputs per Module	7 (sourcing)
Voltage Rating	12–24 VDC
Operating Voltage Range	10.2–28.8 VDC
Maximum Output Current	1A per point
Minimum Load Current	1mA
Maximum Leakage Current	0.3 mA @ 28.8 VDC
On Voltage Drop	25mV
Maximum Inrush Current	4A for 50ms, 6A for 10ms
OFF to ON, ON to OFF Response	0.5 ms
Status Indicators	Logic Side (7 points)
Commons	1 (7 points/common)
Maximum Applicable Fuse	8A
External Power Supply Required	12–24 VDC (-15%/+20%) @ 22mA

We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5. If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.



P1-15CDD2 Input/Output (continued)

General Specifications	
Operating 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	>10MΩ @ 500VDC
Heat Dissipation	1800mW
Enclosure Type	Open equipment
Module Keying	Electronic
Module Location	Any I/O position in a Productivity1000 system
Field Wiring	Use ZIPLink wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	71g (2.5 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

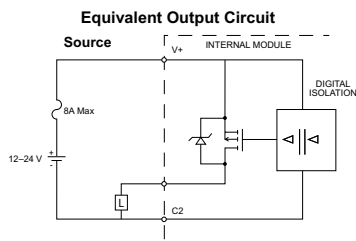
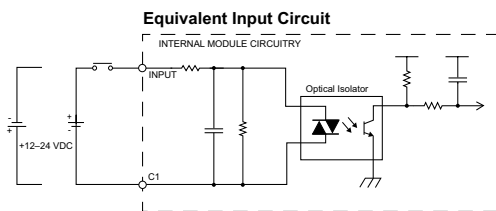
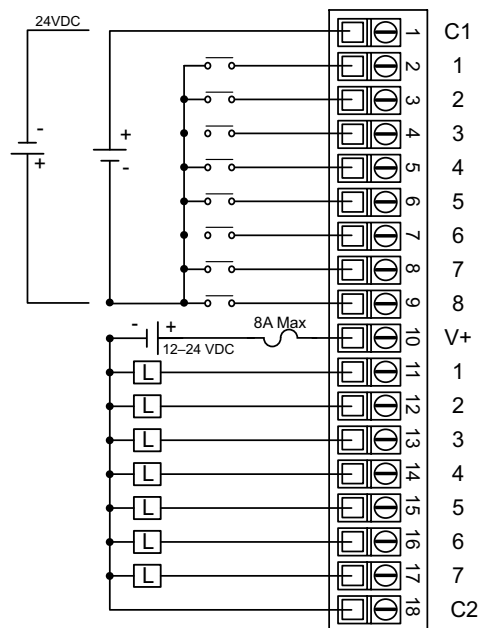
* See CE Declaration of Conformity for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm ²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N·m)	N/A

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

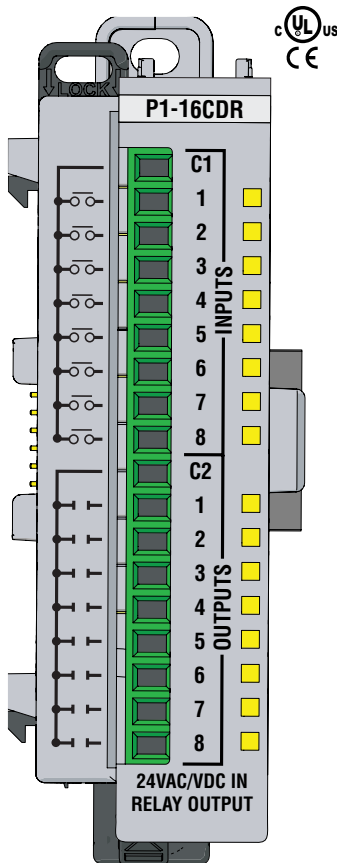
P1-15CDD2 Input/Output (continued)

Wiring Diagrams



P1-16CDR Discrete Input/ Relay Output

The P1-16CDR Discrete Input / Relay Output Module provides eight 24 VAC/VDC inputs and eight relay outputs for use with the Productivity1000 system.



Terminal blocks sold separately



We recommend using pre-wired ZIPLink cables and connection modules. See Chapter 5.

If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1.

Input Specifications

Inputs per Module	8 (sink/source)
Rated Voltage	24 VAC/VDC
Operating Voltage Range	20.4–27.6 VAC/VDC, Max 27.6 VAC, 30VDC
AC Frequency	47–63 Hz
Input Current	8mA @ 24 VAC/VDC
Maximum Input Current	10mA @ 27.6 VAC
Minimum ON Current	2.5 mA
Maximum OFF Current	0.5 mA
ON Voltage Level	>9.5 VDC, >8VAC
OFF Voltage Level	<4.5 VDC, <4VAC
OFF to ON Response	AC: 10ms, DC: 6ms
ON to OFF Response	AC: 20ms, DC: 10ms
Status Indicators	Logic Side (8 points)
Commons	1 (8 points/common)

Output Specifications

Outputs per Module	8
Rated Voltage	6–30 VDC 6–120 VAC
Operating Voltage Range	5–30 VDC 5–144 VAC
Output Type	Relay, Form A (SPST)
AC Frequency	47–63 Hz
Maximum Output Current	1A/point, 8A/common for both AC and DC 1A/point, 8A/common for both is used with ZIPLink cable
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	5A for 10ms
OFF to ON, ON to OFF Response	m10ms
Status Indicators	Logic Side (8 points)
Commons	1 (8 point / common)
Maximum Applicable Fuse	8A

P1-16CDR Discrete Input/ Relay Output (continued)

General Specifications	
Operating 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	>10MΩ @ 500VDC
Heat Dissipation	2730mW
Enclosure Type	Open equipment
Module Location	Any I/O position in a Productivity® 1000 system.
Field Wiring	Use ZIP Link wiring system or removable terminal block (sold separately). See "Wiring Options" in Chapter 5.
Connector Type (sold separately)	18-position removable terminal block
Weight	88g (3.2 oz)
Agency Approvals	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

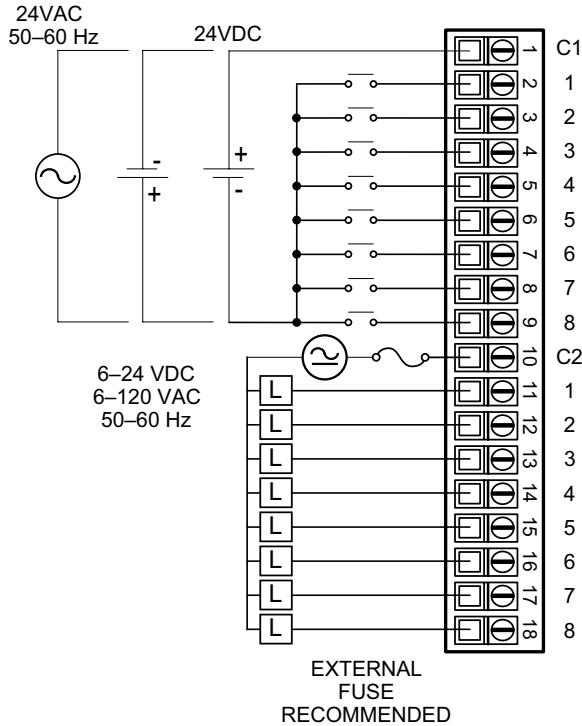
* See CE Declaration of Conformity for details.

Removable Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
Number of Positions	10 screw terminals	10 spring clamp terminals
Wire Range	30–16 AWG (0.051–1.31 mm²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 1/4 in. (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm²) Solid/stranded conductor 3/64 in. (1.2 mm) insulation max. 19/64 in. (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver	0.1 inch (2.5 mm) maximum*	
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

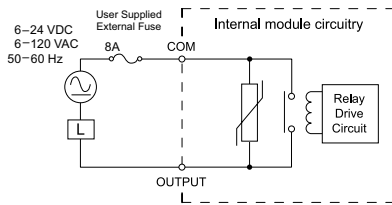
* Recommended screw driver: P/N TW-SD-MSL-1

P1-16CDR Discrete Input/ Relay Output Module (continued)

Wiring Diagrams



Equivalent Output Circuit



Equivalent Input Circuit

