EPE5

Ethernet Port Expander

Description

The EPE5 is an Ethernet Port Expander built in the SY/MAX form factor. The EPE5-T is equipped with a 10BaseT Ethernet port and four RS-422/485 serial ports and the EPE5-ST is equipped with a 10BaseT Ethernet port and four RS-232 serial ports. The EPE5 is one of Niobrara's most popular products.

The EPE5 replaces the EPE5-TCP-D and the EPE5-TCP-A. An Ethernet media converter is needed to go from twisted-pair to other Ethernet media.

The EPE5 now has several new features previously unavailable:
- An Ethernet I/O scanner table with 128 entries.
- The termination and bias of the serial ports is now configurable.
- The backplane interface is now 16-bits wide.
- Module configuration can be written to EEPROM "on-the-fly" or to FLASH when in download mode.

Applications

Modbus Master to Ethernet Gateway
- Supports up to four Modbus master devices, either RTU or ASCII
- Each master can talk to up to 128 devices on the EPE5's serial ports or over Ethernet
- Use with DCS systems to talk to PLCs and other equipment
- Supports 200 destination IP addresses

Ethernet to Modbus Slave Bridge
- Supports up to four networks of Modbus slaves, either RTU or ASCII
- Each serial port will support up to 32 slave devices
- Up to 63 master devices can talk to the connected slaves

Modbus/TCP to SY/MAX® Ethernet Protocol Converter
- Allows bi-directional communication between Modbus Ethernet and SY/MAX Ethernet devices
- Reap the benefits of Transparent Ready™ without abandoning or replacing your existing SY/MAX equipment

Ethernet to POWERLOGIC® Bridge
- One EPE5-T can support up to 128 POWERLOGIC devices
- Mix POWERLOGIC and Modbus devices on the same serial port
- Simultaneous System Manager® and PLC access to POWERLOGIC devices
- Connect to POWERLOGIC devices using Modbus/TCP

SY/MAX Ethernet NIM
- Interconnect SY/MAX PLCs over Ethernet
- Emulate on Ethernet any of the specialty NIMs
- Supports register reads/writes as well as PLC programming commands
- NR&D DC1 cable connects the EPE5 to SY/MAX PLC
- Can serve as hot standby Ethernet transfer NIM
- Make an Ethernet to SY/NET® bridge by connecting an EPE5 to a blue hose NIM

PLC programming access point
•Plug a PC into an EPE5 serial port and program Modicon and SY/MAX PLCs over the same
   connection. The NR&D SC902 Smart Cable will connect an EPE5 serial port to a PC COM port.

Radio Master
•Control radio networks
•Mix Modbus devices onto RNIM radio networks

Serial Protocol Converter
•Devices with different protocols can communicate with each other on separate serial ports
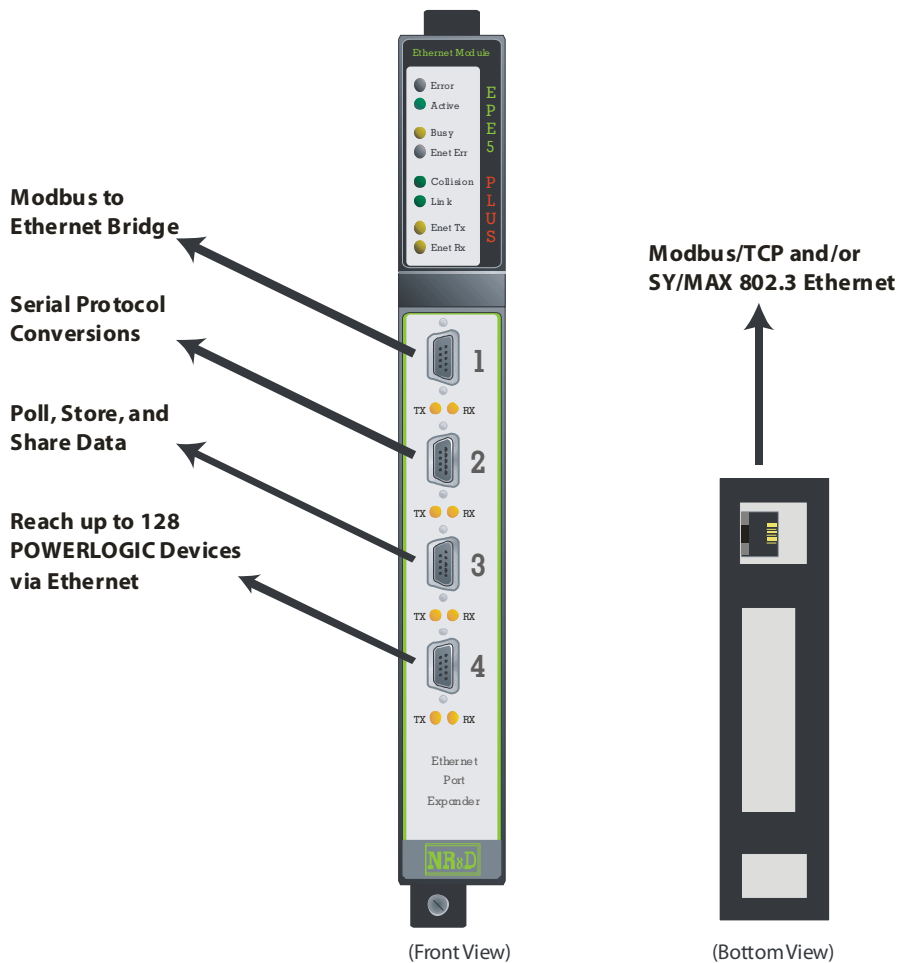
Data Concentrator
•Store data in the 2,048 mailbox registers accessible through any port
•Auto-scan devices on the serial ports or on Ethernet with register reads and writes
•Allows slave devices to share data with no PLC intervention

Ethernet troubleshooting device
•Statistic registers are available for troubleshooting the Ethernet and serial ports

**"... program Modicon
and SY/MAX PLCs over
the same connection."**

**Modbus to
Ethernet Bridge**

**Serial Protocol
Conversions**

**Poll, Store, and
Share Data**

**Reach up to 128
POWERLOGIC Devices
via Ethernet**

**Modbus/TCP and/or
SY/MAX 802.3 Ethernet**

Ethernet Module

Error
Active
Busy
Enet Err
Collision
Link
Enet Tx
Enet Rx

EPE5
PLUS

1
TX RX
2
TX RX
3
TX RX
4
TX RX

Ethernet
Port
Expander

NR&D
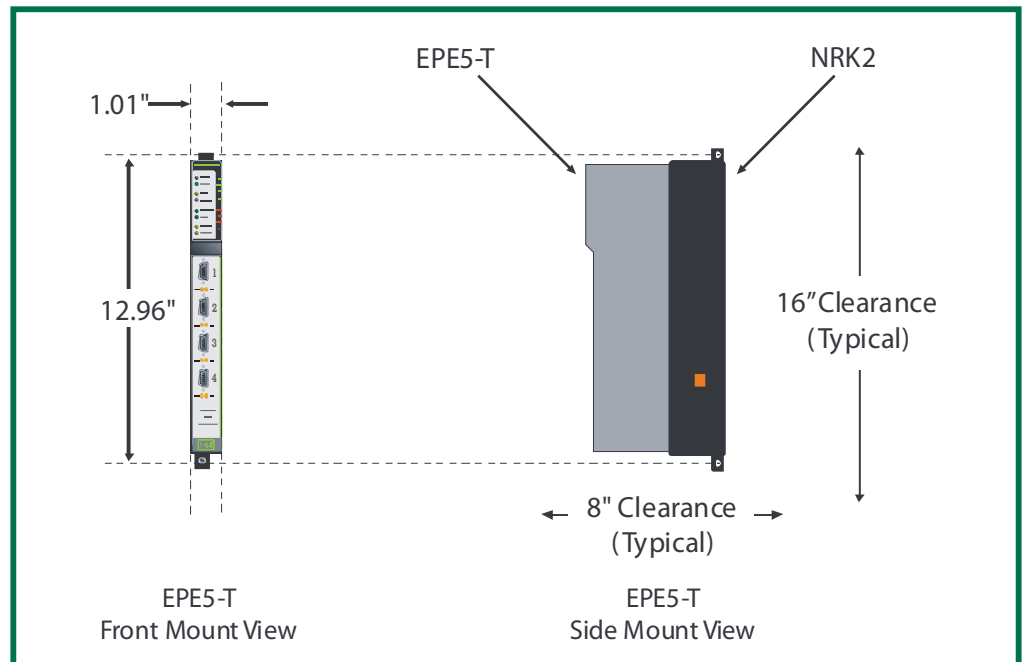
(Front View)   (Bottom View)

The EPE5 supports twisted pair Ethernet cabling with its RJ45 jack. The Ethernet port can speak Modbus/TCP, SY/MAX 802.3, or both protocols simultaneously. The EPE5 supports BOOTP and DHCP for easy IP configuration. An Ethernet I/O scanner table supports 128 entries.

The serial ports support 18 separate modes including all of the Square D and Modicon serial protocols. Some modes allow devices with different protocols to exist on the same physical media. Each serial port has an auto-scan table of 48 entries.

The EPE5 is in the form factor of a SY/MAX rack module. When used in a SY/MAX rack it has a register interface to the PLC but can also be used as a stand-alone solution by including a Niobrara NRK2 single slot rack (below).

The configuration of the EPE5 is stored in registers available from any port. The configuration can be changed "on-the-fly" without rebooting the module. The configuration registers are stored in capacitor-backed RAM. For long-term module storage the configuration can be written to EEPROM "on-the-fly" or to FLASH when the module is in download mode.

The module comes with a CD containing a manual and EPE5SW32 configuration software for the PC. Firmware upgrades are available free of charge for one year after date of purchase. The EPE5 carries a one-year warranty.

EPE5-T   NRK2

1.01"

12.96"

16" Clearance (Typical)

8" Clearance (Typical)

EPE5-T
Front Mount View

EPE5-T
Side Mount View

Panel Layout for EPE5-T Installations using NRK2 Power Supply

Niobrara Research & Development Corporation
www.niobrara.com

Ordering Information

The EPE5 is available as:

- **EPE5-T** with four RS-422/485 serial ports, one 10BaseT Ethernet port
- **EPE5-ST** with four RS-232 serial ports, one 10BaseT Ethernet port

EPE5 Accessories

- **SC902** RS-232<=>RS-422 Converter cable for configuring the EPE5 and upgrading its firmware.
- **NRK2** Single slot rack with built in power supply for stand alone installations.
- **DC1** RS-422 cable for connecting the EPE5 to a SY/MAX PLC or NIM.

Specifications

Warranty / Manual	The EPE5 is furnished with a user manual on cd and carries a one year warranty from the date of shipment. During the warranty period, free firmware upgrades are available. See Niobrara's Standard Terms and Conditions of Sale for additional warranty information.
Dimensions	Standard SY/MAX register module. 1.5" wide by 13" tall by 6.5" deep. Approximately four pounds net. Rugged welded steel enclosure with baked on finish. All serial connectors and indicators are on the front, except the SY/MAX bus card edge connector is on the back and the Ethernet connector is on bottom.
Power Requirements	From SY/MAX bus or NRK2: 5 VDC, 1.5 A
Serial Ports	SY/MAX compatible pin-out. Four RS-232 or four RS-422/RS-485 serial ports. 50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 14,400 or 19,200 baud; 7 or 8 data bits; odd, even or no parity; 1 or 2 stop bits. Selectable checksum (BCC or CRC) supported in some modes SY/MAX compatible DB9 female connectors with slide-lock posts. When used in RS-485 mode, ports are 2- and 4-wire compatible. Handshaking. Auto-scan and Auto-transfer enabled. Configurable Bias and Termination.
Serial Port Modes	Each serial port can independently operate in any of the following modes: SY/MAX, Net-to-Net, Peripheral, PLogic, Multidrop, IDEC, Modbus Host (RTU - Master and Slave), Modbus Gate (RTU - master and slave), Modbus ASCII, Gateway, Transparent, Share, PNIM, RNIM Master, RNIM Slave, Transfer, Chevron, or Dual Slave.
Ethernet Port	10BaseT (Twisted pair) with RJ45 connector. 128 entry I/O scanner.
Ethernet Port Modes	SY/MAX 802.3, Modbus/TCP, or Modbus/TCP+SY/MAX. E-Peer compatible (SY/MAX 802.3 mode only).
IP Configuration	BOOTP, DHCP, or configuration register writes.
Mailbox Registers	2048 processor equivalent registers addressed 1 through 2048. Any number of these may be rack addressed as needed for user applications. Any rack addressed register can be a PLC input or a PLC output as required by the application.
Module Configuration	Module configuration is stored in registers in capacitor-backed RAM and can be changed "on the fly". For long-term storage, configuration can be stored to EEPROM "on the fly" or to FLASH when module is in download mode.
Indicators	Transmit and Receive LEDs for each serial port. Transmit, Receive, Link, Collision, and Error LEDs for the Ethernet port. Active, Error, and Busy LEDs for the Module. Sixteen total indicators.
Operating Conditions	0 to 50 degrees C operating temperature; -40 to 80 degrees C storage. Humidity up to 90% noncondensing. Pressure altitude -200 to +10,000 feet MSL.
Buttons & Switches	Clear button erases RAM and restores module configuration from EEPROM, FLASH, or Factory Defaults. Download switch allows for module firmware download or configuration storage to FLASH.

"... surprisingly easy to configure."