

# INSTRUCTION MANUAL

EP1000A E-Port

Ethernet Interface Port for Micro-DCI® DataLink and Modbus



PN26010, Rev.1

# MicroMod Automation, Inc.

## The Company

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MicroMod Automation is dedicated to improving customer efficiency by providing the most cost-effective, application-specific process solutions available. We are a highly responsive, application-focused company with years of expertise in control systems design and implementation.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivaled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

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**⚠ Warning. An instruction that draws attention to the risk of injury or death.**

**ℹ Note. Clarification of an instruction or additional information.**

**⚠ Caution. An instruction that draws attention to the risk of the product, process, or surroundings.**

**i Information. Further reference for more detailed information or technical details.**

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## Health and Safety

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To ensure that our products are safe and without risk to health, the following points must be noted.

The relevant sections of these instructions must be read carefully before proceeding.

1. Warning Labels on containers and packages must be observed.
2. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given or injury or death could result.
3. Normal safety procedures must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
4. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
5. When disposing of chemicals, ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual may be obtained from the Company address on the back cover, together with servicing and spares information.

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# **1.0 Introduction**

## **1.1 Product Overview**

The MicroMod Automation EP1000A E-Port product provides an interface between the serial networks used by MicroMod controllers and an Ethernet network.

E-Ports with Rev. 0 firmware support the Micro-DCI Datalink protocol and can be used with Micro-DCI System Version 4.1 software products

E-Ports with Rev. 1 firmware support both the Micro-DCI Datalink and MicroMod Extended Modbus, and are compatible with Micro-DCI System Version 4.2 and MOD System 3.2 software products

## **1.2 Scope of Book**

Information in this book is presented as text, visuals, and tables. All three are required, but the text has been minimized wherever possible. The tables provide either summary information or procedural steps to perform a specific task.

The sections of this book contain the following information:

- Section 1, Introduction: This section contains basic product and book information as well as the product specifications.
- Section 2, Installation: This section provides mounting information, power wiring instructions, and signal wiring instructions.
- Section 3, Micro-DCI Software Configuration: This section describes how to configure the Micro-DCI Communications services to work with the EP1000A.
- Section 4, XModbus OPC Server Configuration: This section describes how to configure the MicroMod XModbus OPC Server to work with the EP1000A
- Section 5, Maintenance: This section provides trouble-shooting and information for the E-Port interface box. It also includes the parts list.

## 1.3 Model Number Breakdown

Refer to the MicroMod data sheet or data tag for the model number of the product furnished. The details of a specific number are as follows:

	<b>EP1</b>	-	-	-	<b>A</b>
<b>E-Port for DataLink / Ethernet Interface</b>	EP1				
<u>Power Input</u>					
100-240 V ac		1			
<u>Mounting Brackets</u>					
None			0		
Wall / DIN Rail			1		
Snap Track			2		
<b><u>Controller Interface</u></b>					
None				0	
SL6000 RS-232 Cable				1	
MC5000 Front Port Cable				2	
RS485 ITB with 1' RS485 ITB Cable and Power Adapter Cable				3	
Design Level					

## 1.4 Specifications

*Table 1-1. E-Port Specifications*

<b>Item</b>	<b>Specification(s)</b>
Power Requirements	7- 30 V dc 200 mA @ 12 V dc 100 mA @ 24 V dc
Serial Communication	RS485, four wire, asynchronous; baud rates: 1200, 2400, 4800, 9600, 19200, 28800,38400,57600,115200
Physical Characteristics	Dimensions: 4.2" x 3"  Weight: 5 oz.
Environmental Characteristics	Operating Temperature: 0 - 50°C (32 - 122°F)

*Table 1-2. Datalink Network Specifications*

<b>Item</b>	<b>Specification</b>
Max. number of E-Ports per network segment	2
Max. number of E-Port segments	32

(See Section 1, Micro-DCI Network Architecture, for discussion and illustrations of network segments.)

*Table 1-3. Modbus Network Specifications*

<b>Item</b>	<b>Specification</b>
Max. number of E-Ports per network	2
Max. number of Client Connections	10

*Table 1-4. DB-9 Serial Connectors, Port 0, RS232 Configuration*

Pin	Port 0 (Left Port)
1	CD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

*Table 1-5. RJ45 Ethernet Connector*

Pin	Signal
1	TX +
2	TX -
3	---
4	---
5	---
6	---
7	RX +
8	RX -

- Note** The power input is a standard 2.1 mm P5 type input jack. The center is positive, and the outer shell is negative.

*Table 1-6. Power Connector*

Pin	Signal
Center	7 - 30 V dc
Shell	GND



*Table 1-7. LEDs*

<b>Item</b>	<b>Description</b>
Power LED	Illuminated while power is applied.
LED 1	Ethernet speed, 10 or 100
LED 2	Link light and data activity

## 1.5 Supported Instruments

All Micro-DCI controllers can be used with the E-Port unit. For best performance:

- 53MC5000 controllers should have Revision 5 firmware (or higher).
- 53 SL6000 controllers should have Revision 15 firmware (or higher).

All Mod30ML and Modcell controllers can be used with the E-Port Unit. At least one Modbus interface is required.

## 1.6 Micro-DCI Controller Interface Options

The EP1000A E-Port can be connected to MicroMod Micro-DCI controllers in several different ways.

### 1.6.1 53MC5000 Configuration Port

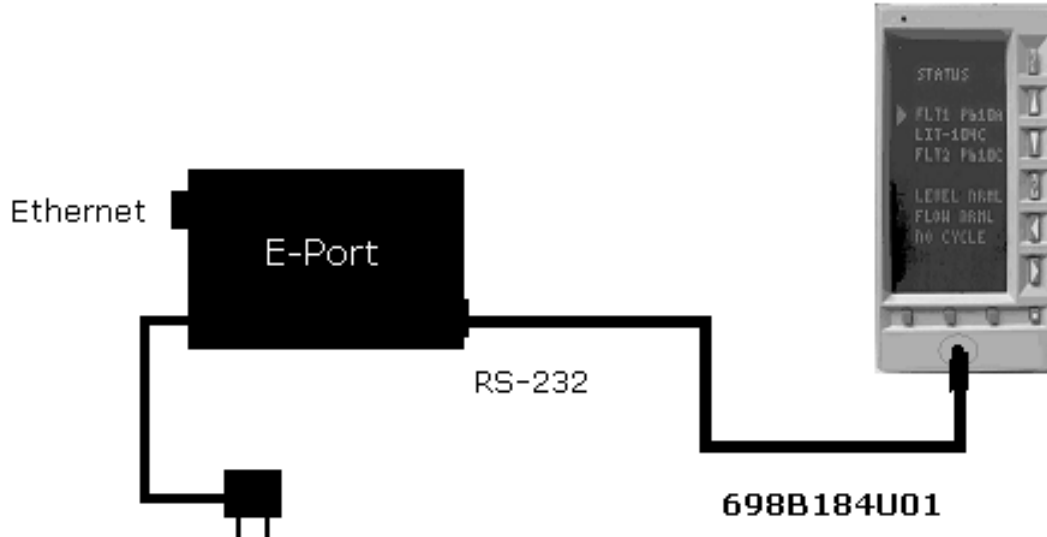


Figure 1-1. Connecting the E-Port Unit to the 53MC5000 Configuration Port

### 1.6.2 53SL6000 RS-232 Port

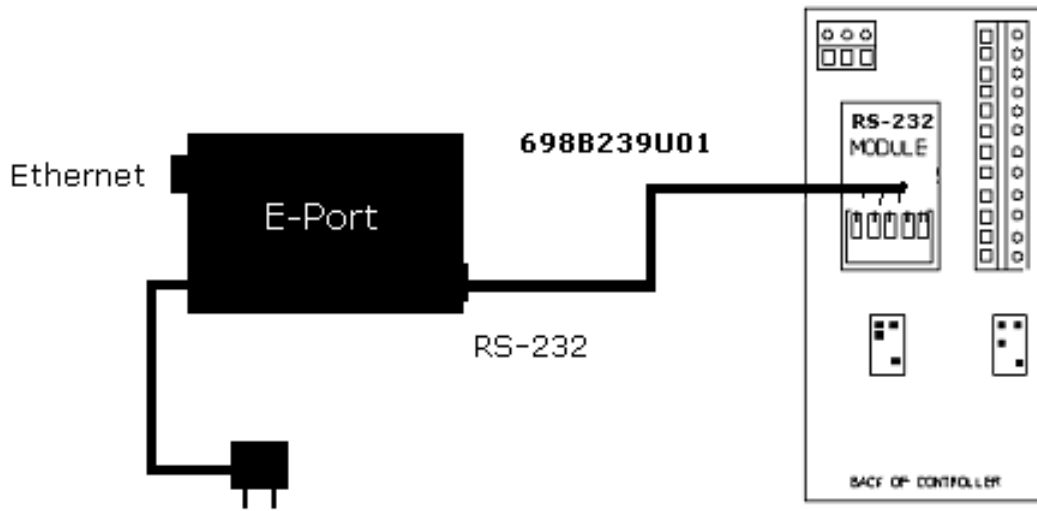


Figure 1-2. Connecting the E-Port Unit to the 53SL6000 RS232 Port

### 1.6.3 DataLink Network

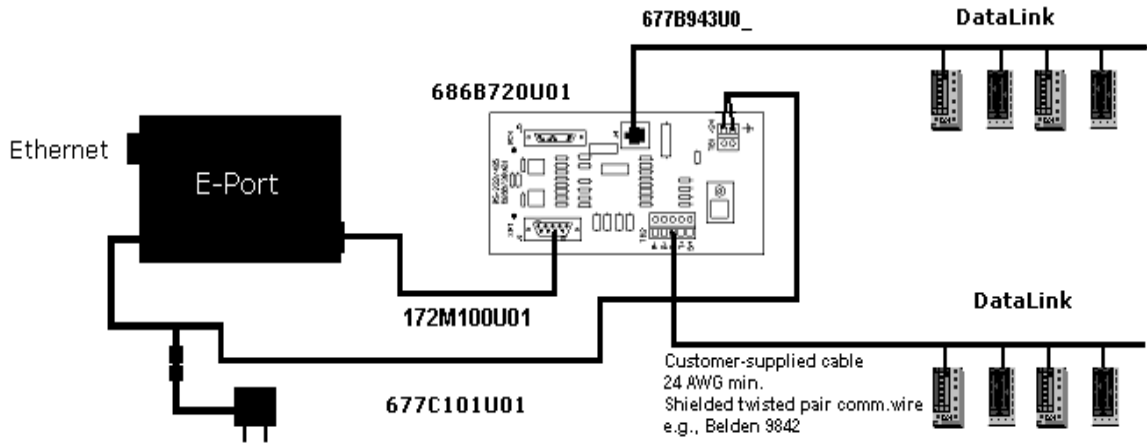


Figure 1-3. Connecting the E-Port Unit to the DataLink Network

## 1.7 MOD30ML / Modcell Interface Options

### 1.7.1 4 Wire RS-485 Modbus

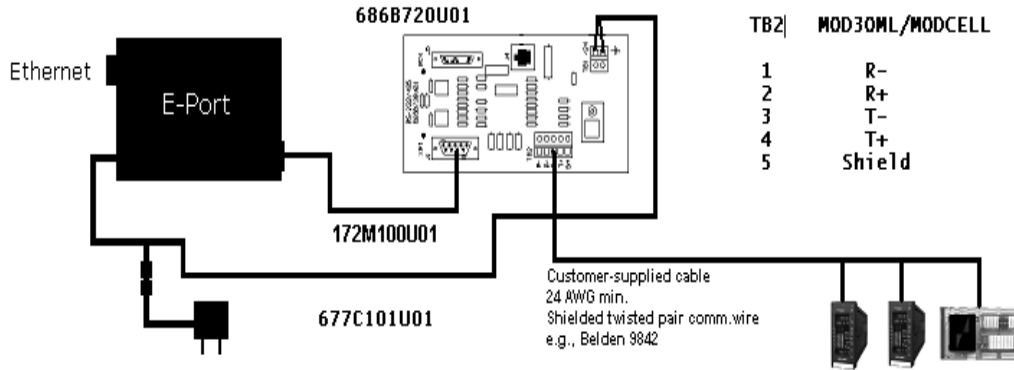


Figure 1-4. Connecting the E-Port Unit to Modbus Network

## 1.8 Micro-DCI Network Architecture

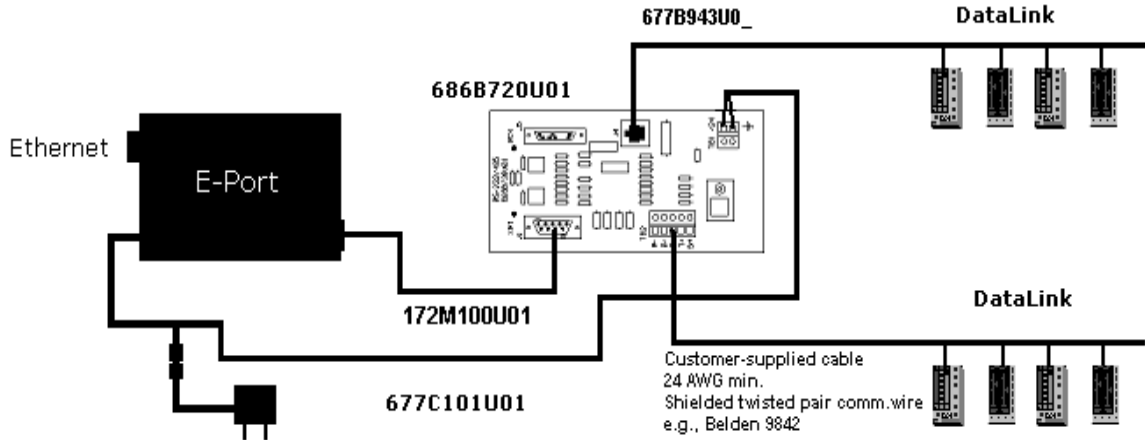


Figure 1-5. Connecting the E-Port Unit to the DataLink Network

A Micro-DCI network is a named network of up to 32 instruments. Each Micro-DCI network in the plant must have a unique name.

Each network is controlled by a Master Comm Services Node and an optional Backup Comm Services Node. Each Micro-DCI network has a Network Type. The supported types are:

- Supervisor Card Networks: The network interface is a DataLink or MicroLink Supervisor card.
- COM Port networks: The network interface is a PC COM port.
- Local Networks: There is no physical network interface; the controllers are simulated inside the PC.
- E-Port Networks: The network interface is a PC Ethernet connection to an E-Port.

Each E-Port unit is assigned to be part of a Micro-DCI E-Port-type network. Depending on the system architecture, each Micro-DCI E-Port network can have up to 32 *segments*. Each segment will typically have one E-port. (Redundant communication configurations may have two E-ports per segment.) Figure 1-6 through Figure 1-8 illustrate possible network architectures.

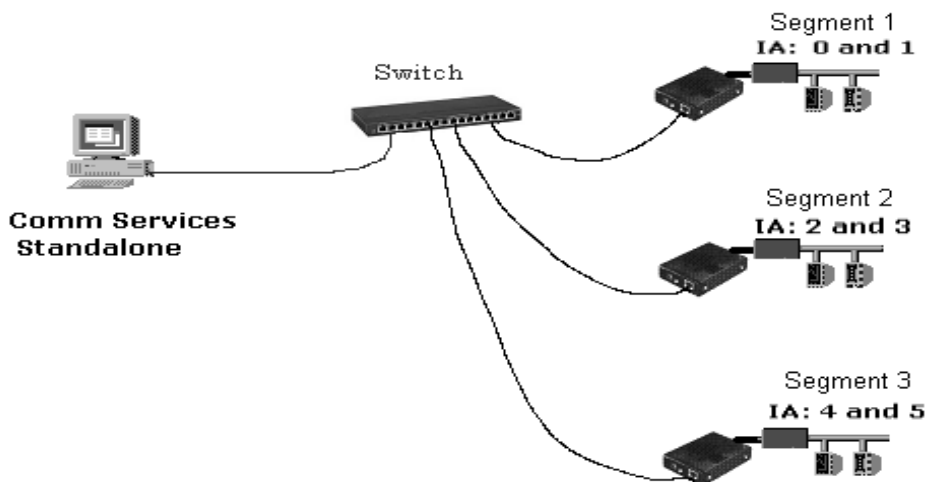


Figure 1-6. Typical System Architecture

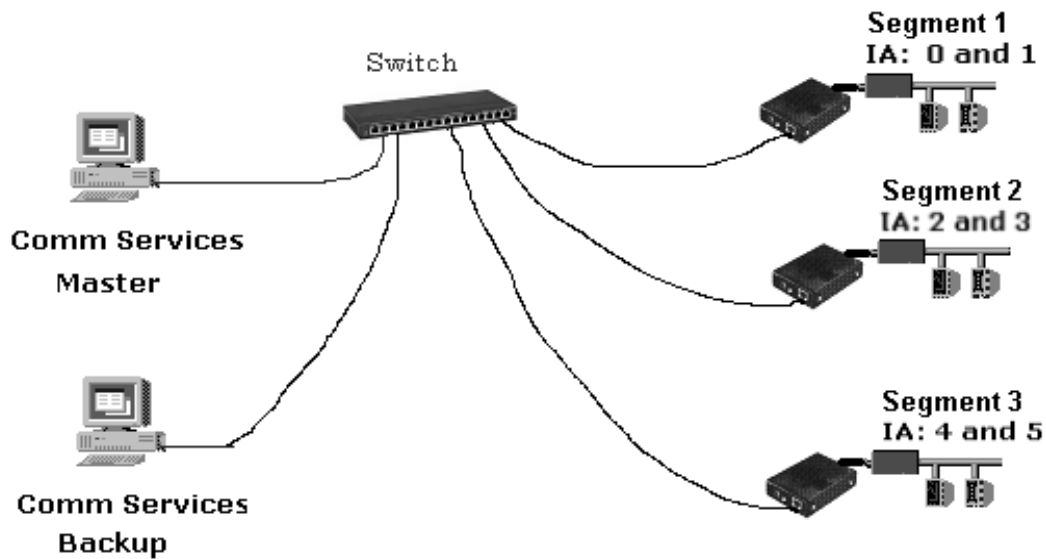
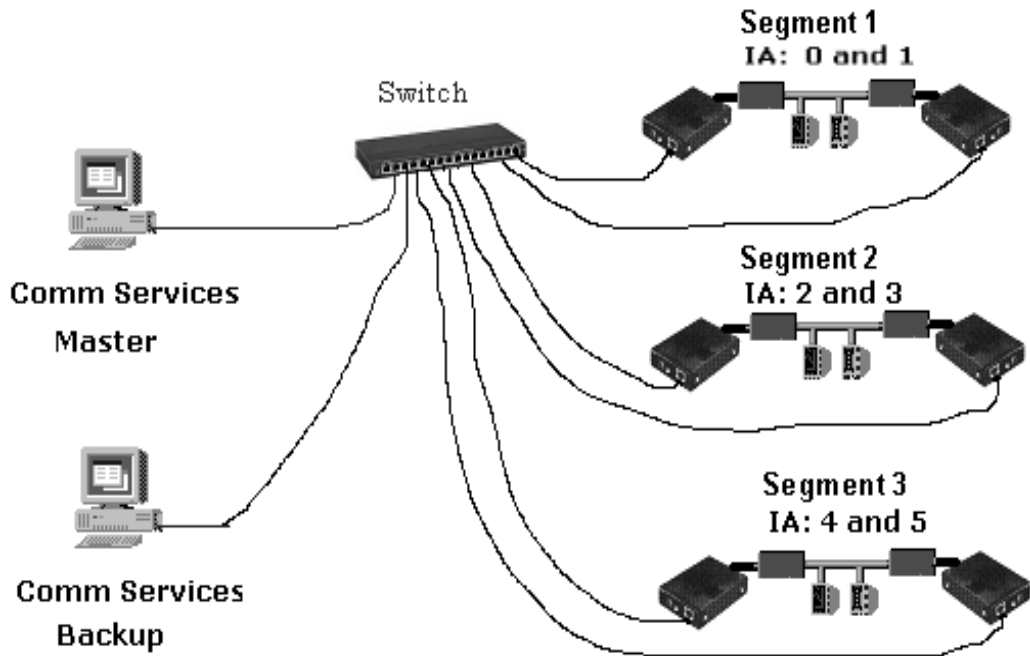


Figure 1-7. System with Redundant PCs



*Figure 1-8. System with Redundant PCs and Redundant E-Ports*

## 1.9 Modbus Network Architecture

A Modbus network is an RS485 network of up to 32 devices. Redundant communication configurations may have two E-ports per network. Figure 1-9 through Figure 1-10 illustrate possible network architectures.

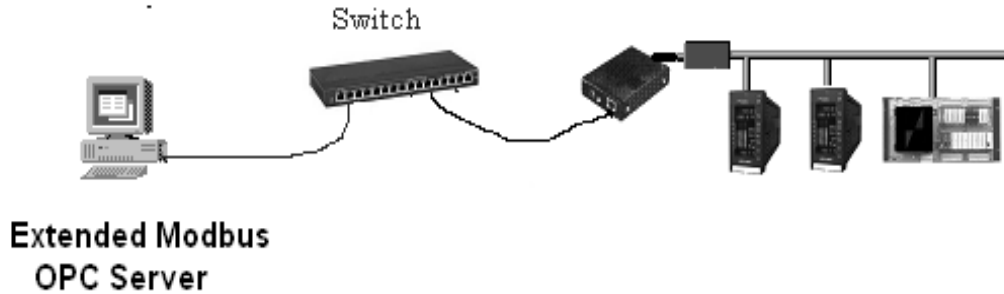


Figure 1-9. Typical System Architecture

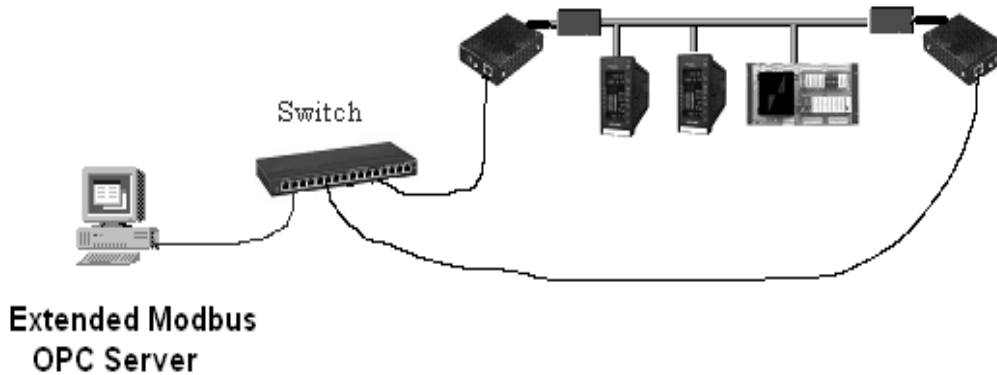


Figure 1-10. Typical System Architecture



## **2.0 Installation**

### **2.1 Inspection**

An itemized list of all items in the shipment is attached to the shipping container. Inspect the equipment upon arrival for damage that may have occurred during shipment. All damage claims should be reported to the responsible shipping agent before installation is attempted. If damage is such that faulty operation is likely to result, the MicroMod Automation Service Department should be notified.

Inspect the packing material before discarding it as a precaution to prevent losing mounting hardware or special instructions that may have been included with the shipment. Normal care in the handling and installation of this equipment will contribute toward its satisfactory performance.

### **2.2 Location**

The E-Port interface unit is designed specifically for indoor mounting. The installation site selected should be dry and vibration free. The ambient temperature should be stable and maintained within the specified minimum and maximum temperature limits listed in Section 1.4, Specifications, of this *Instruction Manual*.

Power requirements are provided in Section 1.4, Specifications.

### **2.3 Mounting**

#### **2.3.1 General**

It is normally not necessary to open the E-Port interface unit during installation. If the case of the unit must be opened, refer to Section 5 for details. Incorrect procedures may damage the unit.

A number of mounting options are available for the E-Port interface unit. These include:

- Wall-mounting (brackets)
- DIN Rail mounting (plastic clips)
- Snap Track mounting (bracket)

Appropriate mounting hardware is supplied by MicroMod Automation Inc., as identified in the product model number.

## 2.3.2 Mounting Procedures

### 2.3.2.1 Wall Mounting

If wall/DIN rail mounting brackets were specified when the E-Port unit was ordered, the following items are supplied for mounting the unit:

Part Number	Description
122C100U01	Mounting hardware package, bagged. This includes: 1 pair (left and right) of aluminum brackets, black 1 pair (identical) of DIN rail clips 4 screws

To fasten the E-Port unit to a wall or other flat surface, use this procedure. (Note: Set aside the DIN rail clips, as they will not be used.)

1. Verify that you have both a left and right aluminum bracket. (Place them side by side, with the flanges pointing away from each other. The tops of the center screw holes in the flanges should be pointing in the same direction (Figure 2-1).
2. On the E-Port unit, remove the two screws on one side.
3. Align the screw holes in the mounting bracket plate with the screw holes in the side of the E-Port unit.
4. Place the screws in the holes and fasten, attaching the mounting bracket to the E-Port unit.
5. Repeat Steps 2 through 4 on the other side of the E-Port unit, using the other mounting bracket.
6. Use the holes in the flanges to attach the unit directly to the wall, using the screws provided.

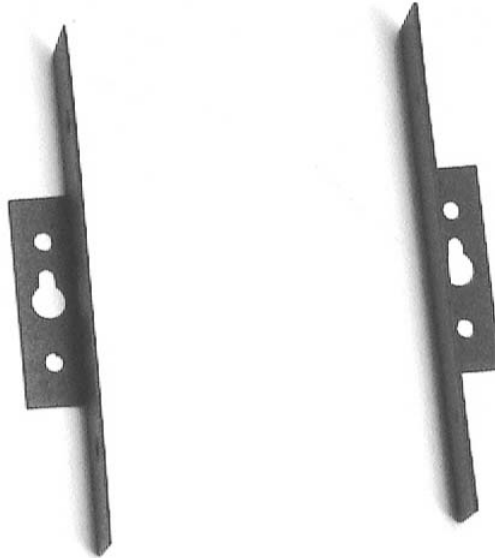
### 2.3.2.2 DIN Rail Mounting

If wall/DIN Rail mounting brackets were specified when the E-Port unit was ordered, the following items are supplied for mounting the unit:

Part Number	Description
122C100U01	Mounting hardware package, bagged. This includes: 1 pair (left and right) of aluminum brackets, black 1 pair (identical) of DIN rail clips 4 screws

To attach the E-Port to a DIN rail, use the following procedure.

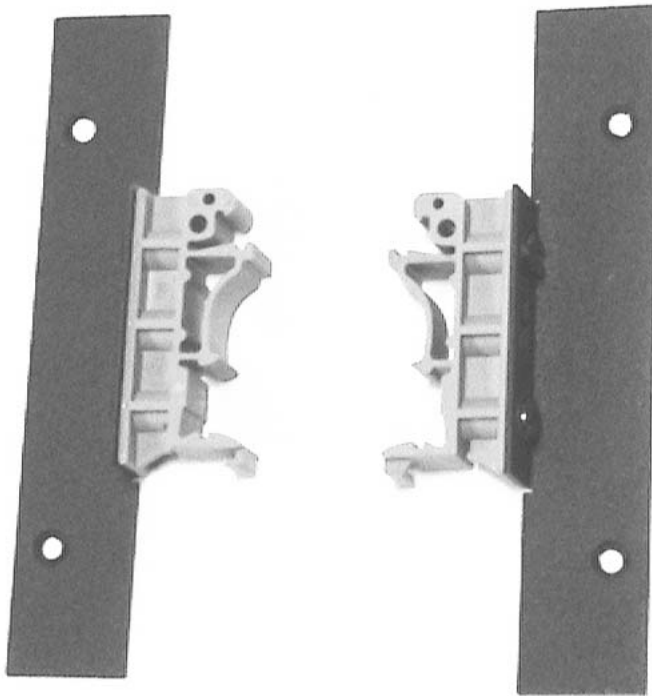
1. Verify that you have both a left and right aluminum bracket. (Place them side by side, with the flanges pointing away from each other. The tops of the center screw holes in the flanges should be pointing in the same direction (Figure 2-1).



*Figure 2-1. Aluminum Mounting Brackets (Pair)*

2. Using two of the screws provided, attach a DIN rail clip to the flange on one of the brackets.
3. Align the second DIN rail clip so that it matches the first clip.

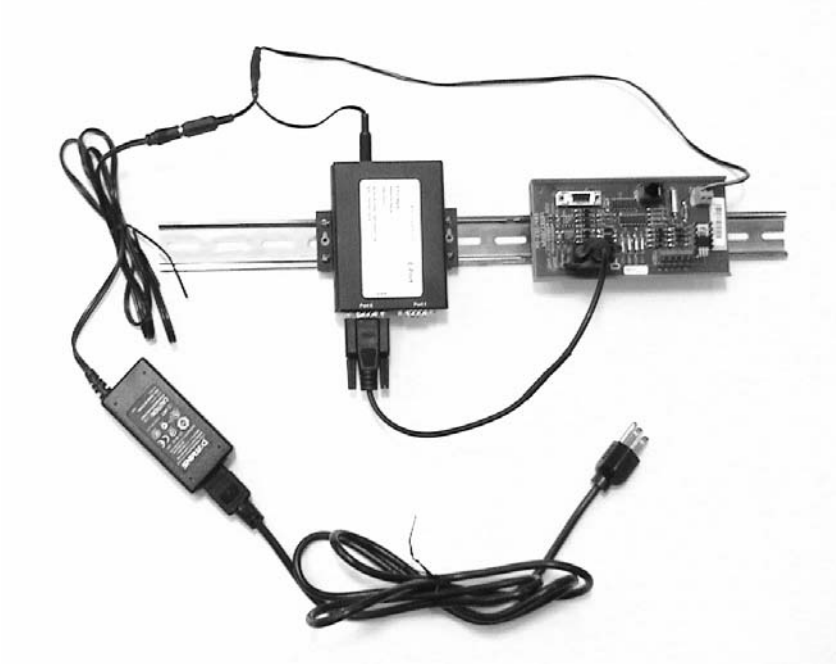
4. Use the remaining two screws to attach the second clip to the flange of the second bracket. These assemblies should appear as illustrated in Figure 2-2.



*Figure 2-2. DIN Rail Mounting Bracket Assemblies*

5. On the E-Port unit, remove the two screws on one side.
6. With the bracket flange facing away from the E-Port unit, align the screw holes in the mounting bracket with the screw holes in the side of the E-Port unit.
7. Place the screws in the holes and fasten, attaching the mounting bracket to the E-Port unit.
8. Repeat Steps 5 through 7 on the other side of the E-Port unit, using the other mounting bracket. The final assembly should appear as illustrated in Figure 2-3.

9. Clip the unit to the DIN rail.



*Figure 2-3. E-Port Unit in DIN Rail Mounting*

### **2.3.2.3 Snap Track Mounting**

If a Snap Track mounting bracket was specified when the E-Port Unit was ordered, the following items are supplied for mounting the unit:

<b>Part Number</b>	<b>Description</b>
623B600U01	1 aluminum Snap Track bracket

1. Remove the screws from both sides of the E-Port unit.
2. Place the E-Port unit in the mounting bracket (Figure 2-5), taking care to align the holes in the bracket with the holes in the sides of the unit.

3. Place the screws through the holes in the brackets and unit sides, and tighten them. The unit will be fastened in the bracket.



*Figure 2-4. E-Port Unit in Snap Track Mounting*

4. Snap the bracket into the Snap Track.



*Figure 2-5. E-Port Unit with Snap Track Bracket*

## 2.4 Connections

### 2.4.1 Power Connections

The E-Port unit is available with these power connection options:

- A standard ac power cable (always supplied with an E-Port unit).
- An optional power adapter cable.
- An optional dc power cable.

#### 2.4.1.1 Standard ac Power Connection

Part Number	Description	Comments / Instructions
699B604U01	AC to DC Power Converter/Cable, Standard, 100-240 V ac	Provides a power connection directly from the E-Port unit to an AC power receptacle.



*Figure 2-6. Standard ac to dc Power Converter/Cable, 100-240 V ac*

1. Connect the power input plug into the E-Port unit.
2. Connect the standard two-prong transformer plug into the appropriate power source.

2.4.1.2 Power Adapter Cable Connection (Optional)

Part Number	Description	Comments / Instructions
677C101U01	Power Adapter Cable, 12-30 V dc	Provides the ability to power both an ITB and the E-Port Unit using the standard power cable. Can be connected to either the standard ac power cable, or the optional dc power cable.

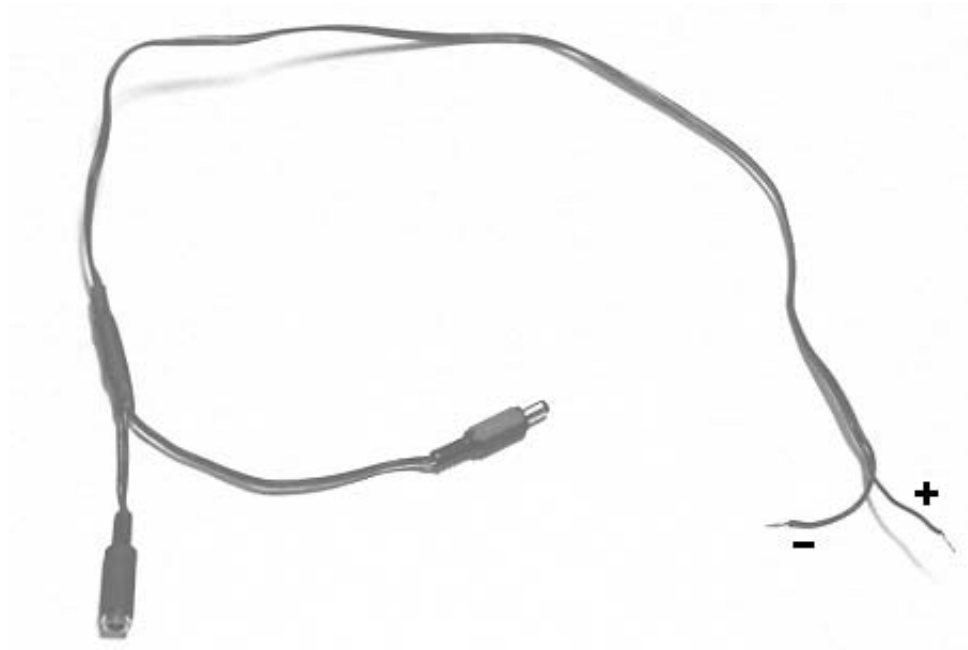


Figure 2-7. Power Adapter Cable

1. On the RS232/485 ITB, locate TB1.
2. Using the Power Adapter Cable, connect the wire labeled “+” to the terminal labeled +24 on TB1.
3. Using the Power Adapter Cable, connect the wire labeled “-” to the terminal labeled with the Ground symbol on TB1.
4. Using the Power Adapter Cable, connect the power input plug to the E-Port unit.
5. Using the Power Adapter Cable, connect the power jack to the power input plug of the standard ac to dc Power Converter/Cable.
6. Using the standard power cable, connect the two-prong transformer plug into the appropriate power source.



### 2.4.1.3 dc Power Connection (Optional)

Part Number	Description	Comments / Instructions
677C100U01	Power Cable, optional, dc	Provides the ability to connect to a dc power source.

The optional dc power cable (Figure 2-8) provides the ability to connect the EP1000A E-Port unit to a dc power source.

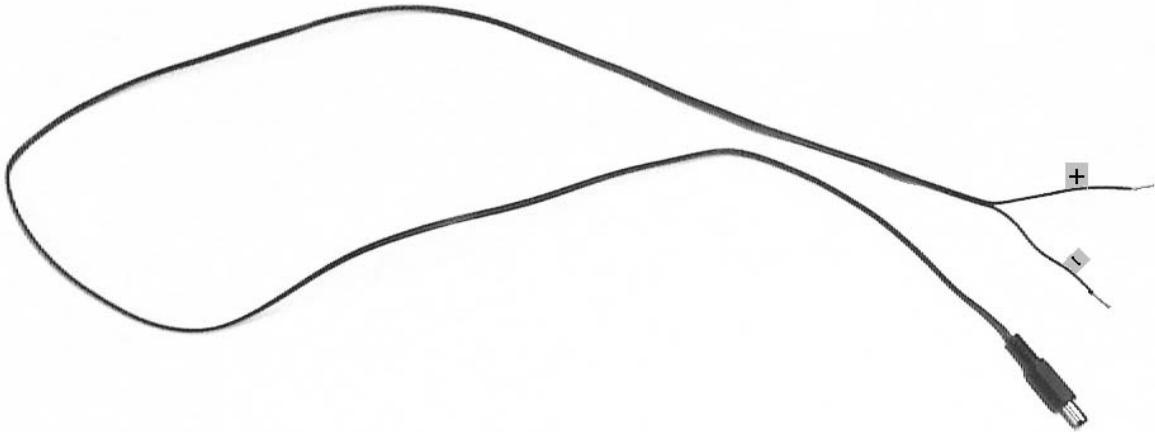


Figure 2-8. Optional dc Power Cable

1. Connect the P5-type power plug of the dc power cable into the power jack of the power adapter cable (Figure 2-7).
2. Connect the + and - wires to the appropriate terminals at your dc power source.

## 2.4.2 Data Connections

### 2.4.2.1 Connecting to a 53SL6000 Controller

Part Number	Description	Comments
698B239U01	Cable, SL6000 front port	Provides an RS232 data connection from the E-Port unit RS232 port to the data port on a 53SL6000 controller.



Figure 2-9. E-Port-to-53SL6000 Connection Cable

#### 2.4.2.2 Connecting to the Front Port of an MC5000 Unit

Part Number	Description	Comments
698B184U01	Cable, MC5000 front port	Provides a data connection from the E-Port unit RS232 port to the front data port on a 53MC5000 controller.



Figure 2-10. E-Port-to-53MC5000 Connection Cable

### 2.4.2.3 Connecting to an RS-485 ITB

The E-Port is connected to the RS232 ITB by a standard DB-9 null modem cable.

Part Number	Description	Comments
172M100U01	Cable, RS232 1' Null Modem Cable (9 pin to 9 pin)	Provides a data connection from the E-Port unit RS232 port to the RS232 port on a ITB.
172M100U02	Cable, RS232 6' Null Modem Cable (9 pin to 9 pin)	Provides a data connection from the E-Port unit RS232 port to the RS232 port on a ITB.



*Figure 2-11. E-Port-to-ITB Null Modem Cable*

2.4.2.4 Connecting the RS485 ITB to Micro-DCI Controllers

DataLink is an interrogator/responder (sometimes referred to as “master/slave”) serial interface capable of supporting 32 instruments on a single network. It uses an RS485 physical interface. The DataLink wiring diagram for this instrument is provided as Figure 2-12.

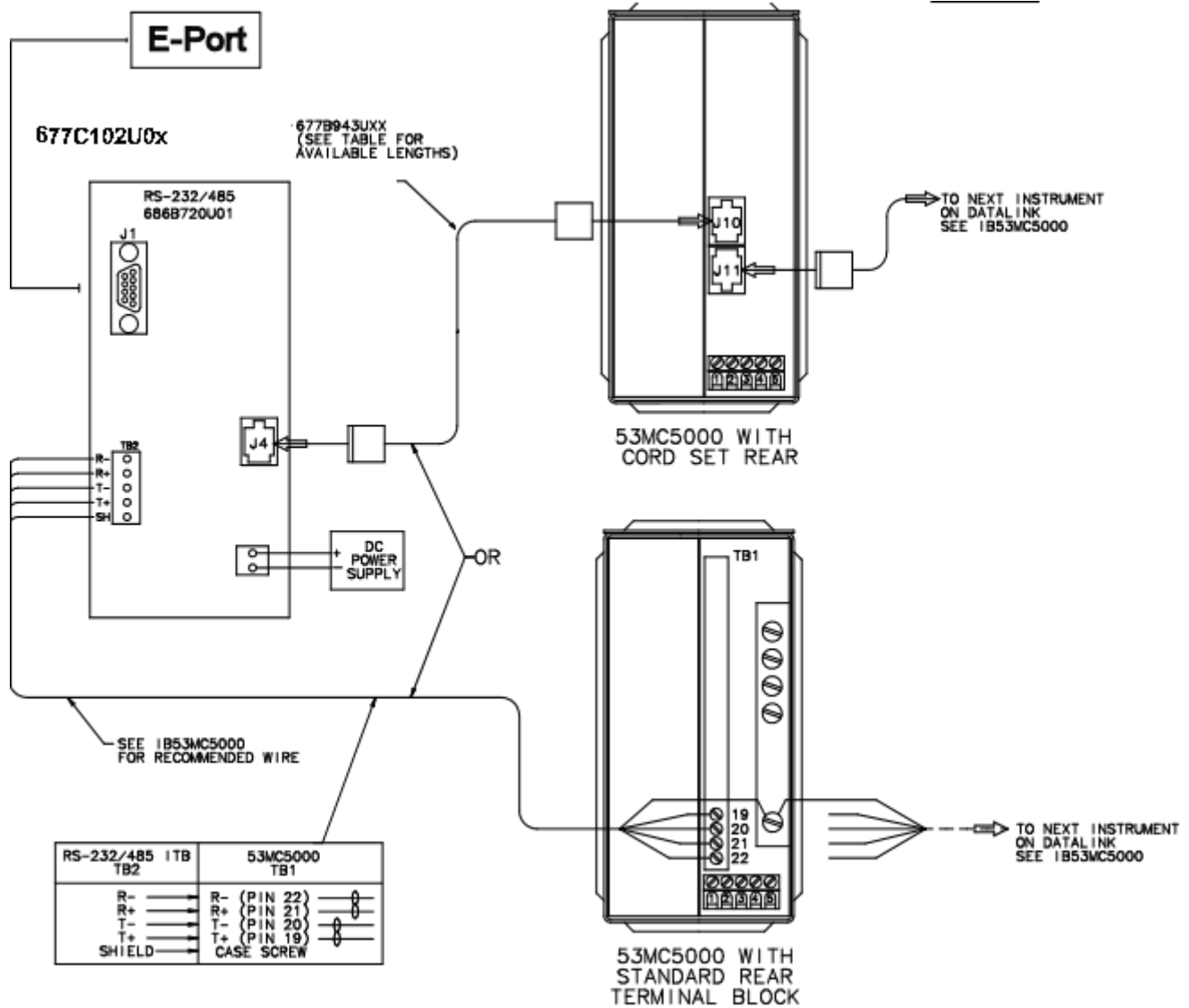


Figure 2-12. DataLink Installation Diagram

2.4.2.5 Connecting to a MOD30ML using RS-232

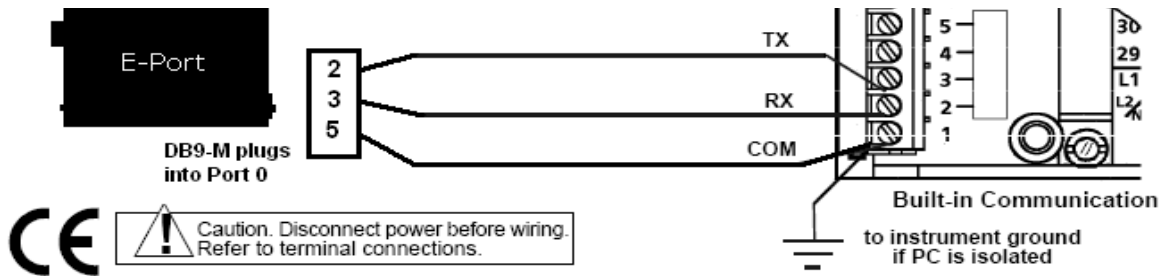


Figure 5-4. Typical Network Connections for Built-In Modbus RS-232 Communication

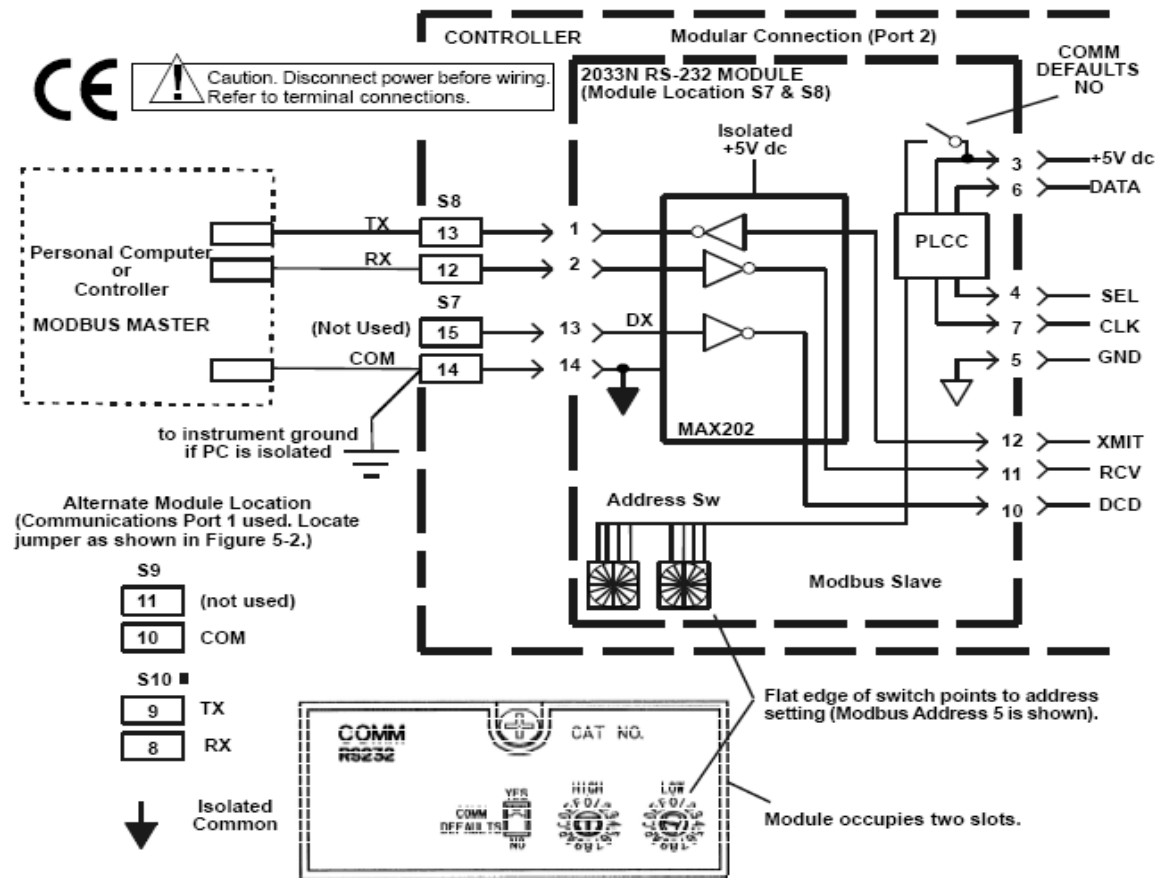


Figure 2-13. MOD30ML RS-232 Installation Diagram

2.4.2.6 Connecting to MOD30MLs using 4 wire RS-485

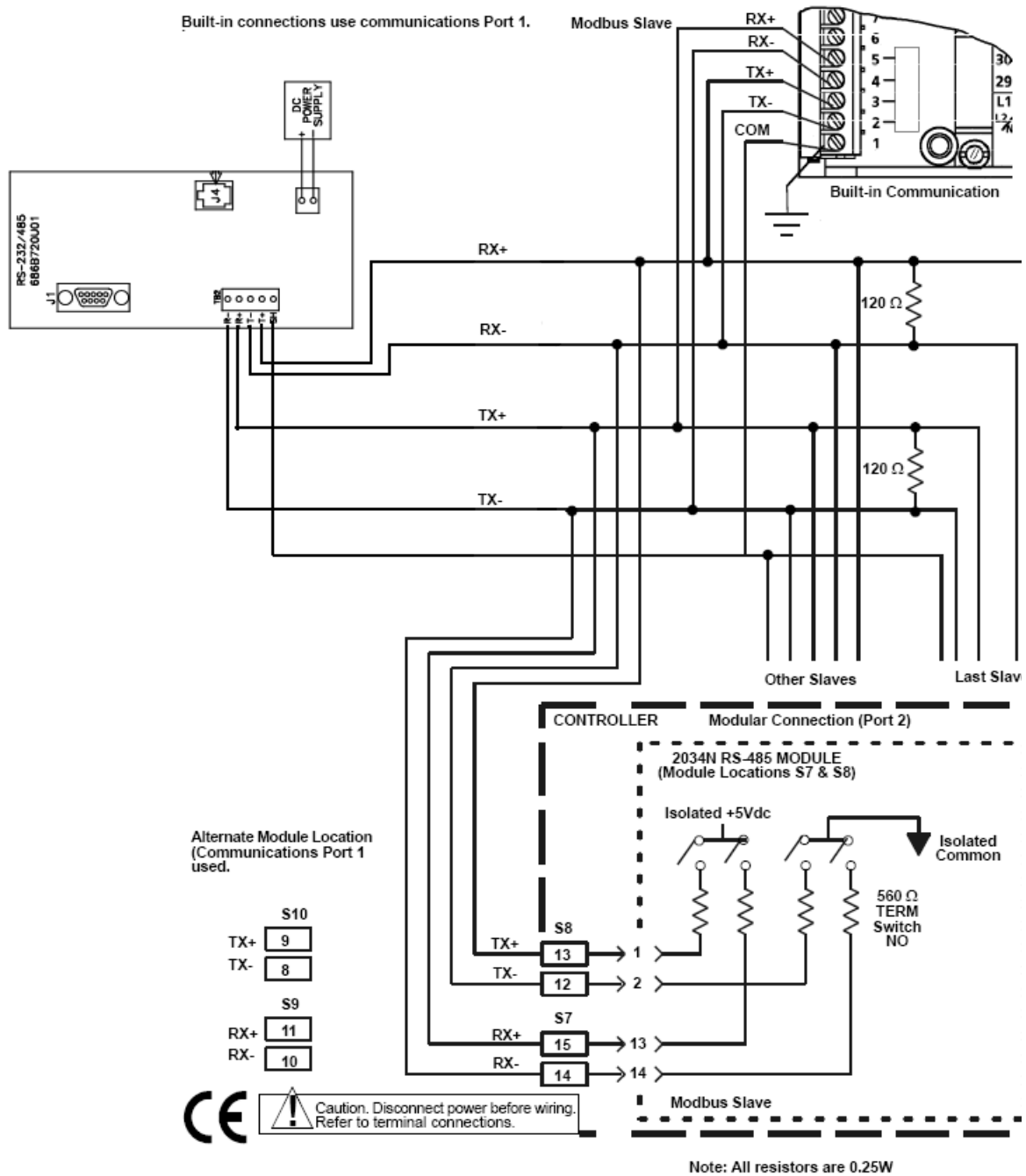


Figure 2-14. MOD30ML 4 wire RS-485 Installation Diagram

2.4.2.7 Connecting to a MODCELL using RS-232

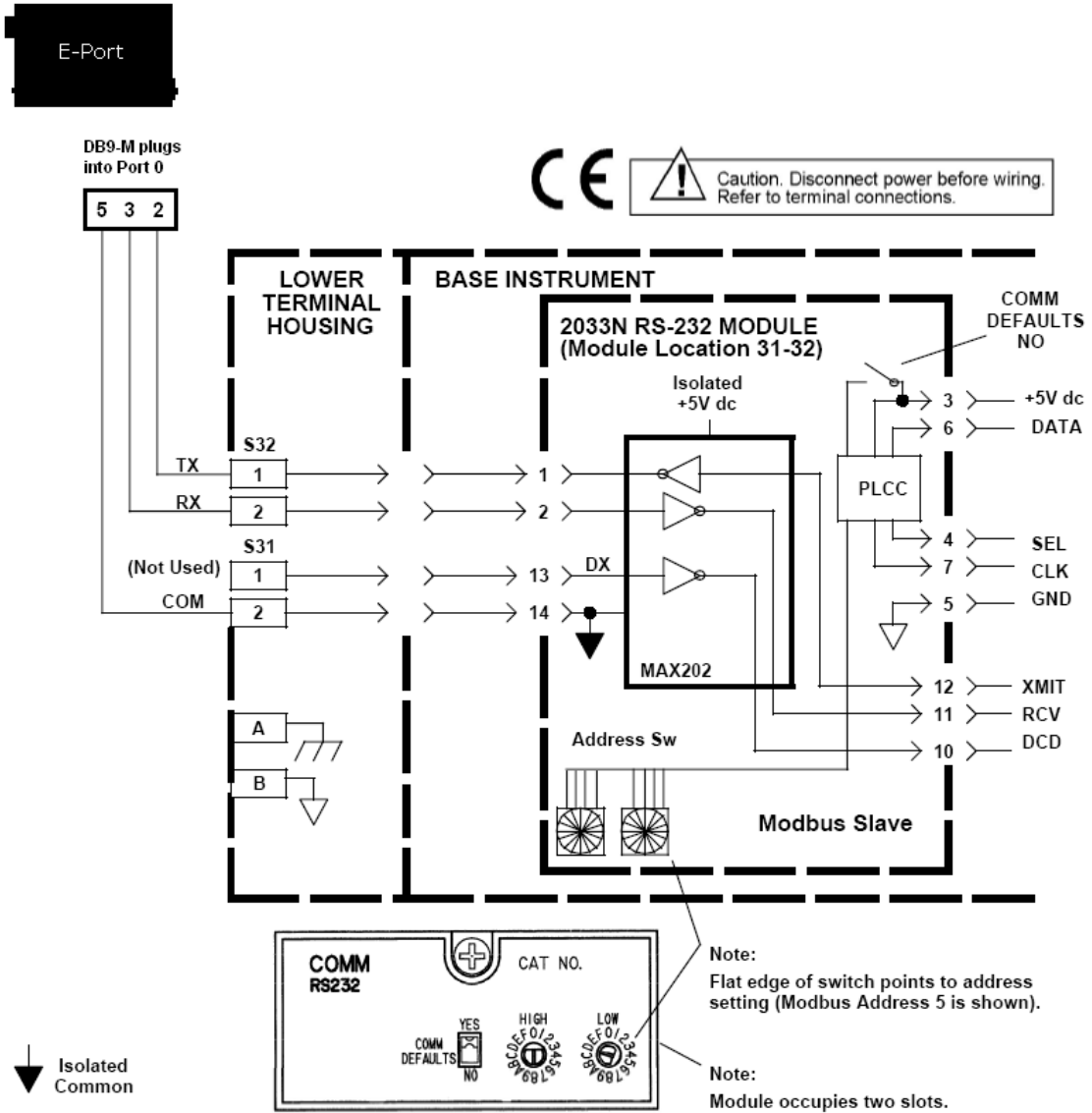


Figure 2-15. MODCELL RS-232 Installation Diagram

2.4.2.8 Connecting to MODCELLS using 4 wire RS-485

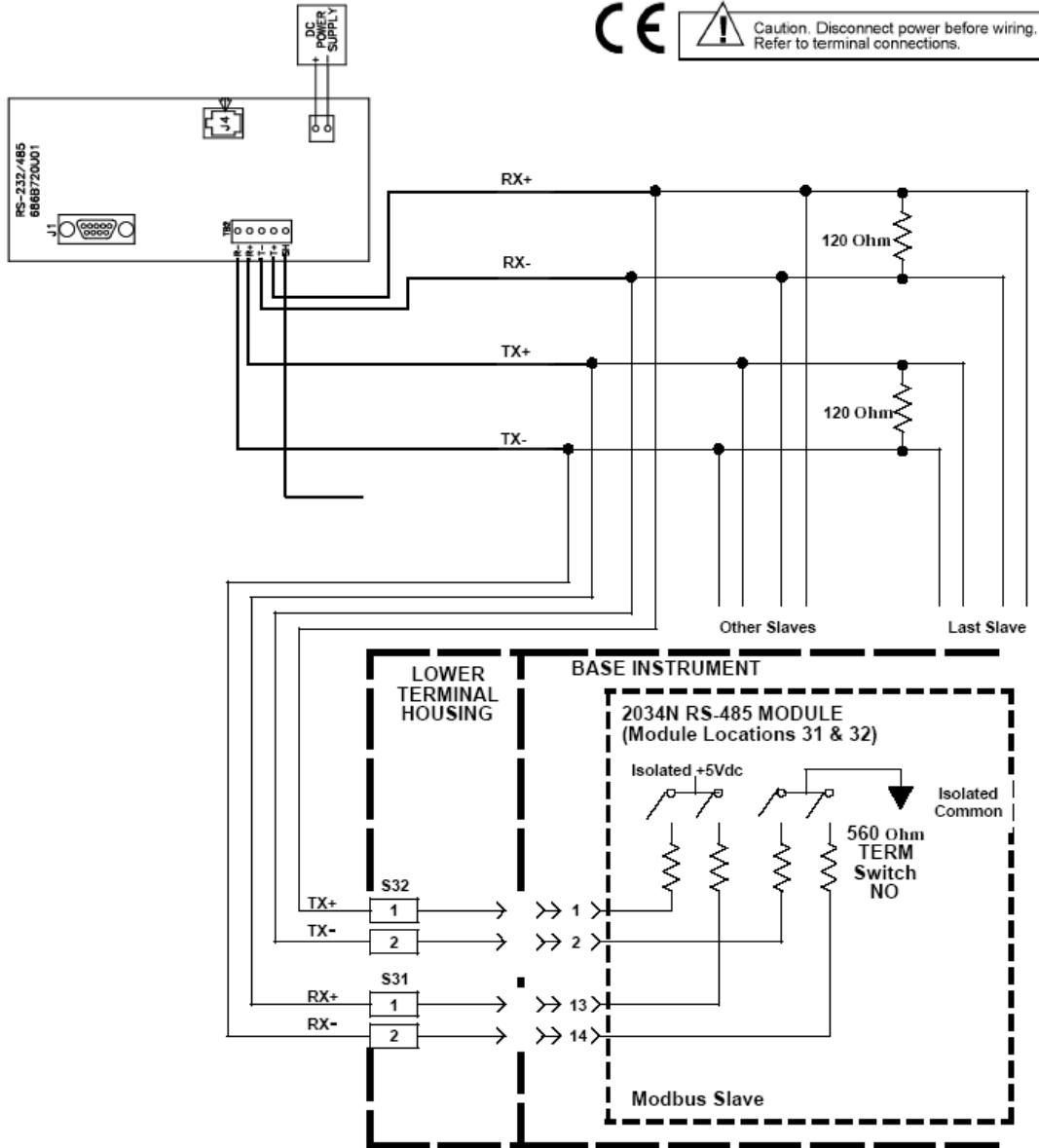


Figure 2-16. MODCEL 4 wire RS-485 Installation Diagram



## 2.4.3 Ethernet Network Connection

### 2.4.3.1 Ethernet Network Considerations

Since E-Port networks are high-performance, realtime networks, the following considerations should be observed when designing your network.

#### 2.4.3.1.1 Installation Requirements

- All E-Ports and their associated PCs must be on the same subnet; that is, no routers can be used between E-Ports and their associated PCs. Switches or routers should be used to isolate this subnet from the rest of the corporate network, to avoid limiting performance due to heavy network traffic.
- If there are any external firewall devices between the E-Port and the computer, they must be disabled or be configured to pass UDP ports: 20034, 4666, and 4669. The Windows XP firewall is configured automatically by the E-PortSetup application.
- If the E-Port is used to connect your computer with a corporate LAN that uses a proxy server for Internet web browsing, you must exclude the IP address of your E-Port unit in your web browser's proxy server settings/preferences. If this is not done, attempts to connect to a web page on the LAN will fail, because the proxy server will attempt to route such requests outside the LAN. For most web browsers, this can be accomplished in the **Advanced** settings for the proxy server configuration. Set the network mask to 255.255.255.0.

#### 2.4.3.1.2 Installation Recommendations

For best performance, MicroMod Automation recommends that you:

- Use 100 BaseTx computer interfaces
- Use 100 BaseTx switches, rather than hubs

#### 2.4.3.2 Connecting to an Existing Network

If you are connecting the E-Port unit to an Ethernet switch, use an RJ-45 patch cable to connect the E-Port unit to an unused network jack.

- ✍ **Notes** You **cannot** use an RJ-45 patch cable to connect the E-Port unit directly to a network card in a computer.

The RJ-45 cable is not supplied by MicroMod Automation Inc.

#### 2.4.3.3 Connecting Directly to a Network Card in a Computer

If you do not have a switch, and want to connect 1 E-Port unit directly to a computer, use an RJ-45 cross-over cable to connect the E-Port unit to the host computer.

- ✍ **Notes** You **cannot** use an RJ-45 patch cable to connect the E-Port unit directly to a network card in a computer.

The RJ-45 cable is not supplied by MicroMod Automation Inc.



## 3.0 Micro-DCI Software Configuration

### 3.1 Creating an E-Port Network with Super32

An E-Port Unit is a network interface device used to facilitate data communication between MicroMod Automation controllers and Communications Services nodes on an E-Port type network. Before you can use E-Port units, you must have an E-Port network available. E-Port communication is only available on Version 4.1 (or later) of the Micro-DCI Communication Services software.

To create an E-Port network:

1. From the Windows task bar, select the sequence **Start > Programs > MicroMod Automation > Micro-DCI Communications Services > Super32**.
2. Right-click on the Communications Services node on which the new network is to be created. A menu is displayed.
3. Select the **Add a new network** option on the menu. The *Network Wizard* window (Figure 3-1) is displayed.

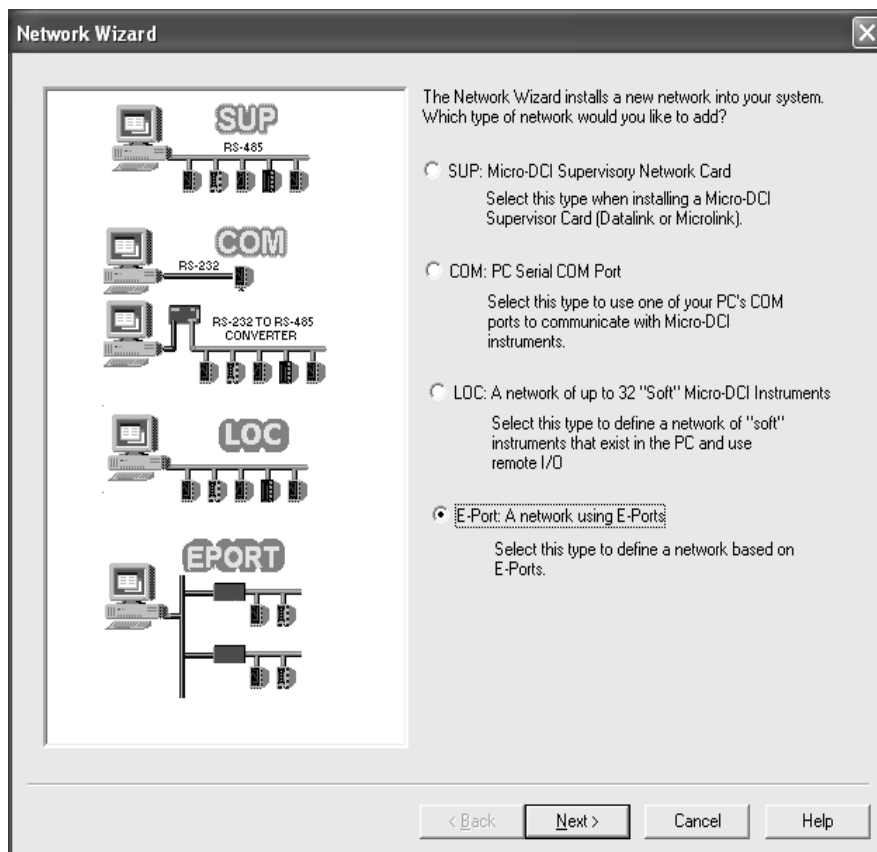


Figure 3-1. Network Wizard Initial Window

4. On the *Network Wizard* window, click on the **E-Port** radio button, then click **Next**. The *Network Attributes* window (Figure 3-2) is displayed.

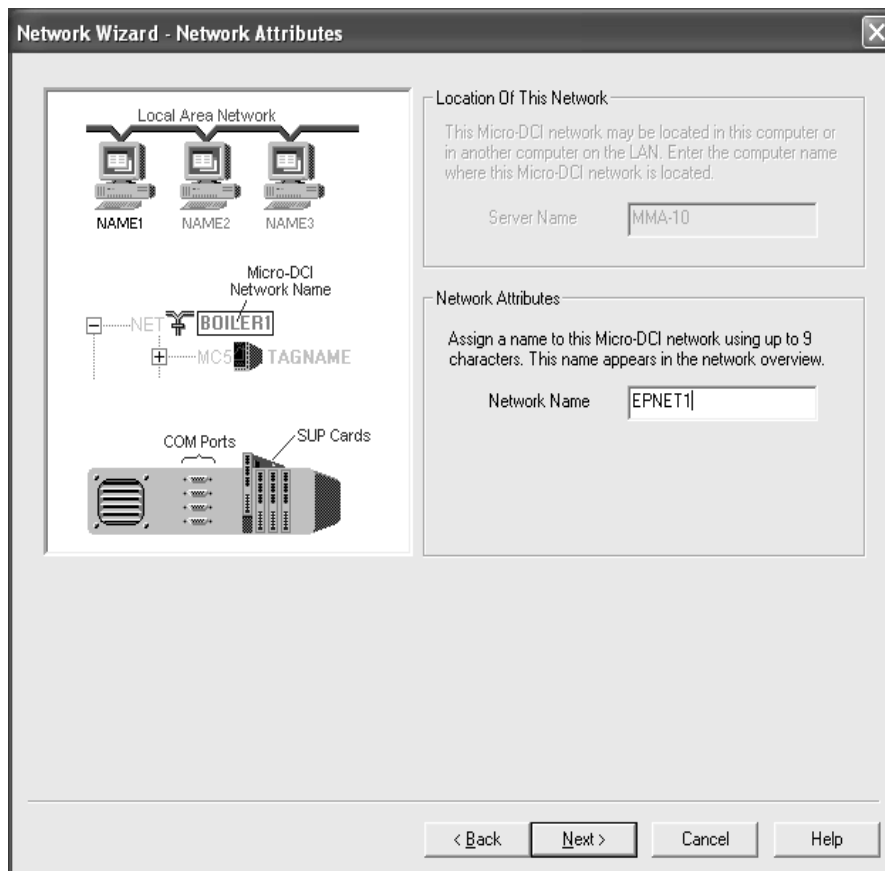


Figure 3-2. Network Attributes Window

5. In the *Network Attributes* pane, locate the *Network Name* entry box and enter the name to be used for the E-Port network. The name can be up to 9 characters in length.

- Click **Next**. The *Network Mode* selection window (Figure 3-3) is displayed.

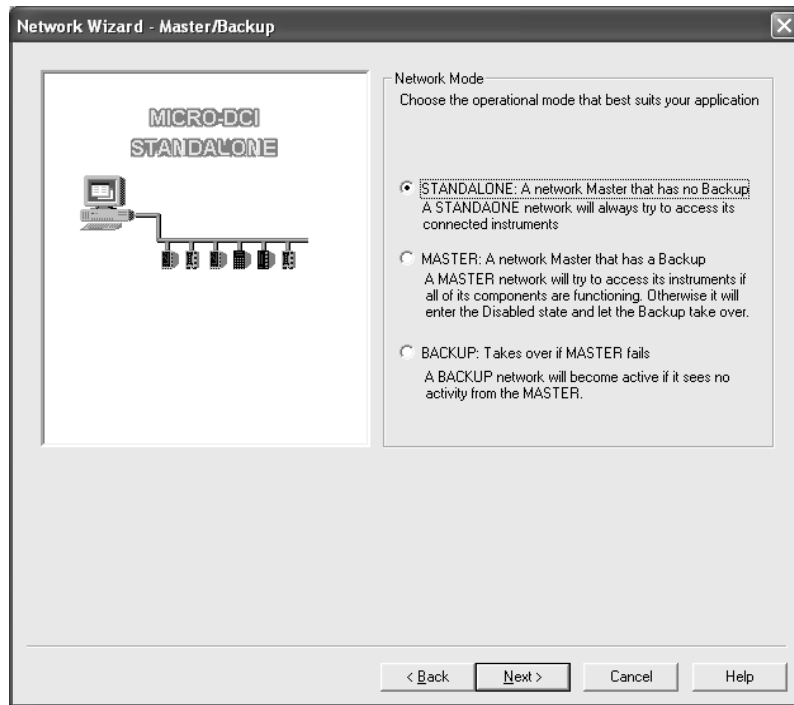


Figure 3-3. Network Mode Selection Window

- Choose the mode for the Communications Services node which was selected in Step 2. Available modes are *Standalone*, *Master*, and *Backup*.
- Click **Next**. The *Finish* window is displayed. The Finish window provides a summary of the configuration performed for the E-Port network.
- Click **Finish** to complete the E-Port network configuration. A confirmation window will advise if the operation was successful, and an entry for the new network will be displayed, below its Communications Services node, on the Super32 window.

## 3.2 Configuring the E-Port

### 3.2.1 Getting Started

To run the E-Port setup program:

- Start Super32. To do so from the Windows task bar, select the sequence **Start > Programs > MicroMod > Micro-DCI Communications Services > Super32**.
- From the **Super32 Tools** menu, select **Configure E-Ports** to launch the E-Port setup program.

### 3.2.2 Configure the E-Port Unit Settings

The E-Port setup program will allow you to view your E-Port unit's current settings, or modify the settings.

### 3.2.2.1 Configuring the E-Port Unit IP Address

If the network to which the E-Port is connected has a DHCP server running, then the values in the left pane in the window will be zero, and the IP address assigned by the DHCP server will appear in the *Select a Unit* pane as shown below.

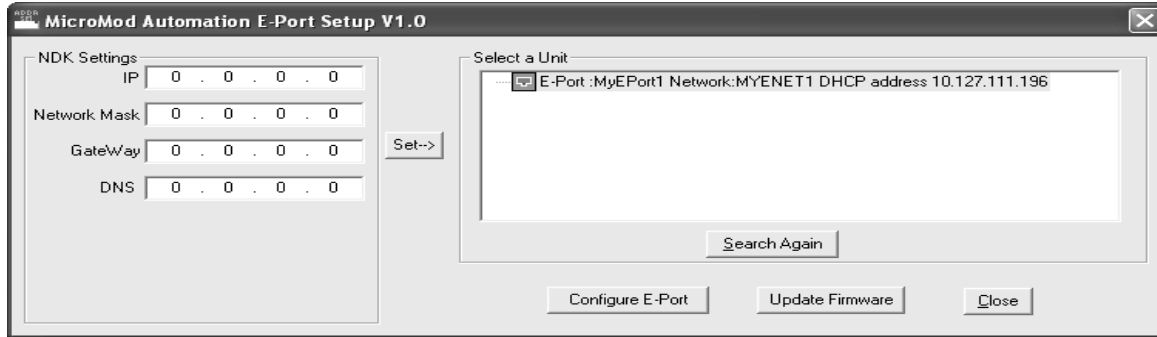


Figure 3-4. E-Port Setup Window

If there is no DHCP server running, you must assign a static IP address. See Section 3.2.2.7, How to Choose an IP Address, below. Enter the information into the *NDK Settings* pane and click on the **Set** button. There will be a short pause while parameters are updated. If you do not see your device in the *Select a Unit* pane, click on the **Search Again** button.

Once the E-Port is listed in the *Select a Unit* pane, configuration can continue.

### 3.2.2.2 Configure E-Port Unit Parameters

Click the **Configure E-Port** button. This will open up the default web browser, to display the home page for your E-Port Unit.

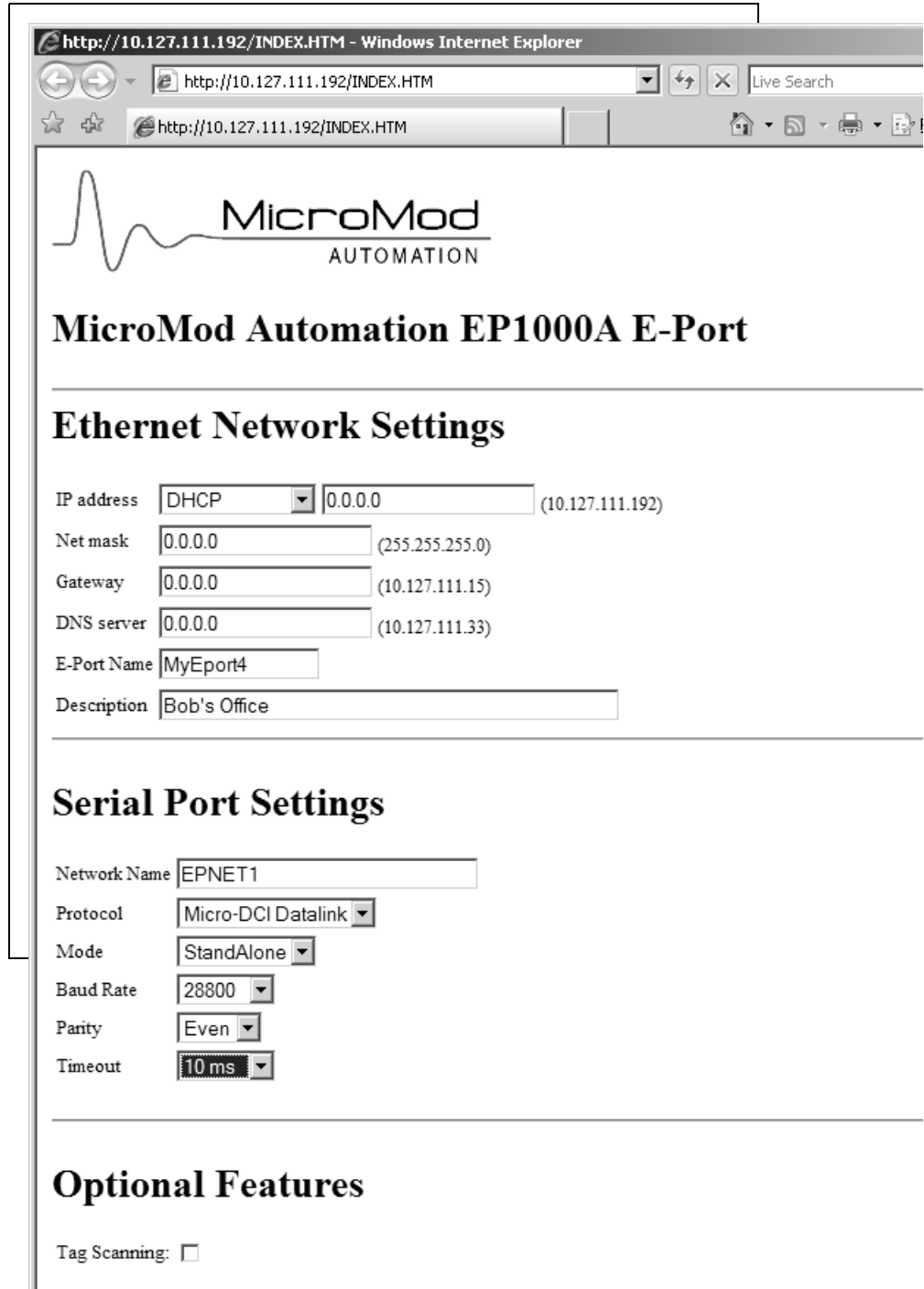


Figure 3-5. E-Port Configuration Web Page

### 3.2.2.3 Assign Device Information to the E-Port Unit

In the **E-Port Name** entry box, enter a device name of up to 16 characters in length for this E-Port unit.

In the **Description** entry box, enter a description up to 60 character long for this E-Port unit.

### 3.2.2.4 Configure Serial Port/Network Settings for the E-Port Unit

In the *Serial Port Settings* portion of the window, locate the **Network Name** entry box. Enter the name of the Micro-DCI network, defined in Super32, that this E-Port unit will join.

Locate the *Network Protocol* drop-down box, and select **Micro-DCI DataLink**.

To specify the mode of the E-Port Unit, locate the *Mode* drop-down box and select one of the following choices:

- **Standalone:** Choose this option if this will be the only E-Port on this network segment.
- **Master:** If there will be two E-Port units on this network segment, one of the E-Port units must be a Master, and the other must be a Backup. Choose this option to designate the Master unit.
- **Backup:** If there will be two E-Port units on this network segment, one of the E-Port units must be a Master, and the other must be a Backup. Choose this option to designate the Backup unit.

To specify the baud rate of the E-Port unit, use the *Baud Rate* drop-down box and select the baud rate that matches the baud rate set in the Micro-DCI controllers. See your system administrator if you need information on the baud rate used in the controllers at your site.

To specify the data parity setting for the E-Port unit, use the *Parity* drop-down box; select the parity setting that matches the parity set in the Micro-DCI controllers. See your system administrator if you need information on the parity setting in the controllers at your site.

To specify the timeout value for the E-Port unit, use the *Timeout* drop-down box. Normally 10 ms is the proper value. It may be increased in situation where additional network delay is introduced by a modem.

### 3.2.2.5 Recording Information onto the E-Port Label

The label on the E-Port unit provides a convenient place to record information about the configuration for the unit. Spaces are provided, on the label, for the E-Port Name, Network Name, and Description.

### 3.2.2.6 E-Port Configuration Security

You can require that a password be entered in order to call up the E-Port Setting web page. To do so, go to the *User Name and Password* portion of the *E-Port Setup* window. Enter a *User Name* and a *Password* in the appropriate entry boxes. Type the password a second time in the Repeat Password entry box.

- **Note** Be sure to make a note of this user name and password, so you can call up the *E-Port Setting* web page again!

### 3.2.2.7 How to Choose an IP Address

- **Caution** If you are part of an existing network, before proceeding, contact your network administrator and discuss the requirements listed in Section 2.4.3.1, Ethernet Network Considerations.

If you are not part of an established network, you can choose any IP address you desire.



You should use one of the following address ranges, that have been reserved for use by isolated networks if you are creating an isolated network. The first range will be used for all of the examples in the documentation.

- 10.0.0.0 to 10.255.255.255 Class A
- 172.16.0.0 to 172.31.255.255 Class B
- 192.168.0.0 to 192.168.255.255 Class C

For example:

- Set Your PC's Network Adapter Card IP Address to 10.1.1.10 (only change the Network Adapter Card, do not change your Dial-Up Adapter settings)
- Set the IP address of the E-Port to 10.1.1.11
- Set the network mask for both the PC network adapter and the E-Port board to 255.255.255.0

### 3.3 Network Management

#### 3.3.1 Use Super32 to Find an Instrument's E-Port

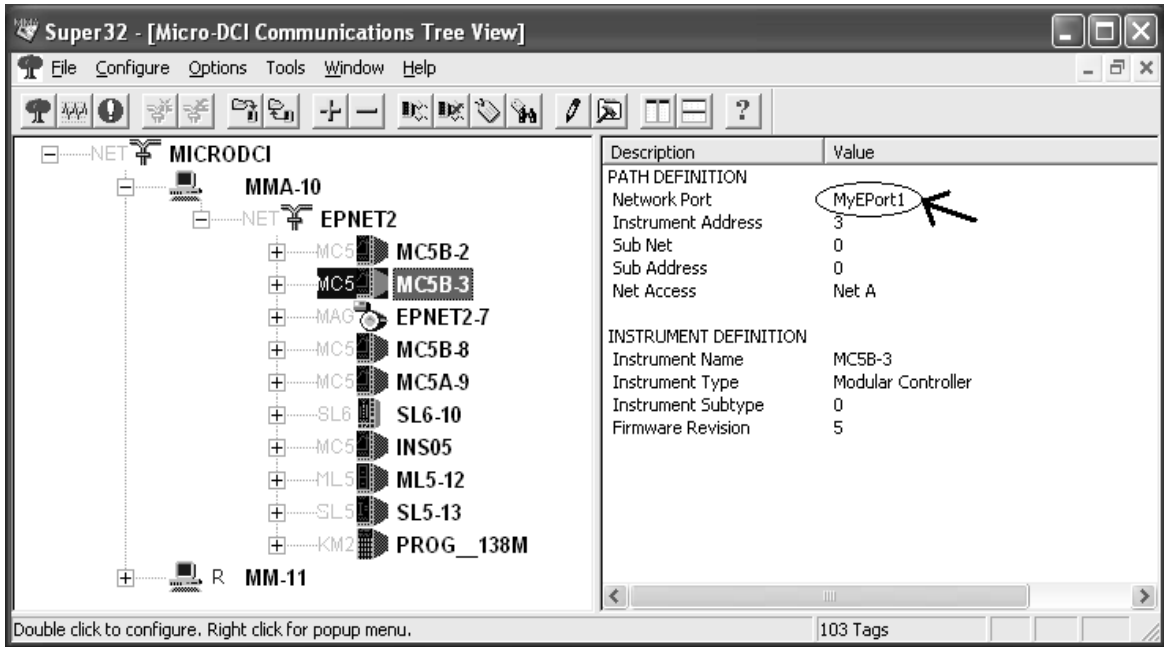


Figure 3-6. Initial Super32 Window

1. Browse the tree list to find the instrument for which you want E-Port information.
2. Click on the icon for an instrument to select it.
3. The pane on the right side of the window displays data about the instrument. The Network Port item shows the E-Port name.

### 3.3.2 Using Super32 Statistics

Click on the **Comm Stats View** toolbar button. The network *Comm[unications] Stat[istic]s View* window will be displayed for all Micro-DCI networks.

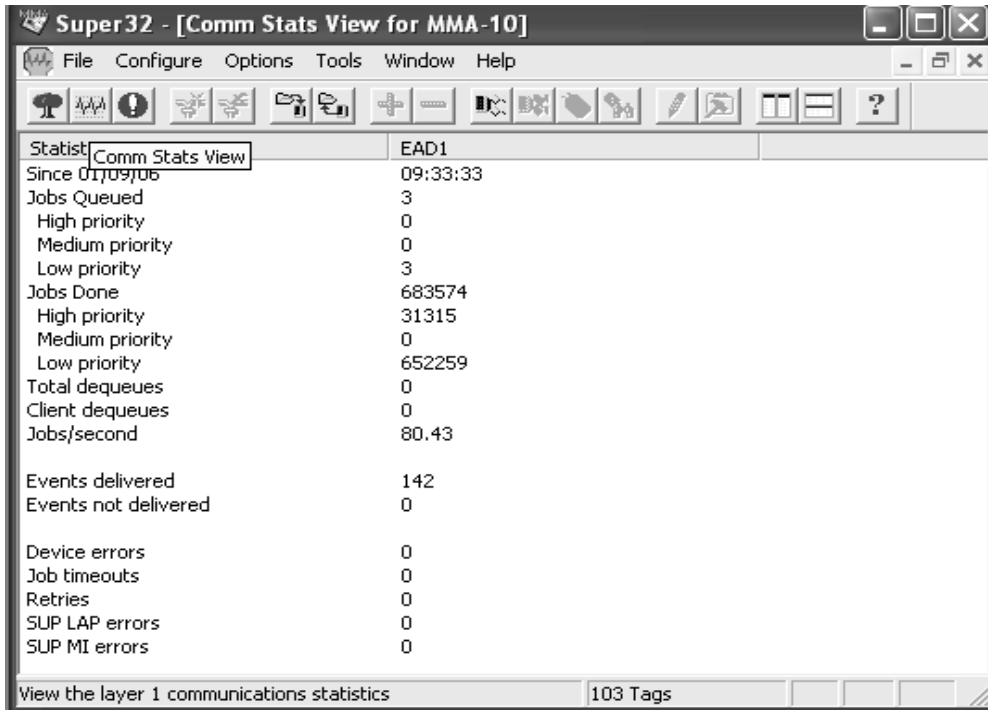


Figure 3-7. Super32 Statistics Display

### 3.3.3 Using E-Port Diagnostics

To view communications statistics for an E-Port unit, click on the **Diagnostics** option located at the bottom of the *E-Port Configuration* web page (Figure 3-5). The statistics will be shown in the resulting display (Figure 3-8). The display lists each of the instruments connected to the E-Port, with each instrument's type, number of transactions, and number of errors associated with that instrument.

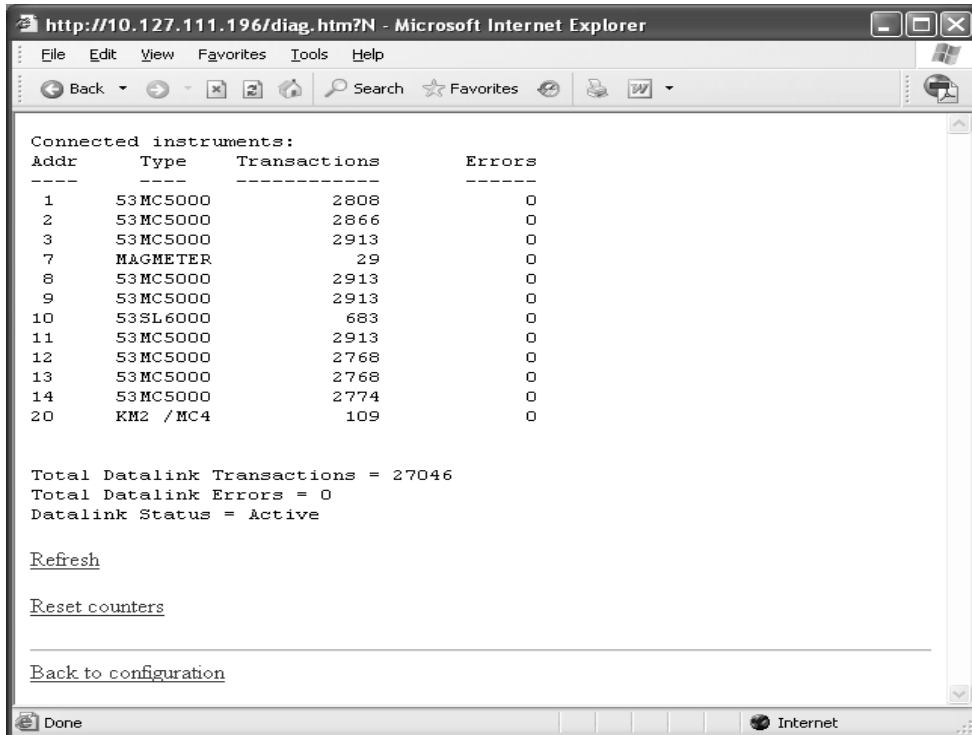


Figure 3-8. E-Port Statistics Display

The Communication Counters provide the following data:

- Total DataLink Transactions**      The total number of transactions performed on the E-Port's DataLink since the E-Port was powered up.
  - Total DataLink Errors**      The total number of errors on the E-Port's DataLink since the E-Port was powered up. DataLink errors indicate a problem in the network wiring or the instrument's DataLink.
- It is normal for errors to be detected:
- when a master E-Port to Backup E-Port switchover occurs, or
  - when an instrument is disconnected, or
  - when an instrument address is changed
- DataLink Status**      Indicates whether the DataLink is in *Active* or *Standby* mode. An E-Port will be in Standby mode if it is part of a Master Backup E-Port configuration, and the other associated E-Port is in Active mode.



## 4.0 XModbus OPC Server Configuration

### 4.1 Creating an Ethernet Port

To create an Ethernet Port:

1. From the Windows task bar, select the sequence **Start > Programs > MicroMod Automation > XMBOPC > XModbus OPC Server**.
2. Click the Edit menu on the menu bar. A menu is displayed.(Figure 4-1
3. Select the **Ethernet Ports** option on the menu. *The Modbus TCP Ports Dialog* (Figure 4-2) will be displayed.

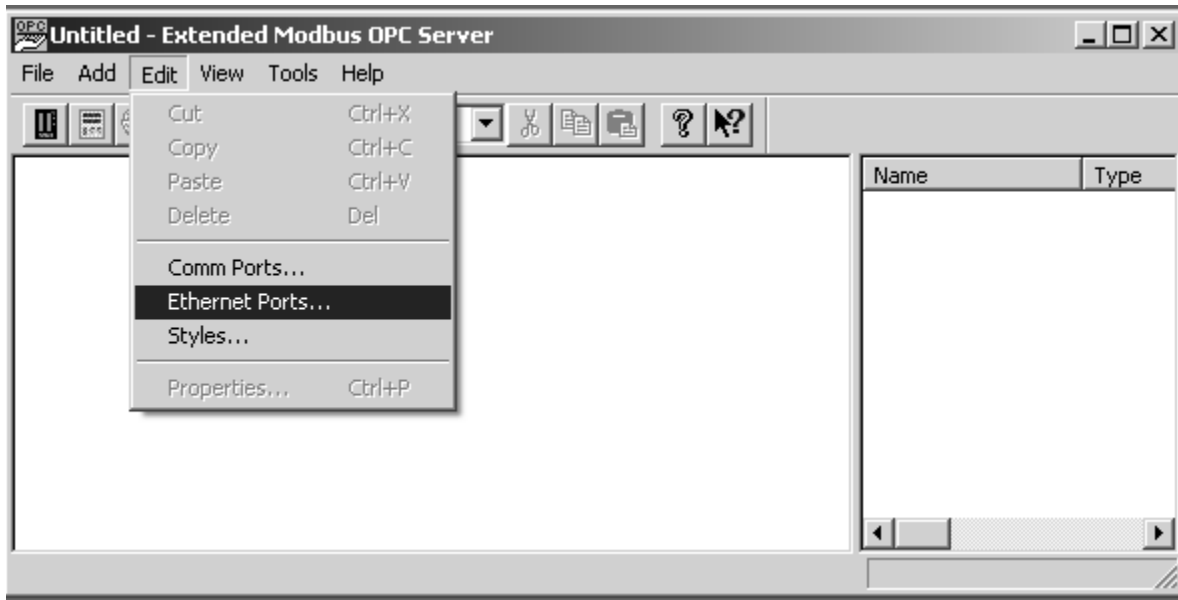


Figure 4-1. Ethernet Ports menu option

- Click the Find Ports button and each E-Port on the network will be listed.

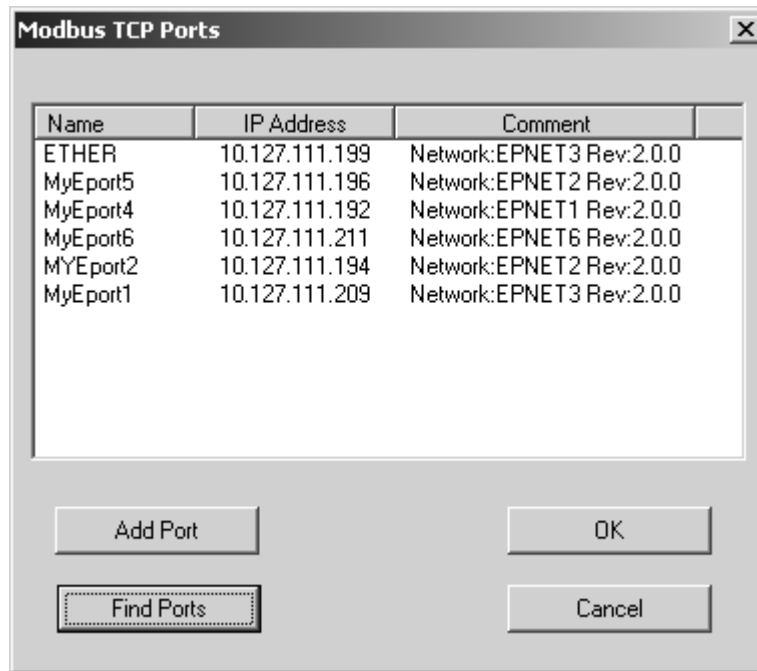


Figure 4-2. Modbus TCP Ports Dialog

- Click OK to close the dialog

## 4.2 Creating a Device

To create a new XModbus device in the OPC Server

- Click the New XModbus Device button on the toolbar

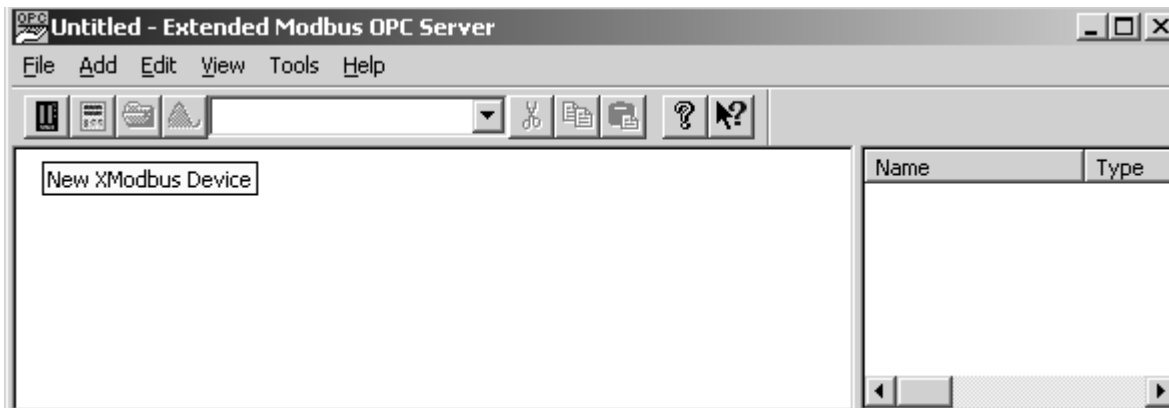
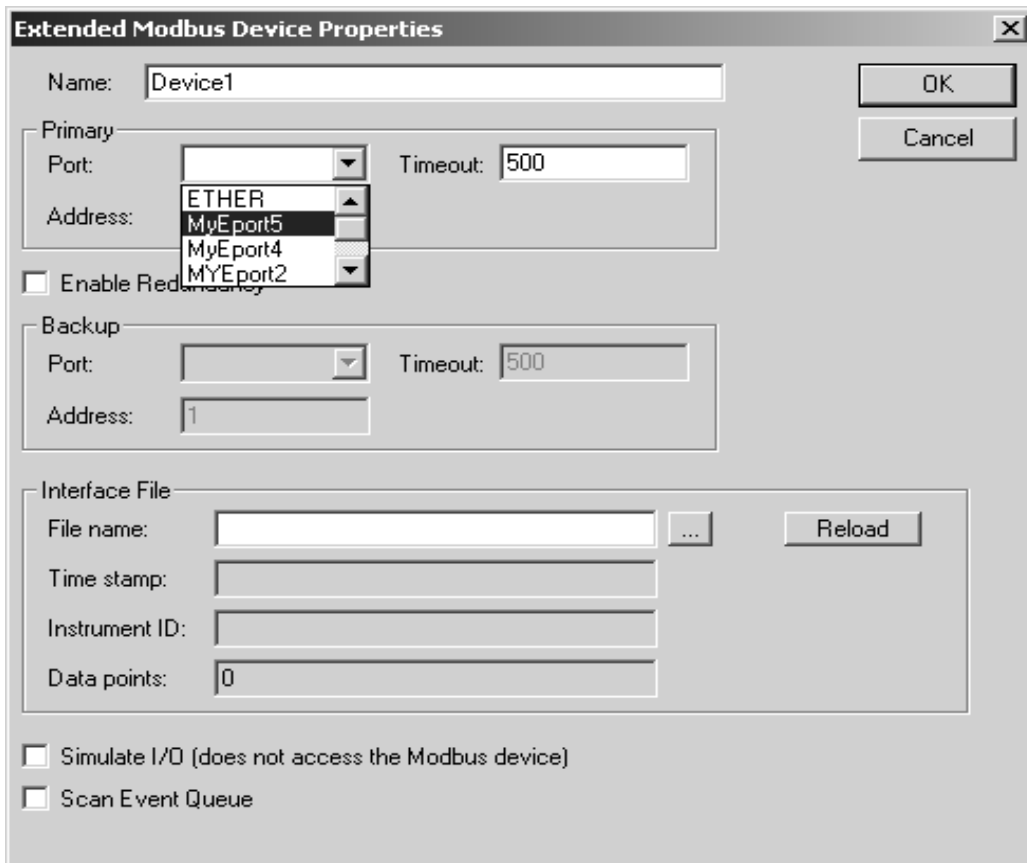


Figure 4-3. New XModbus Device

Figure 4-4.

2. Assign a suitable name to the device
3. Select the E-Port that is wired to the device from the Port dropdown menu



4. Choose a timeout based on the devices response time. This is the time that the OPC server will wait for a response from the E-Port.

If the OPC Server is the only application accessing the E-Port, a Timeout value of 100ms should be used.

If there are additional OPC servers also accessing the E-Port the Timeout value should be increased by 50 ms for each additional server.

5. Click the File Name browse button and browse to the .MIF file for the device.
6. Click OK

## 4.3 Configuring the E-Port

### 4.3.1 Getting Started

To run the E-Port setup program:

1. Start the XModbus OPC Server and click the Tools menu on the menu bar.
2. Select **Configure E-Ports** to launch the E-Port setup program.

### 4.3.2 Configure the E-Port Unit Settings

The E-Port setup program will allow you to view your E-Port unit's current settings, or modify the settings.

#### 4.3.2.1 Configuring the E-Port Unit IP Address

If the network to which the E-Port is connected has a DHCP server running, then the values in the left pane in the window will be zero, and the IP address assigned by the DHCP server will appear in the *Select a Unit* pane as shown below.

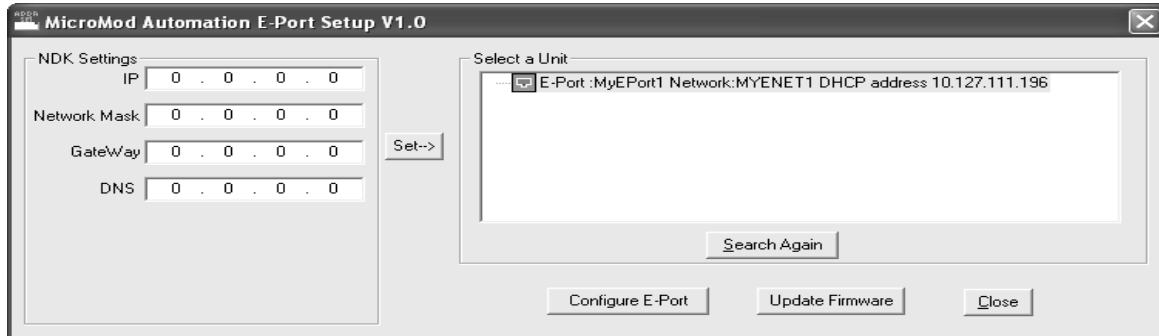


Figure 4-5. E-Port Setup Window

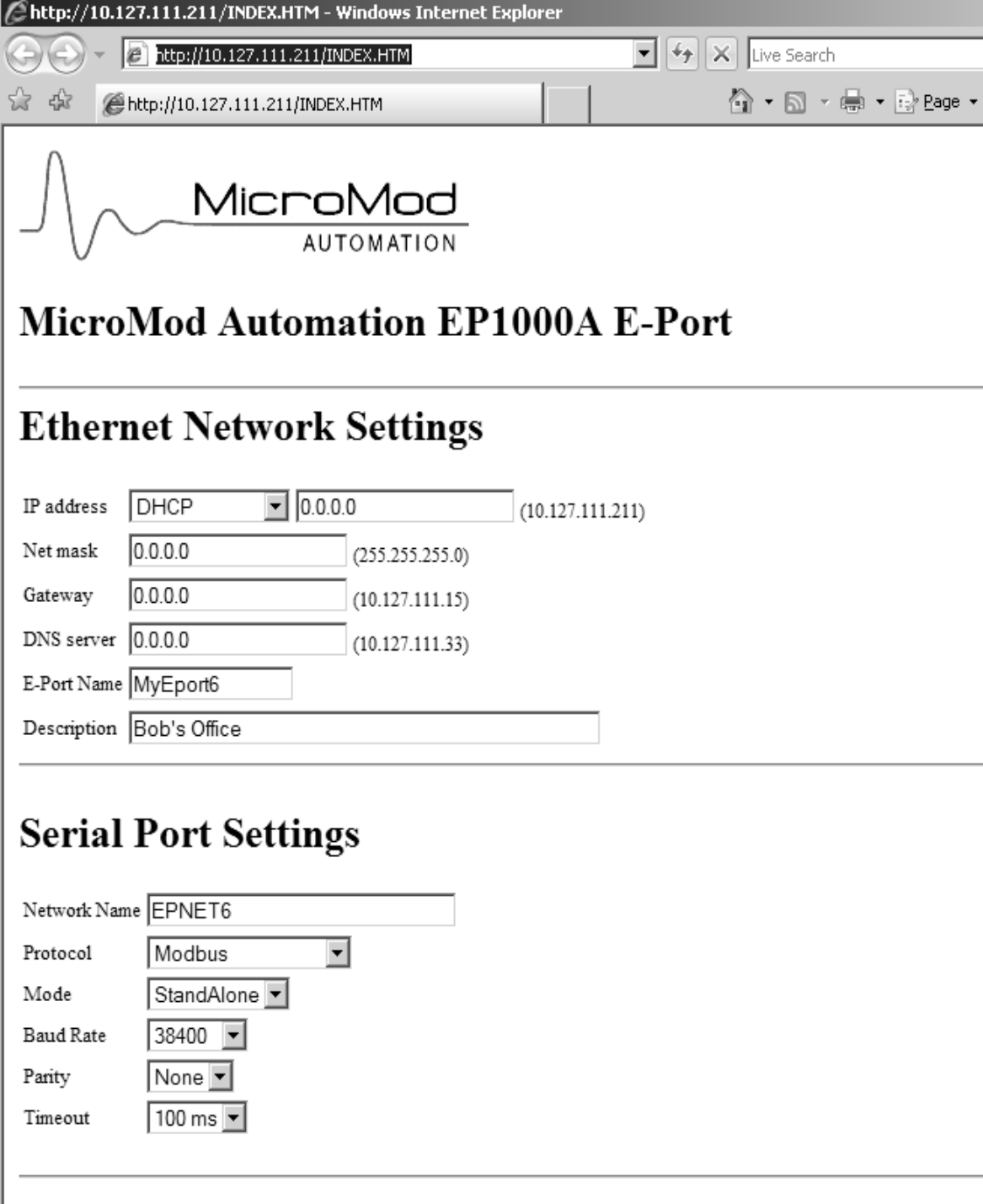
If there is no DHCP server running, you must assign a static IP address. See Section 4.3.2.7, How to Choose an IP Address, below. Enter the information into the *NDK Settings* pane and click on the **Set** button. There will be a short pause while parameters are updated. If you do not see your device in the *Select a Unit* pane, click on the **Search Again** button.

Once the E-Port is listed in the *Select a Unit* pane, configuration can continue.



### 4.3.2.2 Configure E-Port Unit Parameters

Click the **Configure E-Port** button. This will open up the default web browser, to display the home page for your E-Port Unit.



The screenshot shows a web browser window with the address bar displaying `http://10.127.111.211/INDEX.HTM`. The page content includes the MicroMod Automation logo, a title "MicroMod Automation EP1000A E-Port", and two main sections: "Ethernet Network Settings" and "Serial Port Settings".

**Ethernet Network Settings**

IP address	<input type="text" value="DHCP"/>	<input type="text" value="0.0.0.0"/>	(10.127.111.211)
Net mask	<input type="text" value="0.0.0.0"/>	<input type="text" value="255.255.255.0"/>	(255.255.255.0)
Gateway	<input type="text" value="0.0.0.0"/>	<input type="text" value="10.127.111.15"/>	(10.127.111.15)
DNS server	<input type="text" value="0.0.0.0"/>	<input type="text" value="10.127.111.33"/>	(10.127.111.33)
E-Port Name	<input type="text" value="MyEport6"/>		
Description	<input type="text" value="Bob's Office"/>		

**Serial Port Settings**

Network Name	<input type="text" value="EPNET6"/>
Protocol	<input type="text" value="Modbus"/>
Mode	<input type="text" value="StandAlone"/>
Baud Rate	<input type="text" value="38400"/>
Parity	<input type="text" value="None"/>
Timeout	<input type="text" value="100 ms"/>

Figure 4-6. E-Port Configuration Web Page

#### 4.3.2.3 Assign Device Information to the E-Port Unit

In the **E-Port Name** entry box, enter a device name of up to 16 characters in length for this E-Port unit.

In the **Description** entry box, enter a description up to 60 character long for this E-Port unit.

#### 4.3.2.4 Configure Serial Port/Network Settings for the E-Port Unit

In the *Serial Port Settings* portion of the window, locate the **Network Name** entry box. Enter the name of the Micro-DCI network, defined in Super32, that this E-Port unit will join.

Locate the *Network Protocol* drop-down box, and select **Modbus**

To specify the mode of the E-Port Unit, locate the *Mode* drop-down box and select one of the following choices:

- **Standalone:** Choose this option if this will be the only E-Port on this RS-485 network.
- **Master:** If there will be two E-Port units on this RS-485 network, one of the E-Port units must be a Master, and the other must be a Backup. Choose this option to designate the Master unit.
- **Backup:** If there will be two E-Port units on this network, one of the E-Port units must be a Master, and the other must be a Backup. Choose this option to designate the Backup unit.

To specify the baud rate of the E-Port unit, use the *Baud Rate* drop-down box and select the baud rate that matches the baud rate set in the controllers.

To specify the data parity setting for the E-Port unit, use the Parity drop-down box; select the parity setting that matches the parity set in the controllers.

To specify the Timeout value, use the Timeout drop-down box. The E-Port will use this value to calculate how long to wait for a response from the controller. For MOD30ML and Modcell devices, use the 100ms choice.

#### 4.3.2.5 Recording Information onto the E-Port Label

The label on the E-Port unit provides a convenient place to record information about the configuration for the unit. Spaces are provided, on the label, for the E-Port Name, Network Name, and Description.

#### 4.3.2.6 E-Port Configuration Security

You can require that a password be entered in order to call up the E-Port Setting web page. To do so, go to the *User Name and Password* portion of the *E-Port Setup* window. Enter a *User Name* and a *Password* in the appropriate entry boxes. Type the password a second time in the Repeat Password entry box.

- ✎ **Note** Be sure to make a note of this user name and password, so you can call up the *E-Port Setting* web page again!

#### 4.3.2.7 How to Choose an IP Address

- ⚠ **Caution** If you are part of an existing network, before proceeding, contact your network administrator and discuss the requirements listed in Section 2.4.3.1, Ethernet Network Considerations.

If you are not part of an established network, you can choose any IP address you desire.

You should use one of the following address ranges, that have been reserved for use by isolated networks if you are creating an isolated network. The first range will be used for all of the examples in the documentation.

- 10.0.0.0 to 10.255.255.255 Class A
- 172.16.0.0 to 172.31.255.255 Class B
- 192.168.0.0 to 192.168.255.255 Class C

For example:

- Set Your PC's Network Adapter Card IP Address to 10.1.1.10 (only change the Network Adapter Card, do not change your Dial-Up Adapter settings)
- Set the IP address of the E-Port to 10.1.1.11
- Set the network mask for both the PC network adapter and the E-Port board to 255.255.255.0

## 4.4 Network Management

To view communications statistics for an E-Port unit, click on the **Diagnostics** option located at the bottom of the *E-Port Configuration* web page (Figure 4-6). The statistics will be shown in the resulting display (Figure 4-7). The display lists each of the instruments connected to the E-Port, with each instrument's number of transactions, and number of errors associated with that instrument.

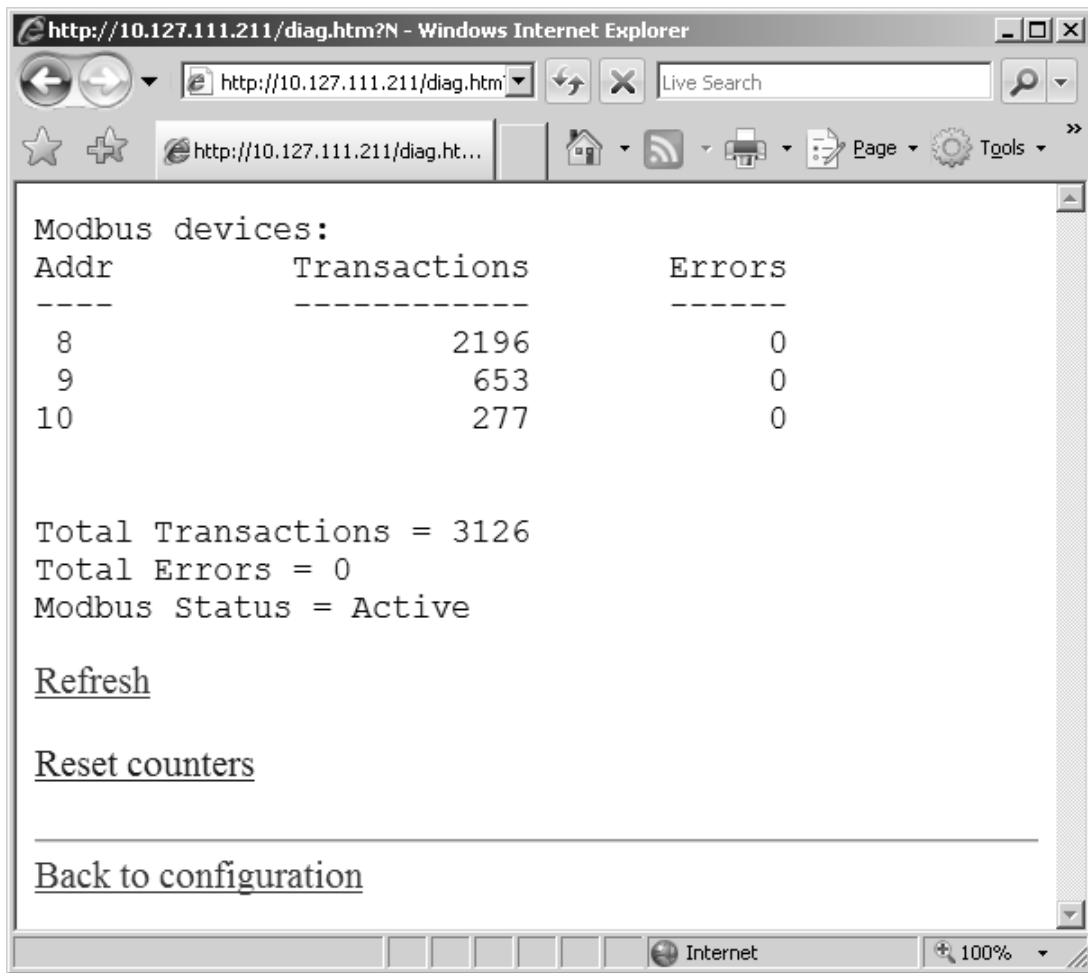


Figure 4-7. E-Port Modbus Statistics Display

The Communication Counters provide the following data:

**Total Transactions** The total number of transactions performed on the E-Port's Modbus since the E-Port was powered up.

**Total Errors** The total number of errors on the E-Port's Modbus since the E-Port was powered up. Errors indicate a problem in the network wiring or the instrument's Modbus hardware.

It is normal for errors to be detected:

- when a master E-Port to Backup E-Port switchover occurs, or
- when an instrument is disconnected, or
- when an instrument address is changed

**Modbus Status** Indicates whether the E-Port is in *Active* or *Standby* mode. An E-Port will be in Standby mode if it is part of a Master Backup E-Port configuration, and the other associated E-Port is in Active mode.

## 5.0 Maintenance

### 5.1 Parts List

The parts list is provided in Table 5-1.

*Table 5-1. Parts List*

<b>Part Number</b>	<b>Description</b>
699B604U01	EP1000A E-Port, with standard ac power cable
694A200U01	EP1000A E-Port Instruction Manual (hardcopy)
122C100U01	DIN rail mounting bracket kit for EP1000A E-Port
623B600U01	Snap Track mounting bracket kit for EP1000A E-Port
698B239U01	53SL6000 RS-232 cable
698B184U01	53MC5000 front port cable
677C100U01	Power cable for dc power
677C101U01	Power adapter cable
172M100U01	RS-232 Null modem cable, 1' length
172M100U02	RS-232 Null modem cable, 6' length
803F001U01	ITB in DIN rail mounting bracket
686B720U01	ITB for Snap Track mounting
677B943U0_	DataLink Cord Set

If a situation arises requiring technical assistance, contact the nearest MicroMod Automation field office.

- Note** When communicating with MicroMod Automation for replacement parts, refer to the serial number of the unit to ensure the correct replacement assembly is supplied. The necessary ordering information is provided on the instrument data tag and on the manufacturing specification sheet supplied with that particular controller.





The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice, or to make engineering refinements that may not be reflected in this bulletin. Micromod Automation assumes no responsibility for errors that may appear in this manual.

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