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# **SAFETY CONTROLLER SC22-3E**

## **ETHERNET/IP AND MODBUS/TCP USERS GUIDE**

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**Revision Date:** March 10, 2009

**Revision:** A

### Change History

<b>Revision</b>	<b>Section(s)</b>	<b>Page(s)</b>	<b>Description of Changes</b>	<b>Date</b>
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## 1 OVERVIEW

This is the Users Guide for the EtherNet/IP (EIP) and Modbus/TCP features of the Banner Safety Controller Model SC22-3E.

Compatible devices supported are:

- EtherNet/IP connection (using the CIP protocol) to the Allen-Bradley ControlLogix family of PLCs. Both implicit and explicit messaging is supported.
- EtherNet/IP connection (using the PCCC protocol) to the Allen-Bradley SLC and PLC5 families of PLCs.
- Modbus/TCP connection to any compatible PLCs or device.

## 2 TROUBLESHOOTING GUIDE

<u>SYMPTOM</u>	<u>OPTIONS</u>
No communication	Check Ethernet LEDs on the SC22-3E. The Amber LED should be steady ON to indicate the link is ok. Replace the Ethernet cable if both LEDs are OFF.
	Check the SC22-3E has the intended IP address and subnet settings. These are viewable via the OBI and PCI.
	Send a “Ping” (Section 2.1) to the SC22-3E to verify communication will work. The SC22-3E Green Ethernet LED will flash when messages are detected. In case of no response, check the network settings, cabling, and connections.
	Cycle the power of the SC22-3E.
PLC indicates a connection size error for an EtherNet/IP assembly	Confirm the intended assembly numbers and sizes match between the SC22-3E and the PLC. The SC22-3E sizes are in units of 16-bit words.
PLC indicates a connection attempt failure	The SC22-3E supports a limited number of network connections. Try reducing the number of devices requesting data from the SC22-3E.
	Check the network switch / router. EIP requires support for a managed switch with IGMP snooping.

### 2.1 SENDING A “PING”

To send a “Ping”, open a DOS window and type ‘ping’ followed by the network address of the Safety Controller. If the ping is successful four reply messages should be received followed by additional ping information.

```

C:\Documents and Settings>ping 192.168.0.15

Pinging 192.168.0.15 with 32 bytes of data:

Reply from 192.168.0.15: bytes=32 time<10ms TTL=64
Reply from 192.168.0.15: bytes=32 time<10ms TTL=64
Reply from 192.168.0.15: bytes=32 time<10ms TTL=64
Reply from 192.168.0.15: bytes=32 time<10ms TTL=64

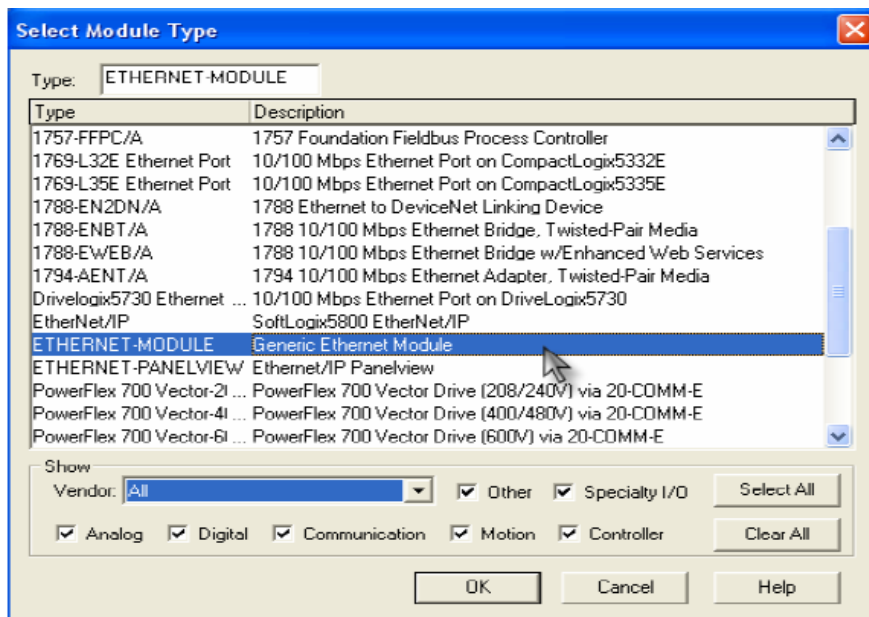
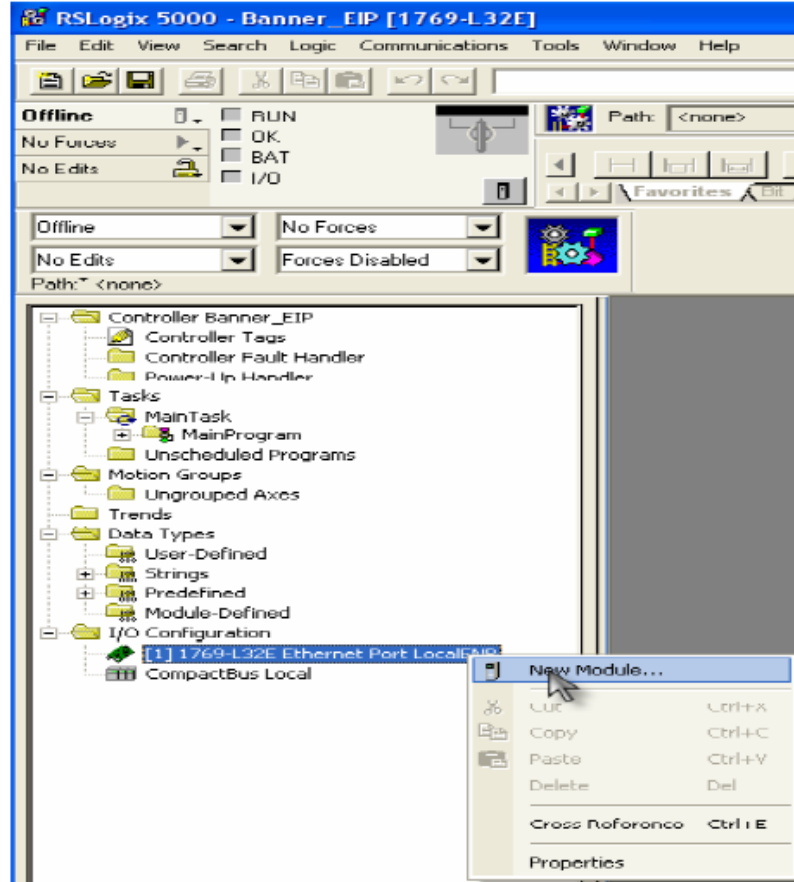
Ping statistics for 192.168.0.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings>
    
```

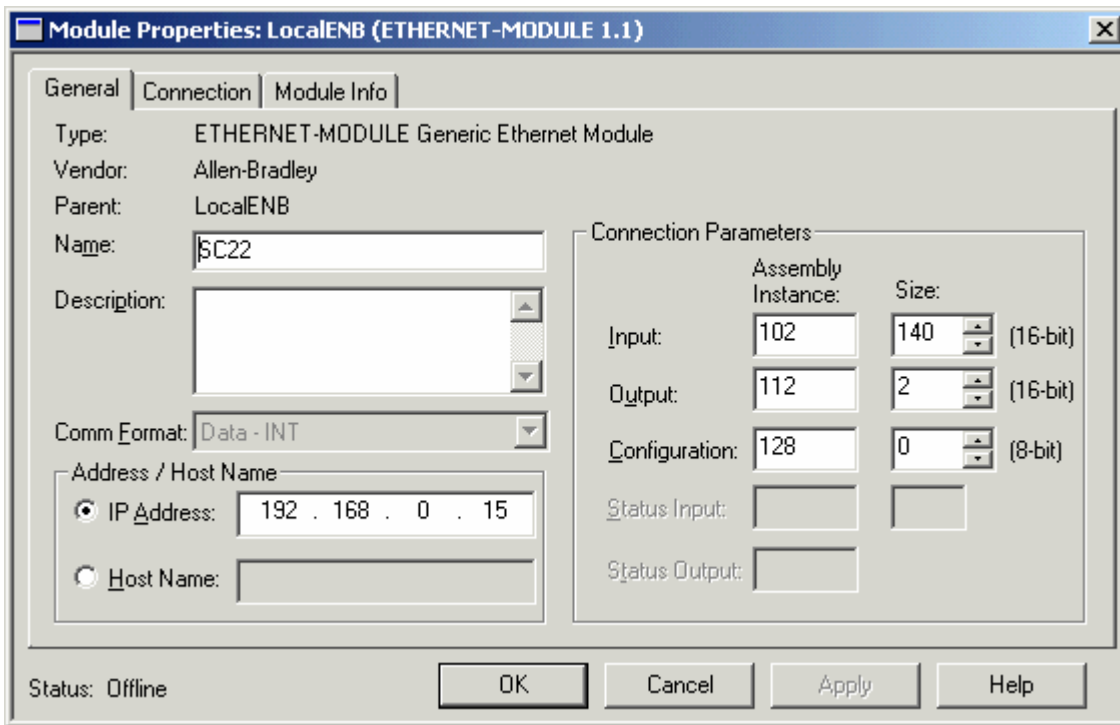
### 3 RSLogix 5000 CONFIGURATION

To create an implicit I/O Class 1 configuration to the Safety Controller using EIP when using a ControlLogix family PLC, configure the Safety Controller as a “Generic Ethernet Module” under the ENET\_MODULE. The following is a sample setup of a Banner sensor:

#### 1. Adding a Banner sensor



2. Configure Banner module property



## **4 USE OF A MANAGED SWITCH**

EtherNet/IP implicit I/O messaging employs use of Multicast messaging. An Ethernet switch which supports IGMP (Internet Group Management Protocol) is required. Consult ODVA.org for a list of qualified vendors for EtherNet/IP products under Communications Bridges and Gateways.