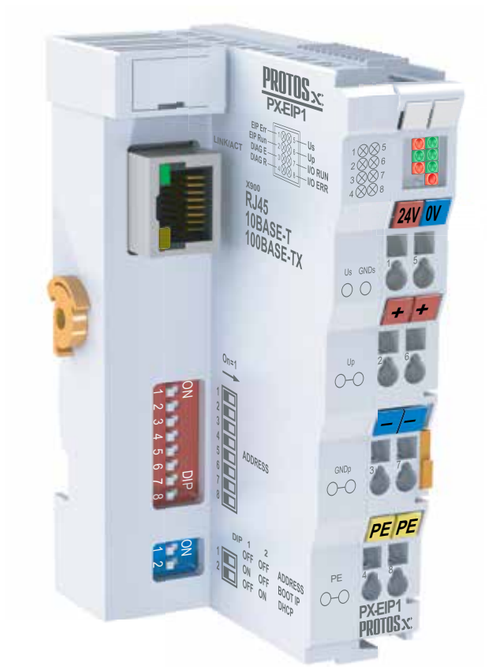
PROTOS X

PX-EIP1 – EtherNet/IP Bus Coupler with 1 RJ45 Port

The PX-EIP1 EtherNet/IP Bus Coupler server allows connection of up to 64 terminals per assembly, 255 terminals total with I/O bus expansion. The PX-EIP1 consists of one RJ45 Ethernet 10/100 Base-T port for connection to an Ethernet client. Use with the Protos X™ I/O System.



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Sales 800-633-0405

PX-EIP1 I/O Bus Specifications	
Supply Power for I/O Bus	24VDC (-15%/+20%)
Input Current from Power Supply	70mA + (total I/O bus current) / 4
Recommended Fuse	10A Max total
I/O Bus Current Supply	1000mA Max
Number of Bus Terminals Supported	64 per assembly, 255 w/ I/O Bus Expansion (based on power budget)
Number of Discrete Inputs/Outputs	1020 Inputs and 1020 Outputs with 255 terminals
Number of Analog Inputs/Outputs	128 total
Maximum Number of Data Bytes*	512 Input Bytes and 512 Output Bytes
PX-EIP1 Terminal Power Bus Specifications	
Supply Power for Terminal Bus	24VDC
Maximum Current	10A
Number of Power Contacts	3 (+24 VAC/VDC, 0V, PE)
PX-EIP1 Ethernet Port Specifications	
Configuration	Dip switches and PX-CFGSW software
Protocol	EtherNet/IP (supports Implicit Messaging only)
Scanner/Client Connections	1
Data Transfer Rates	10/100 Mbps (auto-crossover)
Maximum Cable Length	100m between Coupler and switch
Connection Type	Ethernet, RJ45
Recommended Cable	Shielded, Twisted Pair, Cat5e

PX-EIP1 General Specs	
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
Noise Emission	Conforms to EN 61000-6-4
Protection Class	IP20
Weight	100g
Dimensions (WxHxD)	44 x 100 x 66.4 mm (1.73 x 3.94 x 2.61 in)
Agency Approvals	UL/cUL E172151 (BK9055), CE

LED Status	On	Off
Red LED 1: EIP Error	See PX-CFGSW Help file or PX-USER-M manual for codes.	No EIP Error
Green LED 2: EIP Run	EIP Communication with Scanner (Client) **Flashing:** No Active Communication	N/A
Red LED 3: DIAG Err	See PX-CFGSW Help file or PX-USER-M manual for codes.	No DIAG Err
Green LED 4: DIAG Run	Diagnostics active w/o error **Flashing:** Used in conjunction with Diag Error to determine fault.	N/A
Green LED 5: Us	Bus Coupler Power On	Bus Coupler Power Off
Green LED 6: Up	Terminal Power On	Terminal Power Off
Green LED 7: !/O Bus Run	I/O Bus Data Active (On or Flashing)	No I/O Bus Activity
Red LED 8: I/O Bus Err	I/O Bus Error, blinking Code. See PX-CFGSW Help file or PX-USER-M manual for codes.	No I/O Bus Error

*Number of Terminals cannot exceed 512 input bytes and 512 output bytes.

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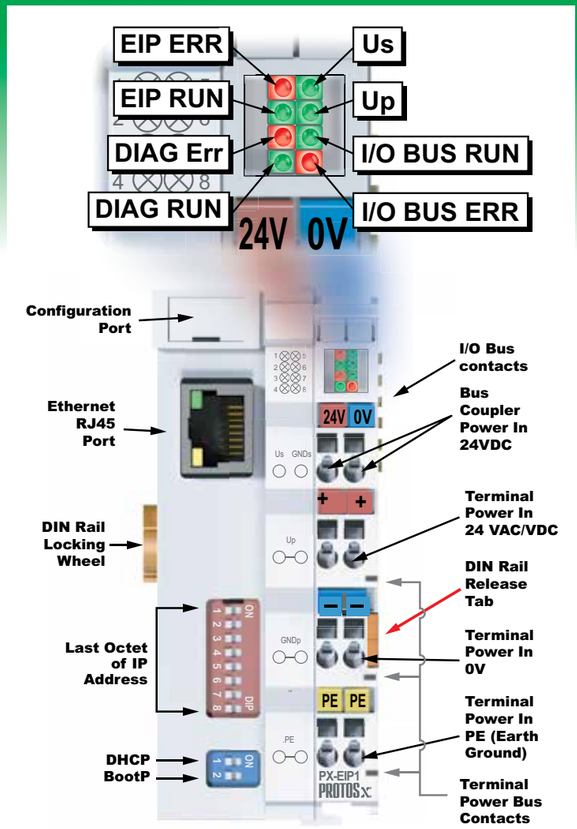
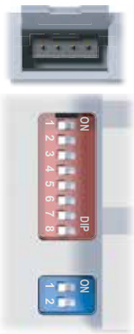
OVERVIEW





Configuration Port

Requires cable PX-USB-232, with a USB 2.0 type A connector for the PC and a 4-pin custom micro connector for the bus coupler. Works with PX-CFGSW software.

IP Address Switches

When setting the IP Address the first three octets of the address are set using PX-CFGSW software. The fourth octet is set using the dipswitches. See PX-USER-M for full details.

DCHP/BootP

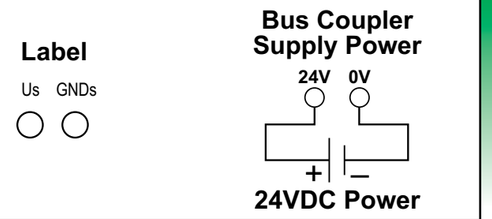
Used to select the type of address assignment. If both DIP switches are off, assignment is by DIP Switches (1 through 8).

Communication Format	
Integer 8 bit Unsigned, Integer 16 bit, or Integer 32 bit	
Assembly Instance	**Size**
Input: 101	(4 x INT 8 (BYTE) or 2 x INT 16 or 1 x INT 32) + terminals
Output: 102	(4 x INT 8 (BYTE) or 2 x INT 16 or 1 x INT 32) + terminals
Configuration: 100	0

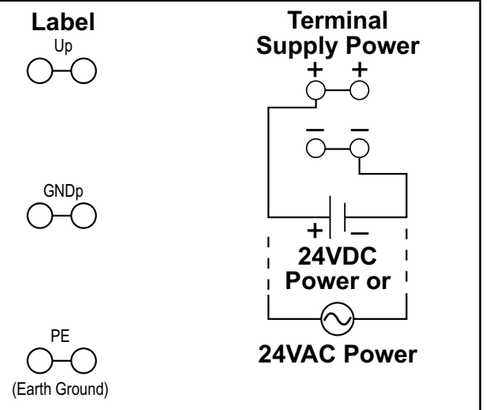
Tech Support 770-844-4200

WIRING DIAGRAMS

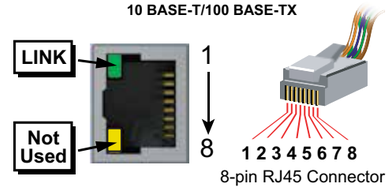
Bus Coupler Power

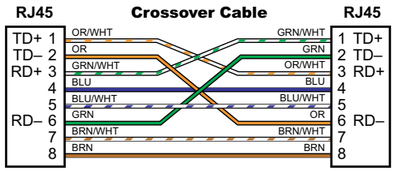


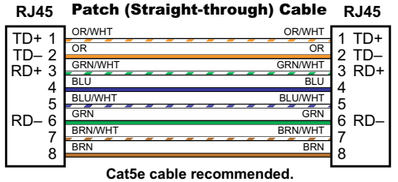
Terminal Bus Power



PX-EIP1 Ethernet Connection







Cat5e cable recommended.
See PX-USER-M manual for complete details.

LED Status		
Green LINK LED	ON = Connection Good	Flashing = Comm Active
Yellow LED	Not Used	

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SYSTEM CONSIDERATIONS

The PX-EIP1 performs as a EtherNet/IP server in a EtherNet/IP network. Communication to the client is via an RJ45 Ethernet port. The maximum distance from client to the PX-EIP1 is 330 feet (100 meters) using 24 AWG shielded, twisted pair Cat5e cable. It is highly recommended that a dedicated network be used for the Protos X system.

The PX-EIP1 Bus Coupler supports up to 64 terminals per assembly, 255 with Bus Expansion Couplers. A minimal assembly consists of a **PX-EIP1 Bus Coupler**, **I/O Terminals** and a **Bus End Terminal**.

The PX-EIP1 automatically assigns EtherNet/IP 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, and 128 analog inputs or outputs, when using bus expansion.

An **I/O Bus**, powered through the Bus 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 1000mA that must be taken into consideration when planning an assembly. Each terminal has an I/O bus current consumption listing that 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 bus 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.

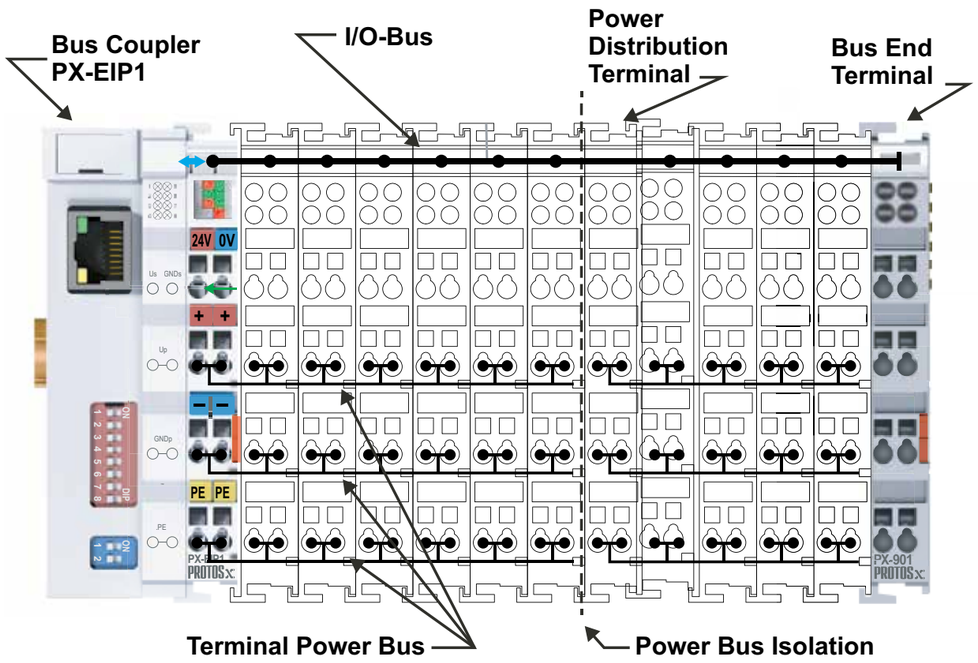
To connect field power to the Terminal Power Bus, or to change from one voltage to another, **Power Feed Terminals (PX-940 & PX-970)** are used. Power Feed Terminals are available in 24VDC or 120-230VAC, and provide power to I/O Terminals located to the right of the Power Feed Terminal. This terminal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

For expansion beyond a 64 terminal assembly, a **Bus Expansion End Terminal (PX-902)** is used in place of a standard **Bus End Terminal (PX-901)**. A **Bus Expansion Coupler Terminal (PX-903)** is used at each expansion assembly in place of a PX-EIP1 Bus Coupler. Up to 31 Expansion couplers can be used in a group of assemblies. Connection is made between the Expansion Coupler Terminals via standard RJ45 Ethernet cable.

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 1000mA as there is no internal current protection.**

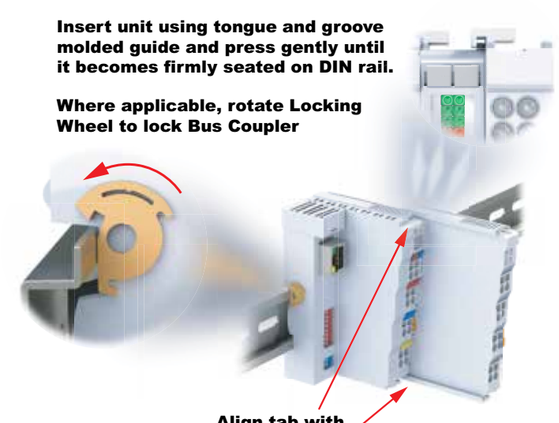
For complete system assembly instructions see the PX-USER-M Manual.



MOUNTING

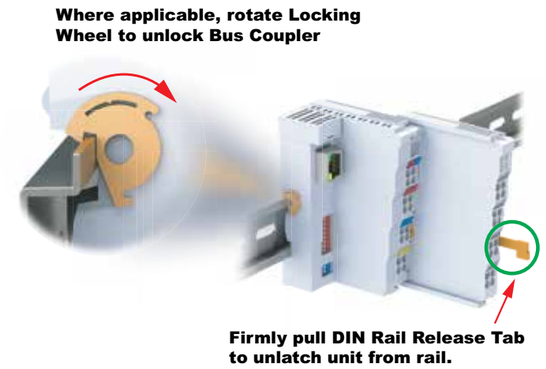
For system assembly, first attach a bus coupler by snapping onto 35mm DIN rail and securing into position using the DIN rail locking wheel located on the left side of the coupler. To add a bus terminal, insert unit onto right side of bus coupler using the tongue and groove at the top and bottom of the 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.



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, release the DIN rail locking wheel, then pull firmly on DIN rail release tab.



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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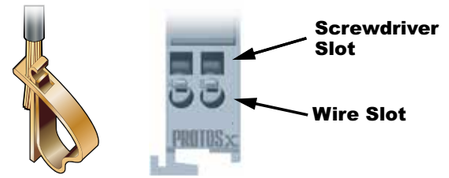
EtherNet/IP FEATURES

The PX-EIP1 Bus Coupler functions as a server in a EtherNet/IP network. For complete details see the PX-USER-M manual.

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 - 2.5mm²
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-EIP1-DS	1st ED. RevA	10/19/2018