



SAFETY PRECAUTIONS

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Only qualified workers should install this equipment. Such work should be performed only after reading this entire set of instructions.
- NEVER work alone.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Turn off all power supplying the equipment in which the EGX is to be installed before installing and wiring the EGX.
- Always use a properly rated voltage sensing device to confirm that power is off.
- Beware of potential hazards, wear personal protective equipment, and carefully inspect the work area for tools and objects that may have been left inside the equipment.
- The successful operation of this equipment depends upon proper handling, installation, and operation. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.

Failure to follow these instructions will result in death or serious injury.

INTRODUCTION

Box Contents

- EGX unit and connectors
- Mounting kit (rubber feet and DIN rail adapters)
- 24 Vdc power supply
- Mounting template
- Registration card
- Installation manual
- Technical Library CD-ROM

Additional Resources

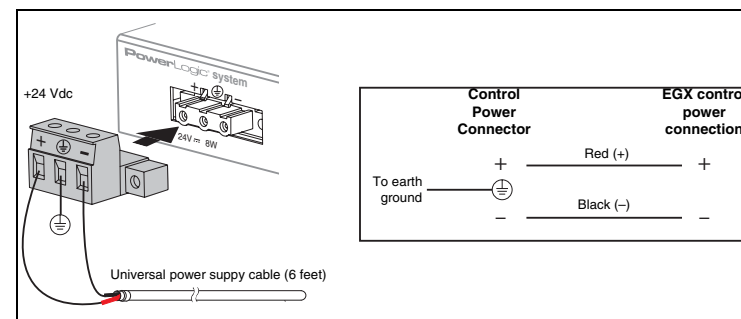
Go to www.powerlogic.com, select your country > literature > Communication Devices > Ethernet EGX > Instructional, and then click the manual you want to download. If you do not have a user name and password, follow the instructions on the web site.

Quick Start Checklist

- Wire the control power.
- Configure the Ethernet communications with HyperTerminal (using a null modem cable) or with a web browser (using an Ethernet crossover cable).
- Configure the serial ports.
- Configure the device list.
- Wire the serial ports.
- Mount the unit.

INSTALLATION

Control Power Wiring



NOTE: The EGX must be properly connected to a true earth ground. If needed, another power supply can be used to power the EGX as long as the power supply is rated for a minimum of 8 watts at 24 Vdc (±10% regulation). See "Specifications" on page 2 for more information about the power supply.

Ethernet Ports

10/100BaseTX RJ-45 Twisted Pair: This Ethernet port drives a twisted pair cable up to 328 ft (100 m). Use data grade twisted-pair wire. This wire must have a characteristic impedance of 100 ohms and meet the EIA/TIA Category 5 standard wiring specifications. The cable can be either Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP). UTP is commonly used in the United States, and STP is commonly used in Europe.

100BaseFX Fiber Optic (EGX400): The fiber-optic port allows the EGX400 to communicate with a fiber optic based Ethernet LAN. The port is a duplex LC connector receptacle and is compatible with 1310 nm wavelength multimode fiber connections. It is optimized for 62.5 or 50/125 micron multimode graded index glass optical fiber. The transceiver is capable of signal integrity in up to 6,562 ft (2,000 m) of multimode fiber. This port supports both half-duplex and full-duplex fiber-optic cable.

NOTE: The EGX400 is shipped with a dust cover inserted into the fiber-optic port because the port is sensitive to dust. The dust cover should remain in the fiber-optic port at all times except when it is removed to insert a fiber-optic cable. Retain the dust cover for future use.

Ethernet Configuration

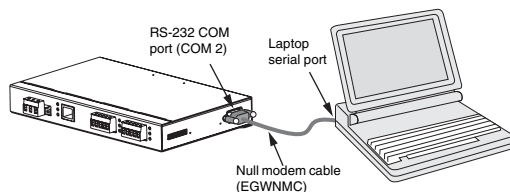
Before configuring the EGX, obtain a unique static IP address, subnet mask, and default gateway (router) address from your network administrator.

Table 1: EGX Default Ethernet Settings

Option	Description	Default
IP Address	The EGX Ethernet IP address (static IP required)	10.10.10.10
Subnet Mask	The Ethernet IP subnet mask address of your network	255.255.255.0
Default Gateway	The gateway (router) used for wide area network (WAN) communications	0.0.0.0
Media Type	Defined as either an UTP or fiber optic connection	Twisted pair (UTP)

Using Hyper Terminal

- Attach a null modem cable (see below).



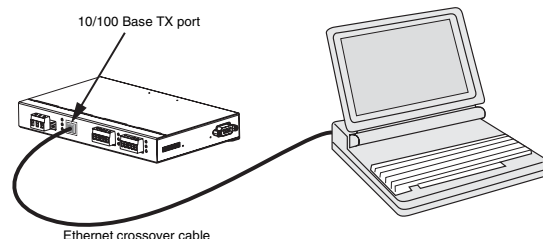
- Click **Start > Run**, then type *hyperterm*.
- In the **Name** text box, type a name for the new connection (for example, *EGX config*), then click **OK**.
- In the **Connect using** drop-down list box, select the computer COM port you will be using, then click **OK**.
- Set the COM properties as follows: Bits per second = 19200, Data bits = 8, Parity = None, Stop bits = 1, and Flow control = None.
- Click **OK**.
- Start the EGX Setup Utility:
 - Apply power to the EGX (see "Control Power Wiring").
 - When the green COM 2 RS-485 LED turns OFF, press Enter on the computer keyboard within five seconds to access the EGX setup utility. See Table 2 for a description of the setup options.

Table 2: EGX Setup Utility Options

Option	Description	Setting
1	Used to enter the IP address.	0.0.0.0 to 255.255.255.255
2	Used to enter the subnet mask.	0.0.0.0 to 255.255.255.255
3	Used to enter a router IP address.	0.0.0.0 to 255.255.255.255
4	Used to define the physical Ethernet connection or media type.	<ul style="list-style-type: none"> 10T/100TX Auto 10BaseT (Half-Duplex) 10BaseT (Full-Duplex) 100BaseTX (Half-Duplex) 100BaseTX (Full-Duplex) EGX400 only: <ul style="list-style-type: none"> 100BaseFX (Half-Duplex) 100BaseFX (Full-Duplex)
5	Saves the settings and exits the setup utility.	

Using a Web Browser

- Connect an Ethernet crossover cable from the EGX to the computer.



- On your computer, set a static IP address of 10.10.10.11 and a subnet mask of 255.255.255.0.
NOTE: If you are unsure how to do this, contact your network administrator. Make a note of your computer's current settings before making any changes.
- Start Internet Explorer (version 6.0 or higher).
- In the **Address** text box, type *10.10.10.10*, then press Enter.
- Type *admin* for your password, then click **Login**.
- Click **Communications Settings**.
- Enter your IP address, subnet mask, and default gateway address assigned to your EGX by your network administrator, then click **Update**.
- Reset your computer to its original network configuration.

Communications

- Start Internet Explorer.
- In the **Address** text box, type the IP address assigned to your EGX, then press Enter.
- Type *admin* for your password and click **Login**.
- Click **Communications Settings** or **Device List** as appropriate and proceed to the sections below.

Configuring Serial COM Ports

- Click **Communications Settings**.
- Select the baud rate, parity, and wiring mode for the serial COM port.

NOTE: Attached serial devices must have the same baud rate, parity, and wiring mode settings. If you are using RS-485, set the mode according to whether your daisy chain is 2-wire or 4-wire. The two serial ports on the EGX are configured independently from each other and can have different settings.

Parameter	Options	Default Setting
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400	19200
Parity	None, Even	Even
Mode	4-Wire, 2-Wire	4-Wire
Port Selection (COM 2 only)	RS-485, RS-232	RS-485

- Click **Update** to save changes, then click **Home**.

Configuring the Device List

For COM 1 daisy-chain devices:

- MODBUS/JBUS devices do not have to be defined in the COM 1 column of the Device List, but it helps you manage your system.
- POWERLOGIC protocol (SY/MAX) devices must be defined in the COM 1 column of the Device List.

For COM 2 daisy-chain devices, all MODBUS/JBUS and POWERLOGIC devices must be defined in the COM2 column of the device list.

To set up the Device List for the EGX200:

- Click **Device List**.
- In the **COM 1** and **COM 2** columns, enter the device **Address** and **Device Type** for each attached device on the daisy chain.
- Click **Update**, then click **Home**.
NOTE: Do not use address 1 or 16 in a mixed mode daisy chain (for example, a single daisy chain with some RS-485 devices using POWERLOGIC device type and others using MODBUS/JBUS device type).

To set up the Device List for the EGX400:

- Click **Device List**.
- In the **COM 1** and **COM 2** columns, enter the device **Address**, **Device Name**, and **Device Type** for each attached device on the daisy chain.
- Click **Update**, then click **Home**.

Wiring to MICROLOGIC Trip Units (EGX200)

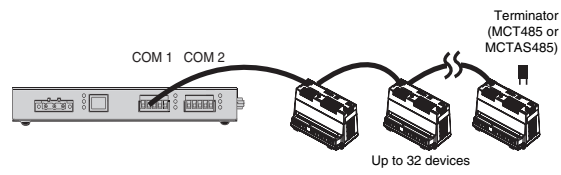
We recommend that you wire and connect all MICROLOGIC® trip units to COM 1. If trip units are on COM 2, all components (meter module, protection module, breaker communications module [BCM], and cradle communications module [CCM]) must be entered into the COM 2 device list (only 24 trip units can be connected to COM 2). Refer to instruction bulletin 63220-080-200 and your MICROLOGIC trip unit instruction bulletin for more information.

Serial Communication Wiring

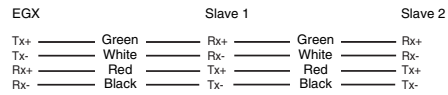
The EGX has two serial ports: COM 1 is always set for RS-485 communication, and COM 2 is selectable between RS-485 and RS-232. By default, COM 2 is set for RS-485 communication.

NOTE: The last device on an RS-485 daisy chain usually needs a terminator (part number MCT485, MCTAS485, or MCT2W [2-wire]).

4-wire Devices



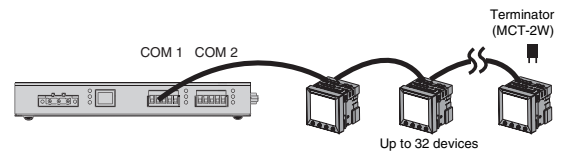
4-wire (use Belden 8723 or 9842)



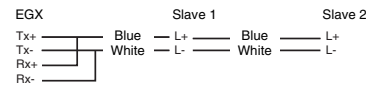
NOTE: The color code shown is for Belden 8723. The color code for Belden 9842 is Blue/White (Tx+), White/Blue (Tx-), Orange/White (Rx+), and White/Orange (Rx-).

NOTE: For surge protection, we recommend connecting the shield wire directly to an external earth ground.

2-wire Devices



2-wire (use Belden 9841)



NOTE: For surge protection, we recommend connecting the shield wire directly to an external earth ground.

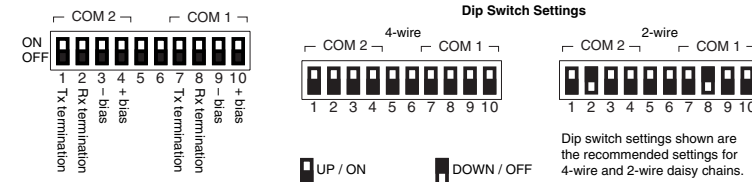
Daisy Chain Maximum Distances

Baud Rate	Max. distance for 1–16 devices	Max distance for 17–32 devices
1200	10,000ft (3,048m)	10,000 ft (3,048m)
2400	10,000ft (3,048m)	5,000 ft (1,524m)
4800	10,000ft (3,048m)	5,000 ft (1,524m)
9600	10,000ft (3,048m)	4,000 ft (1,219m)
19200	5,000ft (1,524m)	2,500 ft (762m)
38400	5,000ft (1,524m)	1,500 ft (457m)

NOTE: This table is only to be used as a guide.

NOTE: Reduce the number of devices or maximum distances by half for 4-wire devices used in 2-wire networks.

RS-485 Biasing and Termination



RS-232 Serial Port

The RS-232 port is used to configure the EGX network parameters, and also can be used for serial communication using Modbus RTU. The EGX RS-232 port is wired as a data terminal equipment (DTE) device and uses a standard DB9 male connector.

Table 3: RS-232 Pin Assignments (DB9 EGX Signal Set)

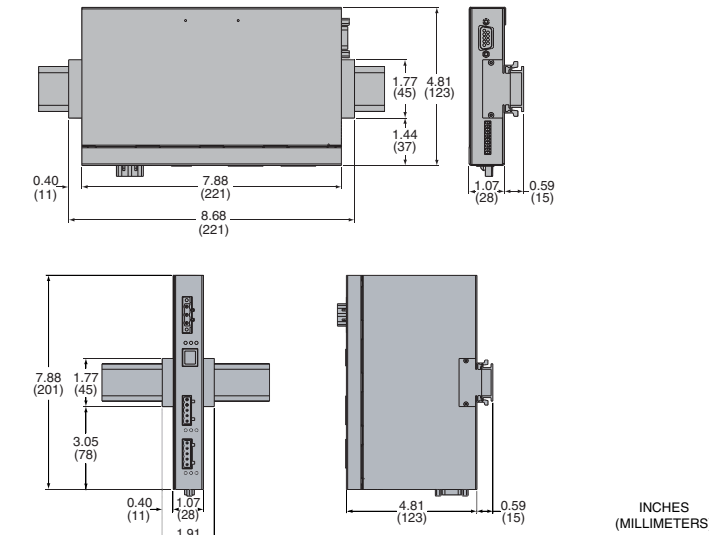
Pin No.	Description
Pin 1	Received Line Signal Detector (Data Carrier Detect)
Pin 2	Received Data
Pin 3	Transmit Data
Pin 4	Data Terminal Ready
Pin 5	Signal Ground

Table 3: RS-232 Pin Assignments (DB9 EGX Signal Set)

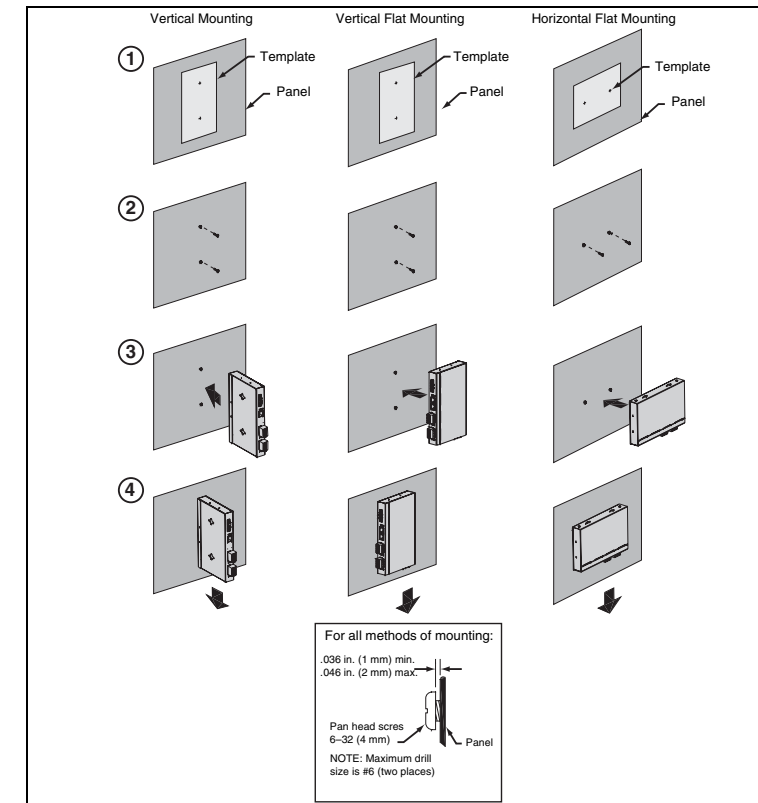
Pin No.	Description
Pin 6	Data Set Ready
Pin 7	Request To Send
Pin 8	Clear To Send
Pin 9	Ring Indicator

MOUNTING

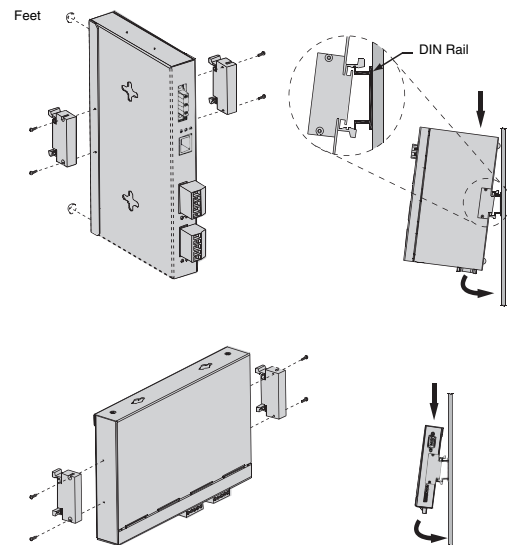
Dimensions



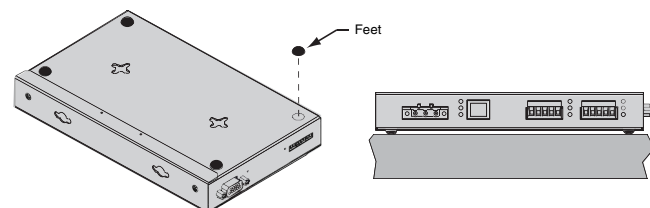
Wall/Panelboard Mounting



DIN Rail Mounting



Feet Installation



SPECIFICATIONS

Control Power Input	
Operating Input Range	24 Vdc ($\pm 10\%$) sourced by Class 2 rated power supply
Burden, maximum	8 Watts
Isolation	1.5 kV
Environmental	
Ambient Operating Temperature	-30° to $+80^{\circ}\text{C}$
Storage Temperature	-40° to $+85^{\circ}\text{C}$
Humidity Rating	5–95% Relative Humidity (non-condensing) at $+40^{\circ}\text{C}$
Pollution Degree	Class 2
Physical	
Weight	1.5 lbs. (.68 kg)
Dimensions	Length (7.88 in. / 200.2 mm), Width (4.81 in. / 122.2 mm), Depth (1.07 in. / 27.2 mm)
Universal Power Supply (included)	
Operating Input Voltage	90–264 Vac, 47–63 Hz
Output	24 Vdc ($\pm 2\%$ Regulation), 20 watts
Safety Approvals	cUL, CE, TUV
Operating Temperature	0° to $+40^{\circ}\text{C}$
Regulatory/Standards Compliance	
Electromagnetic Interference	
Radiated Emissions	EN 55022 / FCC Class A
Conducted Emissions	EN 55022 / FCC Class A
Immunity for Industrial Environments	EN 61000-6-2
Electrostatic Discharge (Air Discharge)	EN 61000-4-2
Immunity to Surge (Impulse Wave)	EN 61000-4-5
Immunity to Electrical Fast Transients	EN 61000-4-4
Power Frequency Magnetic Field	EN 61000-4-8
Voltage Dips	EN 61000-4-11
Voltage Interruptions	EN 61000-4-11
Conducted Immunity	EN 61000-4-6

Radiated Immunity	EN 61000-4-3
Product Standards	
USA (Miscellaneous Apparatus)	UL 508
Canada (Industrial Equipment)	cUL (complies with CSA C22.2, #14–M91)
Europe	CE

MAINTENANCE AND TROUBLESHOOTING

Maintenance

The EGX does not require maintenance, nor does it contain any user-serviceable parts. If the EGX requires service, contact your local sales representative for help. Refer to the technical support contacts provided in the shipping carton for a list of support phone numbers by country. Do not open the EGX enclosure; this will void the product warranty agreement.

Diagnostics

The Diagnostics page, served by the EGX, displays diagnostic data and may be helpful in troubleshooting network problems. This page also contains information about your specific EGX, including the serial number, manufacturing date, and media access control (MAC) address. Pressing Reset clears all cumulative counters.

NOTE: This page will show accumulated readings since the EGX was last activated. If power to the EGX is lost, all values reset to zero.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must be installed and serviced only by qualified personnel.
- Qualified persons performing diagnostics or troubleshooting that require electrical conductors to be energized must comply with NFPA 70 E – Standard for Electrical Safety Requirements for Employee Workplaces and OSHA Standards – 29 CFR Part 1910 Subpart S – Electrical.

Failure to follow these instructions will result in death or serious injury.

Troubleshooting

Problem	Possible Cause	Solution
Power LED is not lit.	Source power is not applied or is not stable.	Apply power or check power source.
	LED is burned out.	Check to see if other LEDs operate properly.
Ethernet link LED is not lit.	Proper link is not established.	Make sure the proper cable is used and connected. Make sure the proper media type is selected in the EGX Communications setup configuration.
	Cannot browse the EGX.	Verify all IP parameters are correct. Verify EGX receives requests (ping EGX by going to DOS prompt and typing "ping" and the EGX IP address, e.g., ping 199.0.62.41). Verify all browser internet options connections settings are correct.
SMS does not go online with devices on EGX.	Configuration problems	Verify that the EGX configuration matches the SMS configuration. Verify the device address is entered correctly in SMS.
	Forgot administrator password.	Call your local sales representative for assistance.

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This product must be installed, connected, and used in compliance with prevailing standards and/or installation regulations. As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

63230-314-200C2
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