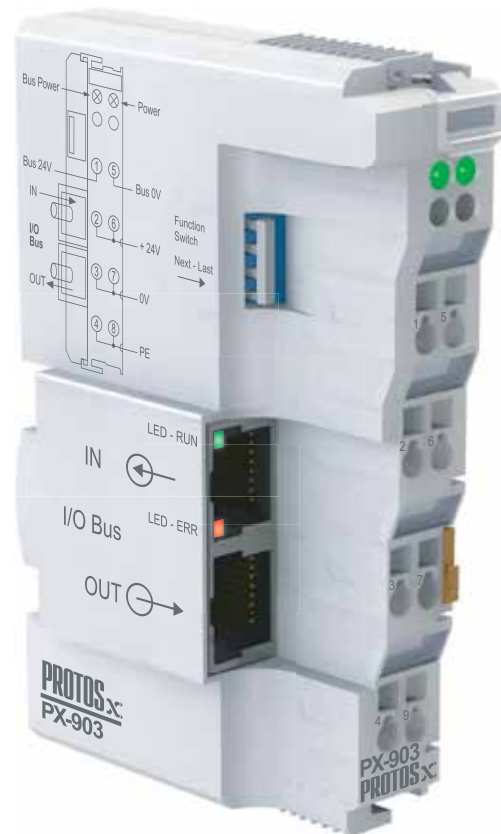


PROTOS^x

PX-903 – Bus Expansion Coupler

The PX-903 Bus Expansion Coupler Terminal enables expansion of terminal assemblies. The PX-903 is installed at the beginning of an expansion terminal assembly and connects to a PX-902 Bus Expansion End Terminal or other PX-903 terminals. Use of the PX-903 allows expansion of up to 31 terminal assemblies in a group. Communication is through the RJ45 port. No configuration is required. Use with the Protos X™ I/O System.



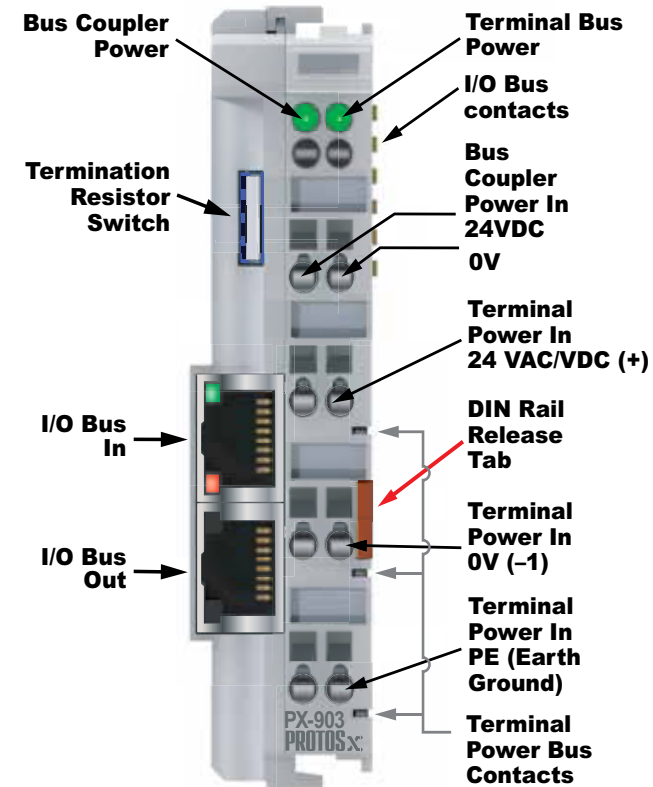
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Sales 800-633-0405

PX-903 Terminal Specifications	
Supply Power for Bus Coupler	24VDC (-15%/+20%)
Input Current from Power Supply	200mA Max, 70mA + (total I/O bus current) / 4
Recommended Fuse	10A Max
I/O Bus Current Supply	400mA Max
Starting Current	2.5 x continuous current
Number of Bus Terminals Supported	64
Supply for Terminal Power Bus	24 VAC/VDC
Maximum Terminal Power Bus Current	10A
Number of Terminal Power Bus Contacts	3 (+24 VAC/VDC, 0V, PE)
Electrical Isolation	500Vms (I/O bus/field potential)
Heat Dissipation	1W max
Number of Expansion Couplers in a Terminal Group	31 max.
Configuration	Automatic
Maximum Distance Between Each Expansion Coupler	16.5ft. (5m)
Connection Type	Ethernet, 2 x RJ45
Recommended Cable	Shielded, Twisted Pair, Cat5e
Termination Resistor	Dip Switch, set for last coupler in expansion group
Adjacent Mounting on Bus Terminals with Power Contact	Yes (Supply)
Adjacent Mounting on Bus Terminals without Power Contact	Yes (Supply)
Passes Terminal Bus Power	Yes (Supply)
Passes PE Bus	Yes (Supply)
Status Indicators	2 Power LEDs

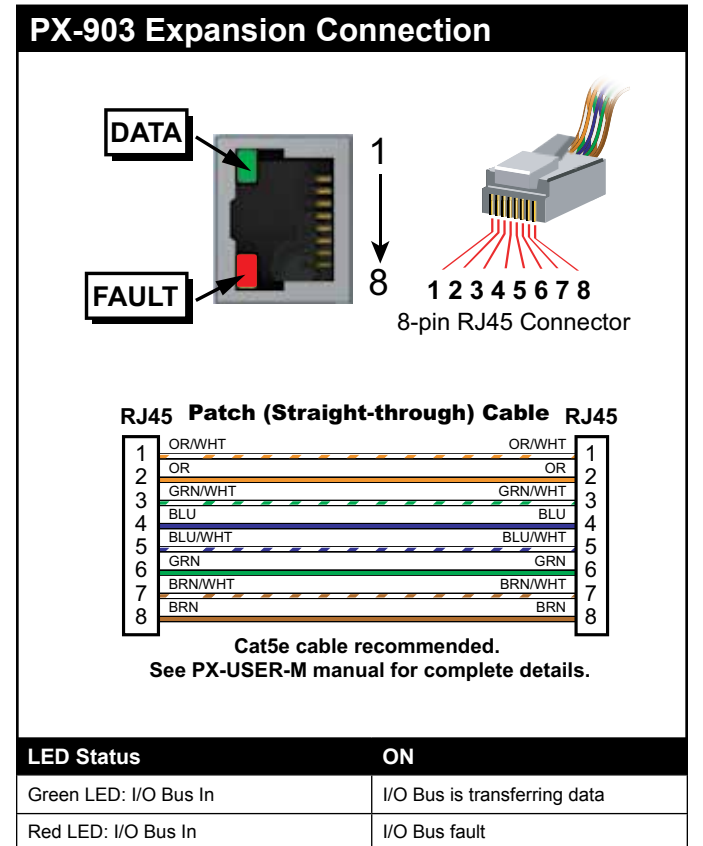
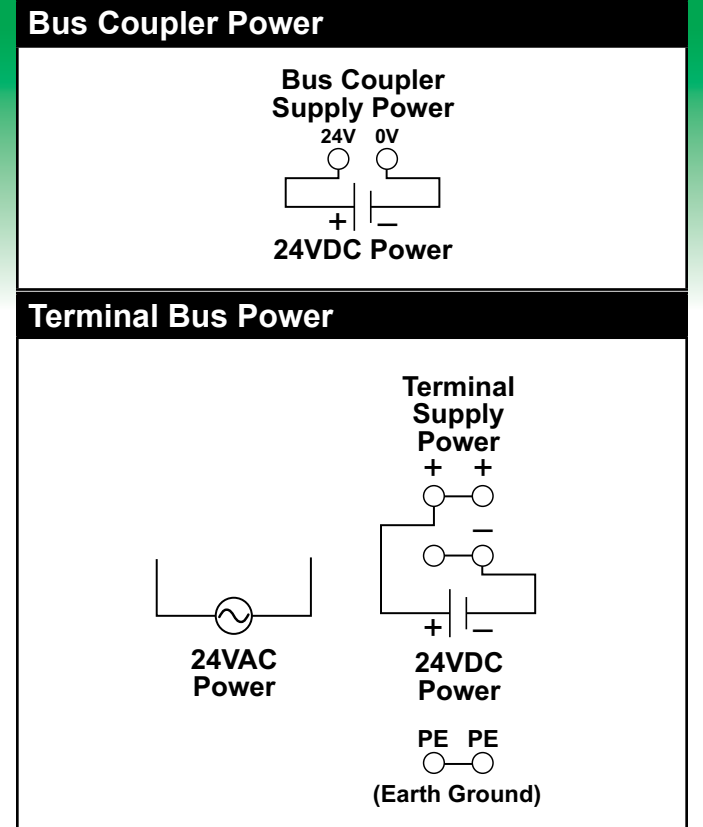
PX-903 General Specifications	
Operating Temp	32° to 131°F (0° to 55°C)
Storage Temp	13° to 185°F (-25° to 85°C)
Relative Humidity	5% to 95%, non-condensing
Environment Air	No corrosive gases permitted
Mounting/Orientation Restrictions	35mm DIN rail/None
Vibration	conforms to EN 60068-2-6
Shock	conforms to EN 60068-2-27
Noise Immunity	conforms to EN 61000-6-2
Protection Class	IP20
Weight	146g
Dimensions (WxHxD)	24.5 x 100 x 68.8 mm (0.96 x 3.94 x 2.71 in)
Agency Approvals	UL File No. E157382, CE

OVERVIEW



Termination Resistor Switch
The Termination Resistor Switch is used to identify the end of the expansion network and should be set to Last. If the PX-903 is not the last expansion coupler, then the switch should be set to Next. See PX-USER-M for full details.

WIRING DIAGRAMS



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Tech Support 770-844-4200

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SYSTEM CONSIDERATIONS

Bus expansion is available when more than 64 terminals are needed within a local area. Bus expansion can increase bus terminal allowance from 64 terminals up to 255 terminals.

Bus expansion is achieved by using a **Bus Expansion End Terminal (PX-902)** in place of a standard **Bus End Terminal (PX-901)** in a PX-MOD or PX-TCP1 terminal assembly. *Please note the PX-TCP2 bus coupler does not support bus expansion.*

A **Bus Expansion Coupler Terminal (PX-903)** is used at each expansion assembly in place of a PX-MOD or PX-TCP1. Up to 31 Expansion Couplers can be used in a group of assemblies. Connection is made between the Expansion Couplers via standard Ethernet cable. The Expansion Coupler has two RJ45 ports, one for I/O Bus In, and one for I/O Bus Out if continuing to another expansion assembly. The maximum distance between each expansion assembly is 16.5ft. (5m) using 24 AWG shielded, twisted pair Cat5e cable.

The PX-MOD and PX-TCP1 automatically assign Modbus addresses for inputs and outputs to the image register. The maximum number of data is 512 bytes of input data and 512 bytes of output data, with up to 1020 inputs, 1020 outputs, 256 analog inputs and 256 analog outputs (PX-MOD) and 128 analog inputs or outputs (PX-TCP1), when using bus expansion.

An **I/O Bus**, powered through the Expansion Coupler, provides data communication across the terminal assembly via six contacts located on the side walls of the terminals. This bus also supplies low voltage power to the I/O terminals. The I/O Bus supply is rated at a maximum of 400mA, which must be taken into consideration when planning an assembly. Each terminal has an I/O bus current consumption listing which can be used to determine the total I/O bus current. The maximum I/O bus current of the coupler must not be exceeded as there is no internal overcurrent protection.

A **Terminal Power Bus** provides power for the I/O

terminals via three contacts; 24V, 0V and PE. A power source of 24VAC or 24VDC must be connected to the Expansion Coupler from an external supply. The PE Bus is available for terminals that support PE connectivity.

A variety of Power Terminals are available for isolating, changing or supplying power to the I/O terminals.

For isolating voltages across the Terminal Power Bus a **Power Separation Terminal (PX-908)** is used. This terminal separates the Terminal Power contacts but passes I/O Bus communication.

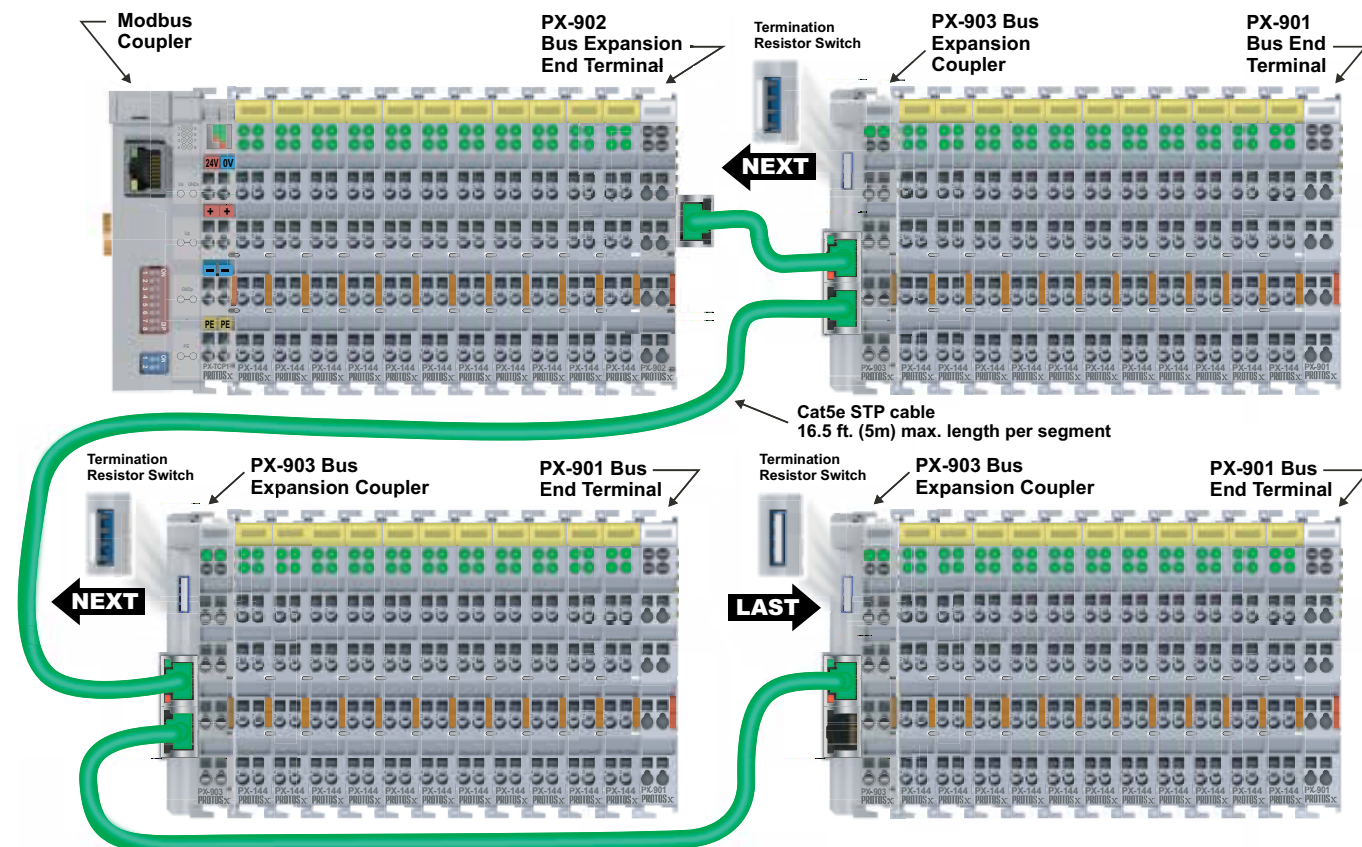
If additional 24VDC supply is required for terminal wiring, eight points of 24VDC power can be distributed from the Terminal Power Bus using a **Power Distribution Terminal (PX-949)**. This terminal must be mounted to the right of a terminal that passes 24VDC on the power bus. Both I/O Bus communication and terminal bus power are passed through to adjoining terminals.

To connect field power to the Terminal Power Bus, or to change from one voltage to another, **Power Feed Terminals (PX-940 & PX-970)** are used. Power Feed Terminals are available in 24VDC or 120-230VAC, and provide power to I/O Terminals located to the right of the Power Feed Terminal. This terminal passes I/O Bus communication. Power Terminals do not consume any addresses.

It is important to stay within the following three specifications:

1. Do not exceed the total number of 64 Terminals allowed per Assembly.
2. Do not exceed the total number of 512 Input Bytes and 512 Output Bytes.
3. Do not exceed the Coupler I/O Bus Power Budget of 400mA as there is no internal current protection.

For complete system assembly instructions see the PX-USER-M Manual.



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MOUNTING

For system assembly, first attach a bus coupler by snapping onto 35mm DIN rail and securing into position using the DIN rail locking wheel (where applicable) located on the left side of the coupler. To add a bus terminal, insert unit onto right side of bus coupler using the tongue and groove at the top and bottom of the unit, pressing gently until it snaps onto the DIN rail. A proper connection cannot be made by sliding the units together on the DIN rail. When correctly installed, no significant gap can be seen between the attached units. Bus connection is made through the six slide contacts located on the upper right side of the units. Add up to 64 bus terminals per bus coupler, including a bus end terminal.

IMPORTANT: For complete assembly instructions and compatibility between terminals see the PX-USER-M manual available for free download at www.automationdirect.com.

Insert unit using tongue and groove molded guide and press gently until it becomes firmly seated on DIN rail.

Where applicable, rotate Locking Wheel to lock Bus Coupler



REMOVAL

A locking mechanism prevents individual units from being pulled off. For bus terminal removal, pull the orange DIN rail release tab firmly to unlatch the unit from the rail. If attached to other terminal units, slide unit forward until released. For bus couplers with locking wheels, release the DIN rail locking wheel, then pull firmly on DIN rail release tab.

Where applicable, rotate Locking Wheel to unlock Bus Coupler



Firmly pull DIN Rail Release Tab to unlatch unit from rail.

HOT SWAP NOT PERMITTED

Always remove power from the system before inserting or removing bus terminals or couplers as failure to do so could cause malfunction or damage to the terminals, couplers or other connected devices.

SAFETY

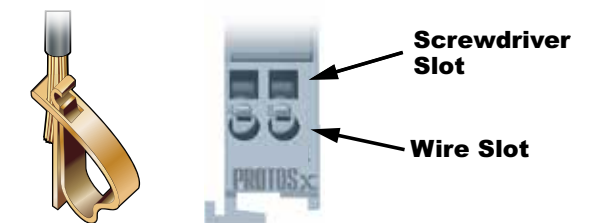
To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

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WIRING CONNECTION

Wire connection is made through a spring clamp style terminal. This terminal is designed for a single-conductor solid or stranded wire. Wire connection is made by firmly pushing the screwdriver into the screwdriver slot, inserting the wire into the wire slot and removing the screwdriver, locking the wire into position.



Wiring Specifications

Connection Type	Spring Clamp Terminals
Wire Gauge / Wire Cross Section	28-14 AWG / 0.08 - 2.5mm ²
Screw Driver Width	Use screwdriver width 2.5mm (0.10) such as our TW-SD-MSL-2
Wire Stripping Length	8mm

Document Name	Edition/Revision	Date
PX-903-DS	1st ED.	9/15/2014

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