ASI EtherLink/2

# User Manual

ASI Controls

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September 2008

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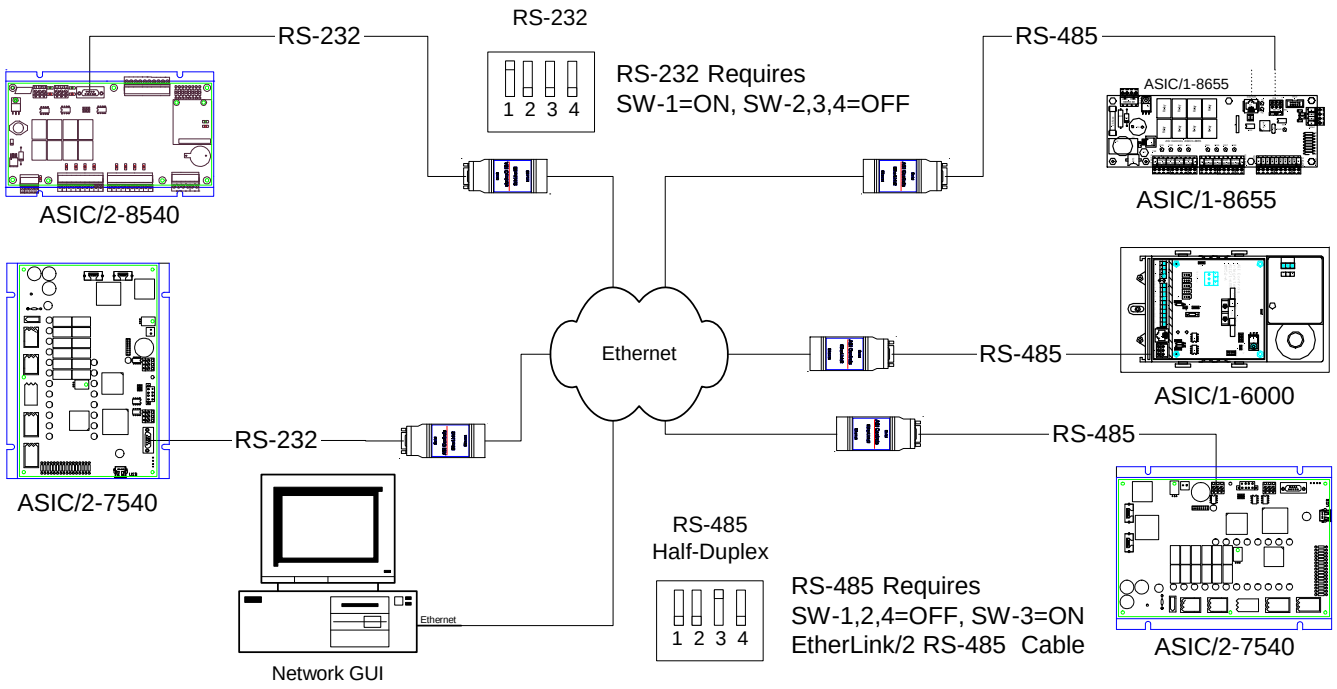
# Configuring EtherLink/2

## Summary

The ASI EtherLink/2 can be the primary access to the ASI network of controllers. You can connect to the system bus of an ASIC/2-7540 or ASIC/2-8540 controller using either RS-232 or RS-485 connections. You can also connect to a network of ASIC/1-8655 or ASIC/1-6000 controllers using the EtherLink/2 RS-485 cable.




The Etherlink/2 has enhanced features including:

- High performance Ethernet to RS-232 or RS-485 Serial router
- Support for simultaneous remote TCP/IP and UDP connections
- TCP/IP Tunnel – single IP port supports one socket connection at a time
- UDP Tunnel – single IP port supports up to 3 simultaneous client connections
- Intelligently detects ASI System Bus alarm events and relays them over Ethernet to ASI Monitor.NET Alarm Suite
- Can be configured via easy to use web interface or via serial port and terminal program (HyperTerminal, etc...)
- Built-in network time synchronization (SNTP) and time-keeper function
- Capable of flash upgrade via built-in FTP server

You must configure the Etherlink/2 for the Specific IP address and serial communication parameters before installing it in your system. Each Etherlink device must have a unique IP address.

## About this Document

This manual was produced using *Doc-To-Help*®, by Component One, LCC. This , EtherLink/2 User Manual, DOC-1643, and Windows™ help system was last revised on 2008-09-16. ASI Controls is always working to improve our products. Please call, write, or e-mail us at: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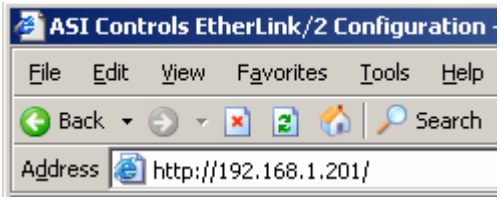
# Connecting with Internet Explorer

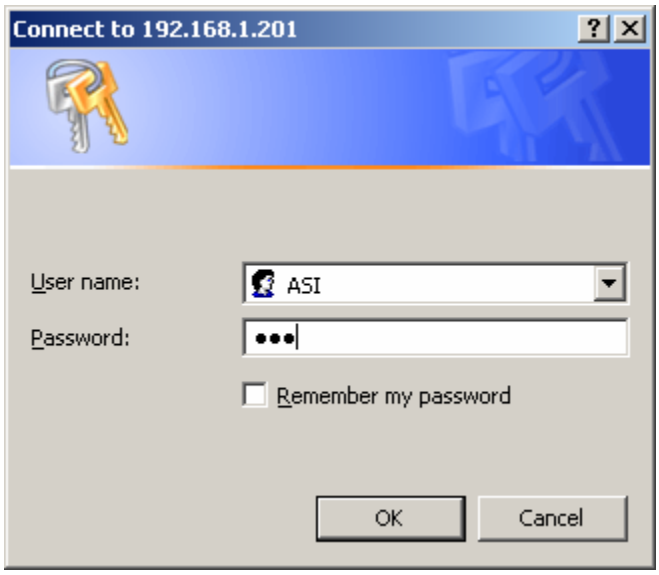
You will need to initially configure the EtherLink/2 for your specific IP address and serial port parameters. If you know the IP address then you can change the parameters by connecting to the EtherLink/2 using Internet Explorer.

Once you have established an IP address for the EtherLink/2 you may do all of your configuration by connecting with Internet Explorer.

The EtherLink/2 is shipped with Default IP Address: 192.168.1.201 . If it does not answer to that address, then you must communicate with the device as described below in Verify/Change Setup.(RS-232)



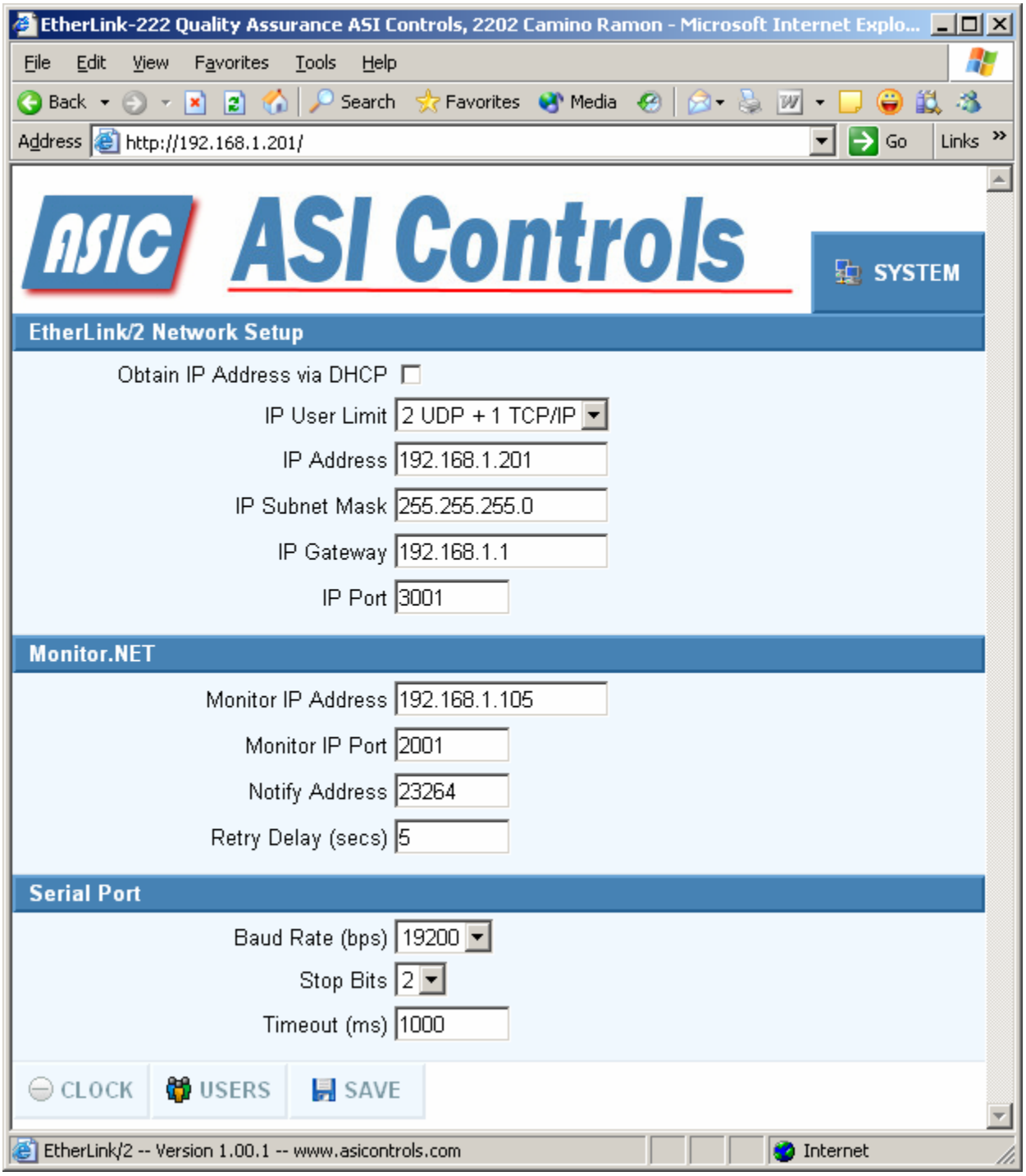

You will be asked to login. The default user/passwords are ASI/ASI and asi/asi. You may change these once you have connected.

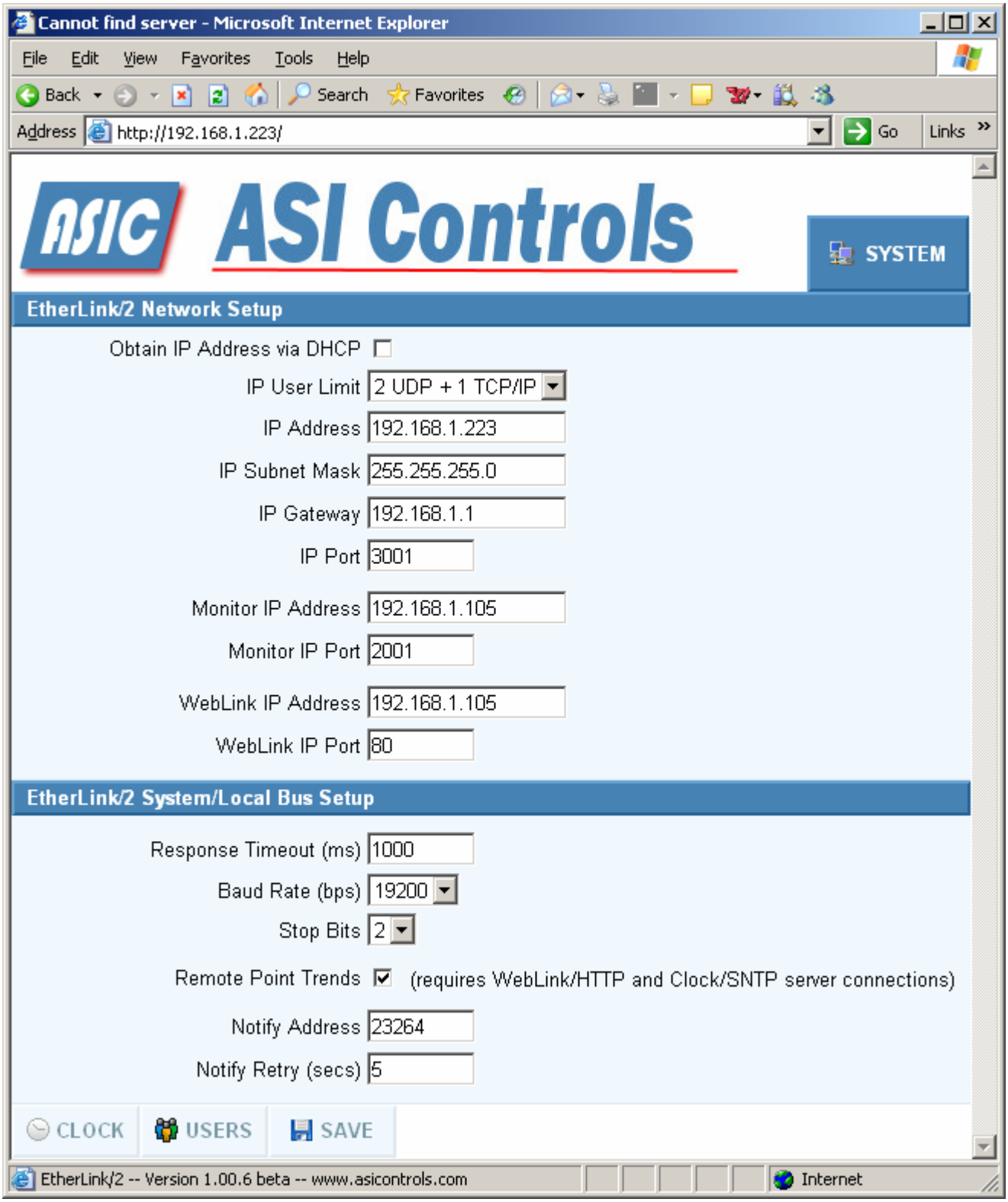


## EtherLink/2 System Configuration

The configuration consists of the Network Setup, the Monitor.Net, and the Serial Port parameters. Typical parameters are shown.

> You must save any changes before changing to another screen.




Cannot find server - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://192.168.1.223/
Go Links
ASI Controls
SYSTEM
EtherLink/2 Network Setup
Obtain IP Address via DHCP
IP User Limit 2 UDP + 1 TCP/IP
IP Address 192.168.1.223
IP Subnet Mask 255.255.255.0
IP Gateway 192.168.1.1
IP Port 3001
Monitor IP Address 192.168.1.105
Monitor IP Port 2001
WebLink IP Address 192.168.1.105
WebLink IP Port 80
EtherLink/2 System/Local Bus Setup
Response Timeout (ms) 1000
Baud Rate (bps) 19200
Stop Bits 2
Remote Point Trends (requires WebLink/HTTP and Clock/SNTP server connections)
Notify Address 23264
Notify Retry (secs) 5
CLOCK
USERS
SAVE
EtherLink/2 -- Version 1.00.6 beta -- www.asicontrols.com
Internet

### DHCP

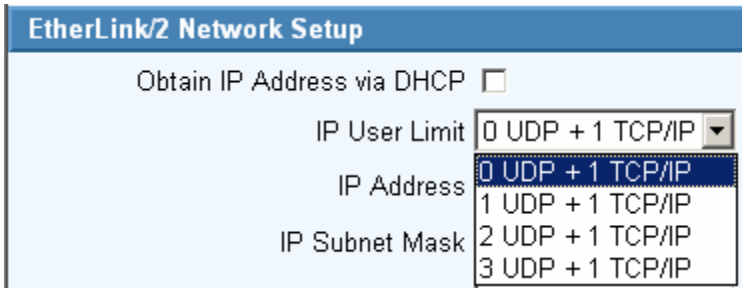
Do not let the DHCP server assign IP addresses except temporarily during initial network configuration. The remote client software must connect to the EtherLink/2 to a specific IP address.

### IP Address and Port

You need to assign IP Address, Subnet Mask, Gateway and Port consistent with your Local Area Network. The default IP Port is 3001.

### IP User Limit

The EtherLink2 supports 1 TCP/IP Connection and up to 3 simultaneous UPD connections based on the IP User Limit setting. You may limit the number of simultaneous UDP connections by setting the IP User Limit.




The TCP/IP connection is required by the ASI OPC server. The first UDP connection is usually used by ASI Expert for system testing and maintenance. If there are any UDP connections, the TCP/IP connection gets every other turn to send messages on the serial communication bus..

The UDP connections take turns with the remaining bandwidth. This can slow down communications and generate occasional COM errors for the UDP connections.

### Monitor IP Address and Port

The EtherLink/2 can forward Notify Messages from the ASI serial bus, to the Monitor Software. You must specify the IP Address and Port of the ASI Monitor software.

### WebLink IP Address and Port

If Remote Point Trends is checked, the EtherLink/2 can forward Remote Points received on the serial port to WebLink at a specific IP Address and Port.

### Serial Port

You must specify the Baud Rate, Stop bits [Default 2] and Timeout [Default 1000 ms] for the ASI serial bus.

### Notify Address

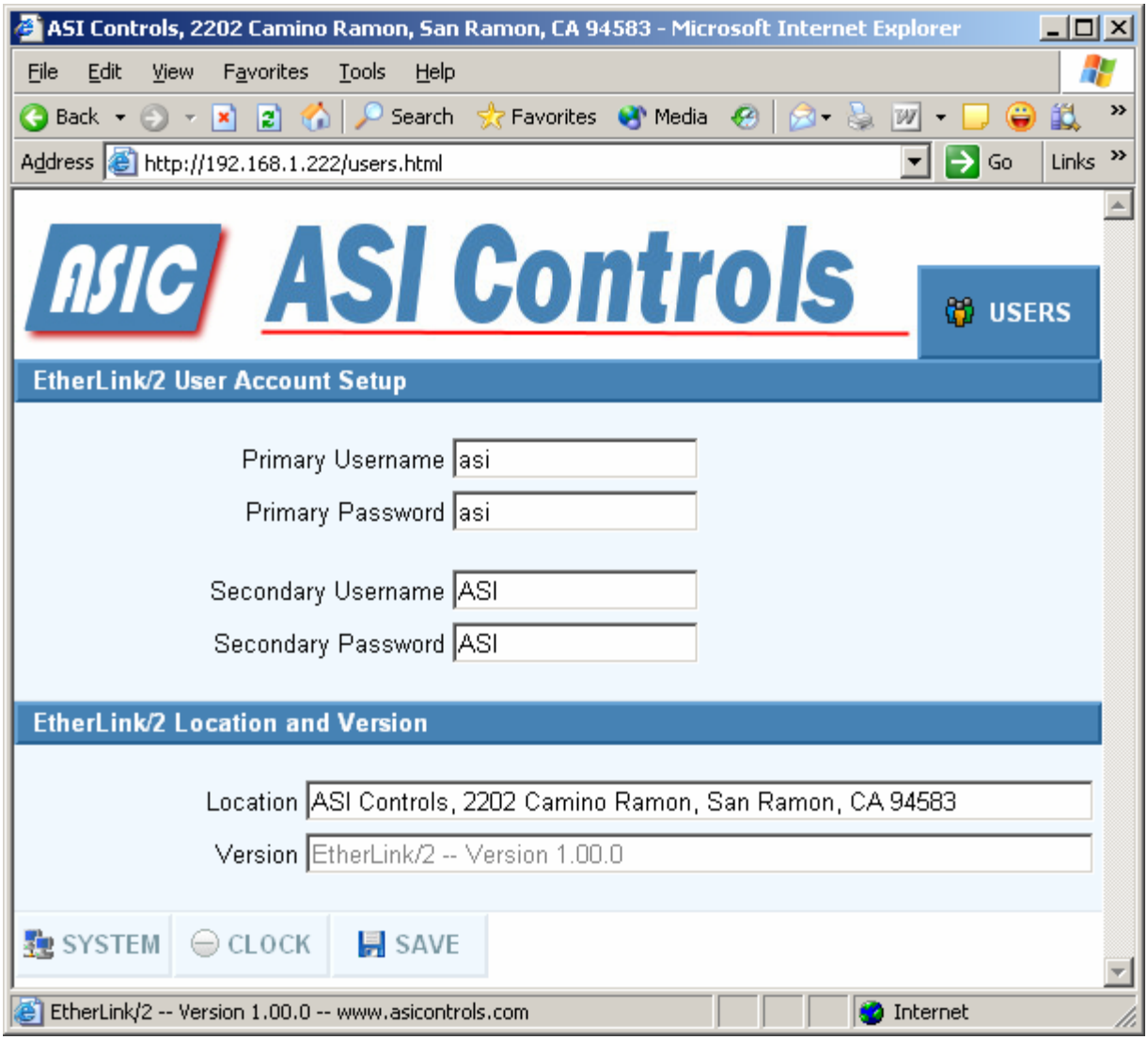
Any Notify sent to the Notify Address will be forwarded to the Monitor IP Address and Port. If the Notify Address is not a Global Address, then the EtherLink/2 will the EtherLink/2 does send an acknowledge, ACK, response to the ASI device on the serial port. It turns out that global notify messages sent to the global address 23264

(0x5AE0) are better at cutting through a busy serial bus than non-global acknowledged messages.

## User Account Setup

The default user/passwords are ASI/ASI and asi/asi. You may change these once you have connected. Be sure to remember your new password!

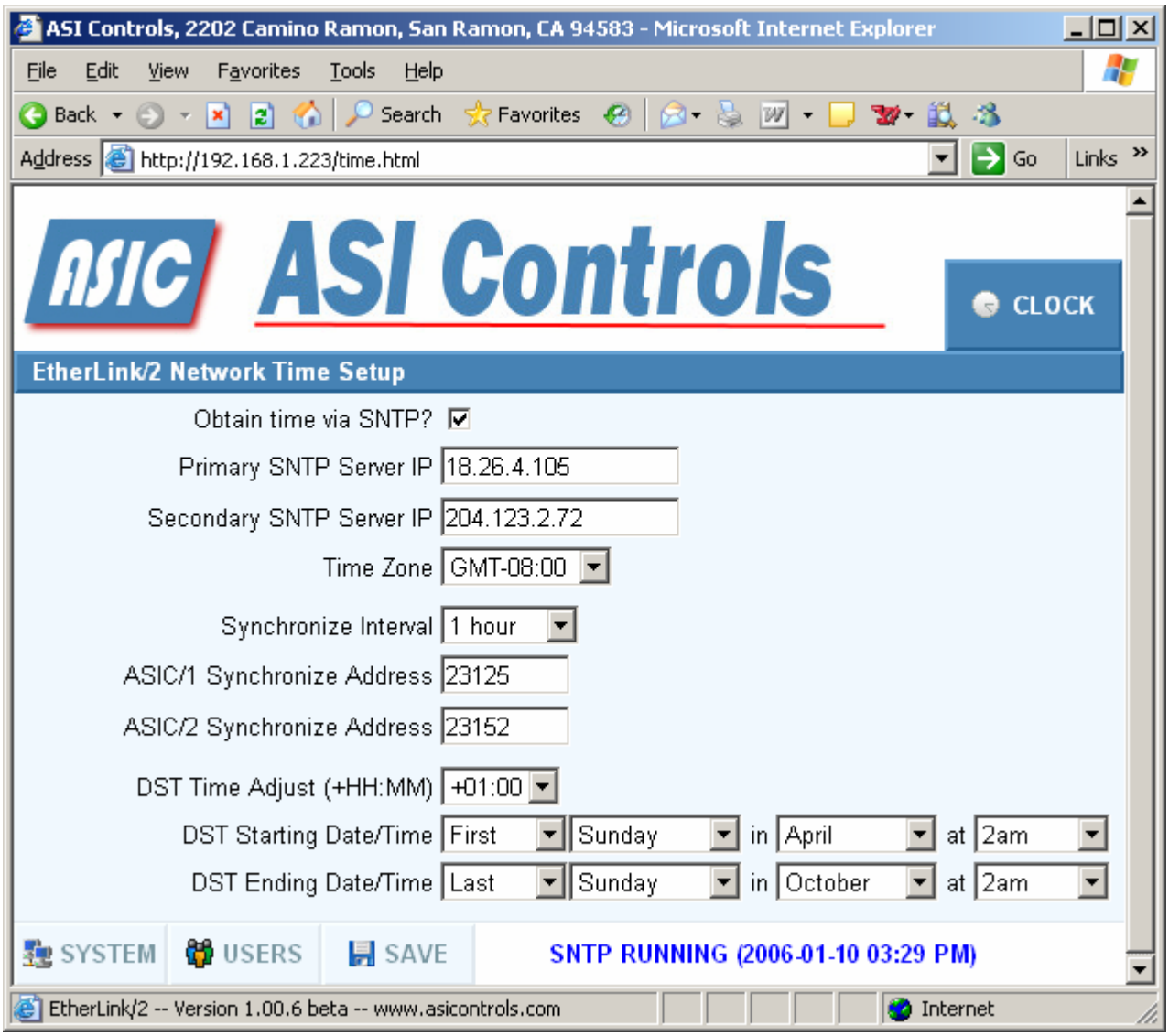
> You must save any changes before changing to another screen.



## Network Time Configuration

A new feature of the EtherLink/2 is the use of Simple Network Time Protocol (SNTP) to obtain the current time from the internet, and broadcast the ASIC/1 and ASIC/2 times periodically on the network. It also can correct for Time Zone and Daylight Savings.

> You must save any changes before changing to another screen.




SNTP time servers are ideally stand alone systems used by computers to receive time from a time source. The SNTP server then sets and synchronizes the time on a computer IT system or enterprise. Time can be passed from one time source to another, typically starting from a reference clock (Stratum 0) connected to a Stratum 1 SNTP server. A time servers synchronized to a Stratum 1 server will be Stratum 2. The further away a network is from a primary source, the greater the chance of signal degradations due to variations in communications lines, and so forth.

The Primary and Secondary SNTP Server IP are obtained from the internet. For example from the NIST Internet Time Service. http://tf.nist.gov/service/its.htm .

The Time Zone refers to off set from Greenwich Mean Time:

Eastern Standard Time is GMT-5:00
Pacific Standard Time is GMT-8:00

The EtherLink/2 can synchronize an ASI Network at hourly intervals. The ASIC/1 Synchronize Address is typically the global address 23125, 0x5A55. . The ASIC/2 Synchronize Address is typically the global address 23152, 0x5A70.

The EtherLink/2 automatically corrects for Daylight Savings Time.

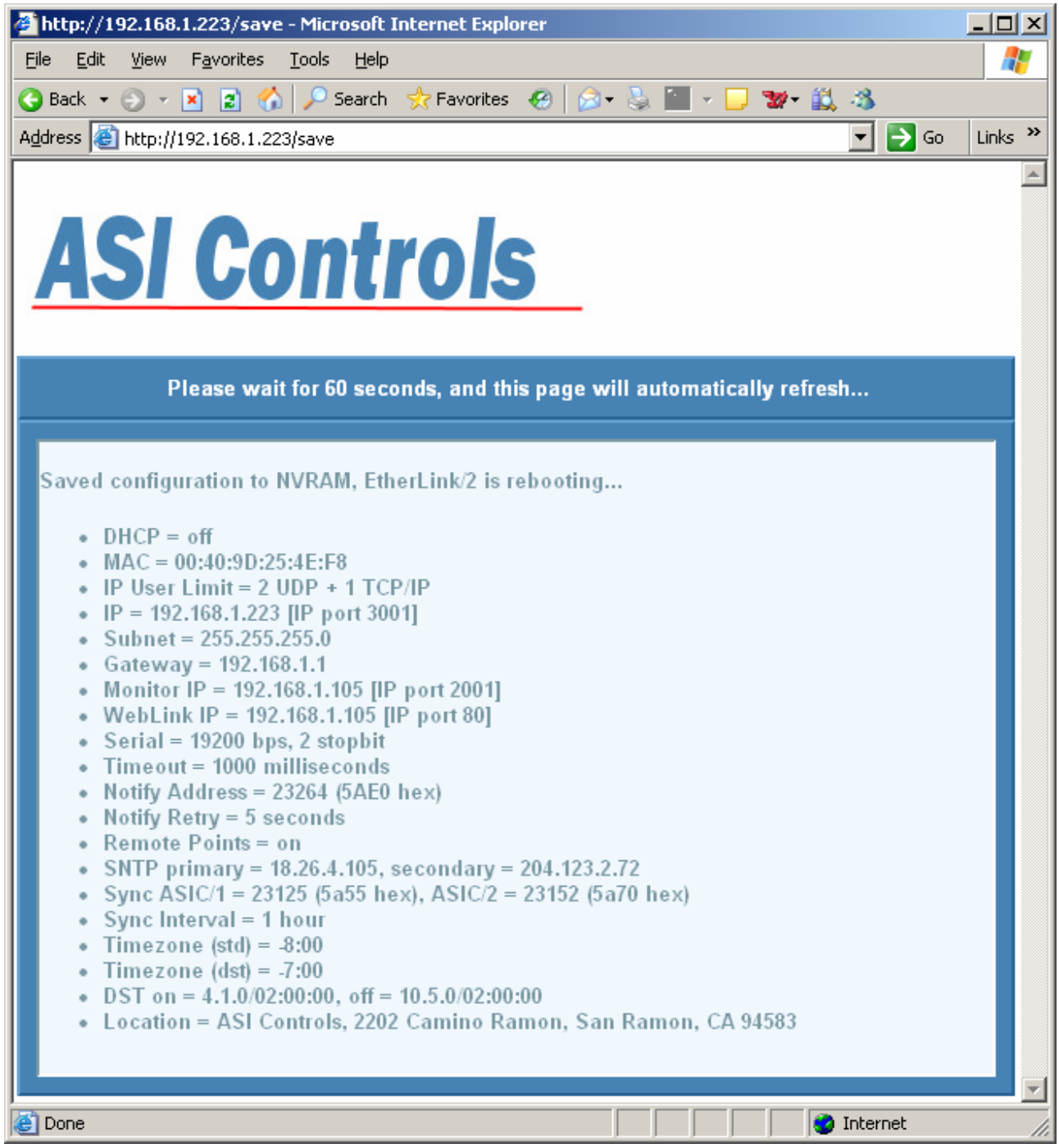
The DST Adjustment is usually +01:00 HH:MM.

| | **Spring Forward** | **Fall Back** |
|---|---|---|
| USA 2005, 2006 | 1st Sunday April 2:00 AM | Last Sunday October 2:00 AM |
| USA 2007 onward | 2nd Sunday March 2:00 AM | First Sunday November 2:00 AM |
| EU 1996 onward | Last Sunday March 2:00 AM | Last Sunday October 2:00 AM |
| Southern Hemisphere | Last Sunday October 2:00 AM | Last Sunday March 2:00 AM |

## Save

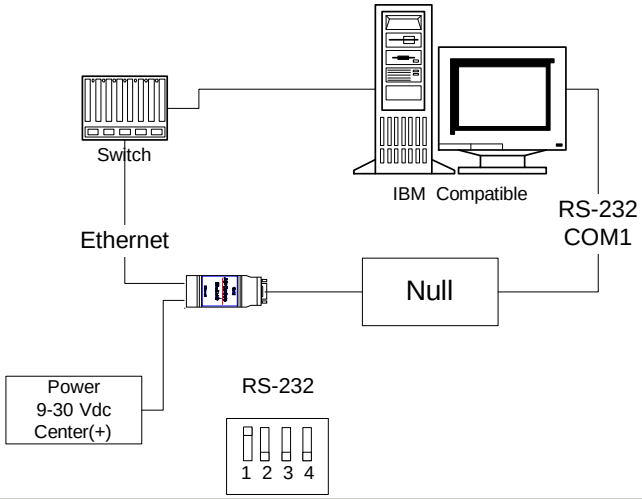
When Save is selected, the current values of the configuration parameters on that screen are saved in non-volatile memory in the Etherlink/2. And a summary page is displayed.

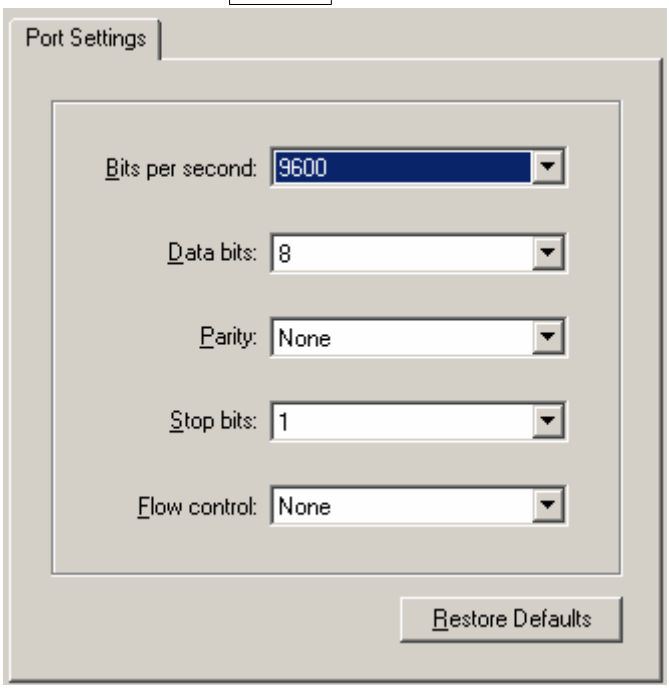
Note: You must wait 60 seconds while the EtherLink/2 reboots.



# Verify/Change Setup (RS-232)

You will need to initially configure the EtherLink/2 for your specific IP address and serial port parameters. Once you have the IP address configured for your network, you can change the parameters by connecting to the EtherLink/2 using Internet Explorer.




1) Connect ASI EtherLink/2 to Power

2) Set DIP switches SW-1=ON, SW-2,3,4=OFF

3) Connect RS-232 (typically COM1) through Null Modem (Female-Female) to EtherLink/2 Serial DB9

4) Run HyperTerminal and Connect [as configured]

Port: COM1, Data bits 1 Parity: None;
Baud: 9600; Stop bits: 2; Flow Control: None!

5) Press the reset pin on the EtherLink/2 It should return the status of the Device. The reset pin is located in the hole just above the dip switches on the back of the unit.

```
EtherLink/2 -- Version 1.00.0 -- Configurable Network Interface
Copyright (c) 2005, ASI Controls, Inc.

  Location = ASI Controls, 2202 Camino Ramon, San Ramon, CA
94583
  DHCP = off
  MAC = 00:40:9D:28:7E:B7
  IP = 192.168.1.201  [IP port 3001]
  Subnet = 255.255.255.0
  Gateway = 192.168.1.1
  Monitor IP = 0.0.0.0  [IP port 2001]
  Notify Address = 23264 (5AE0 hex)
  Notify Retry = 5 seconds
  Serial = 9600 bps, 2 stopbit
  Timeout = 1000 milliseconds

Press any key in 15 seconds to change these settings.
```

6) To Change settings

```
Press A to Accept the settings, or M to Modify? m
Enter the root password: ********** [Netsilicon]
```

For each of the following questions, you can press <Return> to select the value shown in braces, or you can enter a new value.

Do NOT change the MAC Address!

Wait 60 seconds for device to reboot to accept changes.

# ASI Software Connections

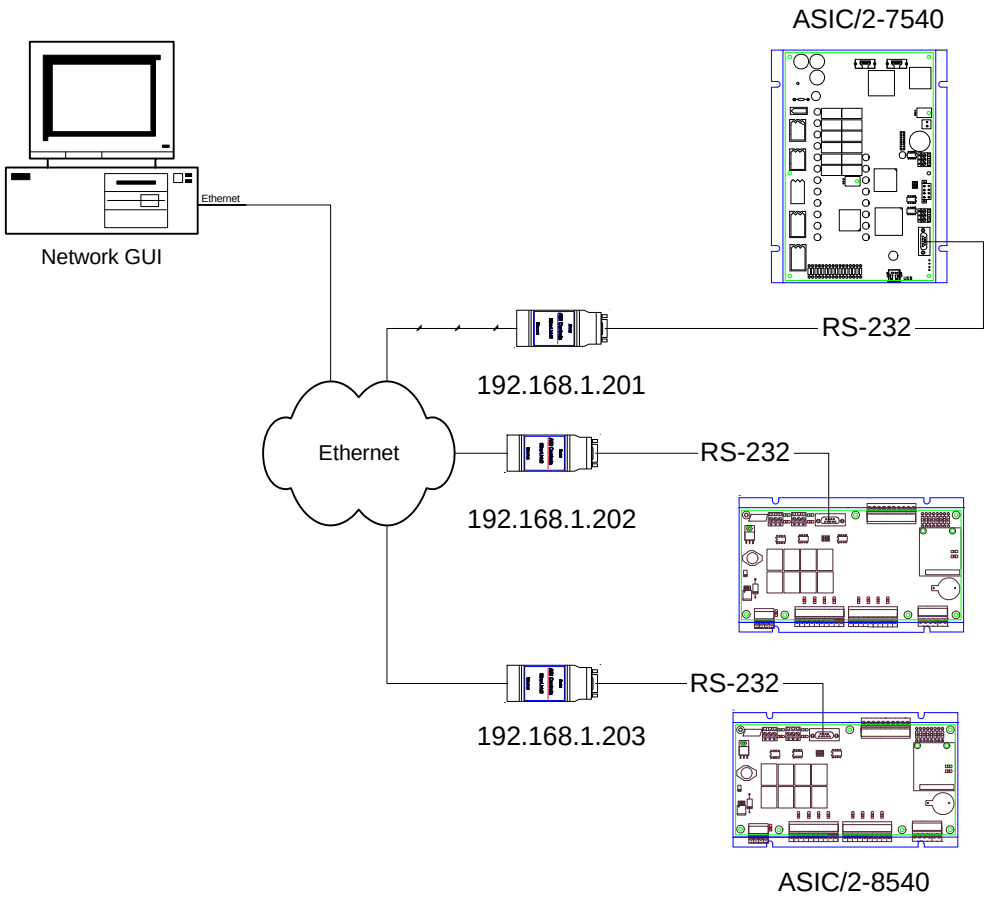
The EtherLink/2 supports both UDP/IP and TCP/IP connections. Access to a single ASI serial bus can be shared to multiple remote users simultaneously.

The ASI OPC Server is usually the primary connection. If more than one Etherlink/2 is on the network then the primary connection should be via TCP/IP.

Like the EtherLink/1 before it, the EtherLink/2 can host only one TCP/IP connection at a time. The TCP/IP connection is automatically reset after 15 seconds of inactivity. Use of TCP/IP is recommended when you don't want to have to open up a unique IP port on the host's firewall for each remote EtherLink/2.

While the EtherLink/1 could not host multiple connections, the EtherLink/2 adds support for multiple simultaneous connections via UDP. If multiple EtherLink/2's are connected to the same OPC server using UDP, then each EtherLink/2 must use a unique IP port number so as to avoid traffic crosstalk. .

ASI Expert can also be used to connect to the Etherlink/2 as a secondary connection using UDP. It is possible to have one or more Expert users connected to an EtherLink/2 via UDP while an OPC Server is simultaneously polling that same EtherLink/2 over TCP/IP.

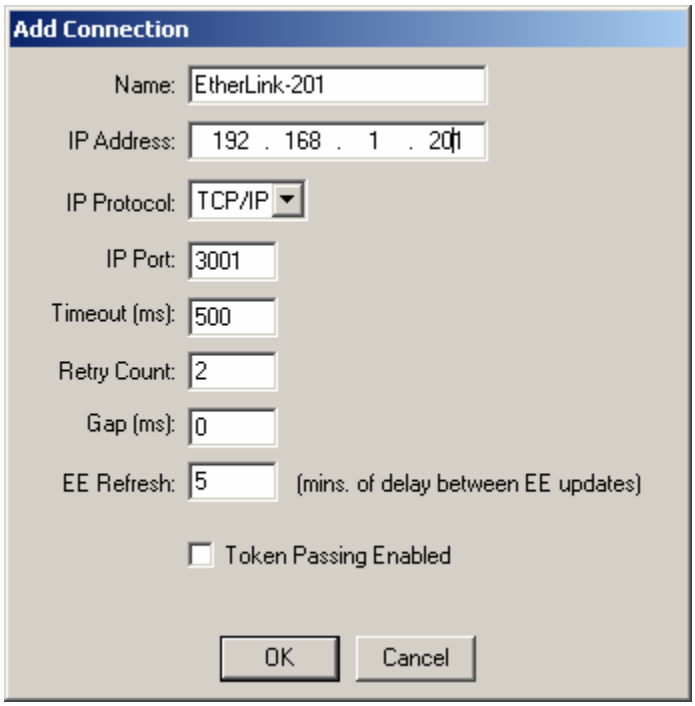

ASIC/2-7540
Ethernet
Network GUI
RS-232
192.168.1.201
Ethernet
RS-232
192.168.1.202
RS-232
192.168.1.203
ASIC/2-8540

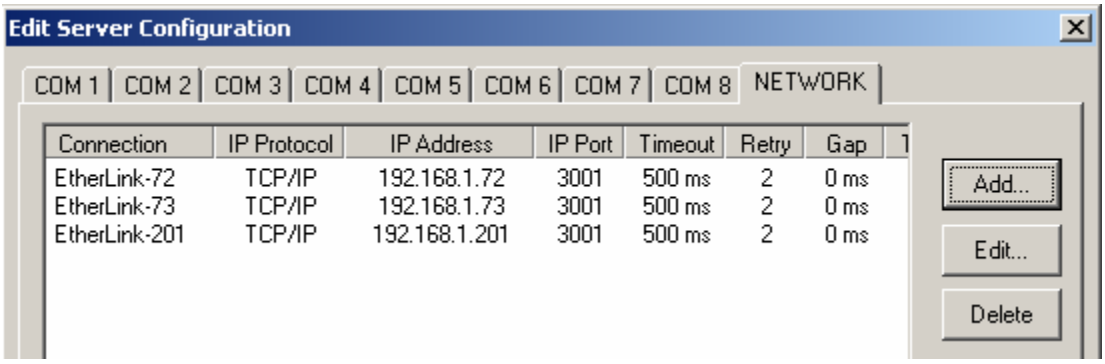
## OPC Server

When a front-end such as ASI WebLink is used, the ASI OPC Server establishes the primary connection to the ASI Network. It can connect to any EtherLink/2 with either TCP/IP or UDP.

Customers concerned with security should select TCP/IP, which can easily be configured to work securely behind a firewall. The OPC Server can communicate to over 100 EtherLink/2's with unique IP addresses simultaneously using TCP on a single IP port.

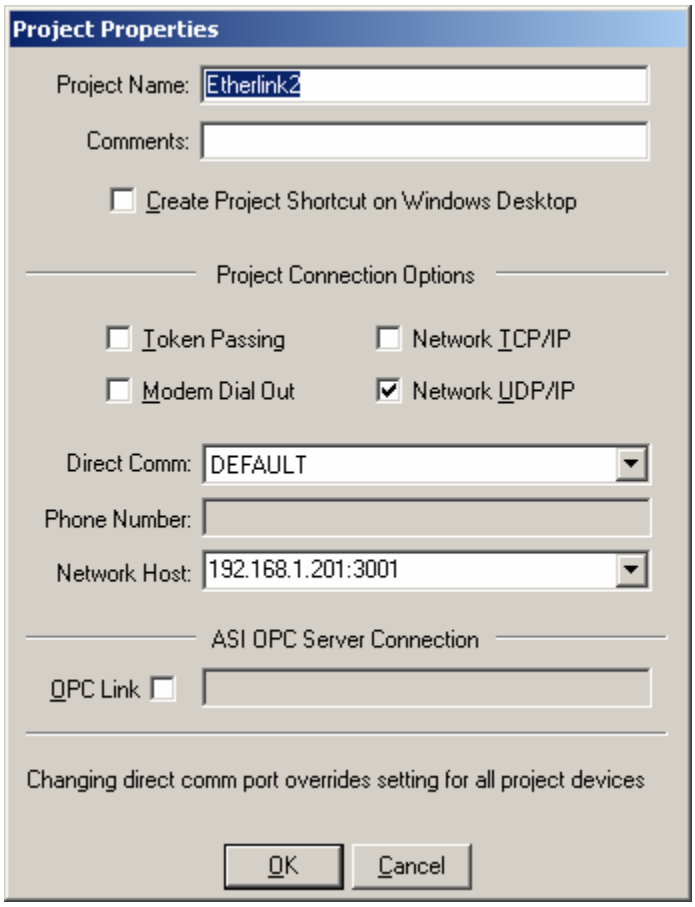
When using UDP, all EtherLink/2's connected to a single OPC server will need to be assigned unique IP ports, or the messages will collide. If UDP is not prohibited because of the multiple IP ports, UDP can yield performance increases over TCP/IP communications.

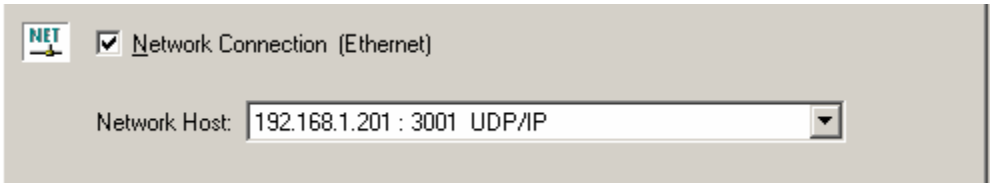


## ASI Expert

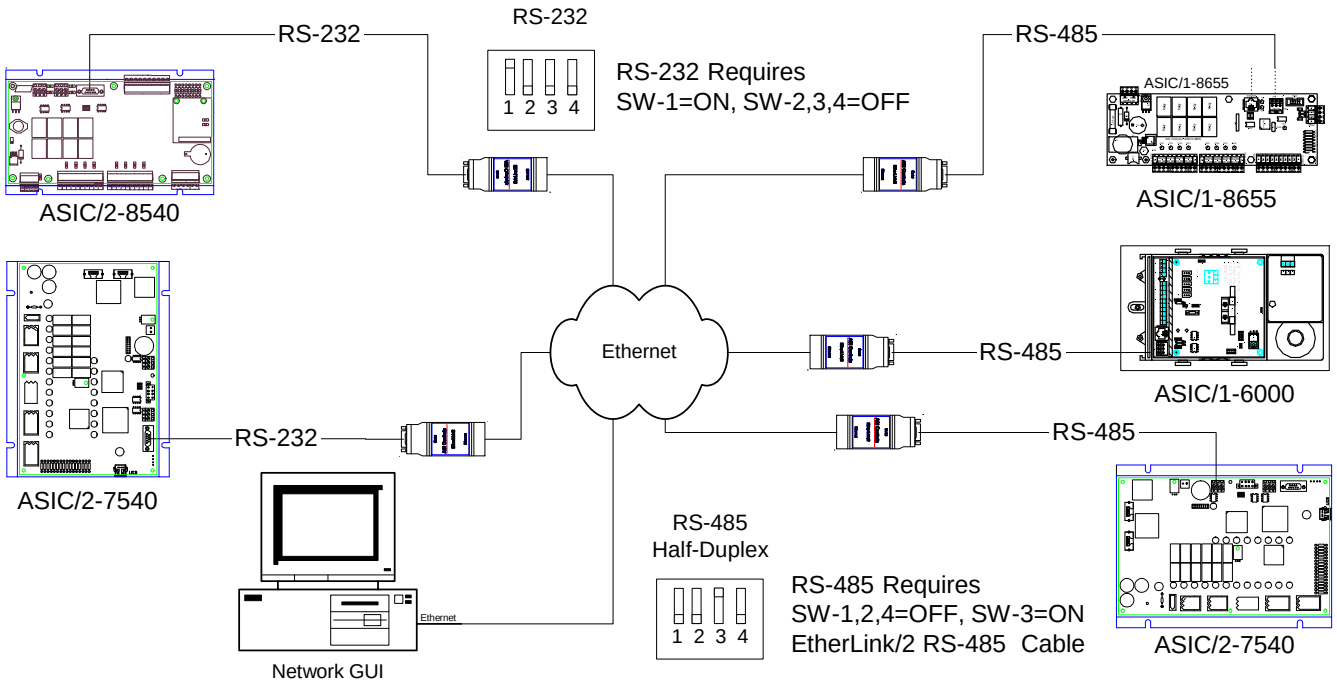
ASI Expert is a secondary connection to ASI Network and supports either direct TCP/IP or UDP connections to an EtherLink/2. If the ASI OPC server is connected an EtherLink/2 over a TCP/IP connection, then Expert must use the UDP connection in order to gain secondary access to the project. When using UDP, Multiple Expert users can connect to the same EtherLink/2 from different computers and share access to networked ASI devices.



# ASI Network Connections

You can use the EtherLink/2 to connect to an ASI Network using either RS-232 or RS-485 connections. Each Etherlink device must have a unique IP address.

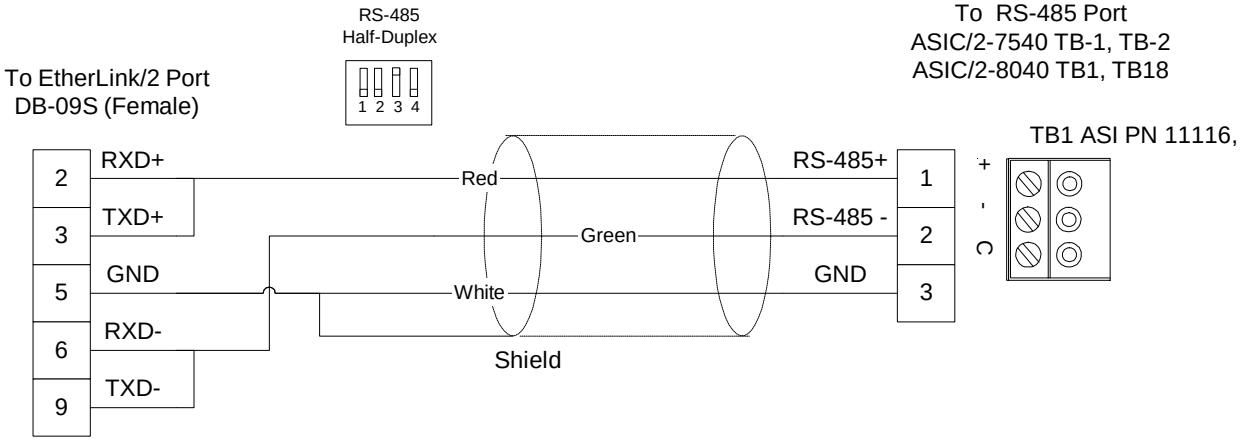



## RS-232 Connection.

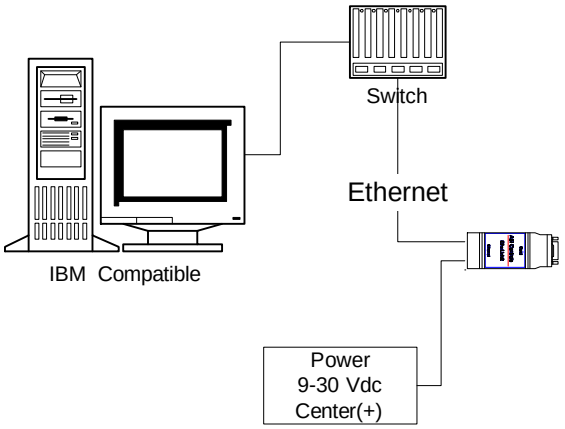
The Etherlink/2 can connect directly to the RS-232 connection of an ASIC/2, or the Direct port of a SINC/3-3000. To connect to the Modem port of a SINC/3-3000 requires the use of a Female-Female Null Modem Cable. It requires setting the DIP switches to SW-1=ON and SW-2,3,4=OFF.

## RS-485 Connection

Connection via RS-485 requires a special **EtherLink/2 RS-485 Cable**, available from ASI, and setting the DIP switches to SW-3=ON and SW-1,2,4=OFF.




# EtherLink/2 Upgrade




You may upgrade the firmware in the Etherlink/2 by establishing an ftp connection with the device and uploading new firmware to it. The latest version will be in a zip file with the version name, image-1.00.0.zip. Unzip the file image.bin to the \ASI\EtherLink2 folder. Note: the image.bin file CAN NOT be renamed.

1) Connect ASI EtherLink/2 to Ethernet and Power

2) Verify Connection with Internet Explorer

For example, if the IP address is 192.168.1.201
http:\192.168.1.201

3) Connect using ftp from command line prompt. You will be asked for the user name and password. The default user name is “asi” and the default password is “asi”.

```
Run cmd
cd \ASI\EtherLink2
ftp 192.168.1.201
       Connected to 192.168.1.201.
       220 NET+ARM FTP Server 1.0 ready.
       User (192.168.1.201:(none)): asi
       331 User asi OK, send password.
       Password:
       230 Password OK.
ftp >
```

4) At the ftp> prompt

```
ftp> bin  [This step is EXTREMELY IMPORTANT]
      200 Type set to I.
ftp> put image.bin
      200 PORT command Ok.
      150 About to open data connection.
      226 Transfer complete
      ftp: 449326 bytes sent in 61.2 Seconds 7.37Kbytes/sec.
```

5) Quit ftp and command

```
      ftp> quit
            221 Goodbye.
      exit
```

6) Wait 90 seconds. for device to reboot. It is now running the latest firmware.

7) Verify Connection with Internet Explorer  The version is shown in the IE status bar.

## Flash Version History

**2007-03-09 EtherLink/2 1.0.1.5**

- Improves communication at 1200 baud.

**2006-10-13 EtherLink/2 1.0.1.4**

- Fixed TCP/IP stack problems when running for a long time.
- Improved performance from the TCP/IP and UDP messaging.

**2006-09-07 EtherLink/2 1.0.1.3**

- Adds Notify Retry Interval [no less than 60s] to reduce traffic when Monitor is not responding.

**2006-05-03 EtherLink/2 1.0.1.2**

- Improves Remote Point Updates

**2006-04-20 EtherLink/2 1.0.1.1**

- Now accepts WebLink IP address set to "0.0.0.0"

**2006-04-17 EtherLink/2 1.0.1.0**

- Embeds a simple UDP command protocol for remote reset (hard reboot), and restart (software reset - faster).
- new utility called etherboot.exe, which prompts for remote IP address, username and password, before sending the command to the EtherLink.

**2006-03-07 EtherLink/2 1.0.0.9**

- Fixes a potential infinite loop in the remote point post to weblink code.

**2006-02-16 EtherLink/2 1.0.0.8**

- New HTTP Post code for sending remote points

**EtherLink/2 1.0.0.6 (Not Released) 2006-01-19**

- Adds Remote Point capture

**EtherLink/2 1.0.0.5 2005-09-30**

- Now validates IP addresses before accepting them.
- DHCP Waits 60 seconds for network to assign an IP address.
- "reset" pushbutton always available to recover the unit via the serial port configuration dialog.

**EtherLink/2 1.0.0.4 2005-08-19**

- Fixes problems with single-quote ['] in location field.

**EtherLink/2 1.0.0.3 2005-08-09**

- Improves internal operation.

**EtherLink/2 1.0.0.2 2005-08-05**

- Adds watchdog timer to prevent lockups.

**EtherLink/2 1.0.0.1 2005-08-02**

- Adds IP User Limit 1 TCP/IP and up to 3 UDP connections to IE System Window.
- Fixes problem with contention with multiple UDP connections.

**EtherLink/2 1.0.0.0  2005-07-28**

- Adds version and Location to IE User Window.