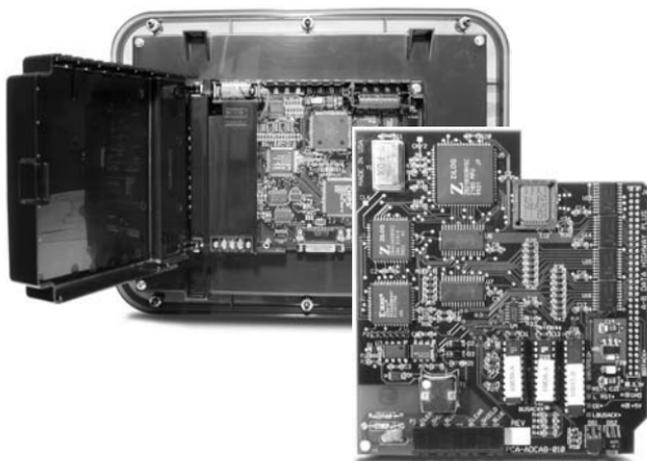


# EZ-ETHERNET Card Installation and User Manual



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# EZ-Ethernet Card Installation and User Manual

Please include the Manual Number and the Manual Issue, both shown below, when communicating with us regarding this publication.

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**Issue:** First Edition

**Issue Date:** 5/15/02

Publication History		
Issue	Date	Description of Changes
First Edition	5/15/02	Original

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**GETTING STARTED**



**CHAPTER**

**1**

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## Manual Overview

### Overview of this Publication

The EZ-Ethernet Installation and User Manual describes the installation and configuration of the EZ-Ethernet Card. Refer also to the EZ-Touch software and Hardware manuals, the PLC manual, and the Ethernet Communications Module manual.

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### Special Symbols



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*When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a special note.*

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**When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a WARNING. This information could prevent injury, loss of property, or even death (in extreme cases).**

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## Overview of the EZ-Ethernet Card

The EZ-Ethernet Option Card provides a low-cost, high performance Ethernet link between one or more EZTouch control panels and corresponding Koyo DL205 or DL405 systems. The EZEthernet Option Card installs directly inside the EZTouch panel.

Ethernet communications requires one or more Ethernet Communications Modules (ECOM) be installed in the local base of the PLC system. When connected to a live 10BaseT network, the EZEthernet Option Card acts as a conduit to pass control packets between the EZTouch Panel and PLC system(s).

The EZ-Ethernet Option Card allows a single panel to communicate with up to ten unique ECOM devices. Furthermore, the ECOM can be on a local network, or on a remote network accessed through a gateway.

The Card has a Hitachi SH1 central processor clocked at 10 Mhz., a Crystal Semiconductor CS8900 Ethernet Controller chip, 48K of ram and 128K of EEPROM Memory and associated hardware.

## Operating System

The EZ-Ethernet operating system is comprised of two layers, a low level boot loader and a primary operating system. The boot loader provides basic intelligence to do minimal Ethernet communications used for initial link establishment and downloading a new primary operating system. Upon power-up, if the boot loader finds a valid primary operating system, the loader will pass control to the primary operating system. Both the loader and the primary operating system are located in EEPROM.

## Packing List

Included with your EZ-Ethernet Card package are the following:

1. EZ-Ethernet Card
2. Instructions for installing the Card inside your EZ-Touch Panel.
3. This EZ-ETHERNET-M manual.
4. CD-ROM which includes the following:
  - EZTouch panel software (version 2.2 or higher).
  - ECOM firmware upgrade for H24-ECOM module (requires firmware Ver 1.0.197 or higher).
  - Adobe Acrobat PDF file of this EZ-ETHERNET-M manual.

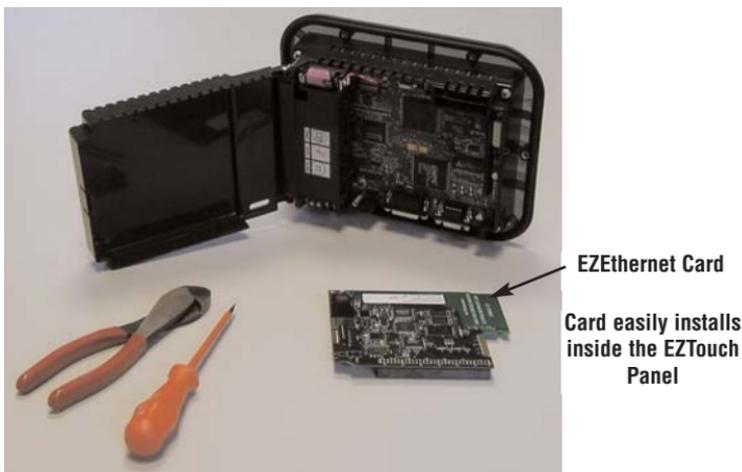


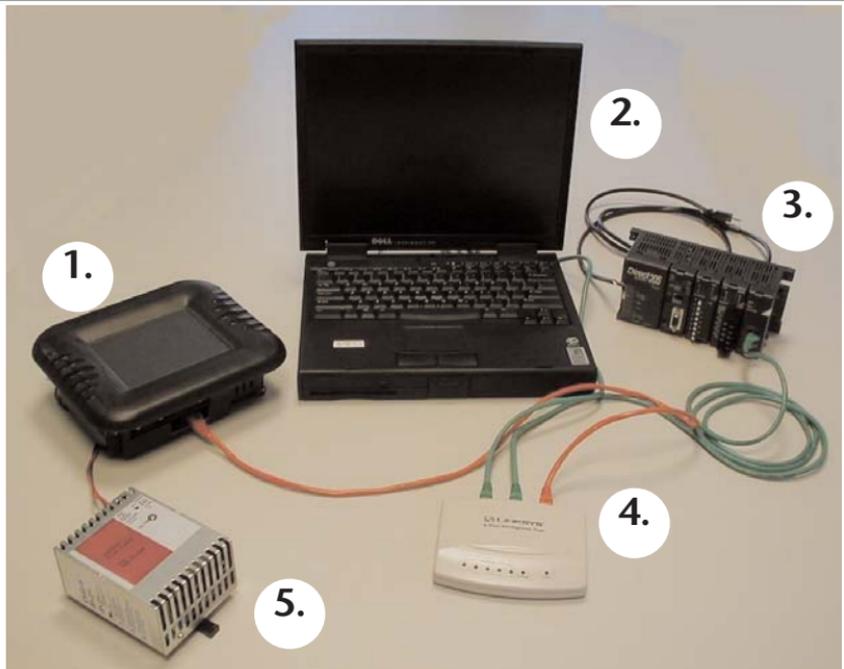
## Minimum Required Hardware

- EZTouch panel with EZ-Ethernet Card installed. Note: Panel must have “-F” in part number and have firmware C.4 or higher. See EZTouch software manual for firmware upgrade instructions.
- DL205 or DL405 PLC with H24-ECOM module installed. Requires firmware upgrade for H24-ECOM module, included on supplied CD. Note: EZ-Ethernet requires firmware Ver 1.0.197 or higher). To get future firmware updates, go to [www.hosteng.com](http://www.hosteng.com), under Support. Instructions are available for upgrading firmware.
- Standard ethernet workgroup hub and at least three CAT-5 ethernet patch cables.
- Personal computer with a ethernet network interface card installed (10BaseT or 10BaseFL).
- 24VDC (1.2 Amp minimum) Power Supply for EZTouch panel

## Minimum Required Software/Firmware

- Windows 98 (or higher)
- EZTouch programming software, version 2.2 or higher (CD included)
- ECOM Firmware 1.0.97 or higher (on the EZTouch 2.2 Upgrade CD)
- EZTouch panel Firmware C.4 or higher (on the EZTouch 2.2 Upgrade CD)





## Typical EZ-Ethernet System

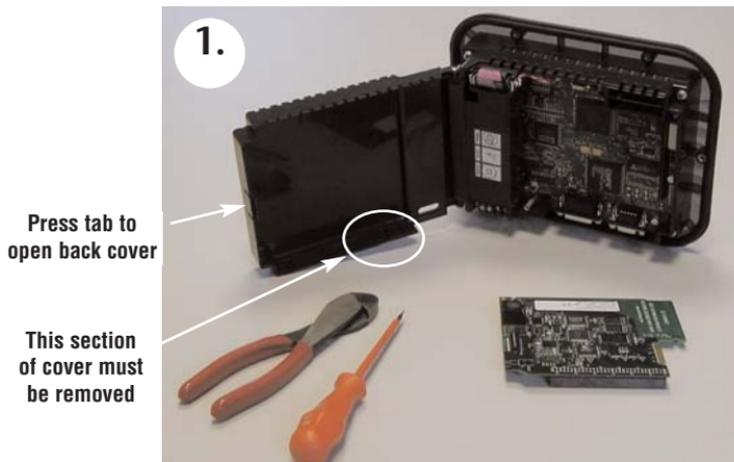
To begin designing and configuring your EZTouch panel with EZ-Ethernet card, you will likely be using the following shown above:

1. EZTouch panel with EZ-Ethernet Card installed. Note: Panel must have “-F” in part number and have firmware C.4 or higher. See EZTouch software manual for firmware upgrade instructions.
2. Personal computer with the following installed:
  - EZTouch panel software (version 2.2 or higher, included on supplied CD)
  - Ethernet network interface card (10BaseT or 10BaseFL)
  - DirectSoft programming software
3. DL205 or DL405 PLC with H24-ECOM module installed. Requires firmware upgrade for H24-ECOM module, included on supplied CD. Note: EZ-Ethernet requires firmware Ver 1.0.197 or higher). To get future firmware updates, go to [www.hosteng.com](http://www.hosteng.com), under Support. Instructions are available for upgrading firmware.
4. Standard ethernet workgroup hub and at least three CAT-5 ethernet patch cables. (Hub shown is **Automationdirect.com** P/N: RT-CNFGKIT, and includes 4 CAT-5 patch cables and one CAT-5 crossover cable. All cables are 5 feet long.)
5. 24VDC power supply for EZTouch panel. (Power supply shown is 50W, 2.0A **Automationdirect.com** P/N: PS24-050D.)

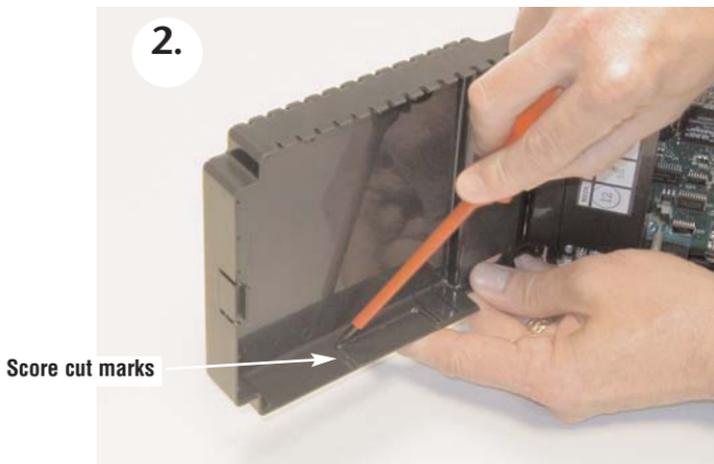
## Installing the EZ-Ethernet Card



**Warning:** Disconnect input power to the EZTouch panel before installing the EZ-Ethernet Card.



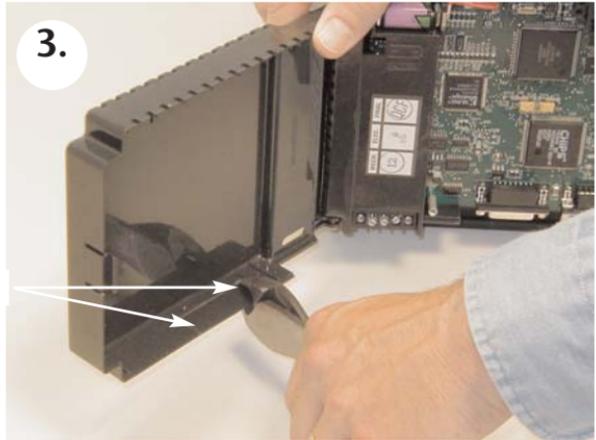
The bottom of the back plastic cover has a section that must be removed to allow access to the cable connector on the EZTouch panel.



The plastic piece to be removed has cut marks, but use a screwdriver to carefully score the cuts a little deeper so it breaks off easier.

3.

Make two cuts



Use a sharp side cutter to carefully make the two cuts along the edge.

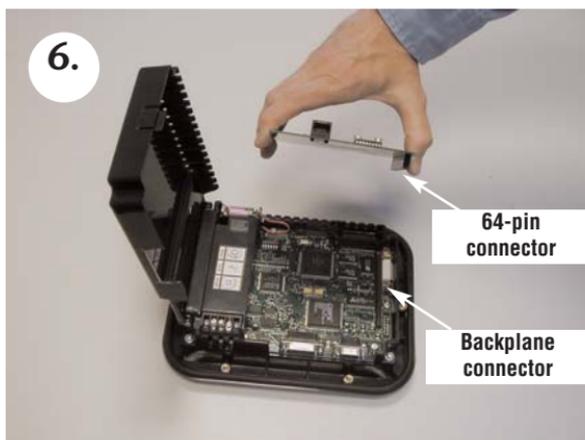
4.



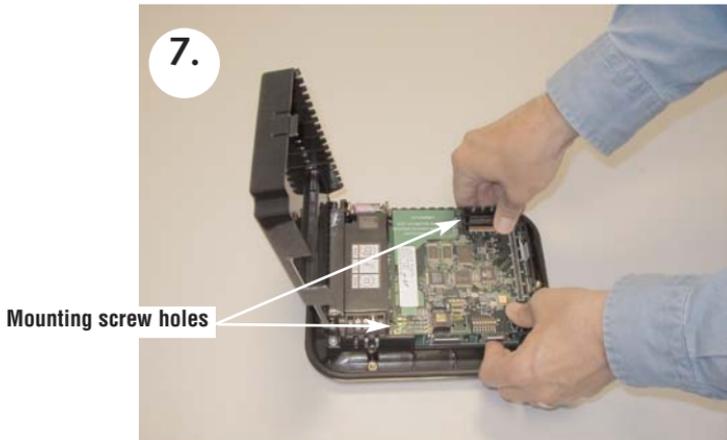
Carefully break off the piece.



The EZ-Ethernet Card is now ready to be installed inside the EZTouch Panel.



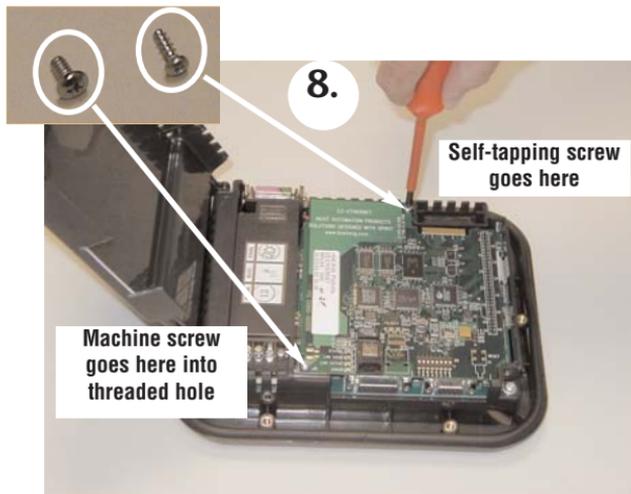
The EZ-Ethernet Card installs directly above the existing EZtouch PC board so that the 64-pin connector on the EZ-Ethernet Card connects to the matching EZTouch backplane connector.



Position the EZ-Ethernet Card so the two mounting screw holes align.



**DO NOT FORCE THE CARD CONNECTOR** into the backplane. Doing this may bend or break the pins and permanently damage the Card. First, make sure that the pins are aligned properly, and then press firmly into place.



Secure Card using the two supplied screws. Do not overtighten.

9.



Close the back cover and press so it snaps back into place. Connect the ethernet cable as shown.

# SETTING UP & USING THE EZ-ETHERNET

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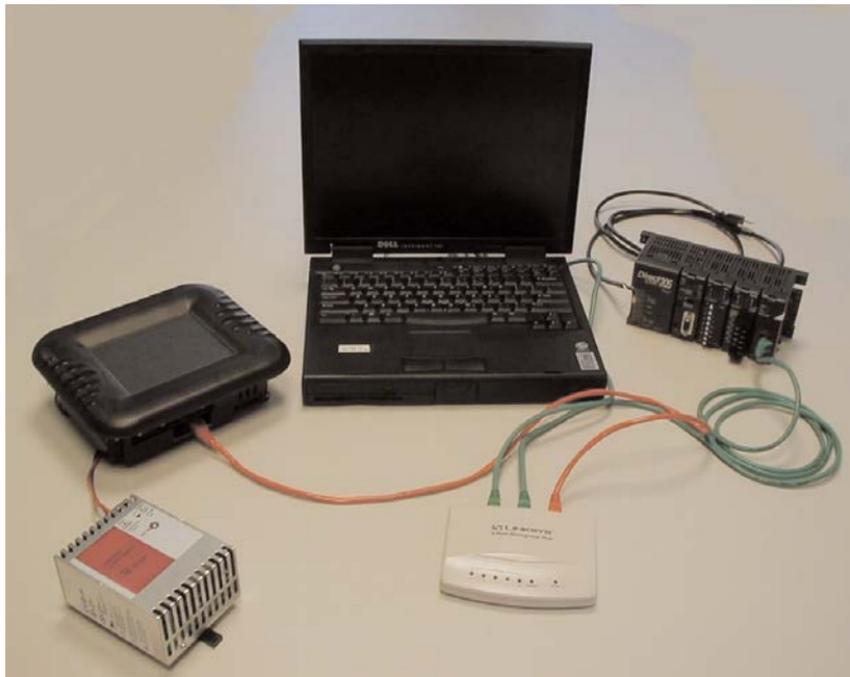
# CHAPTER 2

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## Setting Up Your EZ-Ethernet System

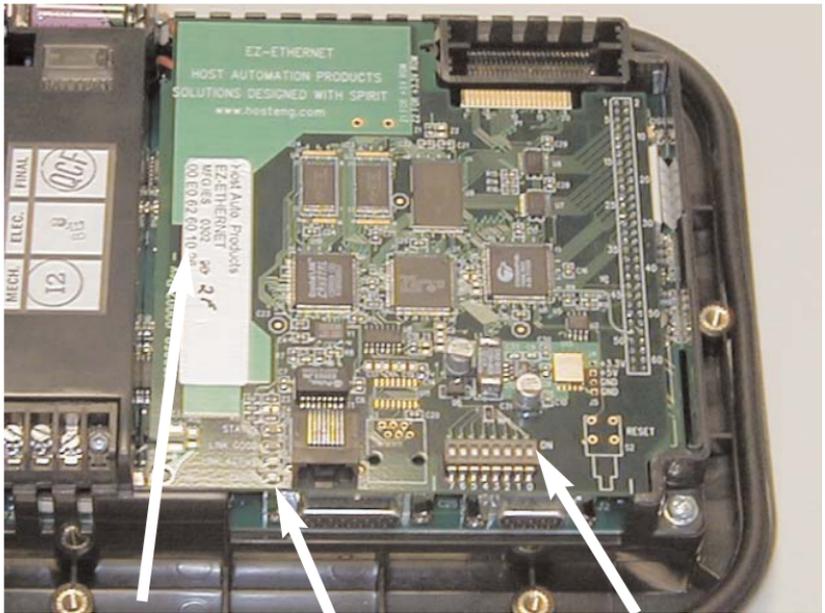
Use the system photo and information shown in Chapter 1 to help you connect the EZ-Ethernet Card to your ethernet system. Make sure you have all the hardware and software listed and that the revision levels match the requirements given. Also refer to the manuals for the EZTouch panel, PLC, and ECOM module.



### DIP Switch Settings

The EZ-Ethernet Card DIP Switch has eight slides. The factory default is for all slides to be in the OFF position. Under normal use, you should not have to change the settings. However, if you wish to assign a “hard” address for the EZ-Ethernet Module ID, you may do this by setting slides 0-5 as shown.

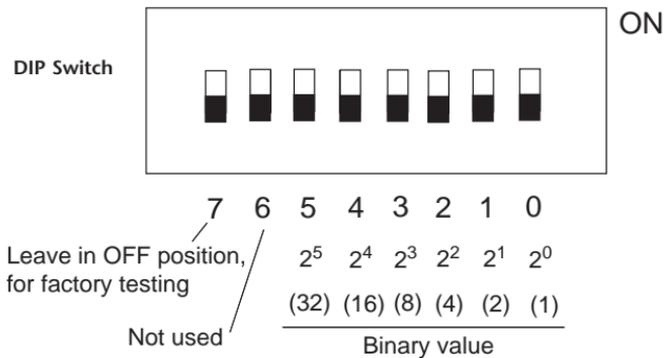
The Module ID equals the sum of the binary values of the slide switches set in the ON position. For example, if you set slide switches 1, 2 and 3 to the ON position, the Module ID will be 14 ( $8 + 4 + 2 = 14$ ). Actual DIP Switch settings can be viewed using NetEdit.



MAC ID

LEDs

DIP Switch



## Diagnostic LEDs

The EZ-Ethernet Card has four indicator LEDs which show the status of the following

### Status Indicator

Power is good to the Card (Green if good).

### Link Good Indicator

The green LINK GOOD LED is steady on when the EZ-Ethernet Card is correctly connected to an active device on the network and is receiving 5VDC operating voltage. The LINK GOOD LED verifies that the proper cables are connected, and the Card is functioning correctly.

### Link Active Indicator

The red link active LED flashes to indicate that the Card sees data traveling on the network. If any network device is sending or receiving data, the link active LED will be illuminated. In idle mode (no network traffic) this LED is OFF. During heavy communication loads this LED will be steady on.

### Error Indicator

If the Card's red ERROR indicator is flashing or steady on, a fatal error has occurred. The error may be in the Card itself, or a network problem may be causing this symptom. The ERROR indication can be caused by a faulty ground, an electrical spike or other types of electrical disturbances. Cycle power to the system to attempt to clear the error.

## Tutorials

Go through the following tutorials to learn how to set up your project and add a PLC and additional EZTouch panels to your project.



**Do not perform control functions over the internet.**

### Tutorial A: First Time Connection

After connecting your EZTouch panel (with the EZ-Ethernet Card installed) and your PLC (with ECOM module installed) to your hub, launch the EZTouch software and set up the project similar to the image below.

**Step 1: Project Information**

*Step 1*  
*It's as easy as 1-2-3...*

SELECT ACTION

Edit Program OFF-LINE (Write to Panel Later)

Read Program from Panel and Edit OFF-LINE

Edit Program ON-LINE

Ethernet/COM Port

Ethernet

Select Panel...

**Selected Action : Edit Offline Write Later**

ENTER PROJECT INFORMATION

Project Location : C:\Program Files\EZTouch\Project\ Browse...

Project Name : Ethernet10.ezt

Start Editing Screen

Number 1 Name Scr 1

Panel Type EZ-T10C-F, 10" Color 640x480 Firmware Revision

PLC type and Protocol DirectLogic Ethernet - Rev A View/Edit PLC Com Setup...

Then Do Merge Browse...

Ok Help Clear Exit

1. Select Edit Program OFFLINE

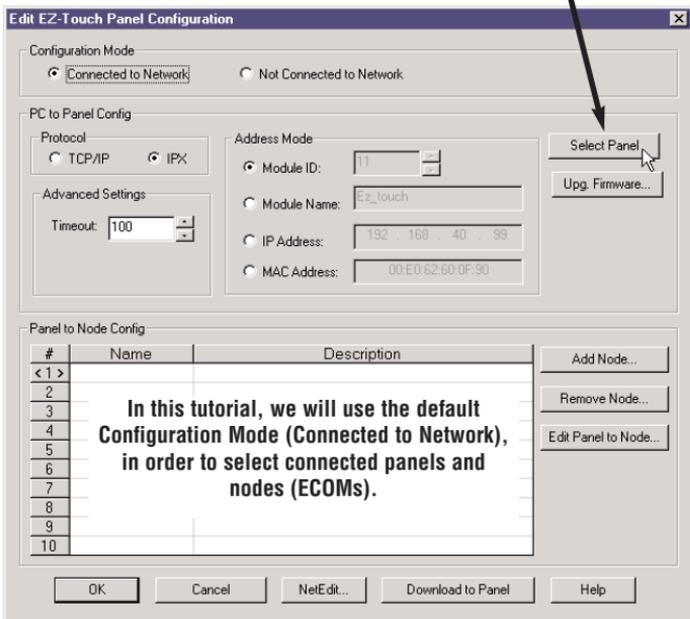
2. Type name of project

3. Choose panel type

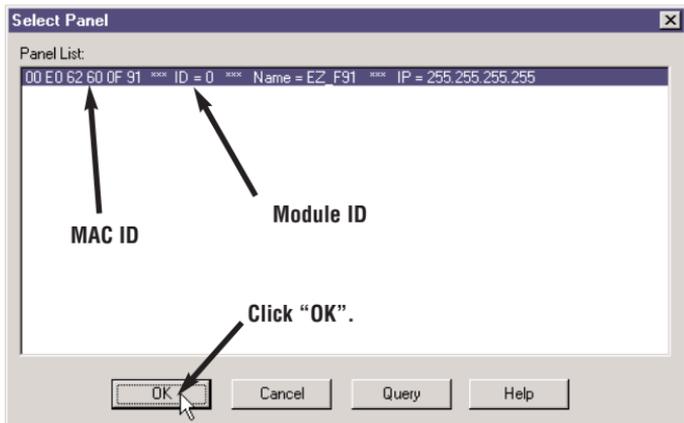
4. Choose Ethernet protocol

5. After setting up the project information window as shown, click on this button labeled "View/Edit PLC Com Setup"

The “Edit EZ-Touch Panel Configuration” window is displayed.  
Click the “Select Panel” button to locate your panel.

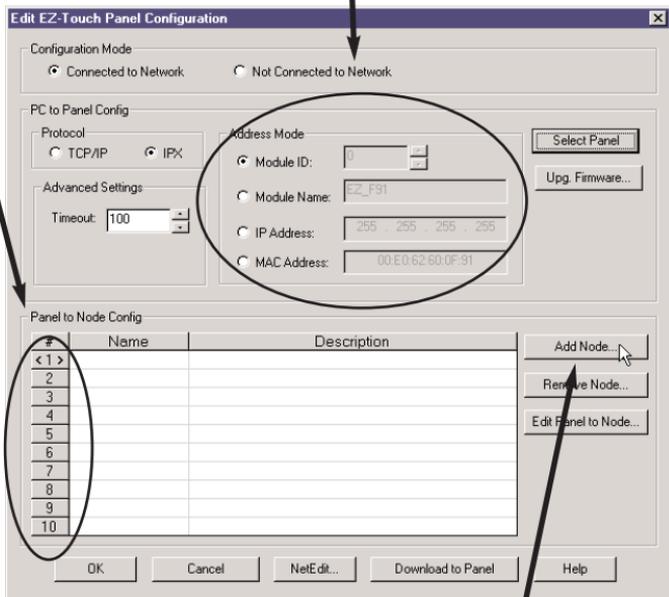


The panel information will appear as shown below. If your panel is not found, check the LINK GOOD LED on the EZ-Ethernet Card and the LINK/ACTIVITY LED on the hub.  
Note: The Module ID comes factory set as Ø.

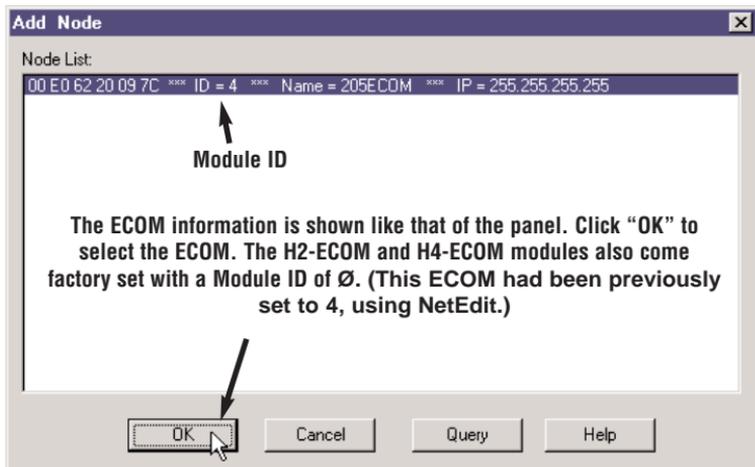


Notice that the panel information is now filled in on the “Edit EZ-Touch Panel Configuration” window.

**Note: The Node Numbers (1-10) correspond to the PLC Station Address in the EZTouch software. For a full description, see the EZTouch software Help file under “DirectLogic PLCs”.**

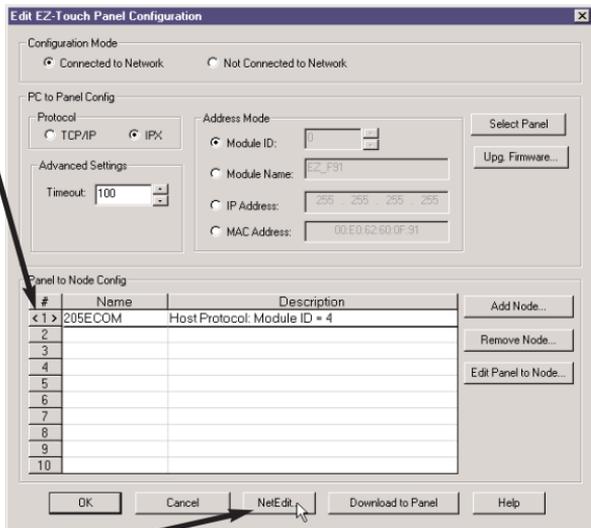


Next, click on “Add Node” to locate and connect any ECOM modules you have connected to your hub. Once a node is added, the panel will communicate to it.



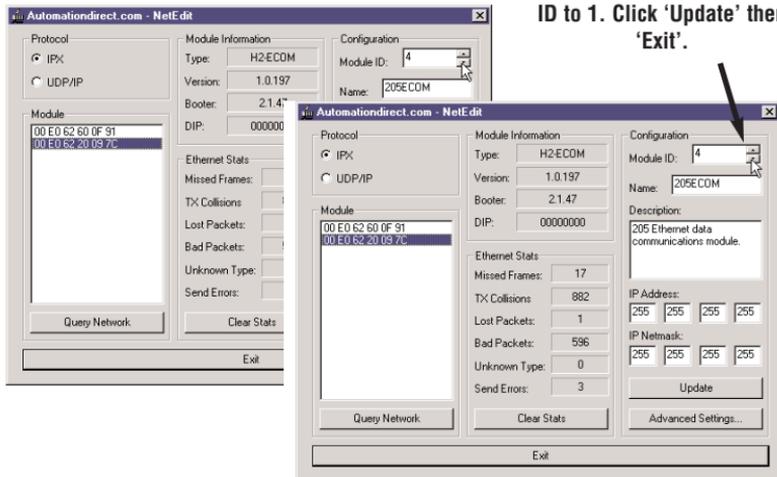
**Note:** If connecting to more than one PLC, we strongly suggest assigning your ECOMs' Module IDs as 1 to 10, to correspond to its number (# column) in the list. This number is used to designate the Station Address the EZTouch panel uses to address the PLC. For example, 2-V3000 is PLC 2's V3000 register.

**NOTE!** NetEdit must be used to make any modifications to EZ-Ethernet and ECOMs (such as: Module ID, Module Name, and IP Address).

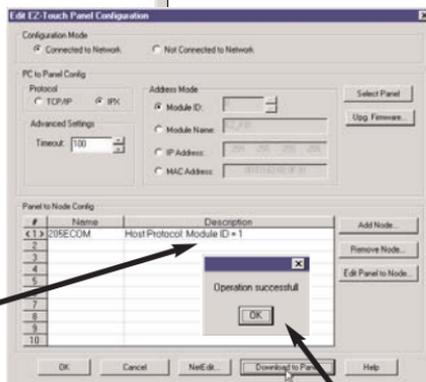
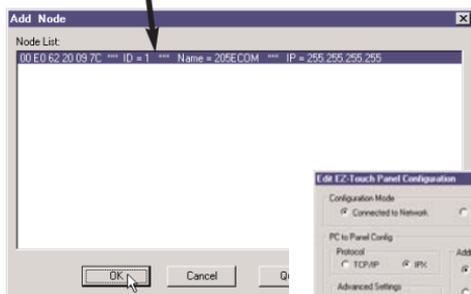
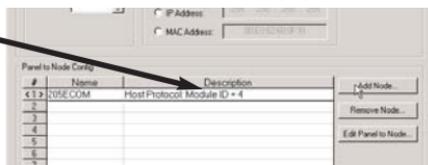


As suggested, to change an ECOM's Module ID from 0 to 1, click on the "NetEdit" button.

Change the ECOM's Module ID to 1. Click 'Update' then 'Exit'.



Now notice that the Module ID does not show it's new setting (1). Select the row of the node and click 'Add Node', to re-select the ECOM.



Now the ECOMs Module ID is displayed accurately in the Panel Configuration window.

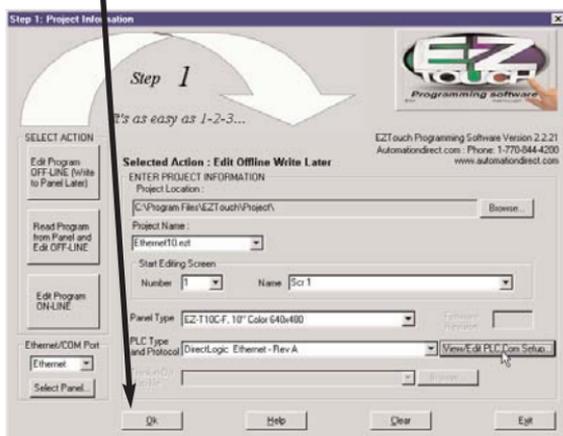
Click Download to Panel to save this configuration to the panel. This panel is now connected to one ECOM.

Now click 'OK'.

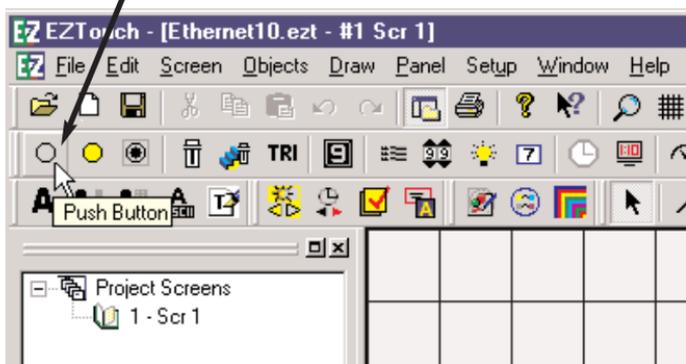
Please remember, the actual Module ID is set by NetEdit. Any new changes made by NetEdit will not be displayed in the Panel Configuration window until re-selected, as shown here.

Finally, click “OK” on the “Project Information” window.

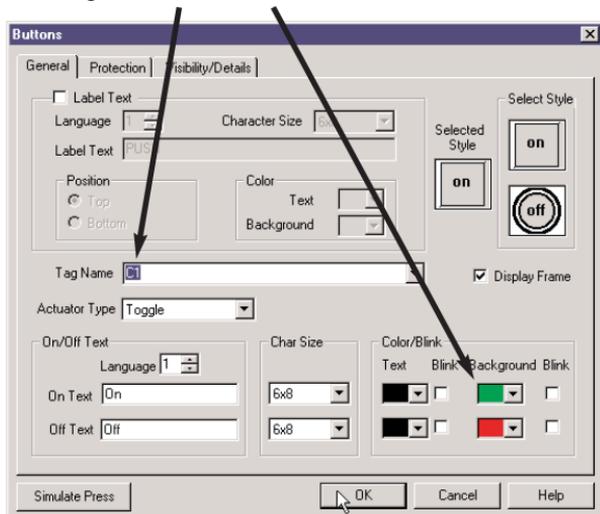
The EZTouch software will now open your newly created project.



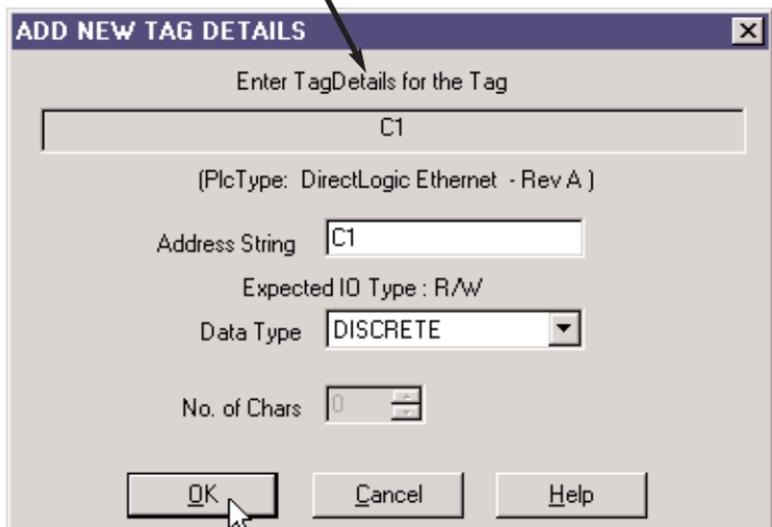
Select the “Pushbutton” object to place a pushbutton on the touch panel.



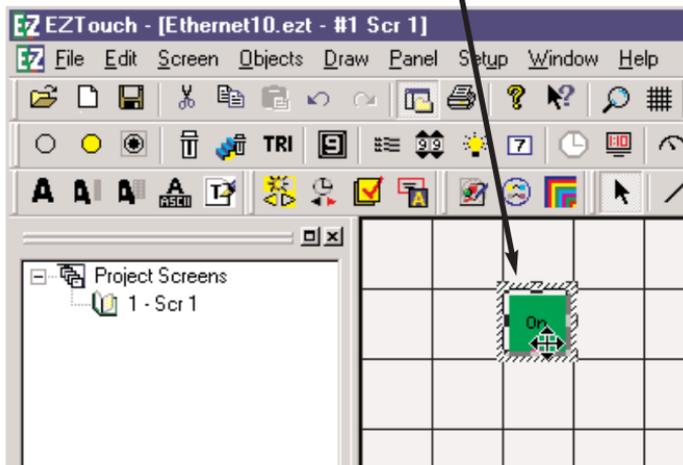
Give the push button a tag name of C1. We have also selected a green On color and a red Off color. Click “OK”.

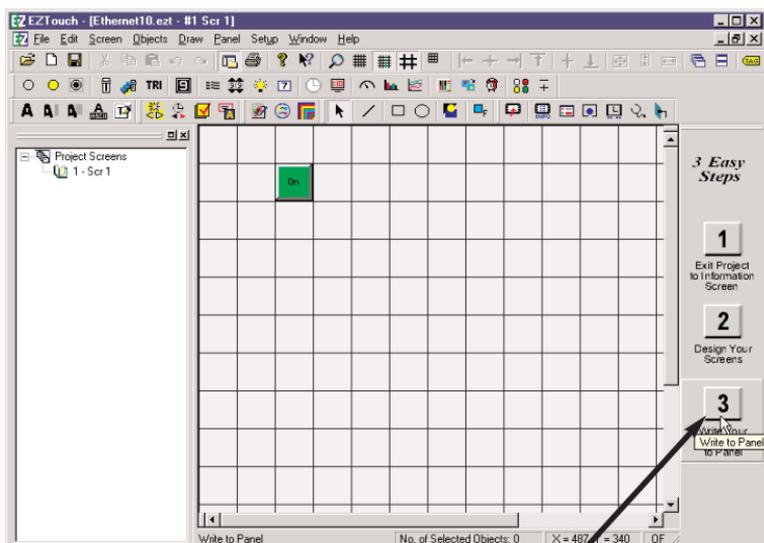


Assign this tag to PLC address C1 and click “OK”.



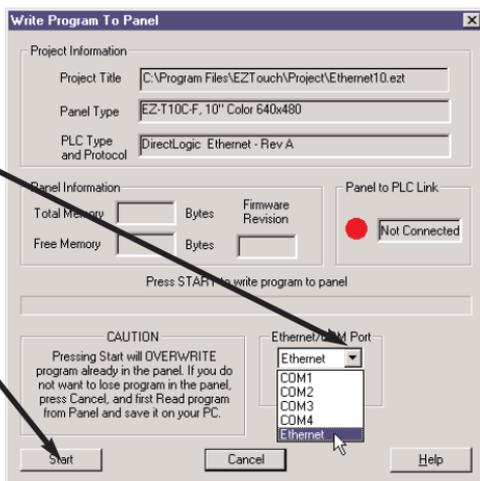
Next, place the object on the screen.

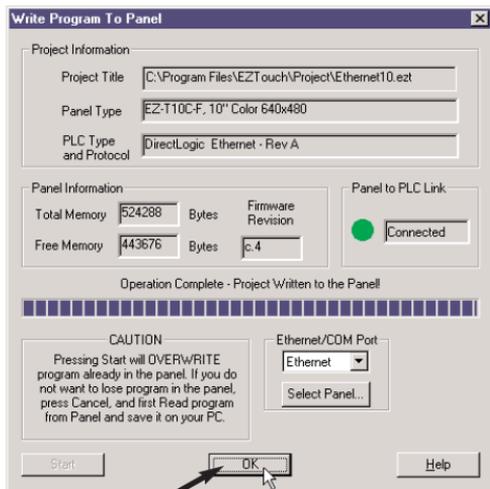




Click on the “Write to Panel” button to download your project to the EZTouch panel.

Select Ethernet and click “Start” to begin writing the project.



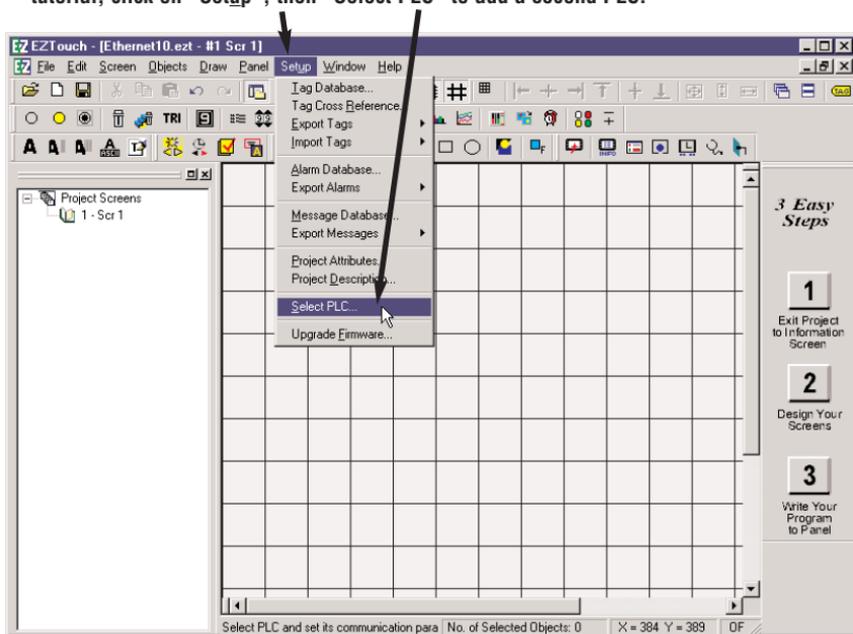


Click "OK". Now check your panel to see if the push button you added works properly.

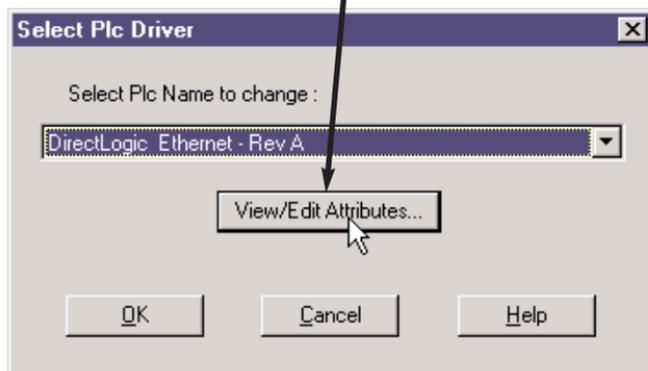
To add PLCs to your project, go to Tutorial B. To add an additional EZTouch panel, go to Tutorial C.

## Tutorial B: Adding PLCs to Your Project

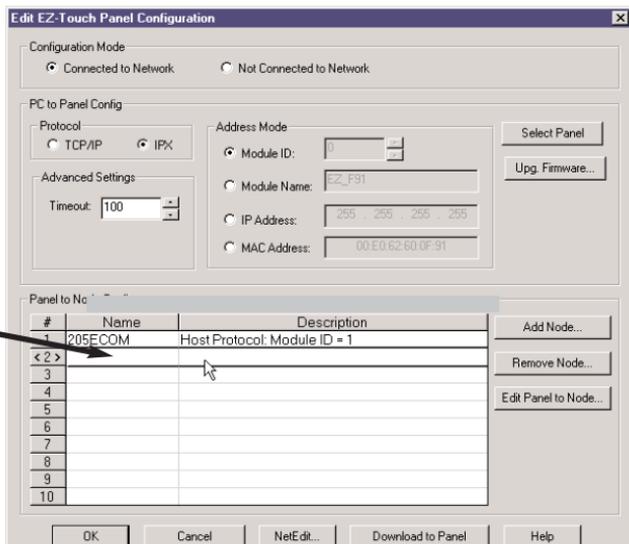
1. Beginning with the project “Ethernet10.ezt” created in the first tutorial, click on “Setup”, then “Select PLC” to add a second PLC.



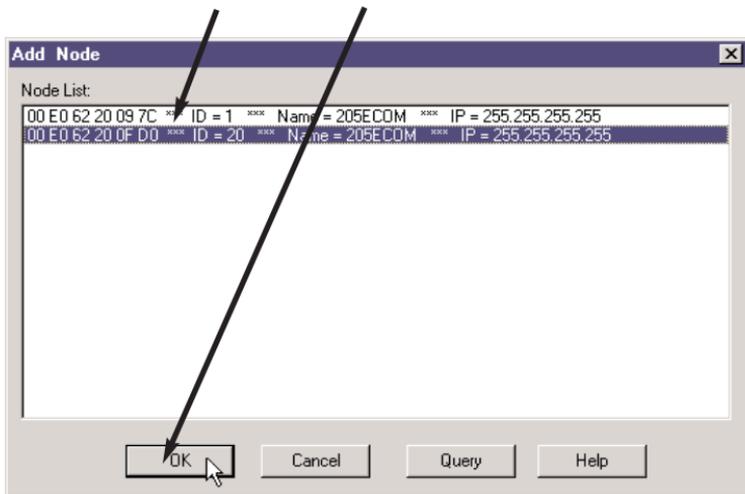
2. Click “View/Edit Attributes” to bring up the “Edit EZTouch Panel Configuration” window.



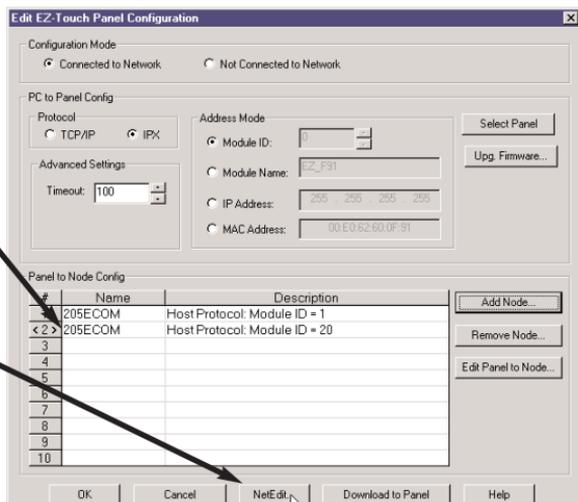
3. Now, select the next row (Row 2), and click the “Add Node” button.



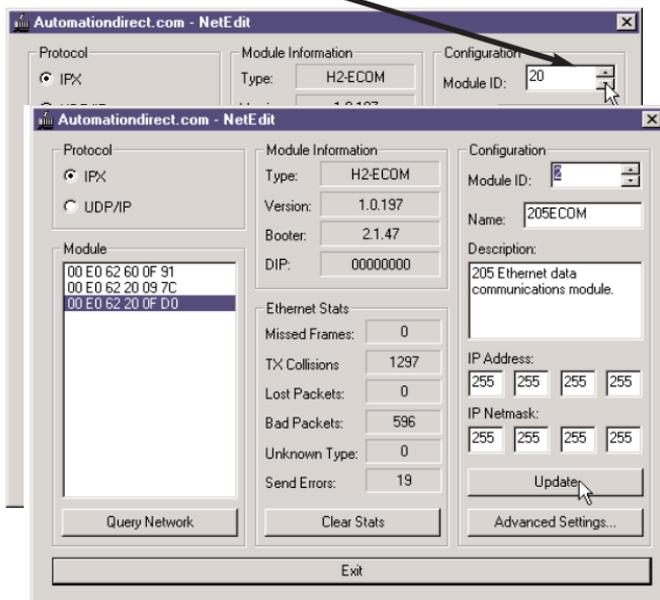
4. Select the new ECOM module listed, and click “OK”.



5. Select the new ECOM module, and click “NetEdit”. We will now change the new ECOM’s Module ID to 2, to match it’s Station Address (#).

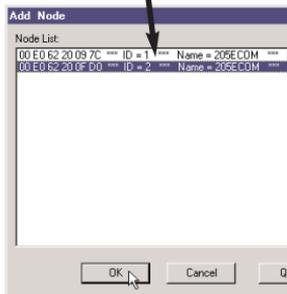
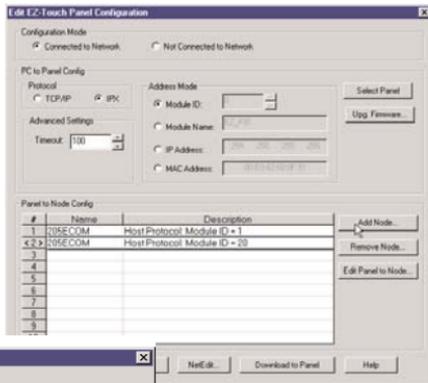


6. Select the Module ID, and enter “2”. Click “Update”.

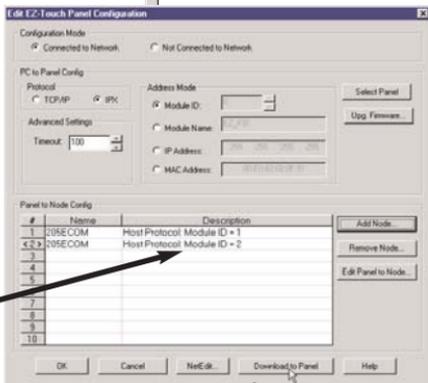


**NOTE! NetEdit must be used to make any modifications to EZ-Ethernet and ECOMs (such as: Module ID, Module Name, and IP Address).**

Now notice that the Module ID does not show it's new setting (2). Select the row of the node and click 'Add Node', to re-select the ECOM.

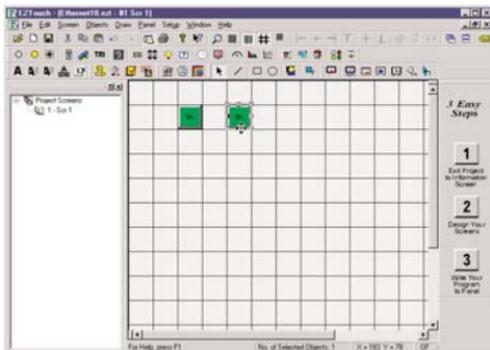
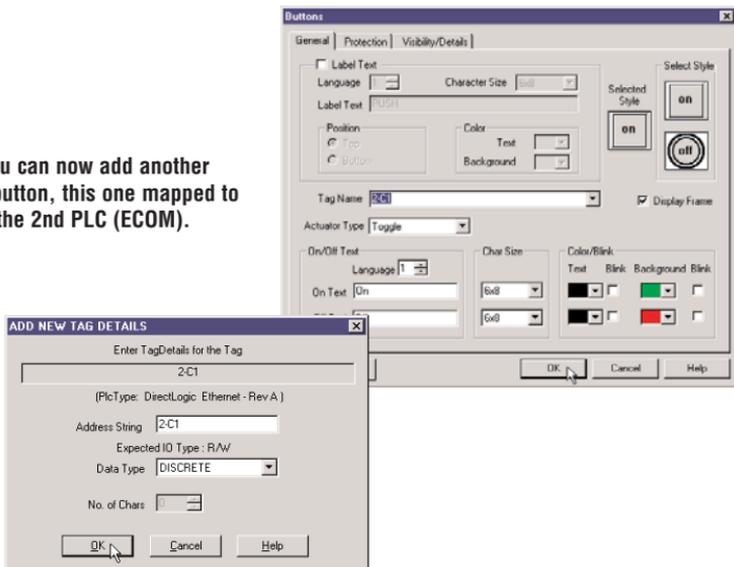


The ECOMs Module ID is now displayed accurately in the Panel Configuration window.



Click Download to Panel to save this configuration to the panel. This panel is now connected to two ECOMs.

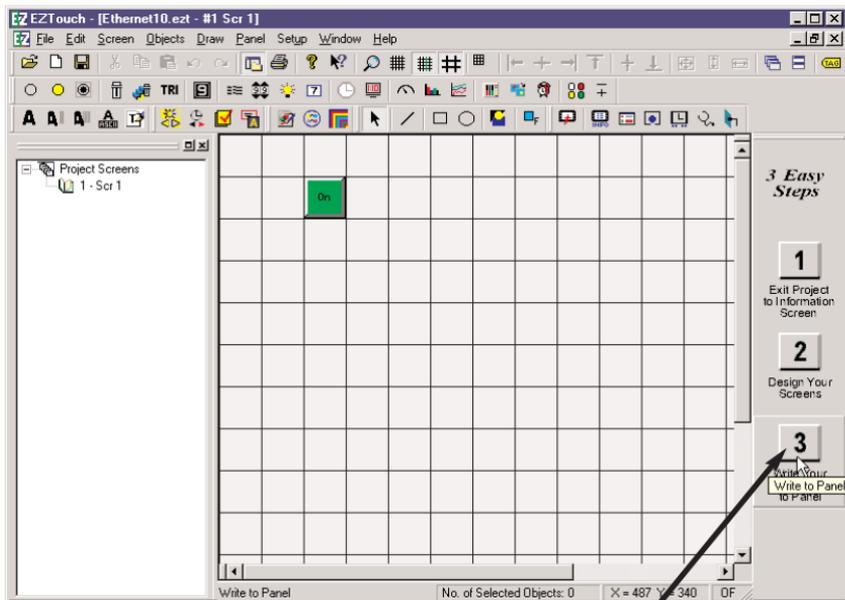
You can now add another pushbutton, this one mapped to the 2nd PLC (ECOM).



Follow the same steps as in the first tutorial and write the project to the panel.

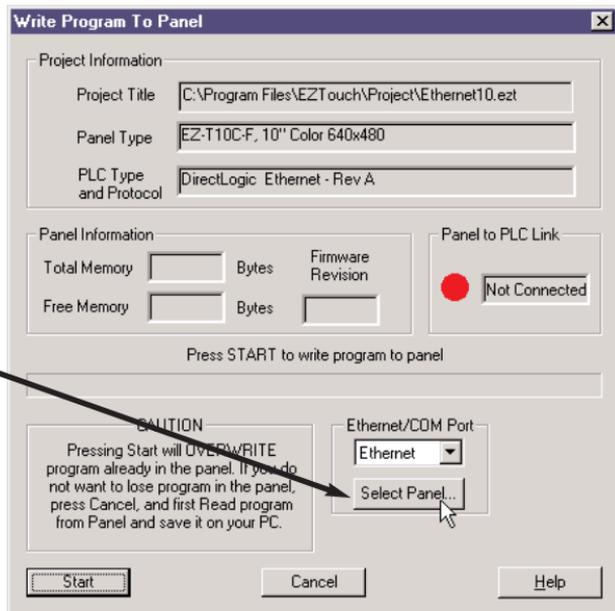
## Tutorial C: Adding a Second EZTouch Panel

This tutorial actually writes the existing project to an additional panel, identical to the first EZTouch panel.

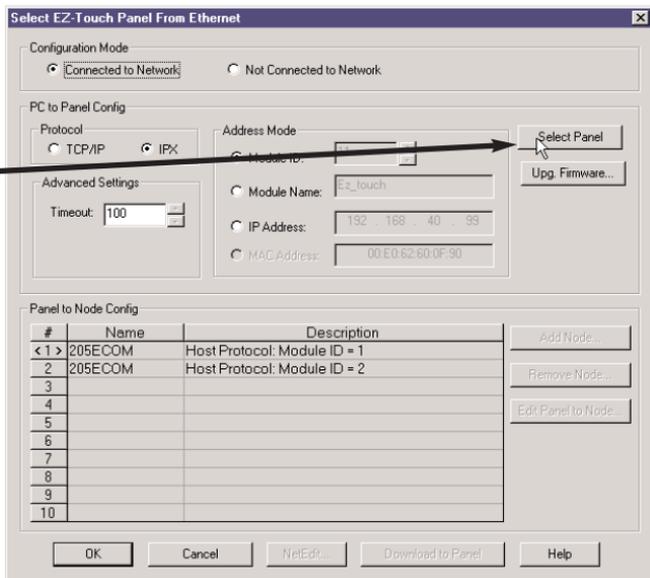


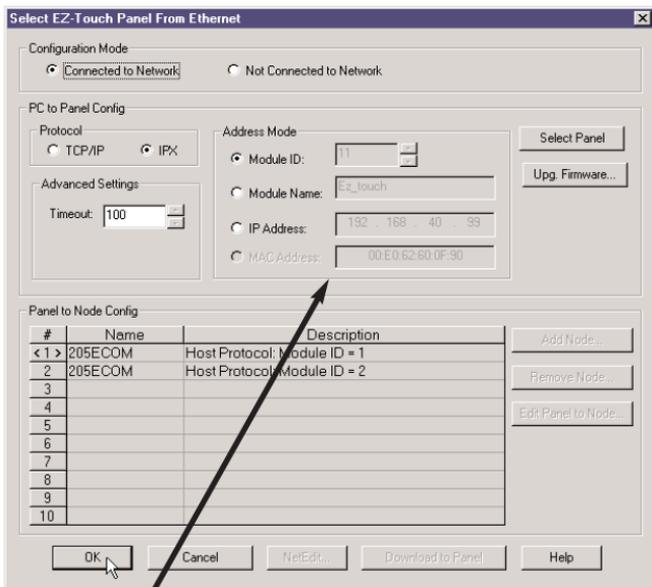
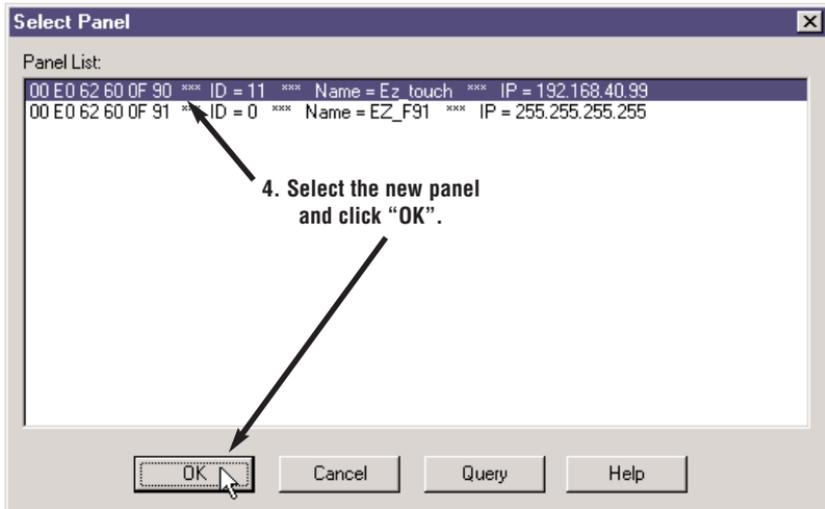
1. Physically connect your second EZTouch panel to the hub. Just as in Tutorial A, click on "Write to Panel".

2. Click "Select Panel"

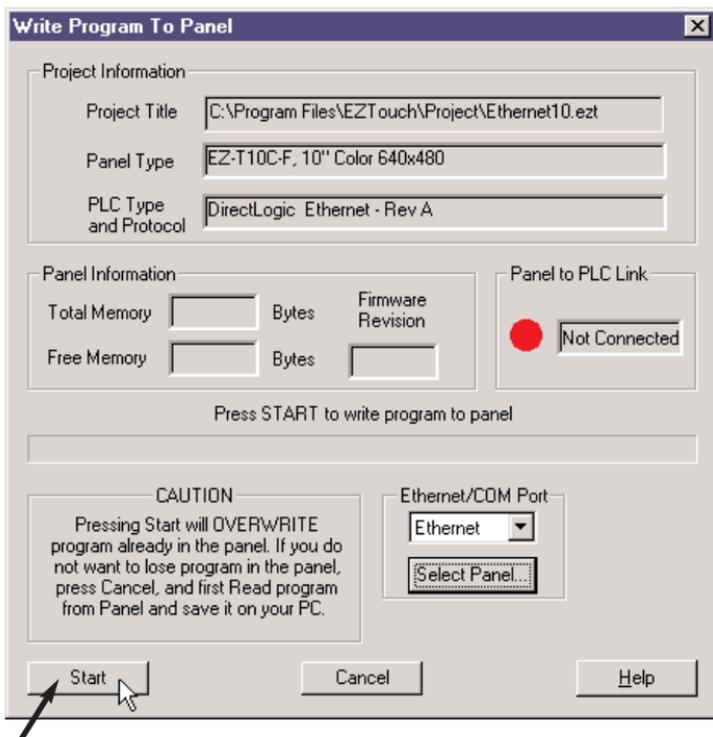


3. Click "Select Panel"





5. Notice that the new panel information is now listed. You can now download this configuration to the panel. Click "OK".

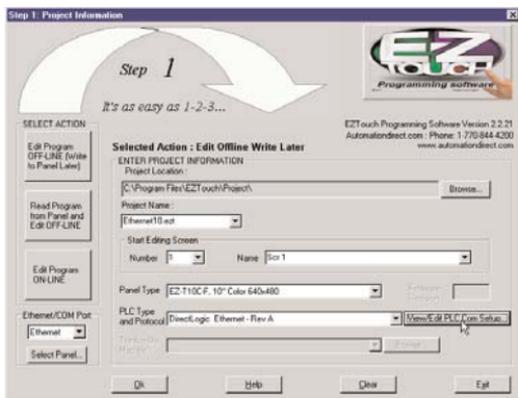


6. Click "Start" to write the EZTouch project (program) to the new panel, and click "OK" to acknowledge. Now, both panels have the same ethernet configuration, with any PLCs [ECOMs] configured, and the same project. Repeat this procedure to add other EZTouch panels.

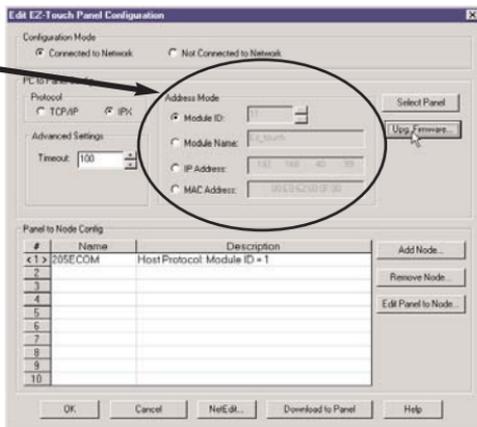
## EZ-Ethernet Firmware Upgrade Instructions

**Note!** You must first download the latest \*.ceb file from the AutomationDirect.com website (Technical Support > EZTouch panel page). Be sure to paste the new \*.ceb file into the C:\Program Files\EZTouch\Firmware folder.

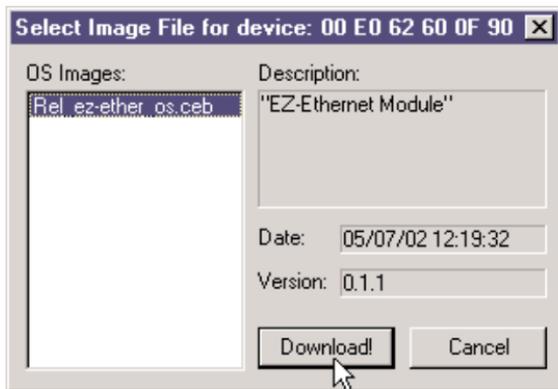
To Upgrade a panel's EZ-Ethernet firmware, select 'Edit Program OFF-LINE' and choose the correct project. Click 'View/Edit PLC Com Setup'.



Make sure you have the correct panel, and click 'Upg Firmware'.

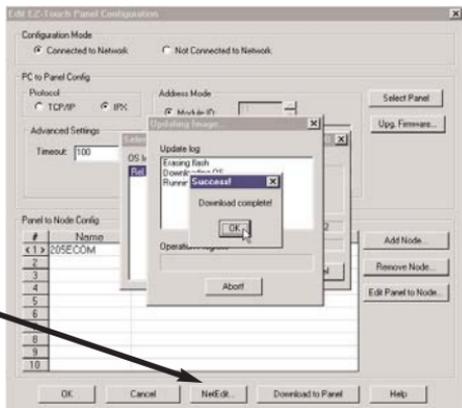


Click 'Download'.



Click 'OK', twice.

You can now confirm the new OS version using NetEdit.



## The EZ-Touch Panel Configuration Window

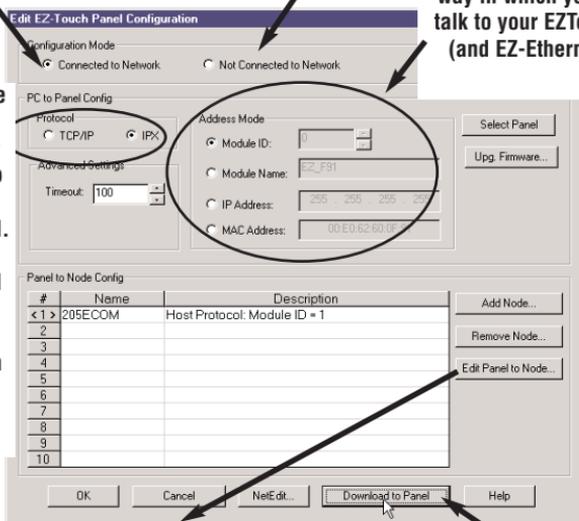
This is the main window utilized by the EZ-Ethernet card. It allows the user to do two types of configuration relating to the EZTouch panel: 1) PC to Panel and 2) Panel to Node.

The Configuration Mode can be either Connected to Network or Not Connected to Network. If you choose Connected, you will be able to 'see' actual devices that are physically connected to your PC's Ethernet network (by hubs, etc).

If you choose Not Connected, you will only be able to configure your panel in an 'offline' fashion. In doing this, you must already know at least the specifics of the panel's Address Mode (e.g. Module ID).

The Address Mode is the way in which your PC will talk to your EZTouch panel (and EZ-Ethernet card).

Protocol is the Ethernet protocol your PC will use to talk to the EZTouch panel. IPX is the preferred and default protocol. Timeout is an advanced setting.



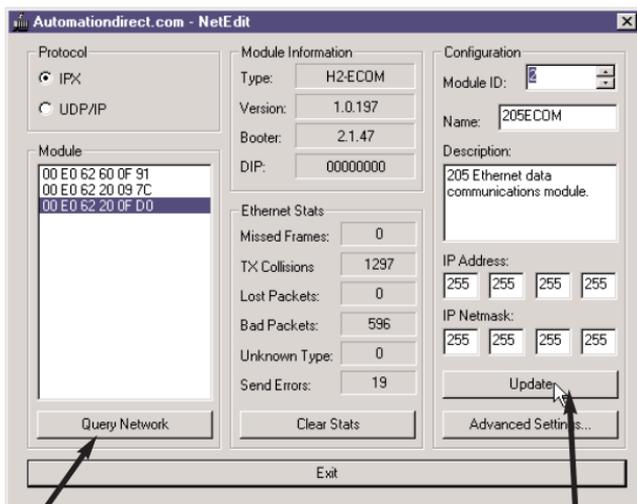
The Panel to Node settings refer to the Retries and Timeouts (and Address Mode) that the panel will use communicating with the Node selected.

When using multiple nodes or panels, you may need to increase timeouts and retries.

The 'Download to Panel' button writes the current configuration to the selected panel. If you have added Nodes (ECOMs) to your list since the last download, your panel will not be configured to talk to them until you download again.

## The NetEdit Window

NetEdit is a utility which edits ECOM and EZ-Ethernet devices. It can be used to change Module ID, Name, Description, Protocol, and IP Addresses. It also allows the user to view the device's current Firmware Version, Booter Version and DIP Switch settings. Please see your H24-ECOM-M manual for additional information on NetEdit.



Click on Query Network to re-scan the network for newly added devices.

Click on Update to make any changes take effect on the selected device.

# SPECIFICATIONS & ERROR CODES

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# APPENDIX

# A

## In This Appendix...

EZ-Ethernet Card Specifications . . . . .	A-2
Ethernet Cable . . . . .	A-3
EZ-Ethernet Error Code Descriptions . . . . .	A-3

## EZ-Ethernet Card Specifications

Specifications	
<b>Diagnostics</b>	LEDs/Network Monitoring Software (NetEdit)
<b>Communications</b>	10BaseT
<b>Data transfer</b>	10 million bits per second
<b>Cable port</b>	RJ45
<b>STATUS Indicator</b>	Green LED
<b>LINK GOOD Indicator</b>	Green LED
<b>LINK ACTIVE Indicator</b>	Red LED
<b>ERROR Indicator</b>	Red LED
<b>Operating temperature</b>	32° to 140° F (limited to panel spec)
<b>Storage temperature</b>	-4° to 158° F (limited to panel spec)
<b>Relative humidity</b>	30% to 95% (non-condensing)
<b>Environmental air</b>	No corrosive gases permitted
<b>Network protocols supported</b>	Novell IPX, UDP/IP
<b>Manufacturer</b>	Host Automation Products
<b>Link distance</b>	100 meters (328 feet)



### **"Invalid tag type"**

Internal error that indicates the EZ-Ethernet Card was given a tag to process in which the tag type is invalid. Operations on that tag only will be halted. This might indicate a corrupt EZ-Touch Project tag database.

### **"Could not append pointer table"**

The EZ-Ethernet card encountered a fatal internal error. The user should reset the panel. If the problem persists, the user should contact Technical Support.

### **"Could not build transactions"**

The EZ-Ethernet card encountered a fatal internal error. The user should reset the panel. If the problem persists, the user should contact Technical Support.

### **"No nodes defined"**

The panel is attempting to obtain information for a program in which the EZ-Ethernet Card is not configured to process. This error would most likely be seen if the user placed a factory EZ-Ethernet Card into a Panel that has an existing program. The user should configure the EZ-Ethernet card to eliminate this problem.

### **"No Items to process"**

The EZ-Ethernet Card attempted either a read or a write tag operation when there were no valid tags to process. User should retry the operation. If the problem persists, the user should contact Technical Support.

### **"No gateway address"**

Attempt was made to communicate with a node that is located behind a router, but no gateway address was configured for the device. The user should add the appropriate gateway IP address to the node in the EZ-Ethernet Card Configuration Utility and download the new configuration to the panel.

### **"Tag references non-existing node"**

An error condition in which the panel is requesting service for a tag that does not have a corresponding node configured in the EZ-Ethernet internal node configuration table. The user should either delete the tag or configure a node for the tag.

### **"No valid address for node"**

The EZ-Ethernet Card was not able to use the configured ECOM information to contact an ECOM device. The user should re-check the EZ-Ethernet node configuration.

**"Node ID is offline; Reason"**

Not used in this release.

**"Node ID is offline; Reason unknown"**

Not used in this release

**"Node ID ???? : No more ecom buffers"**

A condition in which EZ-Ethernet Card requests are being discarded by the node indicated by ???? because the ECOM transaction buffers are saturated. The user should reduce the load on the ECOM by optimizing panel screens and/or removing panels configured to talk through that ECOM.

**"Program Segment packet timeout"**

An exchange between the EZ-Touch Program Loader and the corresponding EZ-Ethernet Card was not completed in the time-out period specified in the EZ-Ethernet Configuration Utility. The user should retry the operation. If this error occurs frequently, the user should increase the time-out setting.

**"Could not write point"**

A EZ-Ethernet adapter was unable to process a tag write request. The user should retry the operation. If the problem persists, the user should contact Technical Support.

**"Tag scan off. Cannot complete Operation"**

Not used in this release.

**"Critical. No more transaction buffers"**

The EZ-Ethernet Card has exceeded its resources attempting to handle the tags for a given panel screen. The user should spread the tags across screens to prevent is error.

**"Packet send error"**

Generic error that occurs if the EZ-Ethernet Adapter cannot send an Ethernet packet. If the problem persists, the user should contact Technical Support.

**"Read Transaction failed"**

The EZ-Ethernet Card was unable to process an incoming tag data response from a node. If the problem persists, the user should contact Technical Support.

### **"Discrete Value must be 0 or 1"**

The EZ-Ethernet was instructed to perform a discrete operation on a tag that had a non-binary (0 or 1) value. This would happen only if the EZ-Touch tag database is corrupt.

### **"Attempted operation on NULL pointer"**

Internal EZ-Ethernet Card Error. If this error persists, the user should check his EZ-Touch Project and the EZ-Ethernet configuration.

### **"Could not build internal arrays"**

Fatal internal EZ-Ethernet Adapter error. Please call Technical Support.

### **"Did not receive response from tag write"**

The EZ-Ethernet Card sent one or more tag write requests that did not respond within the time out period. The user should resend the request. If the problem persists, the user should increase the timeout period for the corresponding node using the EZ-EThernet Configuration Utility.

### **"Adapter write Queue Overflow"**

The EZ-Ethernet can normally process up to twenty-five multiple write requests simultaneously. However, under some situations, the write queue could be over run with requests. The user should ensure that the network has significant bandwidth to handle the traffic.

### **"Adapter Read Queue Overflow"**

Not used in this release.

### **"Direct Net send request failed"**

The EZ-Ethernet Card was unable to send a Koyo DirectNet protocol packet. Contact Technical Support.

### **"K-Sequence send request failed"**

The EZ-Ethernet Card was unable to send a Koyo K-Sequence protocol packet. Contact Technical Support.

### **"K-Sequence negative response"**

The EZ-Ethernet Card received an error response from the targeted slave node.

**"Write tag retry count exceeded"**

The EZ-Ethernet Card was unable to successfully process a user tag write request. This occurs only after the attempt failed for the number of retries specified for the node in the EZ-Ethernet Configuration Utility. This error normally indicates a network problem. The user should adjust the node's timeout and retry settings until this error is no longer seen.

**"Exceeded system tag limit"**

The EZ-Ethernet adapter was told to process a single screen of data that contained more than the tag limit (500 tags/screen for reads, 25 tags/request on writes). The user should spread some of the tags across a second screen.

**"PLC not in TERM; Tag write inhibited"**

The user attempted to write a tag when the target PLC's switch was not set to "Terminal". The user should place the switch in Terminal mode so writes can be processed. The inhibited write must be re-issued after the PLC is placed in Terminal mode.

EZ-ETHERNET-M