AN-X-ABRIO-HMI
Remote I/O
HMI Interface
Module

User Manual

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Throughout this manual we use notes to make you aware of safety considerations.

WARNING!

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

These warnings help to:

- identify a hazard
- avoid the hazard
- recognize the consequences

IMPORTANT!

Identifies information that is especially important for successful application and understanding of the product.

TIP

Identifies information that explains the best way to use the AN-X-ABRIO-HMI

AN-X-ABRIO-HMI Module Overview

The AN-X-ABRIO-HMI communications module connects a PanelView or other HMI to an Allen-Bradley remote I/O network. It runs on the AN-X-AB hardware.

Existing applications that use a remote I/O PanelView can use AN-X to communicate with a PanelView on Ethernet. The AN-X acts as a bridge between remote I/O and Ethernet.

Similarly, any other HMI that communicates on Ethernet can use the AN-X to connect to a PLC using remote I/O.

The module acts as one or more racks on the remote I/O network, writing inputs and reading outputs.

It supports up to 16 rack numbers, from 1 to 76 octal, with any combination of partial racks, and supports all remote I/O baud rates.

It also supports block transfer reads and writes at all possible locations on these racks.

The PanelView or other HMI accesses data on the AN-X as PLC-5 I, O, N and S files.

The AN-X-ABRIO-HMI module has a web interface for configuration, monitoring logs and diagnostic counters, and for performing other administrative functions. You can communicate with the module using any standard web browser such as Internet Explorer.

The module firmware can be updated over Ethernet using the Windows utility AnxInit. Refer to page 47 for details.

Hardware Features

The module has:

- LEDs to indicate the status of the connection to the Ethernet (100 and Link/Act)
- a LED to indicate the module's internal state (SYS)
- a LED to indicate the state of communications on the Remote I/O network (NET)
- an Ethernet connector
- a power connector
- a 3-pin Phoenix connector to connect to the remote I/O network

A watchdog timer is implemented in the module's hardware. If the firmware does not kick the watchdog within the timeout period the watchdog times out and places the module into a safe fatal failure state.

A jabber inhibit timer is implemented in the module's hardware. If the network transmitter is on longer than 150% of the longest network frame time, the transmitter is forced off and the module is placed into a safe fatal failure state.

Package Contents

- AN-X-ABRIO-HMI module
- CD containing software and documentation
- rubber feet for desktop use

Modes of Operation

There are three AN-X modes of operation:

- Boot mode. The AN-X is running its low level startup firmware.

- Configuration mode. This is the mode when you are updating the firmware in the AN-X.
- Production mode. This is the normal runtime mode of operation.

Refer to page 29 for information on how to determine the current mode of operation.

Installation

Prevent Electrostatic Discharge

The module is sensitive to electrostatic discharge.

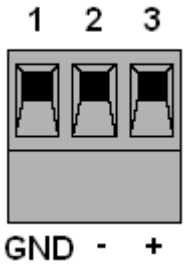
WARNING!

Electrostatic discharge can damage integrated circuits or semiconductors. Follow these guidelines when you handle the module:

- Touch a grounded object to discharge static potential
- Do not touch the connector pins

Power

AN-X requires a DC power input of anywhere from 12 to 24 VDC.



Left to right the pins on the power connector are chassis ground, negative voltage and positive voltage.

The chassis ground should be connected.

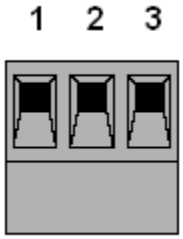
Power consumption is 300 mA @ 12VDC or 150 mA @ 24VDC.

The part number for the power connector is Phoenix MSTB 2.5/3-ST-5.08

Cabling and Termination

Follow Allen-Bradley cabling recommendations for remote I/O. Refer to Approved Vendor List for DH, DH+, DH-485, and Remote I/O Cables, publication ICCG-2.2, February 1996.

From left to right on the AN-X module, the network connections should be line 1, shield, line 2.



Terminate both ends of a remote I/O network by using external resistors attached to the physical ends of the network. There should be two and only two terminators on the network.

Use 82 ohm resistors if the network operates at 230.4 kbps or if the network operates at 57.6 kbps or 115.2 kbps and none of the devices in the table below are present. The maximum number of physical devices on the network is 32.

Use 150 ohm resistors if the network contains any of the devices in the table below, or if the network operates at 57.6 kbps or 115.2 kbps and you do not require the network to support more than 16 physical devices.

Device Type	Catalog Number	Series
Adapters	1771-AS	All
	1771-ASB	Series A and B
	1771-DCM	All
Miscellaneous	1771-AF	All
	1771-AF1	All

Baud Rate	Maximum Cable Length
57.6 Kbaud	10000 ft
115.2 Kbaud	5000 ft
230.4 Kbaud	2500 ft

Ethernet Cabling

AN-X has a standard RJ-45 connector for connecting to Ethernet.

If you are connecting to the AN-X through a router or switch, use a standard Ethernet cable.

If you are connecting directly to the AN-X module, use a crossover cable.

Software Installation

You must uninstall any previous version of the software before you can install a new version. Use the Windows Control Panel Add and Remove Programs to remove the old version.

Insert the CD supplied with the AN-X module and run the program setup.exe on the CD to install common AN-X components.

Quick Start

Step	Operation	See page
1	Install the AN-X Windows software	6
2	Power up the AN-X, connect it to Ethernet and use AnxInit to assign it an IP address	8
3	Connect AN-X to the Remote I/O network	4
4	Create a configuration file	18
4	Use the AN-X web interface to download the configuration file and configure the remote I/O network	38
5	Access the remote I/O data from the HMI or other device	22

Ethernet Configuration

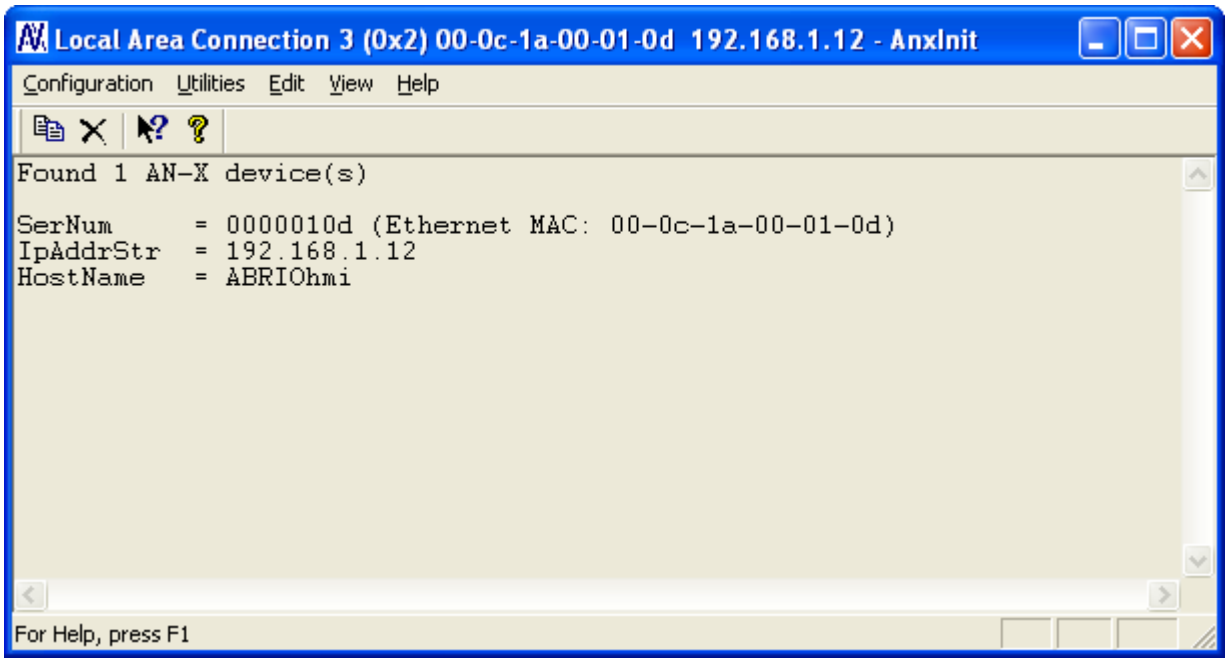
Before you can use the AN-X-ABRIO-HMI, you must configure its network properties on Ethernet.

Ethernet Configuration

AN-X can be configured to use a static (unchanging) IP address or it can be configured to obtain its IP address from a DHCP server.

Unless you have control of the DHCP server, in most applications you will configure AN-X to use a static IP address. Otherwise the DHCP server may assign a different IP address each time AN-X powers up, and any software that accesses the AN-X module must be reconfigured.

AN-X is shipped with DHCP enabled. If it finds a DHCP server on the network, the DHCP server assigns it an IP address. You can use the utility AnxInit to find the IP address that the DHCP server has assigned. Select *Utilities/Locate All AN-X Modules* and AnxInit will locate the AN-X and display its IP address.



If AN-X does not find a DHCP server within about three minutes of starting up, it reverts to a temporary static IP address of 192.168.0.41 If AN-X is using this temporary IP address, it repeatedly flashes the SYS LED red three times followed by a pause. If your computer is on the same subnet, you can use the web interface to change the IP address of the AN-X.

IMPORTANT!

Use this temporary IP address only for initial setup of AN-X. AN-X will not function correctly for its intended purpose at the temporary IP address.

If you are using multiple AN-X modules, configure them one at a time, especially if there is no DHCP server on the network, since they will all revert to the same temporary IP address when they fail to find a DHCP server.

IMPORTANT!

If you are connecting AN-X to an existing Ethernet network, consult the network administrator to obtain a static IP address for AN-X and to obtain information about how you should configure AN-X.

IMPORTANT!

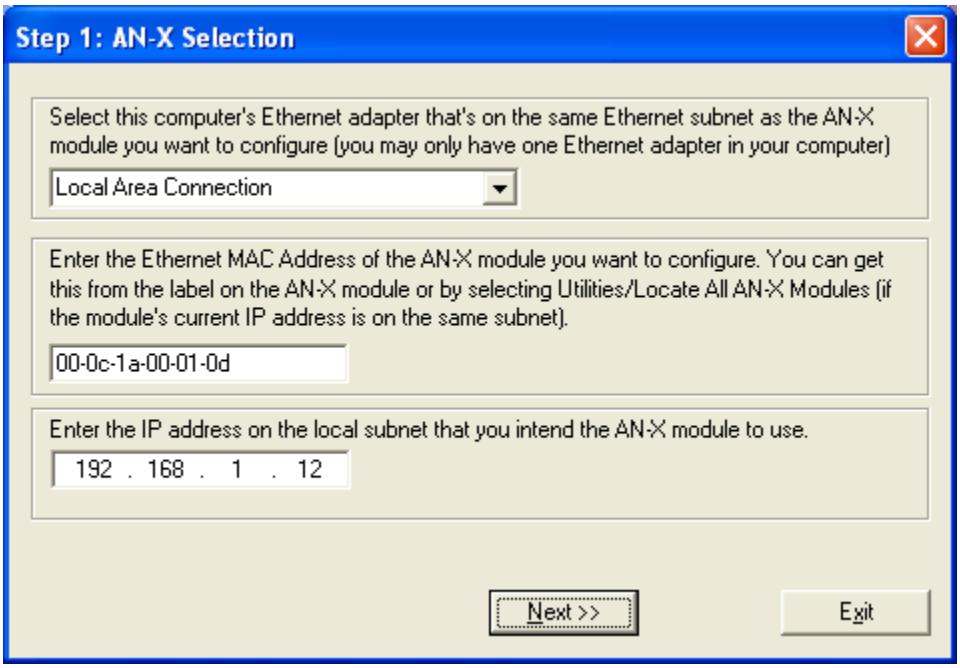
The AN-X must be on the local Ethernet (same subnet as your computer) when you set its IP address.

You configure the Ethernet properties using the Windows utility AnxInit supplied with AN-X or the AN-X web interface.

In AnxInit, use the *Configuration/AN-X IP Settings* command to start the AN-X IP configuration wizard, which takes you step by step through the IP configuration process.

Step 1

In step 1, you identify the AN-X you are configuring.



1. Select the Ethernet adapter that is connected to the AN-X. In most cases there will be just one Ethernet adapter in the computer. The AN-X must be on the same subnet as the computer.

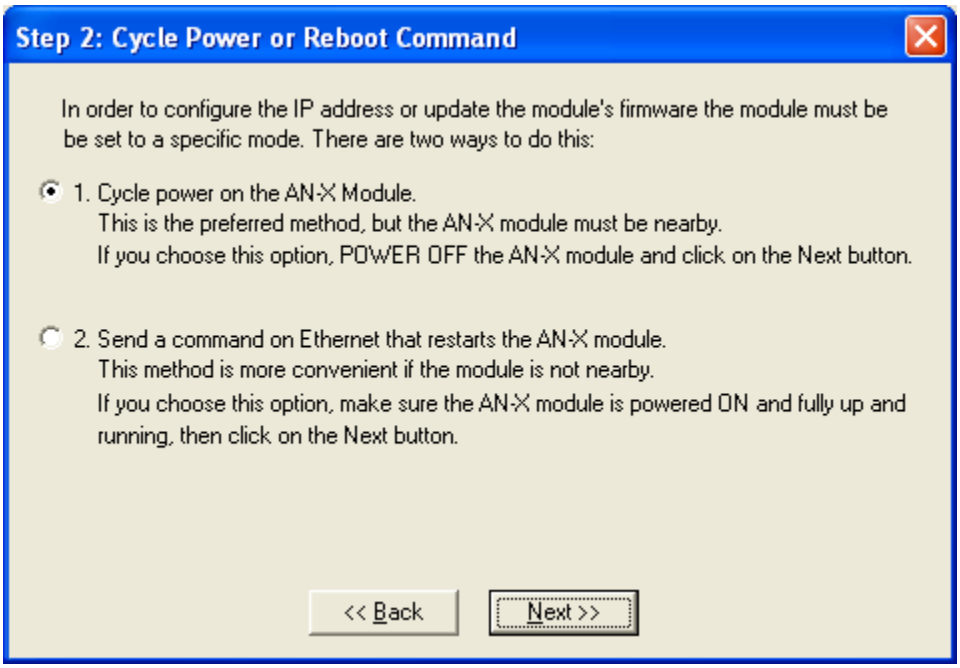
2. Enter the MAC address of the AN-X you are configuring. This is printed on the AN-X label. It consists of six pairs of hexadecimal digits, separated by hyphens. In the example above, it's 00-0c-1a-00-01-0d

If the AN-X is already online, you can obtain its MAC address using the *Utilities/Locate All AN-X Modules* command.

3. Enter the IP address you intend the AN-X to use. In the example shown, it's 192.168.1.12

Step 2

In step 2, you choose a method of restarting AN-X to put it in boot mode.

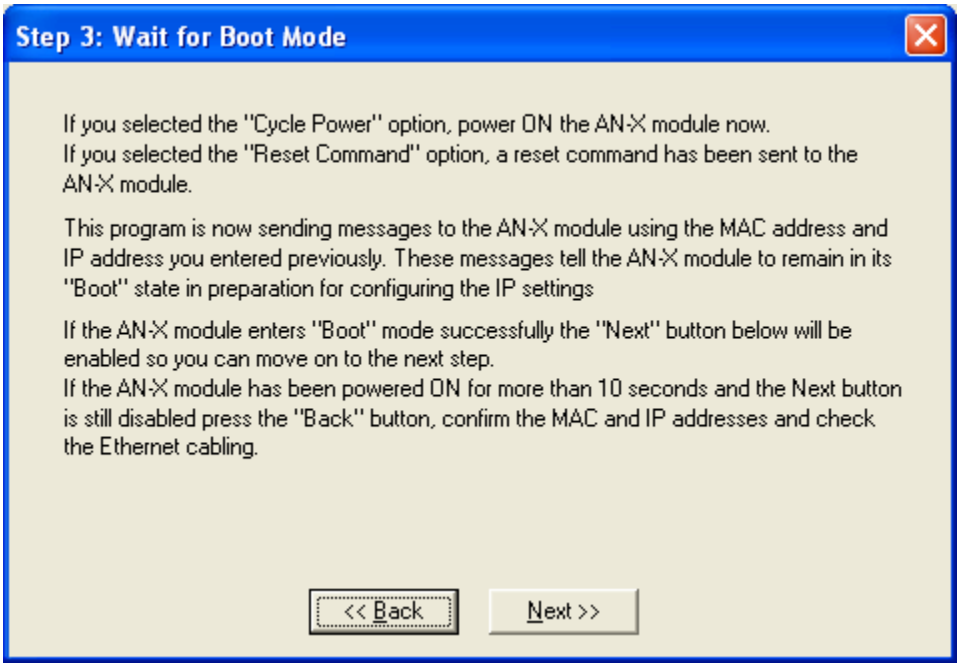


The preferred method is to cycle power on the AN-X. Select the first option on the screen and click the *Next* >> button.

An alternative method, useful if the AN-X in not easily accessible, is to send it a command over Ethernet. The AN-X must be powered on and completely running for this method to work. For example, if this is the first time you are configuring a new AN-X, allow sufficient time for it to acquire an IP address from a DHCP server or to time out and use its default IP address (about 3 minutes). Select the second option on the screen and click the *Next* >> button.

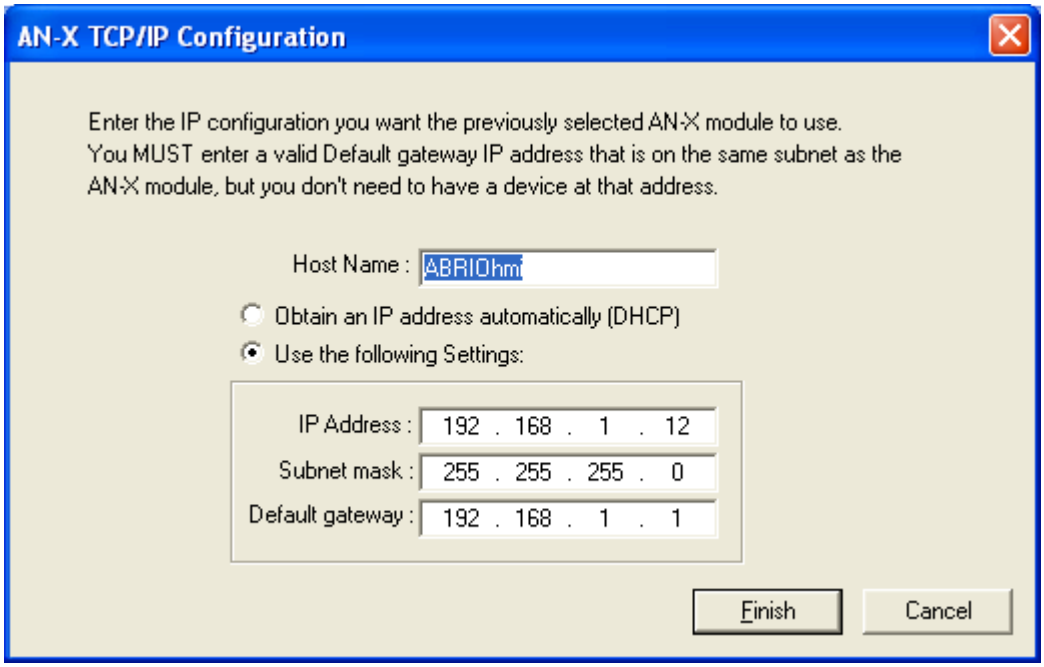
Step 3:

Wait for AN-X to enter boot mode. While AnxInit is waiting, the *Next>>* button is disabled. When AN-X is in boot mode, the *Next>>* button is enabled.



If the AN-X does not enter boot mode within about 10 seconds, return to the previous screens and check the entries.

The *AN-X TCP/IP Configuration* dialog appears.



Enter a *Host Name* for the AN-X. Give the AN-X a meaningful name that is unique on your network. This name is also used internally by AN-X and may be used to identify the AN-X if you have a DNS server on your network. The name can be from 1 to 31 characters long. It can contain alphanumeric characters and a hyphen.

To configure the AN-X to obtain its IP address from a DHCP server on the network, select *Obtain an IP address automatically (DHCP)*

To configure the AN-X to use a static IP address, select *Use the following Settings* and enter:

- the desired IP address for the AN-X
- the Subnet mask for the AN-X
- the default gateway for your network.

You must enter a default gateway address that is valid for the subnet, even if there is no device at the gateway address on the network.

Click *Finish* to complete the configuration.

If you click *Cancel*, AN-X is left running the boot code. Use the *Utilities/Restart AN-X* command to restart the AN-X in production mode.

Standalone Computer

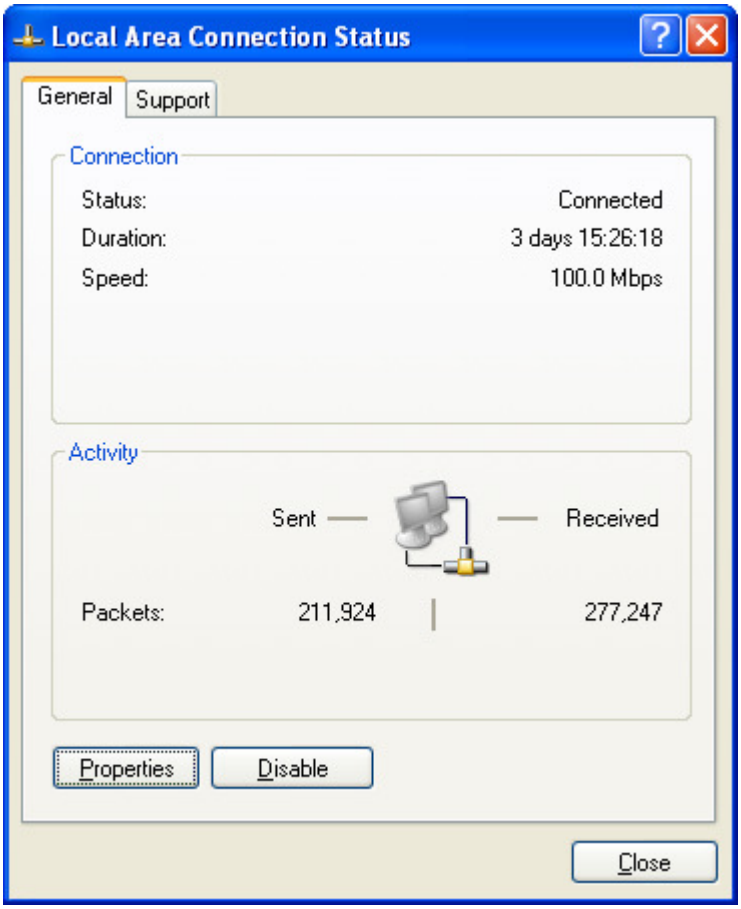
Since you are connecting directly from the computer to AN-X, use a crossover Ethernet cable.

The following instructions assume Windows XP. They also assume that an Ethernet network card has been installed in the computer and that AnxInit has been installed on the computer.

TIP

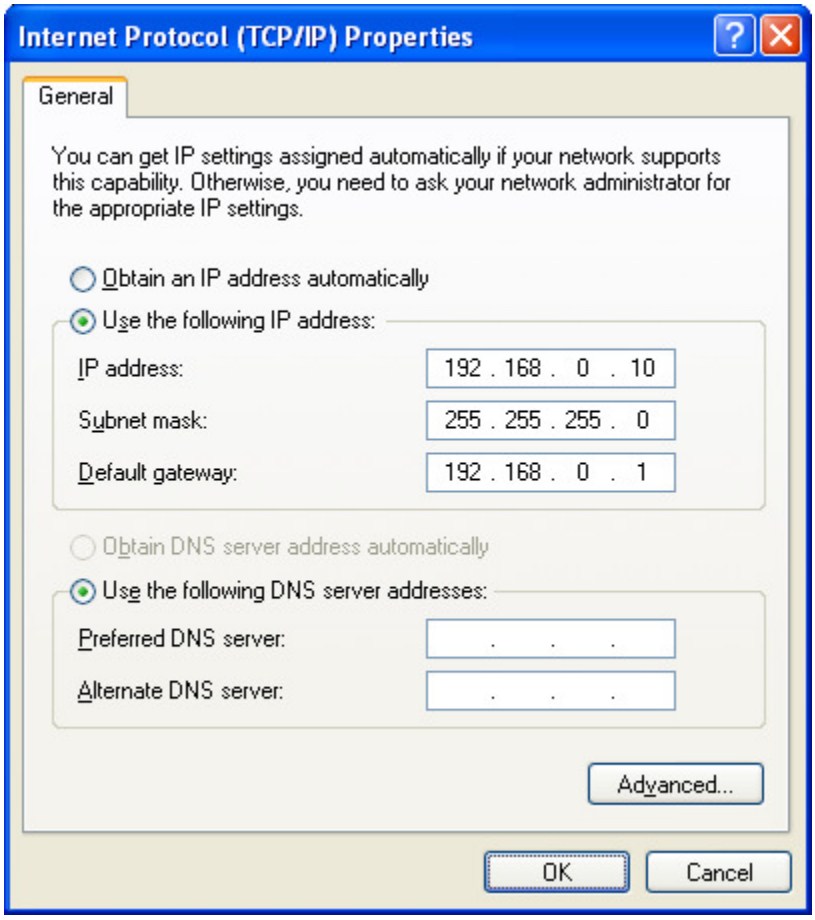
The parameters in this example will work when you set up any standalone computer to work with AN-X.

First configure the computer to use a static IP address. From the Control Panel, select *Network Connections*. Double click on *Local Area Connection* (or whatever connection is being used for the AN-X)



Click the *Properties* button.

Double click on *Internet Protocol (TCP/IP)*.



In this example, we assigned the computer an IP address of 192.168.0.10

We set the Subnet mask to 255.255.255.0 (standard mask for the Class C network address of 192.168.0.x).

We set the Default gateway to 192.168.0.1 (this address does not exist on the Ethernet network but AN-X requires a valid default gateway entry).

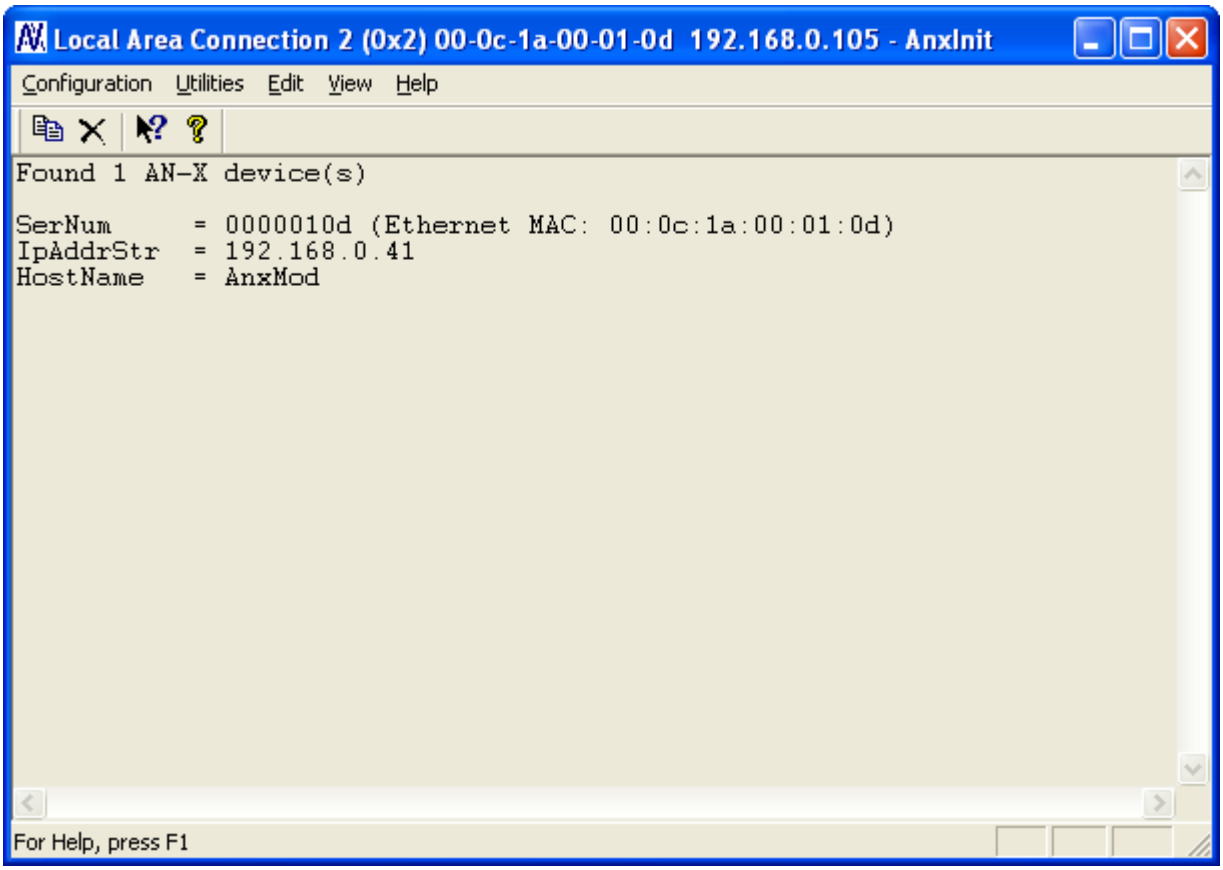
Click OK to accept the settings

Connect the computer to AN-X using the crossover cable.

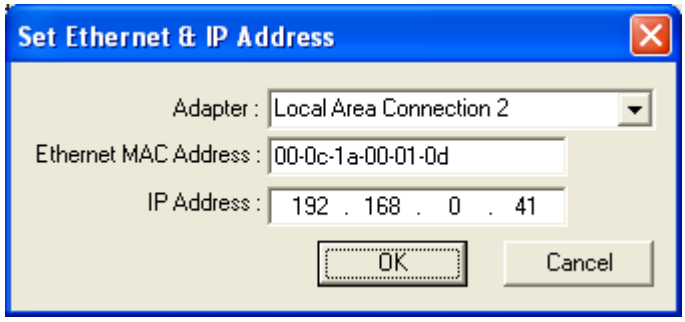
If this is the first time you have used the AN-X module, it will look for a DHCP server on the network. It waits about three minutes, then reverts to a default IP address of 192.168.0.41

Power up the AN-X and wait for the search for a DHCP server to time out. When the search for a DHCP server times out, AN-X repeatedly flashes the SYS LED red three times followed by a pause.

Run AnxInit. Select *Utilities/Locate All AN-X Modules* and confirm that it finds the AN-X.

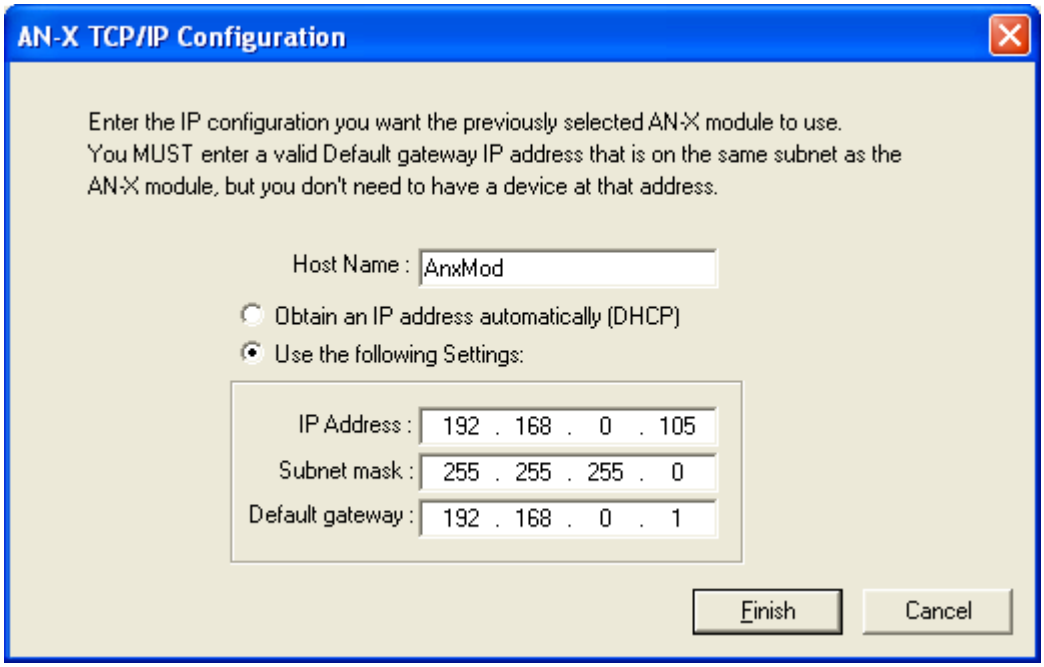


Select *Utilities/Select An AN-X* and enter the MAC Address and IP address.



Click *OK* to accept the setting.

Select *Utilities/AN-X IP Configuration*.



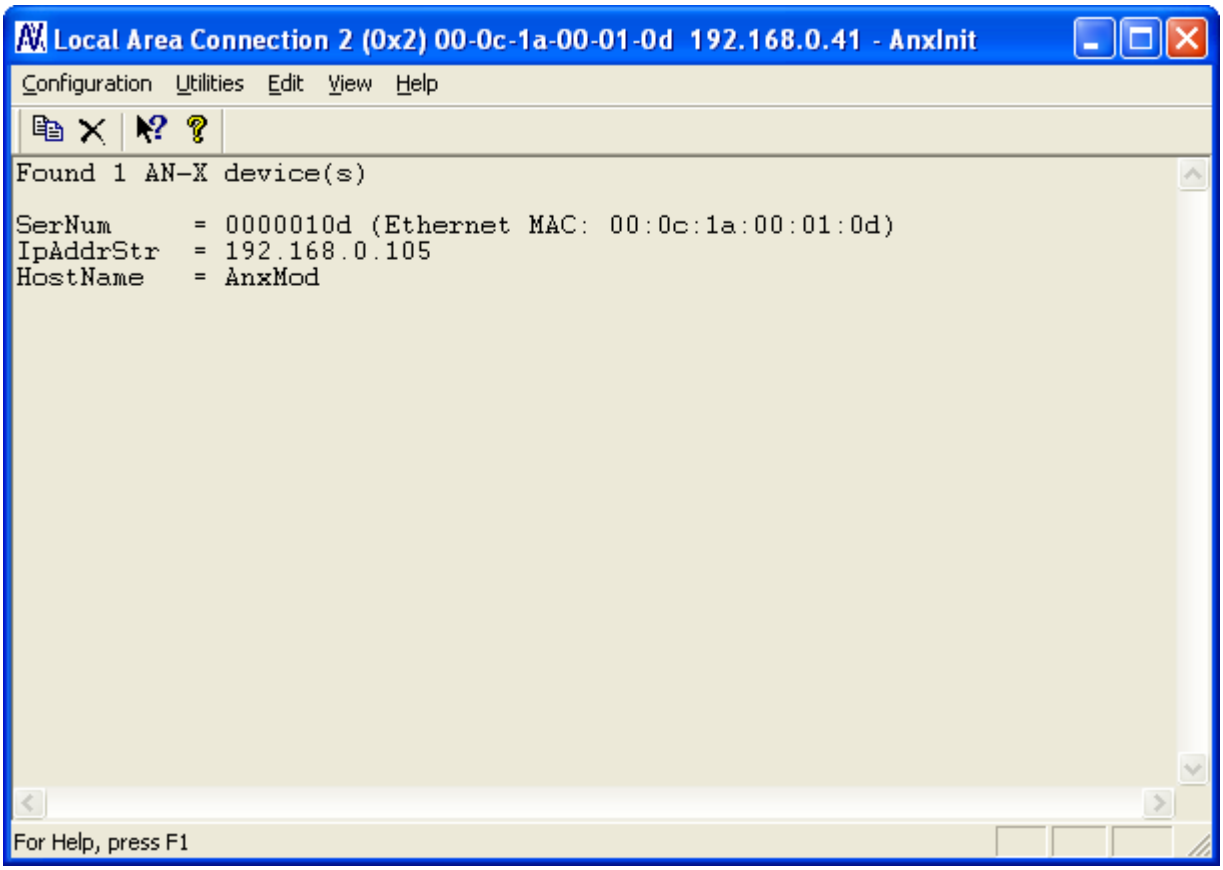
Enter an IP Address. In this case we chose 192.168.0.105

Enter the same Subnet mask and Default gateway that you entered for the computer. The default gateway address does not exist on the network but AN-X requires that the field have a valid entry.

Click *Finish* to accept the settings.

Select *Utilities/Restart AN-X* to restart AN-X with the new parameters.

When the AN-X has restarted (SYS LED is solid green), select *Utilities/Locate All AN-X Modules* and confirm that the AN-X is found with the new parameters.



Reconfiguring an AN-X from an Unknown State

It sometimes happens that an AN-X has been previously configured with an IP address that causes it to be inaccessible on the current Ethernet network. To reconfigure it to a known state, run the command *Configuration/AN-X IP Settings* to start the AN-X IP Configuration Wizard and reconfigure AN-X.

Configuring Remote I/O

Configuring a Remote I/O Network

The remote I/O configuration consists of:

1. the baud rate
2. rack definitions
3. block transfer definitions

Configuration File

The remote I/O configuration is defined in a comma-separated variable text file.

The configuration file starts with a line with just the keyword RioCfg.

The configuration ends with a line that contains just the keyword EndRioCfg. Anything after the EndRioCfg line is ignored

Within the configuration data, anything after a semicolon is treated as a comment. A comment can be inserted at the end of a line or on a separate line.

The file can also contain blank lines.

You download the configuration to the AN-X using the web interface (see page 38)

Baud Rate

The baud rate is defined by a line that consists of the keyword Baud, followed by a comma, and then one of 57k, 115k or 230k.

Selection	Baud Rate, kbits/second
57k	57.6
115k	115.2
230k	230.4

The baud rate definition must be included in the configuration file.

Example

Baud, 57k

Racks

Racks are defined by line that consist of the keyword Rack, followed by a comma, the racknumber in octal in the form 0oxx where xx is the rack number from 1 to 76 octal, a comma, the start quarter (1-4), a comma, and the end quarter (1-4).

Examples

Rack, 0o01,1,4

Rack, 0o07,1,1

The end quarter must be greater than or equal to the start quarter.

0 is not an allowed rack number.

There can be a maximum of 16 different rack numbers (not 16 separate rack definitions).

There must be at least one rack definition in the configuration file.

Block Transfers

Block transfer definitions contain the block transfer type (read or write), the location (rack, I/O group and slot), the PLC-5 file address (file number and offset) where the HMI can access the data, and the block transfer length. The fields must be separated by commas.

btr, rack, I/O group, slot, PLC-5 integer file, offset, length

btw, rack, I/O group, slot, PLC-5 integer file, offset, length

The rack number is in the form 0oxx where xx is the rack number from 1 to 76 octal. The rack must have been previously defined in a rack definition.

The I/O group must be in the range 0 to 7.

The slot must be 0 or 1.

The PLC-5 file is always an integer (N) file. The file number can be from 0 to 999. The offset can be from 0 to 999. The offset + length cannot exceed 1000.

The block transfer length can be from 1 to 64.

The rack address must have been previously defined or the block transfer definition will produce an error.

Examples

btr,0o01,0,0,32,0,1

btw,0o01,0,0,32,0,1

Block Transfers by Length

For compatibility with some existing PanelView applications, AN-X-ABRIO-HMI supports a block transfer by length mode, where multiple block transfers of different lengths are defined at the same I/O location (rack, I/O group and slot). When the remote I/O scanner requests a block transfer at that location, the AN-X uses the requested length to select which data to access.

The block transfer must be at the lowest address in the partial rack where the block transfer is found. For example, if the rack is a quarter rack, rack 1, starting at I/O group 2 (second quarter), any block transfers must be at rack 1, I/O group 2, slot 0.

If you are using block transfer by length mode, only one rack number can be defined in the configuration.

The configuration file must contain a line with the keyword BtByLen before the rack and block transfer definitions.

Sample Configuration

```
RioCfg, ; start of configuration

Baud, 57k6, ;define baud rate for 1771 IO network (57k6,115k2,230k4)

Rack, 0o01, 1, 4, ;define rack at octal 01, start quarter 1, end quarter 4

btr,  0o01, 0, 0, 31, 0, 64, ;define btr, rack 01, group 0, slot 0 -> N31:0,
length is 64

btw,  0o01, 0, 0, 31, 128, 64, ;define btw, rack 01, group 0, slot 0 -> N31:128,
length is 64

EndRioCfg,
```

Sample Block Transfer by Length Configuration

```
RioCfg, ; start of configuration

Baud, 57k, ;define baud rate for 1771 IO network

BtByLen, ;emulate SRIO configuration and map BT by len

Rack, 0o01, 1, 1, ;in BtByLen user can define only one rack

btr,  0o01, 0, 0, 31, 0, 1, ; each BTR definition must have a different length

btr,  0o01, 0, 0, 33, 0, 2, ; each BTR definition must have a different length

btw,  0o01, 0, 0, 33, 0, 1, ; each BTW must have a different length

btw,  0o01, 0, 0, 33, 3, 32 ; all BTs use group 0, slot 0

EndRioCfg
```

Downloading Configurations

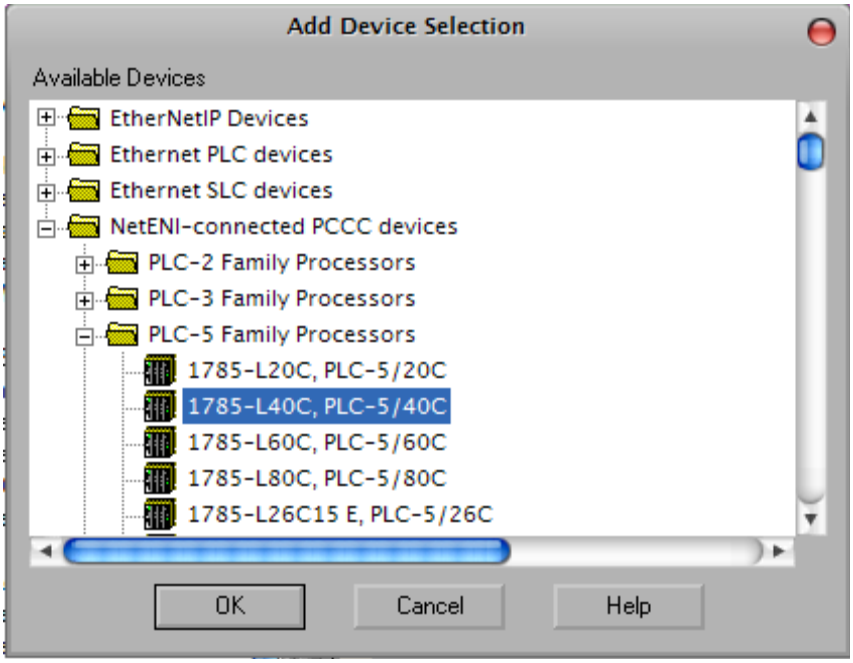
To download a configuration to the AN-X-AB-RIO, start the web interface and select *Automation Network/Configure RIO to Enet/IP* to download a configuration file to the AN-X.

Accessing Data

Configuration

PanelView

Use FactoryTalk View Studio to add the RSLinx Enterprise device shown.



Other HMIs

Access data on the AN-X as you would any other PLC-5.

I/O Data

Discrete I/O Data

Discrete data is mapped to PLC-5 I (input) and O (output) files, based on the rack and I/O group.

Block Transfer Data

Block tansfer data is mapped to PLC-5 N (integer) files and offsets you specified in the remote I/O configuration.

Status File Information

AM-X maps remote I/O diagnostic counters and rack status to a PLC-5 status file. An HMI can access these counters by reading the status file.

The following tables show the contents.

Diagnostic Counters

Counter	Status file	Description
TX PACKETS	S2:0	Transmitted packets
GOOD RX PACKETS	S2:1	Good received packets
RX CRC ERRORs	S2:2	CRC errors
RX ABORT ERRORS	S2:3	Abort errors
RX NOISE ERRORS	S2:4	Noise errors
RX PACKET TIMEOUTS	S2:5	Timeouts, packet sent, no reply
RX PROTOCOL ERRORS	S2:6	Protocol errors
RX PROTOCOL MASK	S2:7	Indicates cause of protocol error

Rack status

Status table element	Contents
s2:8	Status racks 01-03
s2:9	Status racks 04-07
s2:10	Status racks 10-13
s2:11	Status racks 14-17
s2:12	Status racks 20-23
s2:13	Status racks 24-27
s2:14	Status racks 30-33
s2:15	Status racks 34-37
s2:16	Status racks 40-43
s2:17	Status racks 44-47
s2:18	Status racks 50-53
s2:19	Status racks 54-57

Status table element	Contents
s2:20	Status racks 60-63
s2:21	Status racks 64-67
s2:22	Status racks 70-73
s2:23	Status racks 74-76

The rack status contains 4 bits per rack, with the low bit corresponding to a rack starting at I/O group 0, etc. The bit is 1 if the rack is being scanned and is 0 otherwise.

Using AnxInit

AnxInit is a 32-bit Windows application supplied with AN-X to perform the following functions:

- Locate and identify AN-X modules on the Ethernet network
- Select a specific AN-X for configuration
- Set the IP address and other Ethernet parameters for an AN-X
- Restart an AN-X in production mode
- Display information about the selected AN-X
- Read the kernel parameters for the selected AN-X
- Update the flash (low level firmware) on the selected AN-X
- Update the firmware on the selected AN-X
- Patch the firmware on the selected AN-X

In addition, it can be used to:

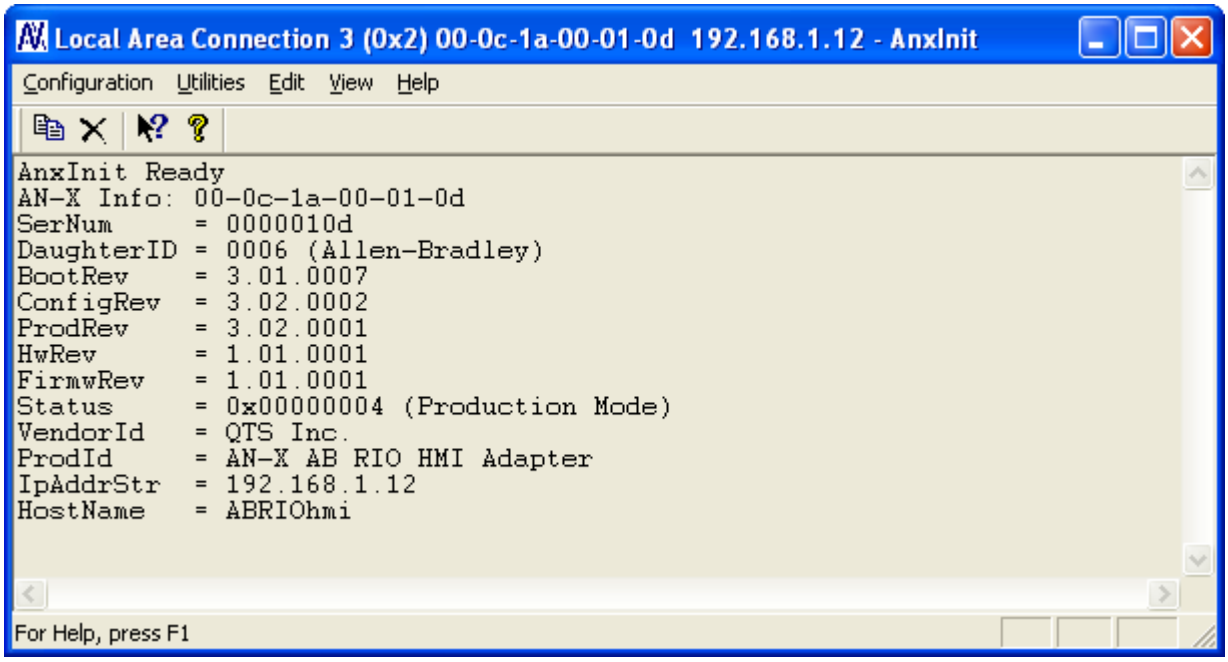
- clear the AnxInit log
- copy the contents of the log to the clipboard for use by another application. This is often useful for technical support

AnxInit Log

AnxInit logs messages in its main window. These messages are often useful for determining the cause of errors or for technical support.

To clear the log, select *Edit/ClearLog*.

To copy the contents of the Log to the Windows clipboard so that they can be pasted into another application, select *Edit/Copy*.



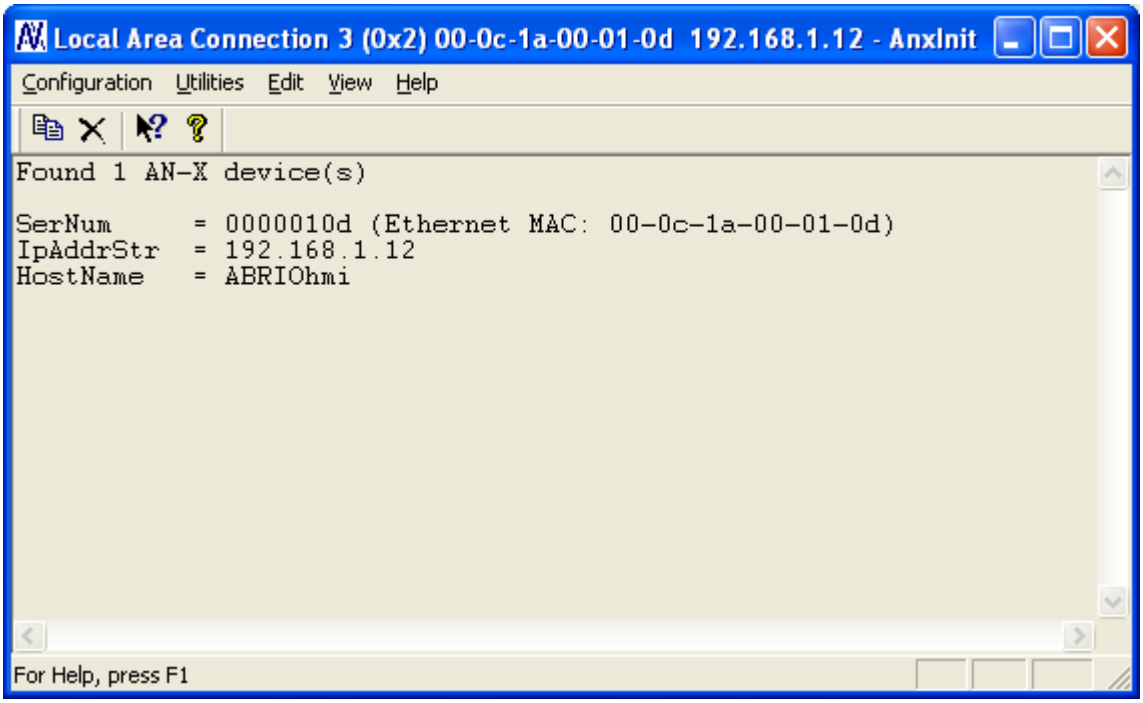
AN-X Log

Locating Available AN-X Modules

To locate all accessible AN-X modules on the Ethernet network, select *Utilities/Locate All AN-X Modules.*

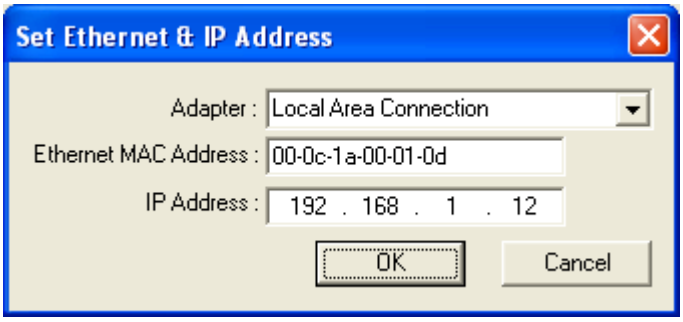
AnxInit displays a list of the AN-X modules it finds, showing their MAC IDs, IP addresses and host names.

This command is useful for determining IP addresses when they have been set by a DHCP server or for confirming that an AN-X is accessible.



Selecting an AN-X

Before you can perform an operation on an AN-X, you must select which AN-X you want the operation performed on. Choose *Utilities/Select An AN-X* to select a specific AN-X.



From the Adapter list, select the network adapter that connects to the Ethernet network that contains the AN-X.

In the *Ethernet MAC Address* field, enter the MAC Address of the AN-X you wish to select. It can be found on the AN-X label or by using the *Locate All AN-X Modules* command. The format is as shown above, six pairs of hexadecimal digits separated by hyphens.

In the *IP Address* field, enter the Ethernet IP address of the AN-X. It can be found using the *Locate All AN-X Modules* command. The format is as shown above, four decimal numbers, each in the range 0 to 255.

Both MAC address and IP address must match the settings on the AN-X in order for communication to occur.

Click OK to select the AN-X.

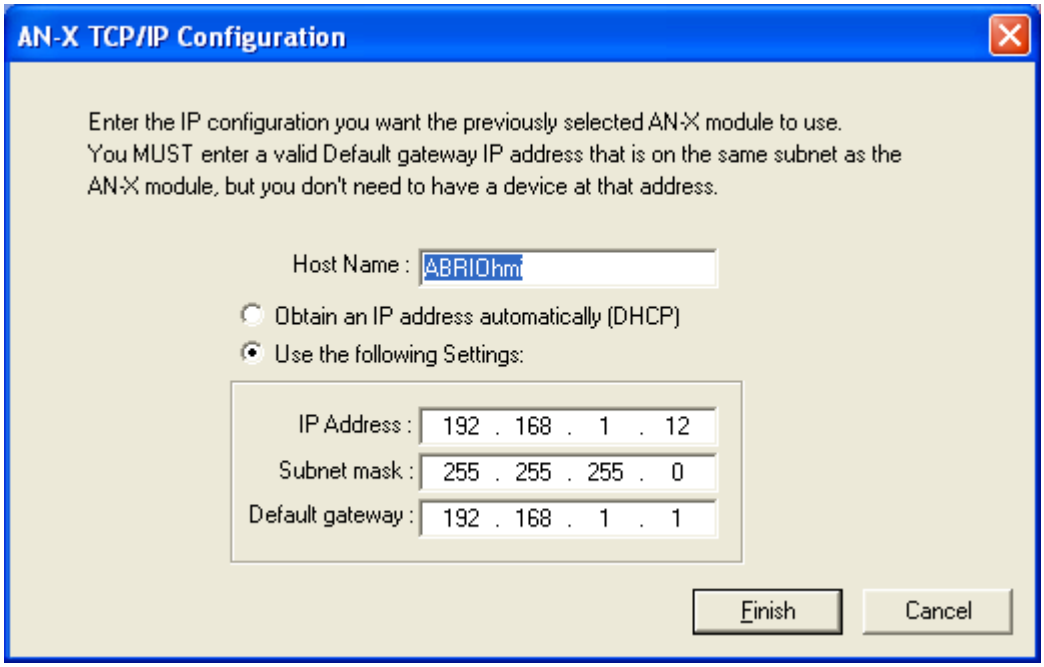
The title bar of AnxInit shows the MAC Address and IP Address of the currently selected AN-X.

Set AN-X IP Configuration

The AN-X must be on the local Ethernet to set its IP address.

First select the AN-X using the *Utilities/Select An AN-X* command.

Next select *Utilities/AN-X IP Configuration.* The *AN-X TCP/IP Configuration* dialog appears.



Enter a *Host Name* for the AN-X. AN-X uses the host name to create ControlLogix tags, so give the AN-X a meaningful host name. This name is used internally by AN-X and may be used to identify the AN-X if you have a DNS server on your network. The name can be from 1 to 31 characters long.

To configure the AN-X to obtain its IP address from a DHCP server on the network, select *Obtain an IP address automatically (DHCP)*

To configure the AN-X to use a static IP address, select *Use the following Settings* and enter the following:

- the desired IP address for the AN-X.
- the Subnet mask for the AN-X
- the default gateway for your network.

You must enter a default gateway address that is valid for the subnet, even if there is no device at the gateway address on the network.

Click OK to complete the configuration.

Use the *Utilities/Restart AN-X* to restart the AN-X in production mode.

If you Cancel the *Utilities/AN-X IP Configuration* command, AN-X is left running in boot mode. Use the *Utilities/Restart AN-X* command to restart the AN-X.

Restart an AN-X

Use the *Utilities/Restart AN-X* command to restart the currently selected AN-X in poduction mode.

AN-X Info

The *Utilities/AN-X Info* command provides information about the currently selected AN-X in the log window.

The information shown:

AN-X Info	Ethernet MAC address
SerNum	Serial number
DaughterID	Daughterboard ID, 6 for AN-X-ABRIO-HMI
BootRev	Boot code version
ConfigRev	Configuration kernel version
ProdRev	Production kernel version
HwRev	Hardware version
FirmwRev	Firmware release version (depends on current operating mode)
Status	see below
VendorId	Vendor ID
ProdId	Product ID
IpAddrStr	AN-X IP address
HostName	AN-X host name

In boot mode, FirmwRev, Vendor ID and Product ID and not valid, and IpAddrStr and HostName are not shown.

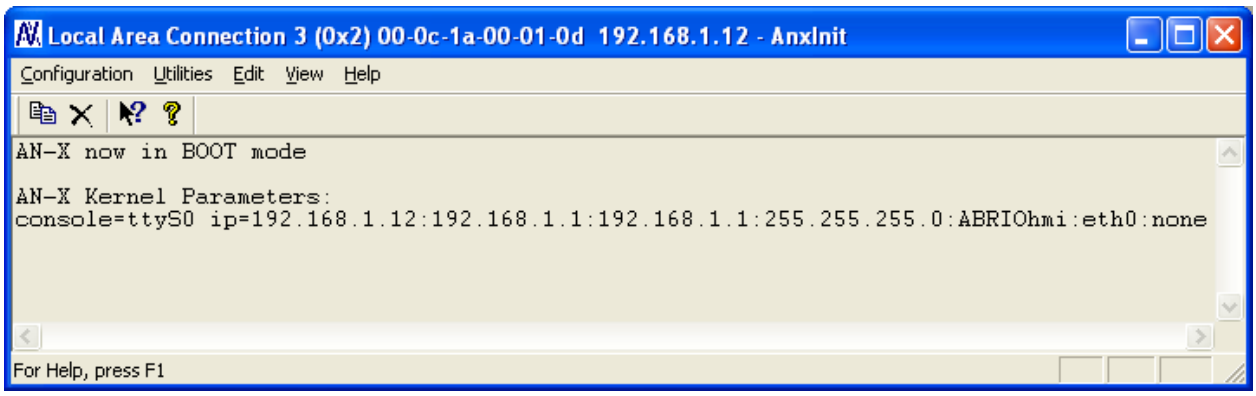
Possible status values are:

Value	Meaning
1	Boot mode
2	Configuration mode
4	Production mode

Read Kernel Parameters

The *Utilities/Read Kernel Parameters* command displays various communications parameters for the currently selected AN-X

This command resets the AN-X. You will be warned and given the opportunity to cancel the command.



The *Utilities/Read Kernel Parameters* command leaves the AN-X running the boot code. Use the *Utilities/Restart AN-X* command to restart the AN-X in production mode.

Run Config Mode

The *Utilities/Run Config Mode* command is used to restart the currently selected AN-X in configuration mode (normally used internally for updating firmware).

This command is not used in normal operation but may be required for technical support.

The AN-X is in configuration mode when the SYS LED flashes red twice, followed by a pause.

To exit configuration mode, use the *Utilities/Restart AN-X* command to restart AN-X in production mode.

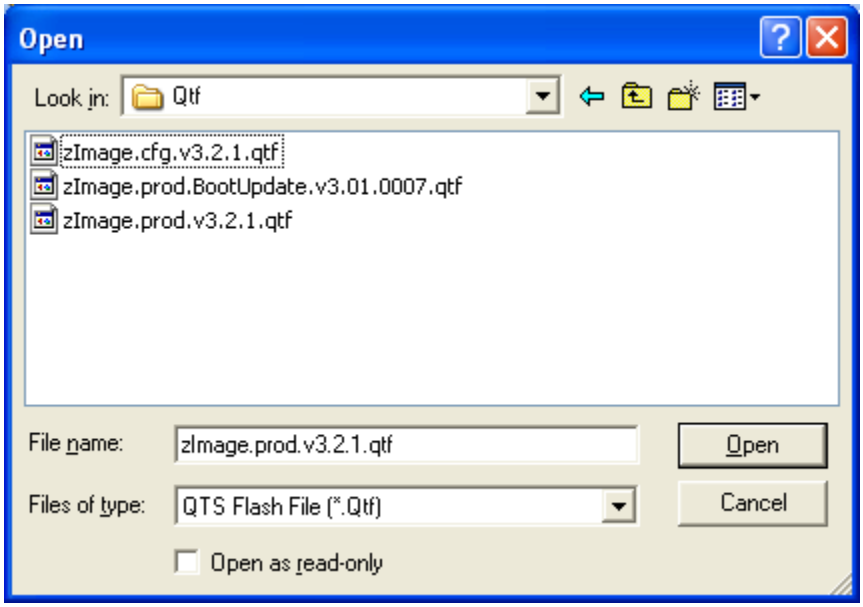
Update AN-X Flash

The *Utilities/Update AN-X Flash* command updates the low-level firmware (configuration and production kernels).

Files have extension qtf.

This command resets the AN-X. You will receive a warning and be given the opportunity to Cancel the command.

If you cancel at the filename dialog, the AN-X has already been reset and is in boot mode. Use the *Utilities/Restart AN-X* command to restart it in production mode.



Update Firmware

There are two ways to update all the firmware in an AN-X module.

1. The *Configuration/Firmware Update* command starts the firmware update wizard, which takes you step by step through the firmware update process.
2. The *Utilities/Update Firmware* command updates all the firmware on an AN-X you have selected using the *Utilities/Select An AN-X* command.

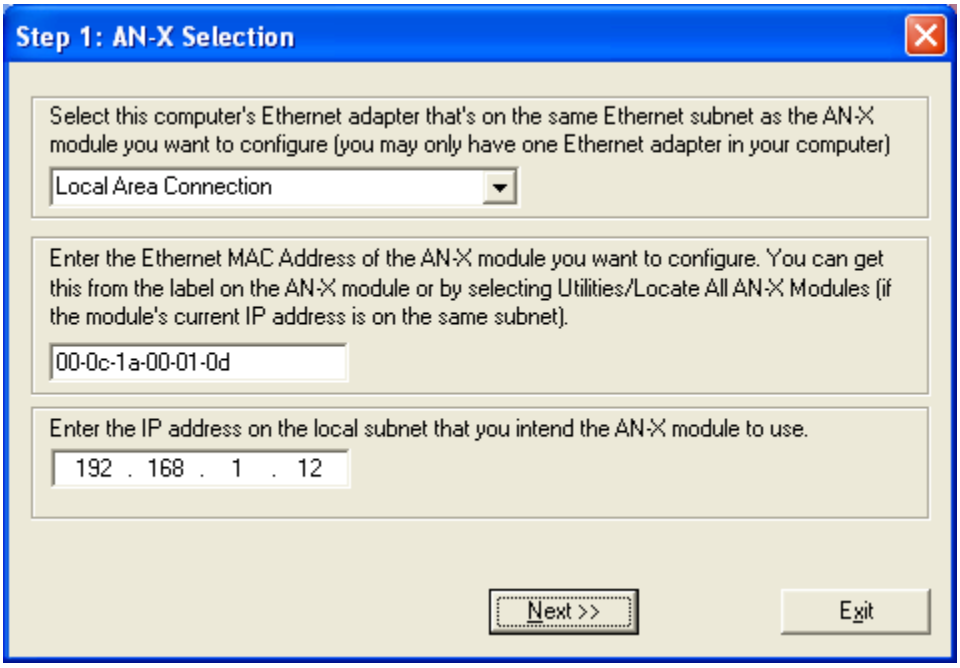
Firmware files have extension *bin*.

Firmware Update Wizard

Select the *Configuration/Firmware Update* command to start the firmware update wizard.

Step 1:

In step 1, you identify the AN-X you are configuring.



1. Select the Ethernet adapter that's connected to the AN-X. In most cases there will be just one Ethernet adapter in the computer. The AN-X must be on the same subnet as the computer.

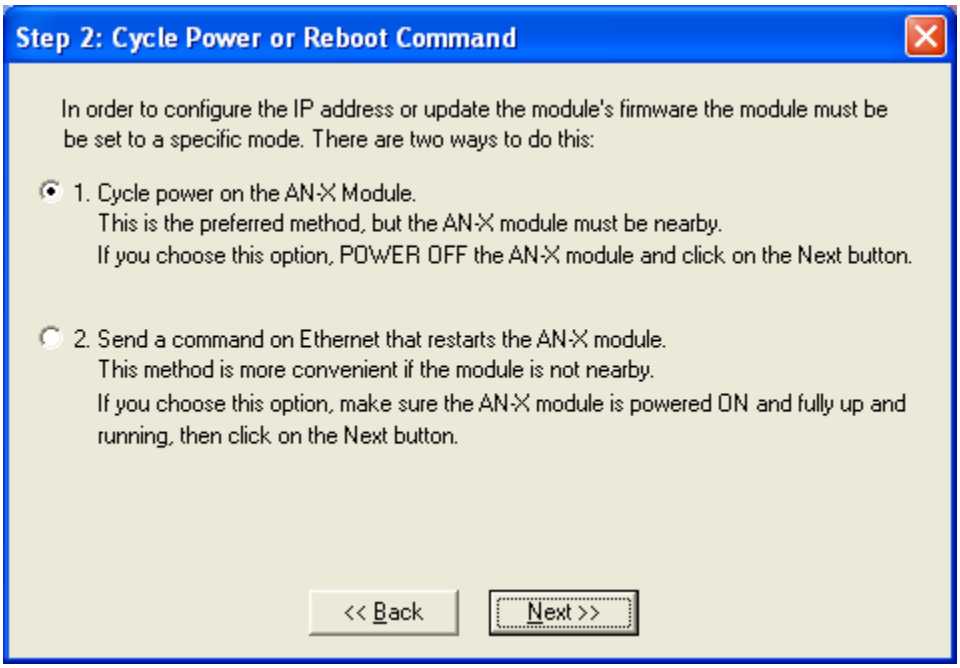
2. Enter the MAC address of the AN-X you are updating. This is printed on the AN-X label. It consists of six pairs of hexadecimal digits, separated by hyphens. In the example above, it's 00-0c-1a-00-01-0d.

If the AN-X is already online, you can obtain its MAC address using the *Utilities/Locate All AN-X Modules* command.

3. Enter the IP address of the AN-X you want to update

Step 2

In step 2, you choose a method of restarting AN-X to put it in config mode.

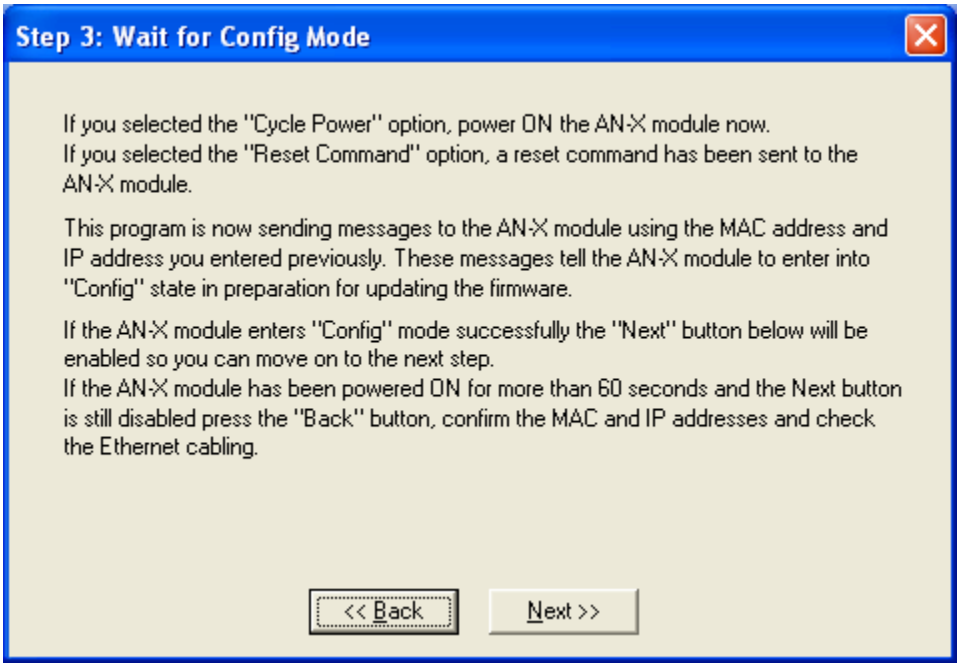


The preferred method is to cycle power on the AN-X. Select the first option on the screen and click the *Next* >> button.

The second method, useful if the AN-X in not easily accessible, is to send it a command over Ethernet. The AN-X must be powered on and completely running for this method to work. For example, if this is the first time you are configuring a new AN-X, allow sufficient time for it to acquire an IP address from a DHCP server or to time out and use its default IP address (about 3 minutes). Select the second option on the screen and click the *Next* >> button.

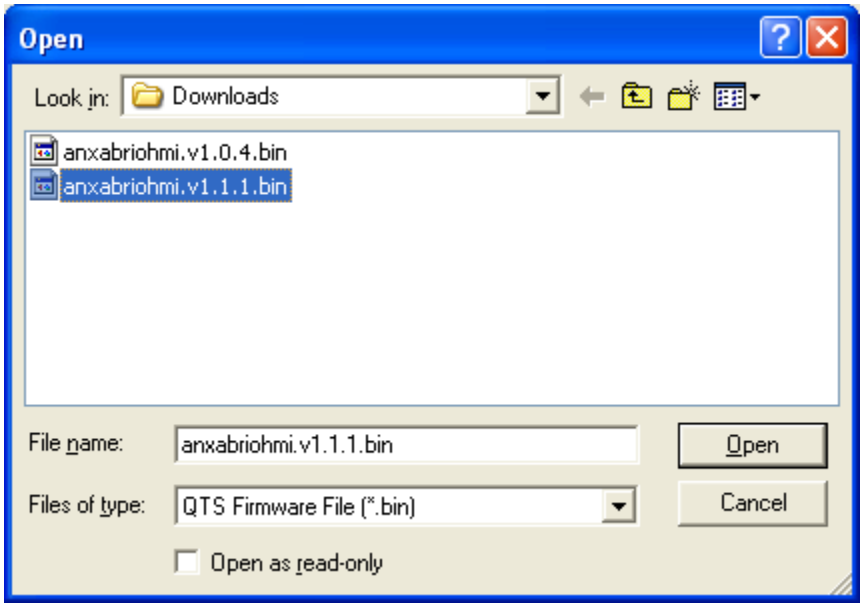
Step 3:

Wait for AN-X to enter config mode. While AnxInit is waiting, the *Next*>> button is disabled. When AN-X is in boot mode, the *Next*>> button is enabled.



If the AN-X does not enter config mode within about 60 seconds, return to the previous screens and check the entries.

Click the *Next*>> button, and select the firmware file you want to download and click *Open*.



AnxInit transfers the firmware file and restarts the AN-X.

After you run update the firmware, you must reconfigure the AN-X.

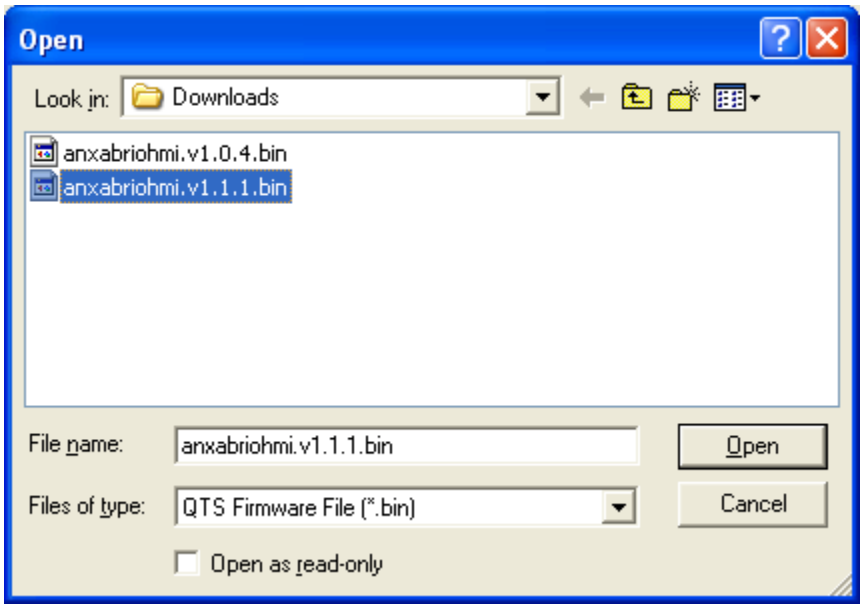
Update Firmware Command

The *Utilities/Update Firmware* command updates all the firmware on an AN-X you have previously selected using the *Utilities/Select An AN-X* command.

This command resets the AN-X. You will receive a warning and be given the opportunity to Cancel the command.

If you cancel at the filename dialog, the AN-X has already been reset and is in configuration mode. Use the *Utilities/Restart AN-X* command to restart it in production mode.

Click the *Next>>* button, and select the firmware file you want to download and click *Open*.



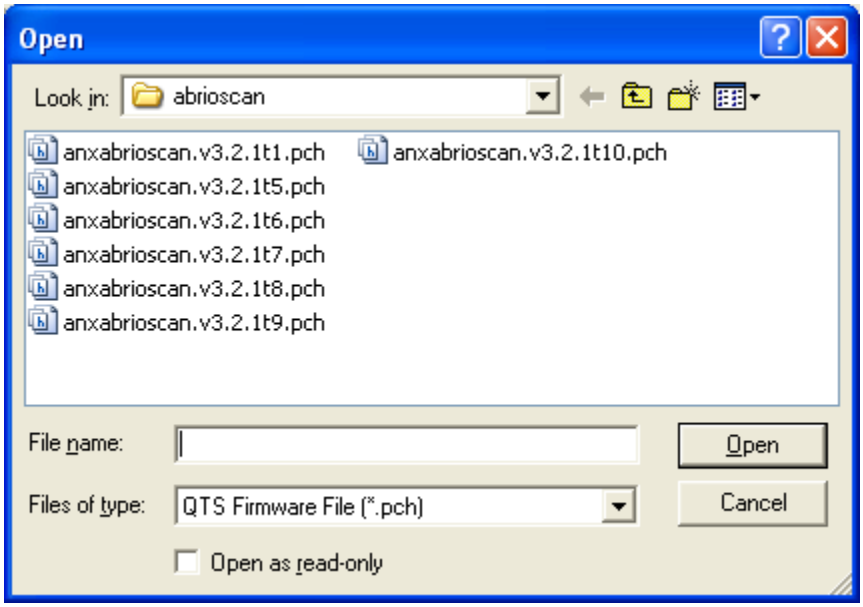
AnxInit transfers the firmware file and restarts the AN-X.

After you run update the firmware, you must reconfigure the AN-X.

Patch Firmware

The *Utilities/Patch Firmware* command applies small patches to the firmware running on the AN-X.

These patch files files have extension *pch*.



This command resets the AN-X. You will receive a warning and be given the opportunity to Cancel the command.

You do not have to reconfigure the AN-X after applying a patch. All configuration information will be left intact.

When the patch has been applied, AnxInit restarts the AN-X in production mode.

If you cancel at the filename dialog, the AN-X has already been reset and is in configuration mode. Use the *Utilities/Restart AN-X* command to restart it in production mode.

Using the Web Interface

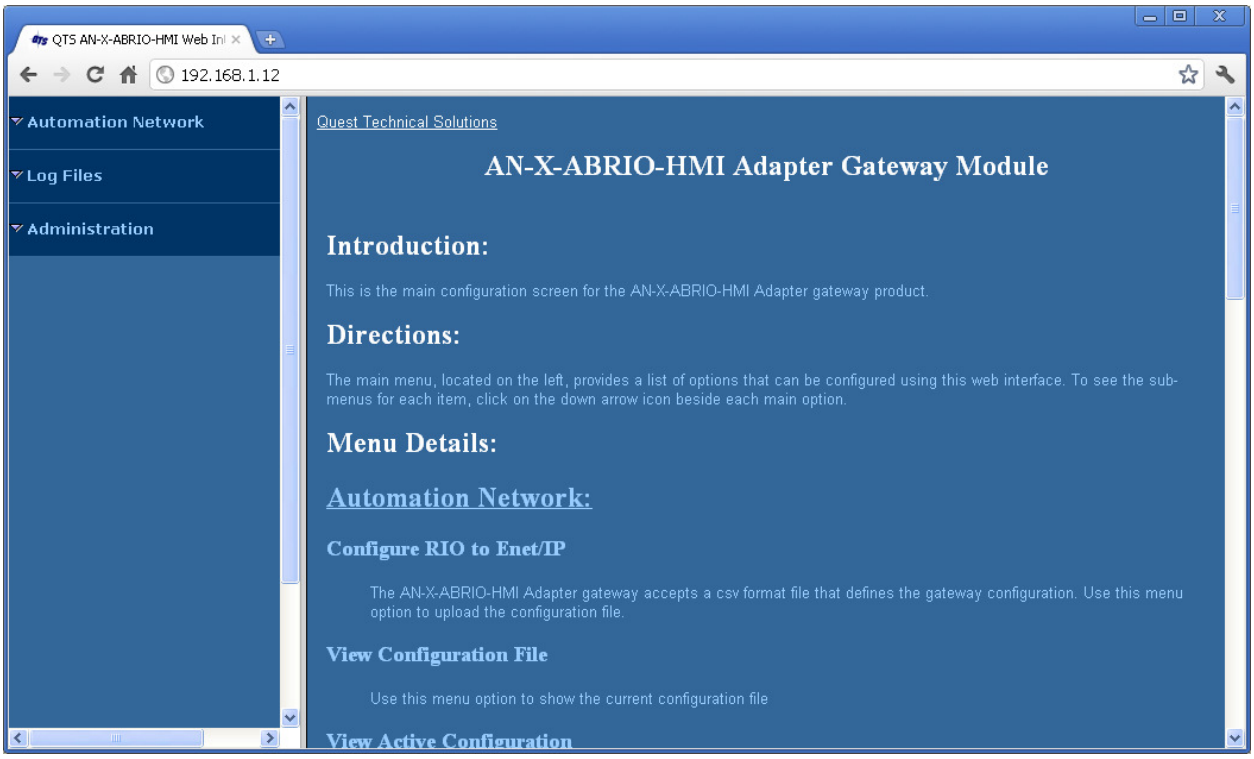
The AN-X module contains a webserver capable of communicating with standard web browsers such as Internet Explorer.

Use the web interface to:

- configure the remote I/O
- view the current configuration
- view diagnostic counters
- view AN-X logs
- perform administrative functions

To use the web interface, you must know the IP address of the AN-X. Use the *Utilities/Locate All AN-X Modules* command in AnxInit to find all AN-X modules on the Ethernet network.

To access the web interface, start your web browser and type the AN-X IP address where you normally enter web addresses in the browser.



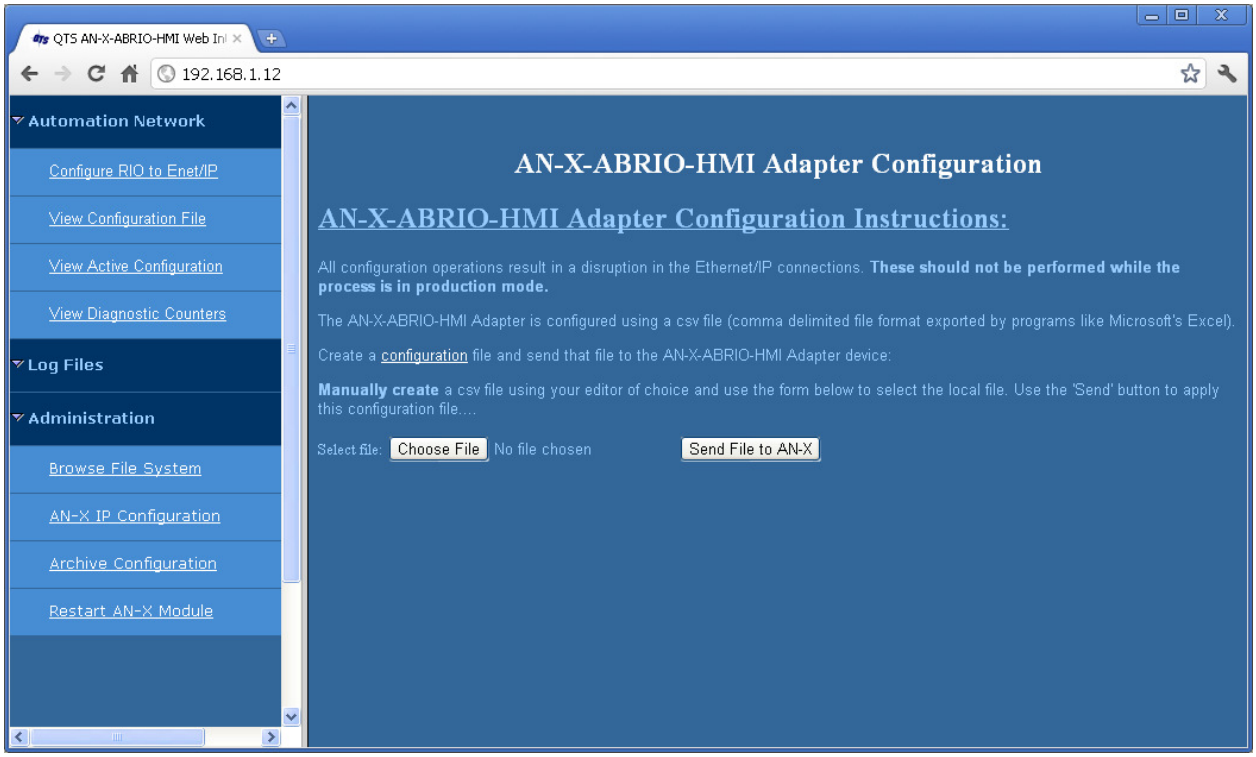
The left pane contains commands. Click on the arrows at the left of the main headings to expand or contract the sections.

The contents of the right pane depend on the current command being executed.

Automation Network

Configure RIO to Enet/IP

Select *Automation Network/Configure RIO to Enet/IP* to download a configuration file to the AN-X.



First create a configuration file. Refer to page 18 for details on the file format.

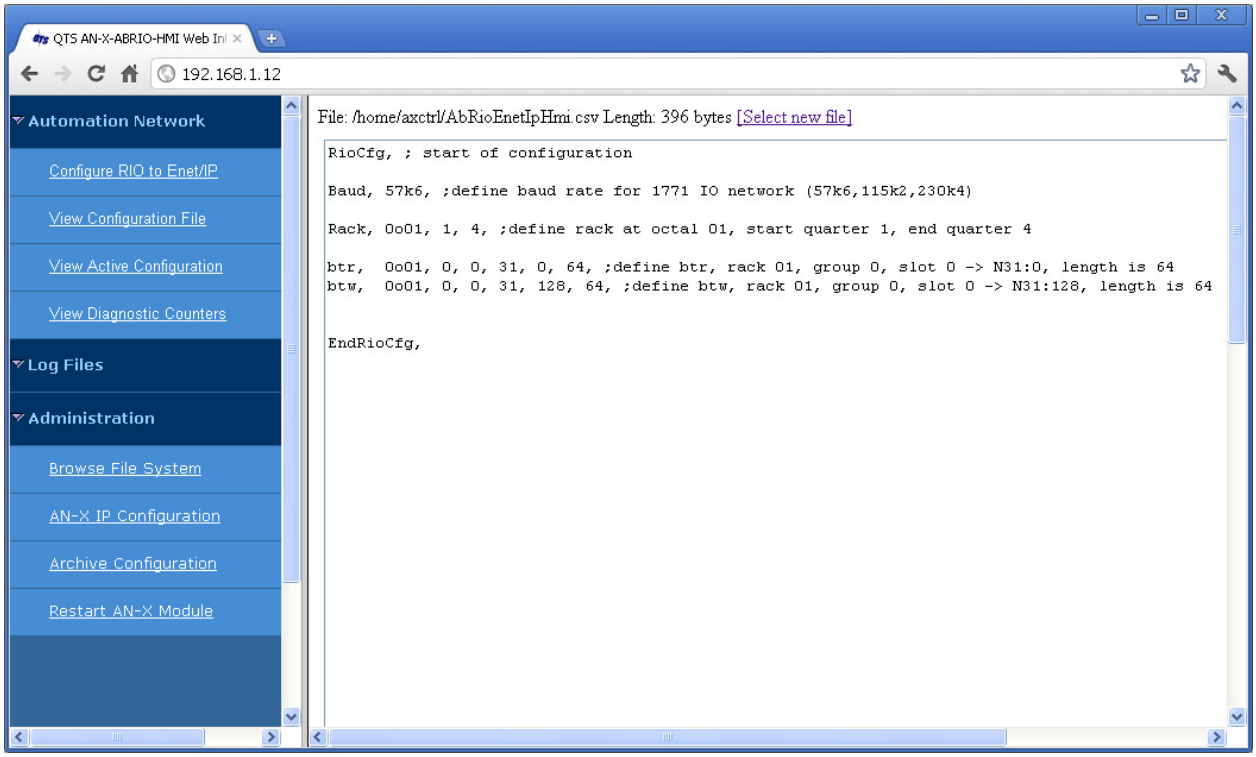
Use the *Choose File* button to select the file.

Click the *Send File to AN-X* button to send the file to the AN-X.

AN-X parses the file and displays either the configuration if it has been successful or a message that indicates the source of the error if it fails.

View Configuration File

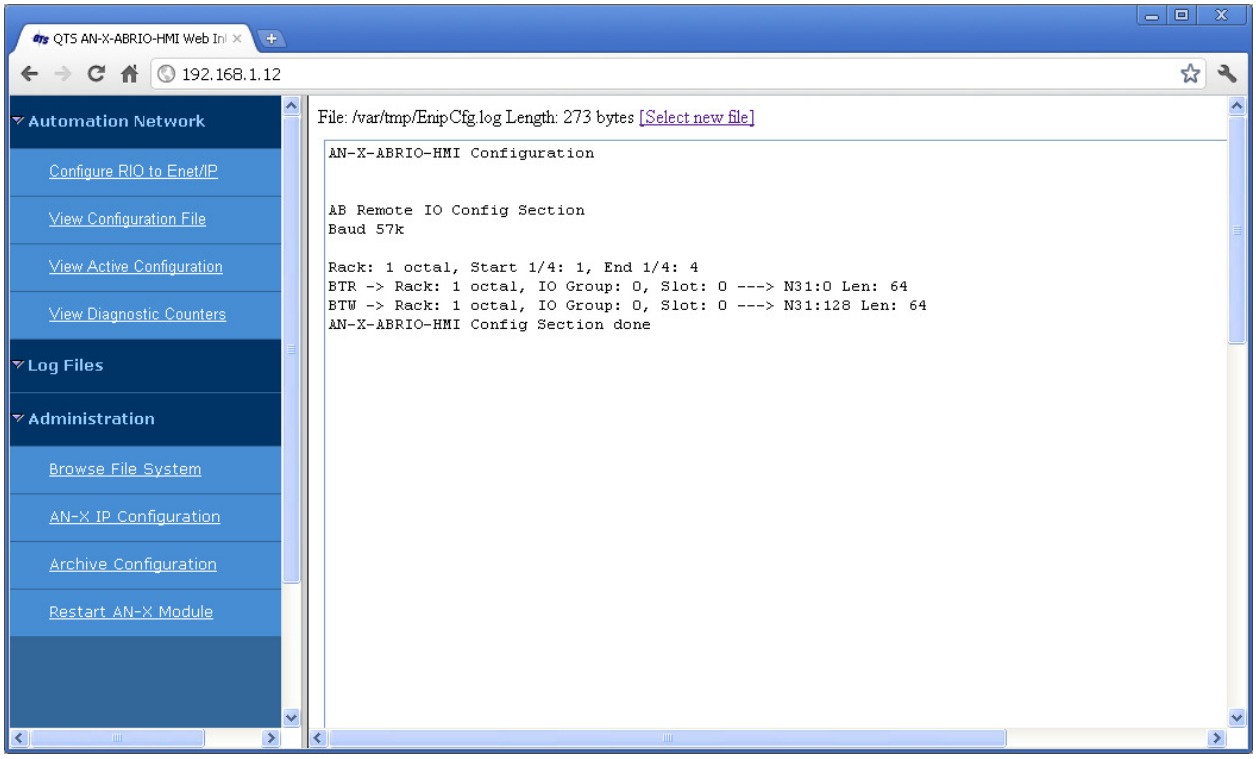
Select *Automation Network/View Configuration File* to display the configuration file that was sent to the AN-X.



To upload the configuration, copy the contents to a text file.

View Active Configuration

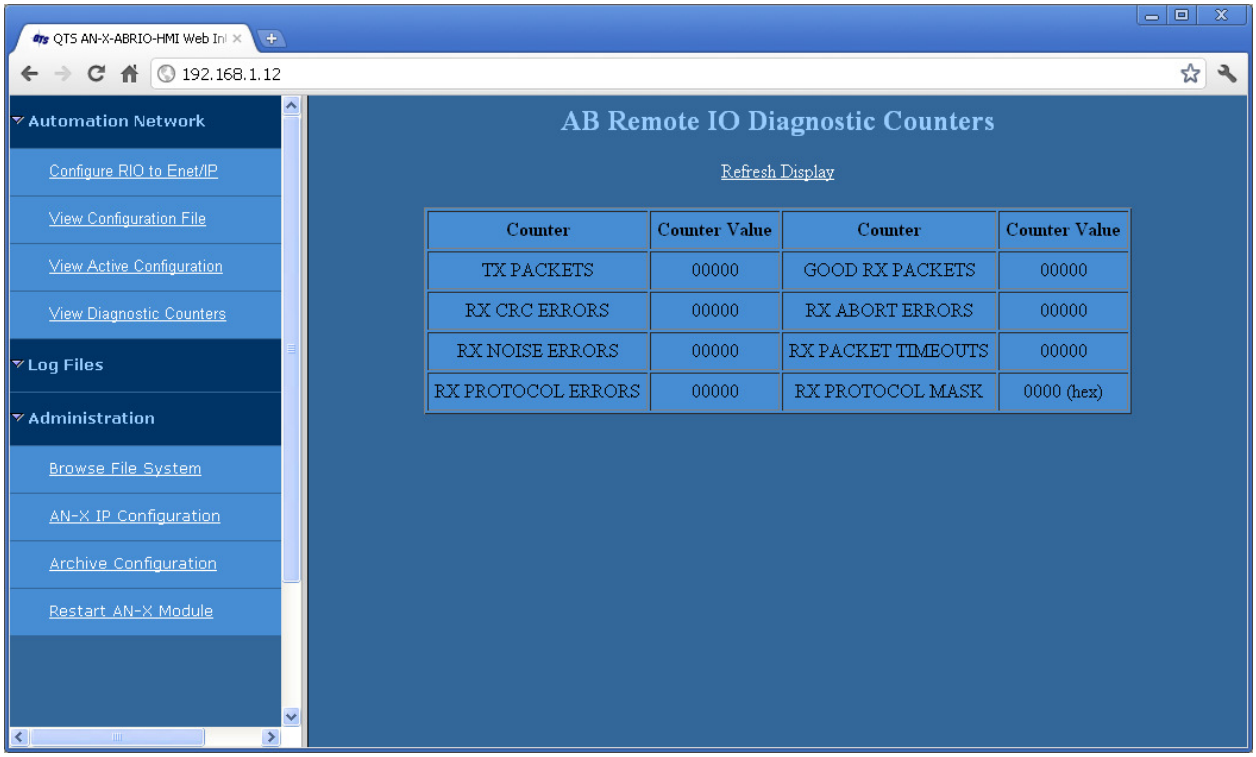
Select *Automation Network/View Active Configuration* to display the result of the last configuration download.



View Diagnostic Counters

Select *Automation Network/View Diagnostic Counters* to display the remote I/O diagnostic counters.

Refer to page 23 for detailed information on the counters.



Use the Refresh Display button to update the counters.

You can also access the counters from an HMI by reading the status (S) file on the AN-X (see page 23).

Log Files

AN-X maintains various logs to record diagnostic and error messages. Use the *Log Files* menu in the web interface to view these logs.

System Error Log

The System Error log records errors that occur during AN-X operation. This log is normally empty.

Ethernet/IP Log

The Ethernet/IP log shows messages and errors associated with the Ethernet communication.

System Info Log

The System Info Log records informational messages during startup and normal operation.

View All Logs

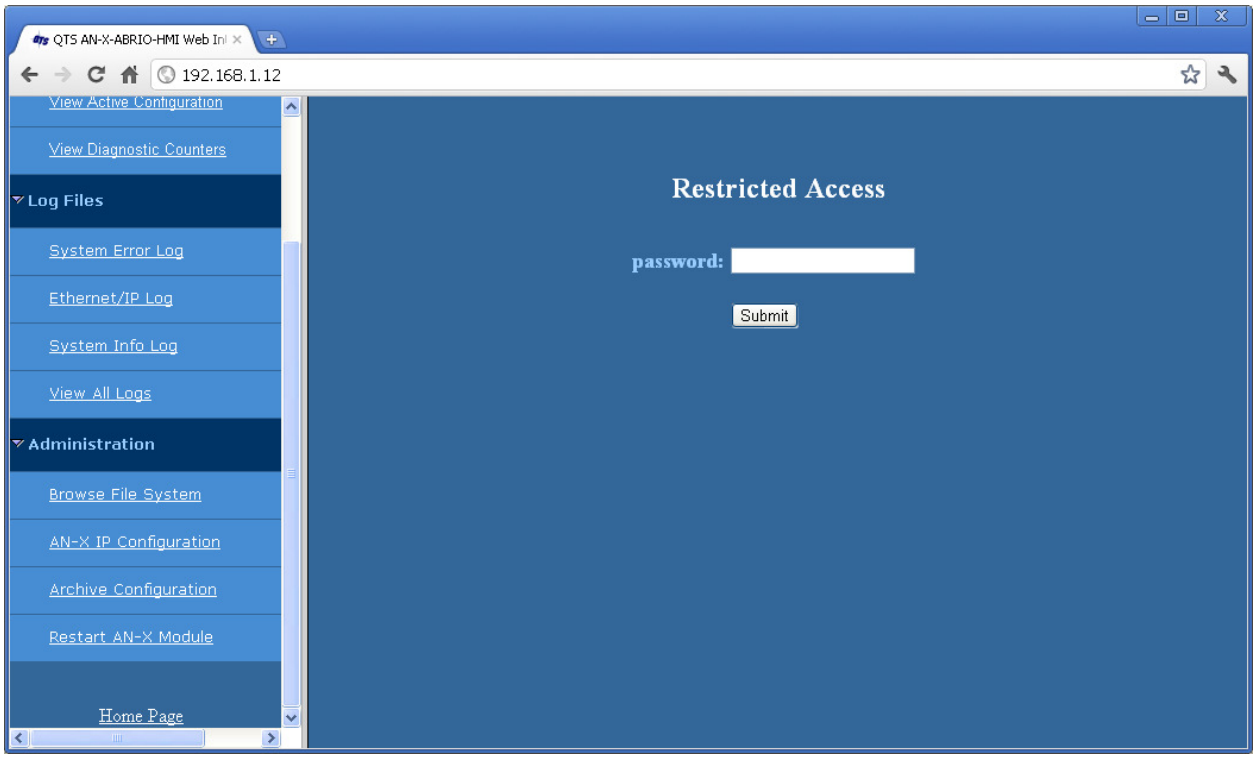
Use *View All Logs* to list and view all the AN-X logs. To view a log file, double click on the file name.

Administration Menu

The Administration Menu is used to set the AN-X IP address and to view and edit files on AN-X. The file edit function is password protected and is used only for AN-X technical support.

Browse File System

If you are required by technical support to examine files on the AN-X, select *Administration/Browse File System.*

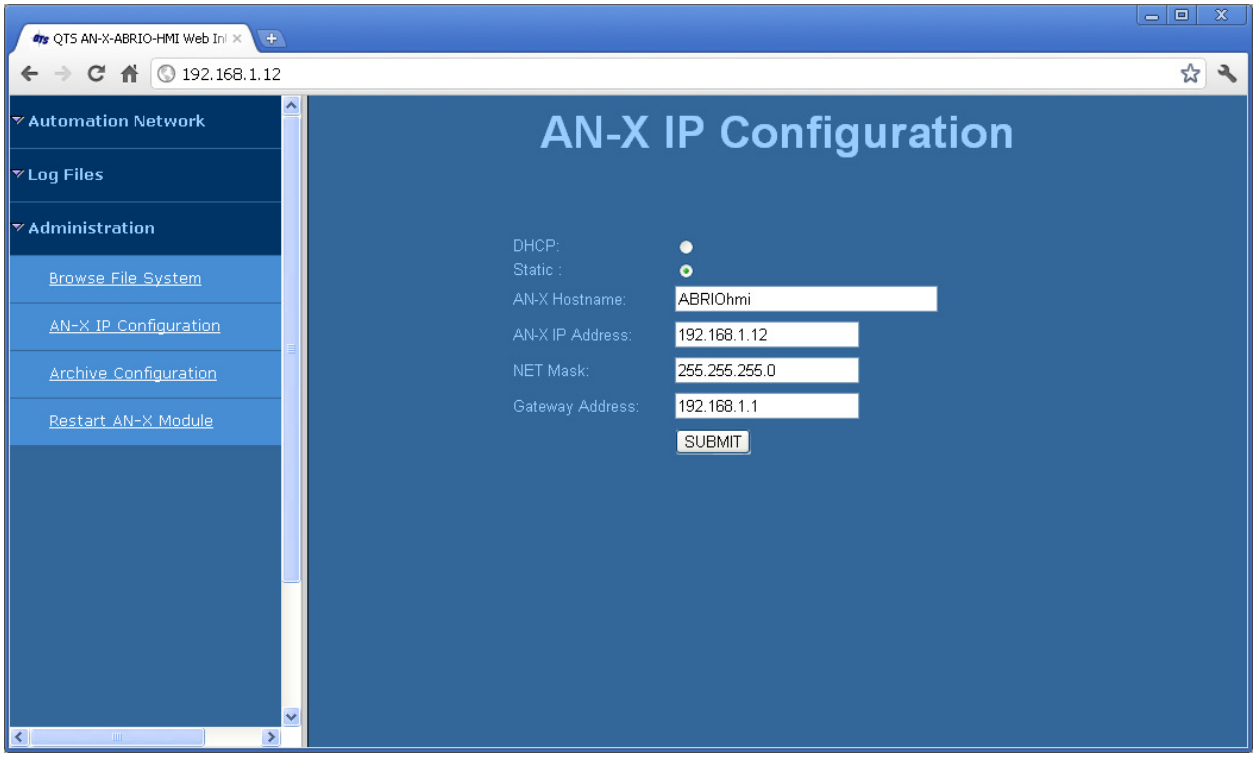


Technical support will provide the password and supply detailed information on any further steps.

AN-X IP Configuration

You can change the AN-X IP configuration from the web interface. This requires that you know the currect IP address and can use it to access the web interface.

Select *Administration/AN-X IP Configuration*.



You can configure the AN-X to use DHCP or to use a static IP address.

The host name can contain alphanumeric characters and a hyphen.

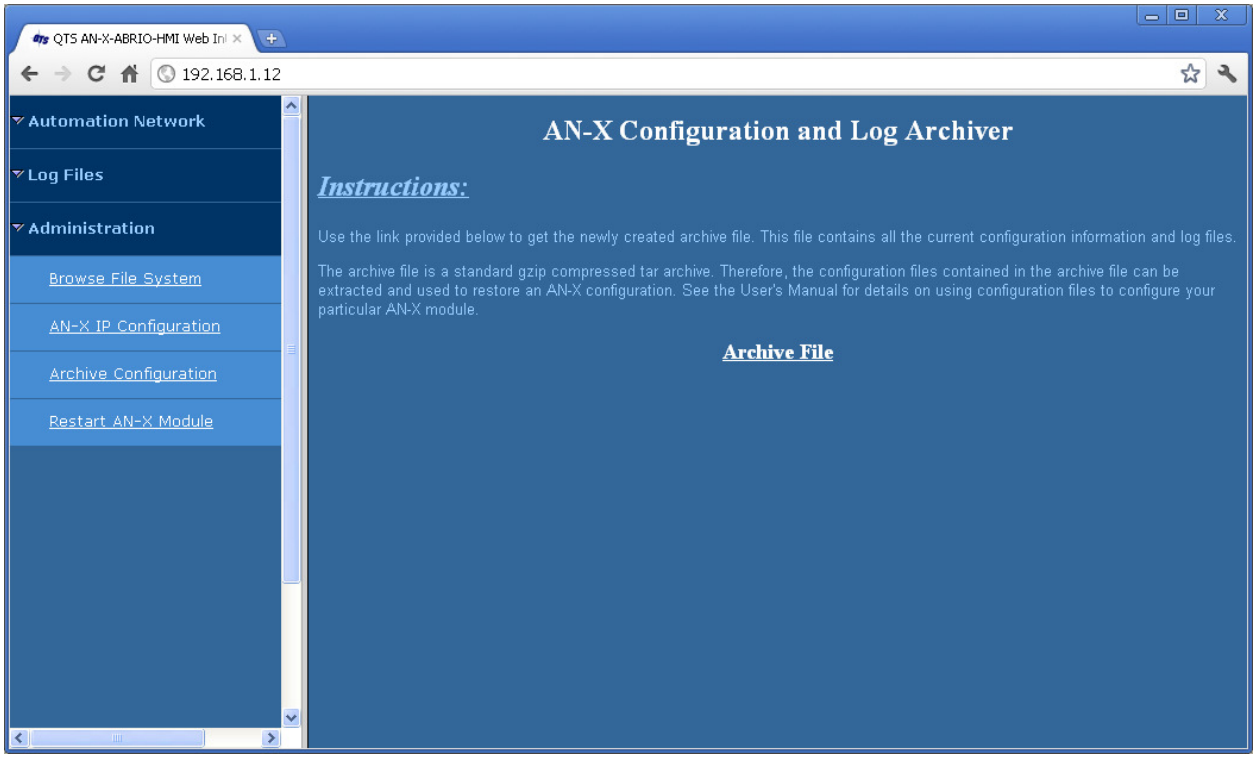
Click SUBMIT to set the parameters.

When prompted, click CONTINUE to reboot the AN-X with the new parameters.

Archive Configuration

You can archive all the current AN-X configuration files and log files from the web interface. The archive file is a standard gzip compressed tar archive. It intended for technical support only.

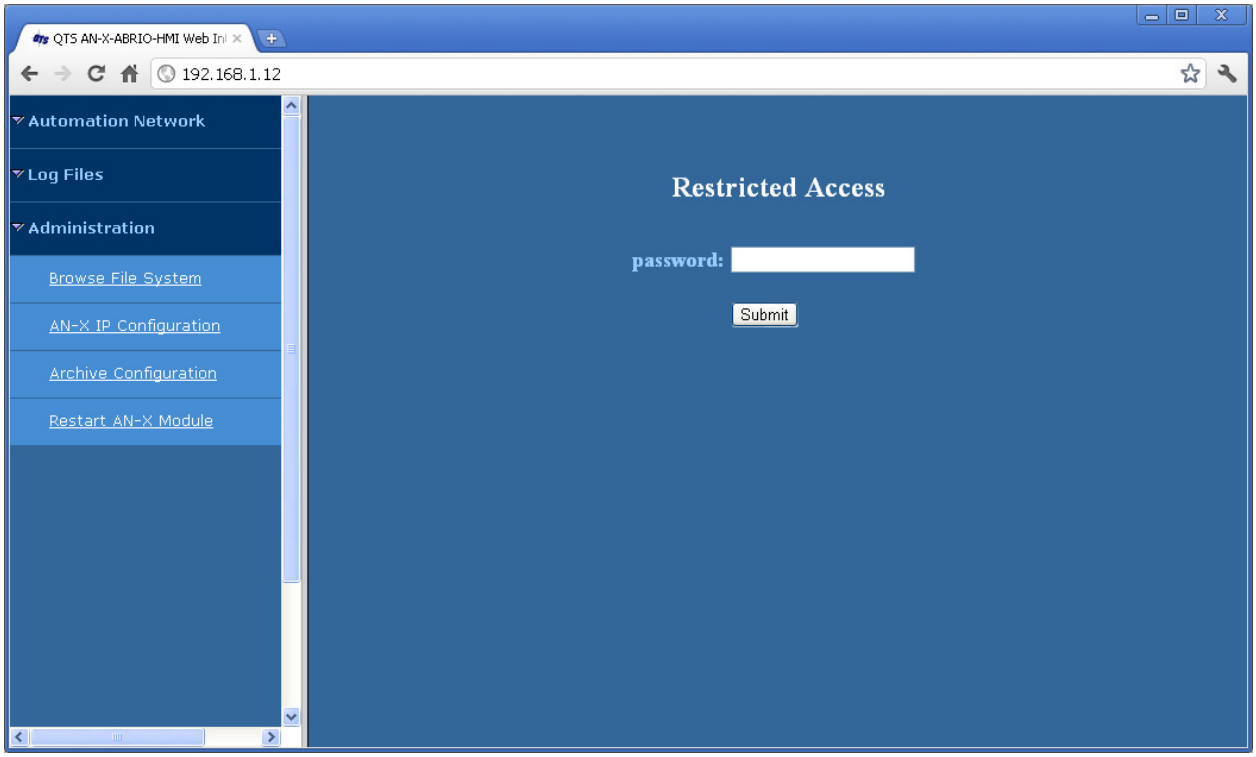
Select *Administration/Archive Configuration.*



Click on the *Archive File* link and save the file. Select the destination where the file will be stored.

Restart AN-X Module

The Restart AN-X Module is password protected and is intended for technical support.



Technical support will provide the password and supply detailed information on any further steps.

Troubleshooting

LEDs

The AN-X-ABRIO-HMI has LEDs that indicate the state of the Ethernet connection, the overall module state and the connection to the remote I/O network.

Ethernet LEDs

There are two LEDs that indicate the state of the Ethernet connection.

The orange LED, labelled 100, is on if the link is running at 100 Mbits/second and is off otherwise.

The green Link/Act LED is off if the link is inactive and is on if the link is active. If activity is detected, the link blinks at 30 ms intervals and continues blinking as long as activity is present.

SYS LED

The SYS LED is used by the AN-X operating system and software to indicate the state of operations and errors. Errors or status indication in boot mode cause the LED to flash yellow. Otherwise, the LED flashes red.

The SYS LED should be used in conjunction with the logs to locate the cause of problems.

In the following, red 3 means three red flashes followed by a pause, and so on.

SYS LED State	Possible cause
Red 2	AN-X is in config mode
Red 3	DHCP configuration failed
Red 4	Fatal application error, check logs for cause
Red 5	Application memory access violation, check logs
Red 6	Application failed, illegal instruction, check logs
Red 7	Application crashed, unknown cause, check logs
Fast red flash	Reconfiguration failed
Single red flash	Unscheduled messaging, addressing or connection problem
Slow red flash	Script or application problem during startup

At startup, the SYS LED sequence is:

- boot code starts – fast flashing red
- boot code loads a kernel – solid red
- if the configuration kernel is loaded, 2 red flashes followed by a pause
- if the production kernel loads with no errors, solid green

NET LED – Network Status

The NET LED shows the status of remote I/O communication.

Color	Meaning
Red	A frame receive error has been received in the last second (CRC error, abort, or timeout), stays red for 1 second after the error occurs One or more racks is in error
Flashing Red/Off	At least one rack which is being scanned is in error
Green	All racks are being scanned with no errors

Updating the Firmware

The AN-X operating software consists of several parts:

- boot code, runs at startup
- configuration kernel, runs when you update firmware
- production kernel, runs in normal operation
- application software, for network communication and scheduled messaging

The kernels are supplied in file with extension *qtf* and are updated using the AnxInit utility. Run the command *Utilities/Update AN-X Flash* and select the file you wish to download. Refer to page 31 for details.

Firmware files contain the application programs for AN-X and have extension *bin.* They are downloaded using the command *Configuration/Firmware Update* or *Utilities/Update Firmware* in AnxInit. Refer to page 31 for details.

Occasionally individual patch files are released. They have extension *pch* and are downloaded using the *Utilities/Patch Firmware* command in AnxInit. Refer to page 35 for details.

Reading Version Numbers

To read the version numbers of the various software components:

Boot code	AnxInit – AN-X Info
Configuration kernel	AnxInit – AN-X Info
Production kernel	AnxInit – AN-X Info
Firmware	AnxInit – AN-X Info (version depends on current mode, boot, configuration or production)
Individual applications	
	Web interface, System Info Log

Specifications

Parameter	Specification
Function	Bridge between Ethernet and Remote I/O network
Typical Power Consumption	300 mA @ 12 VDC or 150 mA @ 24 VDC
Maximum Power dissipation	3.6W
Environmental Conditions:	
Operational Temperature	0-50°C (32-122°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)
Relative Humidity	5-95% without condensation

Support

How to Contact Us: Sales and Support

Sales and Technical Support for this product are provided by ProSoft Technology. Contact our worldwide Sales or Technical Support teams directly by phone or email:

Asia Pacific

+603.7724.2080, asiapc@prosoft-technology.com

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Latin America (Sales only)

+1.281.298.9109, latinam@prosoft-technology.com.

Warranty

Quest Technical Solutions warrants its products to be free from defects in workmanship or material under normal use and service for three years after date of shipment. Quest Technical Solutions will repair or replace without charge any equipment found to be defective during the warranty period. Final determination of the nature and responsibility for defective or damaged equipment will be made by Quest Technical Solutions personnel.

All warranties hereunder are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without Quest Technical Solutions approval or which have been subjected to accident, improper maintenance, installation or application, or on which original identification marks have been removed or altered. This Limited Warranty also will not apply to interconnecting cables or wires, consumables nor to any damage resulting from battery leakage.

In all cases Quest Technical Solutions' responsibility and liability under this warranty shall be limited to the cost of the equipment. The purchaser must obtain shipping instructions for the prepaid return of any item under this Warranty provision and compliance with such instruction shall be a condition of this warranty.

Except for the express warranty stated above Quest Technical Solutions disclaims all warranties with regard to the products sold hereunder including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of Quest Technical Solutions for damages including, but not limited to, consequential damages arising out of/or in connection with the use or performance of the Product.