AN-X-TI-MAS

TI Remote I/O

Communication

Module

User Manual

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

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

These warnings help to:

WARNING!

- 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-TI-MAS

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AN-X-TI-MAS Module Overview

The AN-X-TI-MAS communications module connects a ControlLogix PLC or other device to a TI 505 remote I/O network.

The module acts as a scanner on the remote I/O network, reading inputs and writing outputs. It supports up to 15 remote bases.

A ControlLogix processor communicates with the module using scheduled connections over Ethernet, to read inputs from the TI remote I/O network and write outputs.

The AN-X-TI-MAS module has a web interface for configuration. 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 supplied. Refer to page 63 for details.

Please note: To connect this module to an existing coaxial network you will need a RS-485/RF I/O Channel Converter, (PPX:505-6860). It is available from Siemens Industrial Automation Inc. distributors. For assistance in locating your distributor call 1-800-964-4114. Reference documents are available for download from www.prosoft-technology.com .

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 and the state of communication with the ControlLogix (SYS)

- a LED to indicate the state of communications on the TI remote I/O network (NET)

- an Ethernet connector

- a power connector

- a 9-pin connector to connect to the TI 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-TI-MAS 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.

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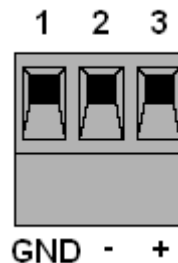
Left to right the pins on the power connector are chassis ground, negative voltage and positive voltage.

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

Contact QTS if you need a suitable wall adapter.

Cabling and Termination

Refer to the Simatic TI545/TI555 System Manual, publication PPX:545/555–8101-2 for detailed information on cabling and installation.

The module has a standard 9-pin connector for connection to the remote I/O network. The AN-TI-MAS is wired just like a TI scanner. Follow the TI recommendations for termination.

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.

Quick Start

Step		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 TI remote I/O network	5
4	Use the AN-X web interface to autoconfigure the remote I/O network and ControlLogix configuration	19
5	Configure the AN-X in RSLogix 5000	33
6	Scan I/O, read inputs and write outputs	
7	Use the web interface to create tags for RSLogix 5000	38
8	Import the tags into RSLogix 5000	39
9	Use the tags to access data	

Ethernet Configuration

The AN-X-TI-MAS module connects a device such as a ControlLogix processor on Ethernet to scan a TI remote I/O network.

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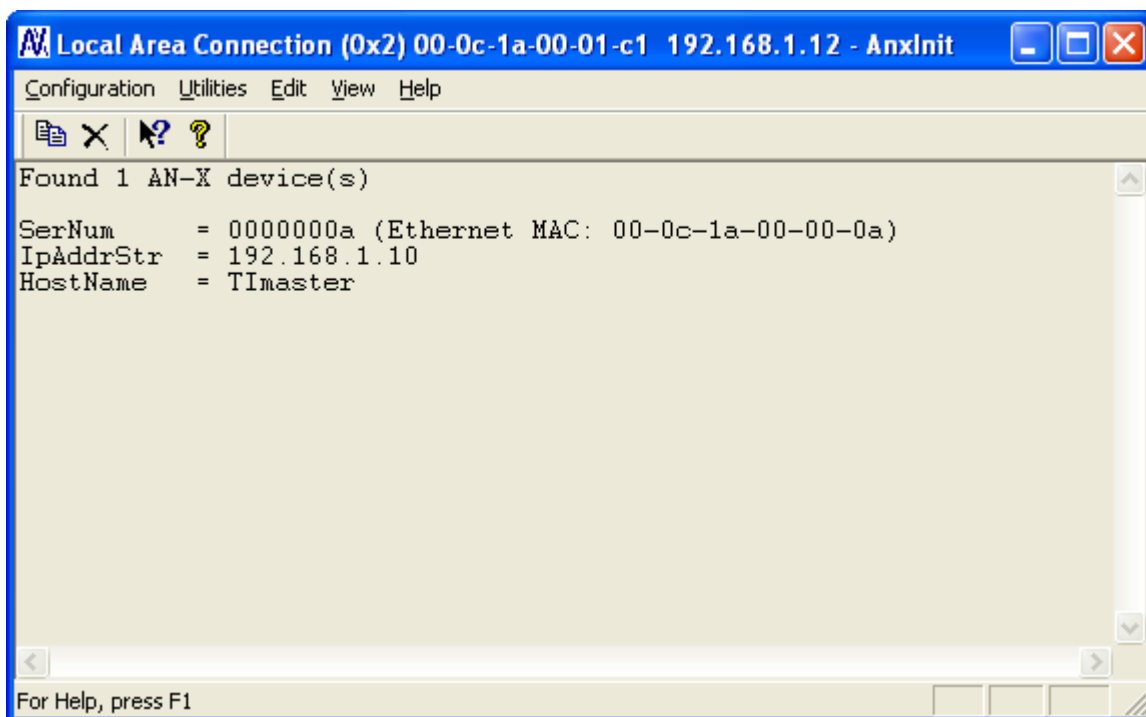
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If AN-X does not find a DHCP server within about three minutes of starting up, it reverts to a temporary static IP address of 192.168.0.41 If AN-X is using this temporary IP address, it repeatedly flashes the SYS LED red three times followed by a pause.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

IMPORTANT! Use this temporary IP address only for initial setup of AN-X. AN-X will not function 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.
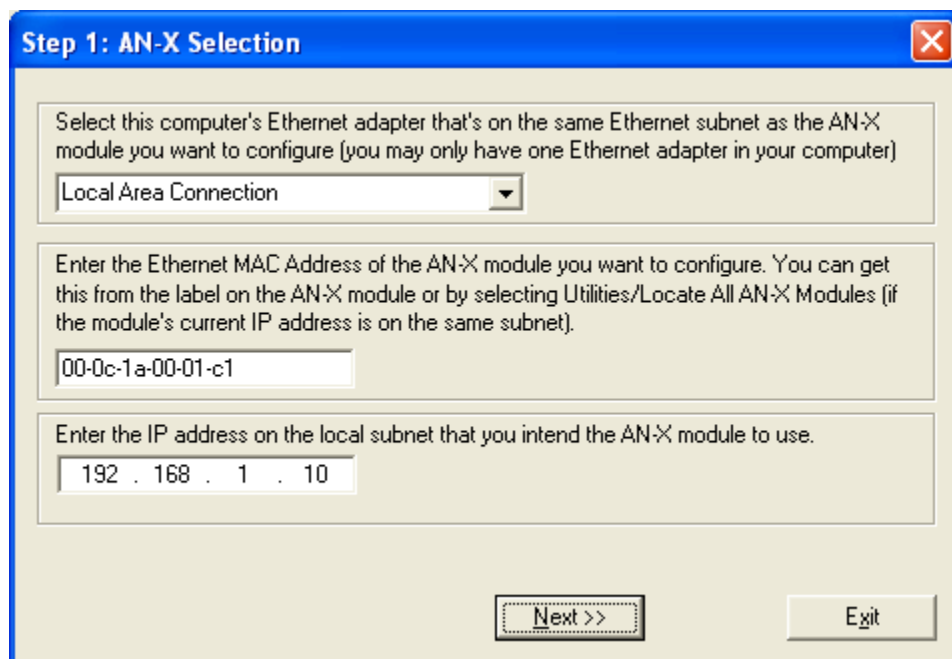
Step 1

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

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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-c1.

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 192.168.1.10

Step 2

In step 2, you choose a method of restarting AN-X to put it in boot mode.
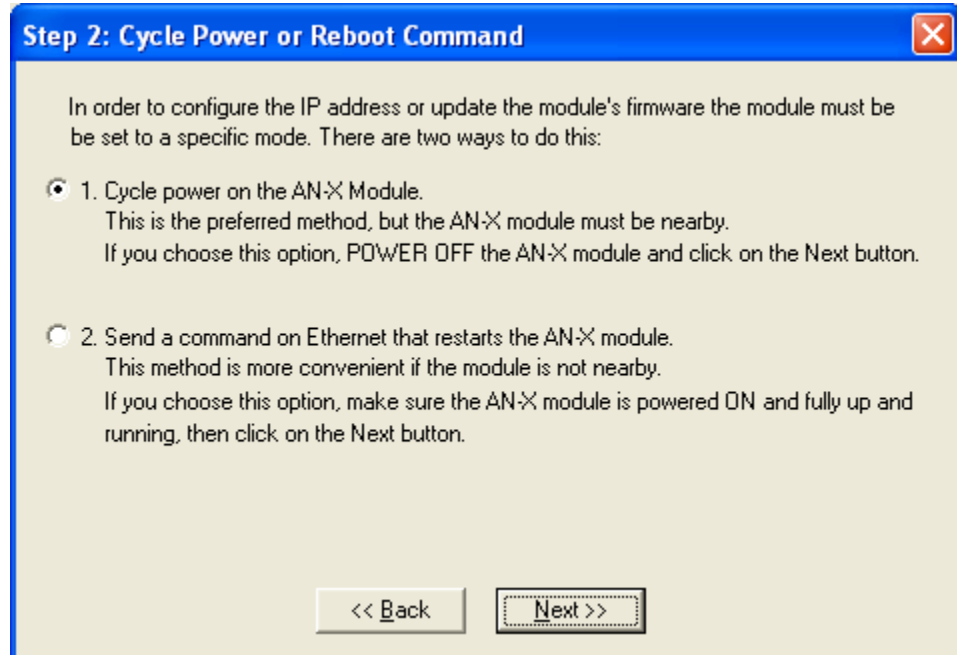
The preferred method is to cycle power on the AN-X. Select the first option on the screen and click the *Next >>* button.

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.

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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.

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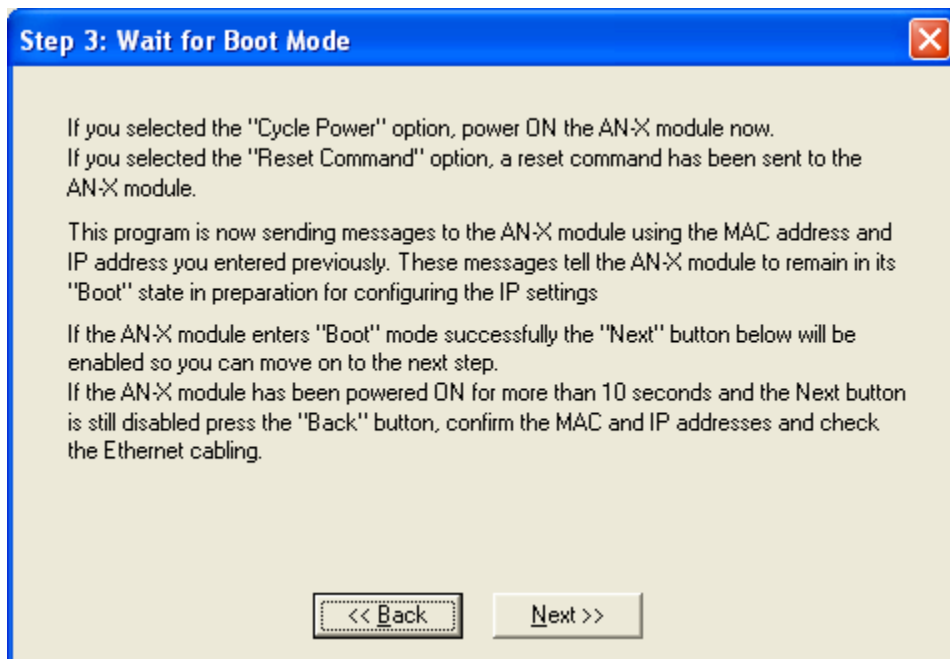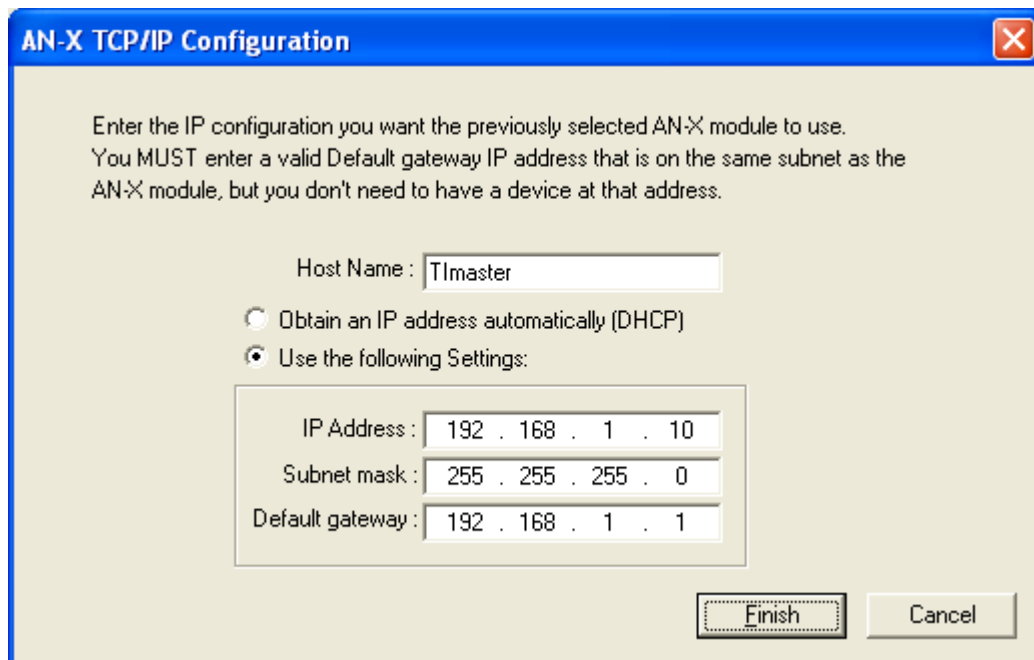Enter a *Host Name* for the AN-X. AN-X uses this name when it creates tags, so give the AN-X a meaningful name that is unique on your network. This name is also used internally by AN-X and may be used to identify the AN-X if you have a DNS server on your network. The name can be from 1 to 31 characters 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 OK 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.

Example: Standalone Computer

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

The following instructions assume Windows 2000. The procedure for Windows NT or Windows XP is very similar. 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 Start menu, select *Start/Settings/Network and Dialup Connections*. Double click on *Local Area Connection*.
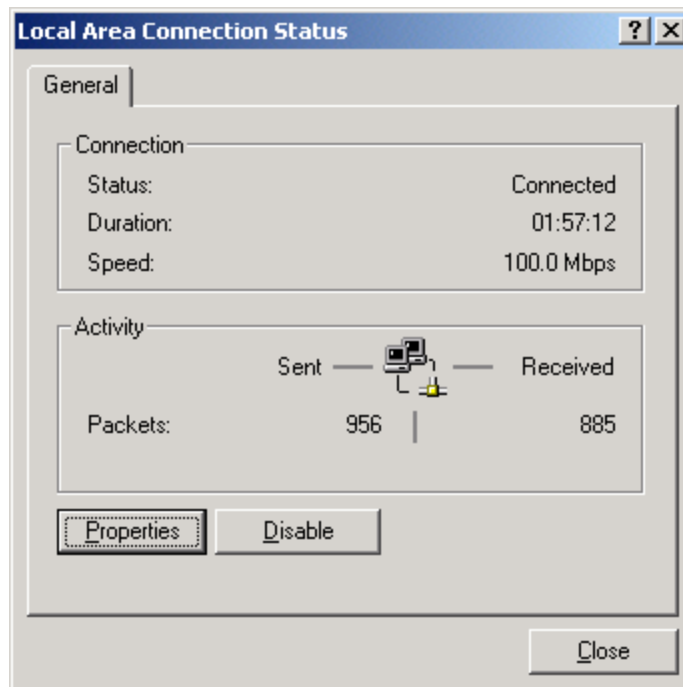
Click the *Properties* button.

Double click on *Internet Protocol (TCP/IP)*.
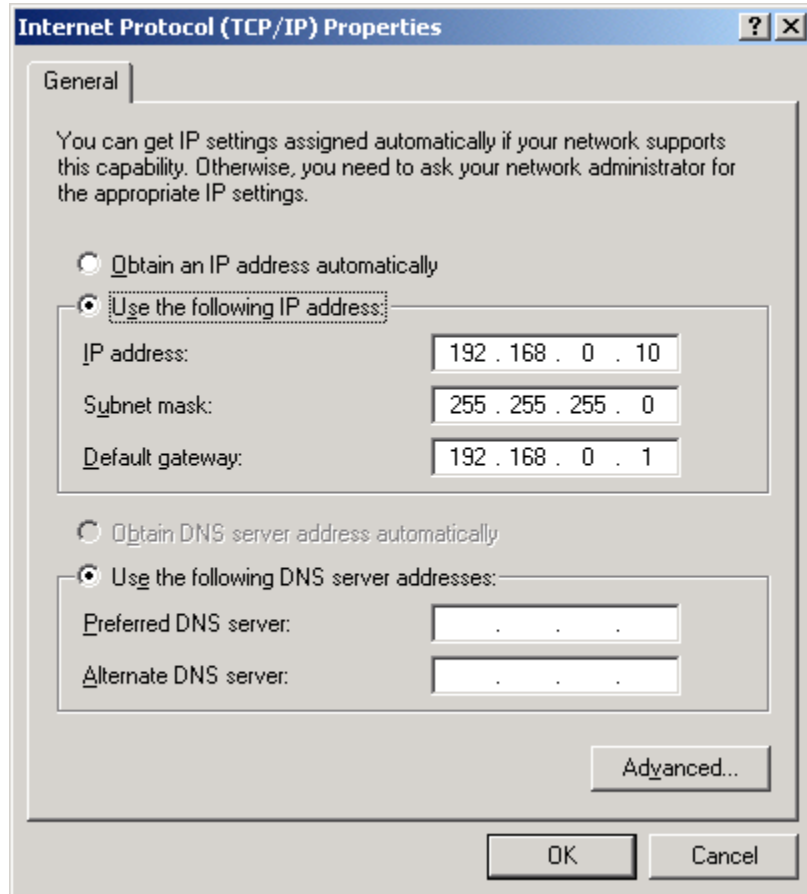
In this example, we will assign the computer an IP address of 192.168.0.10

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

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.
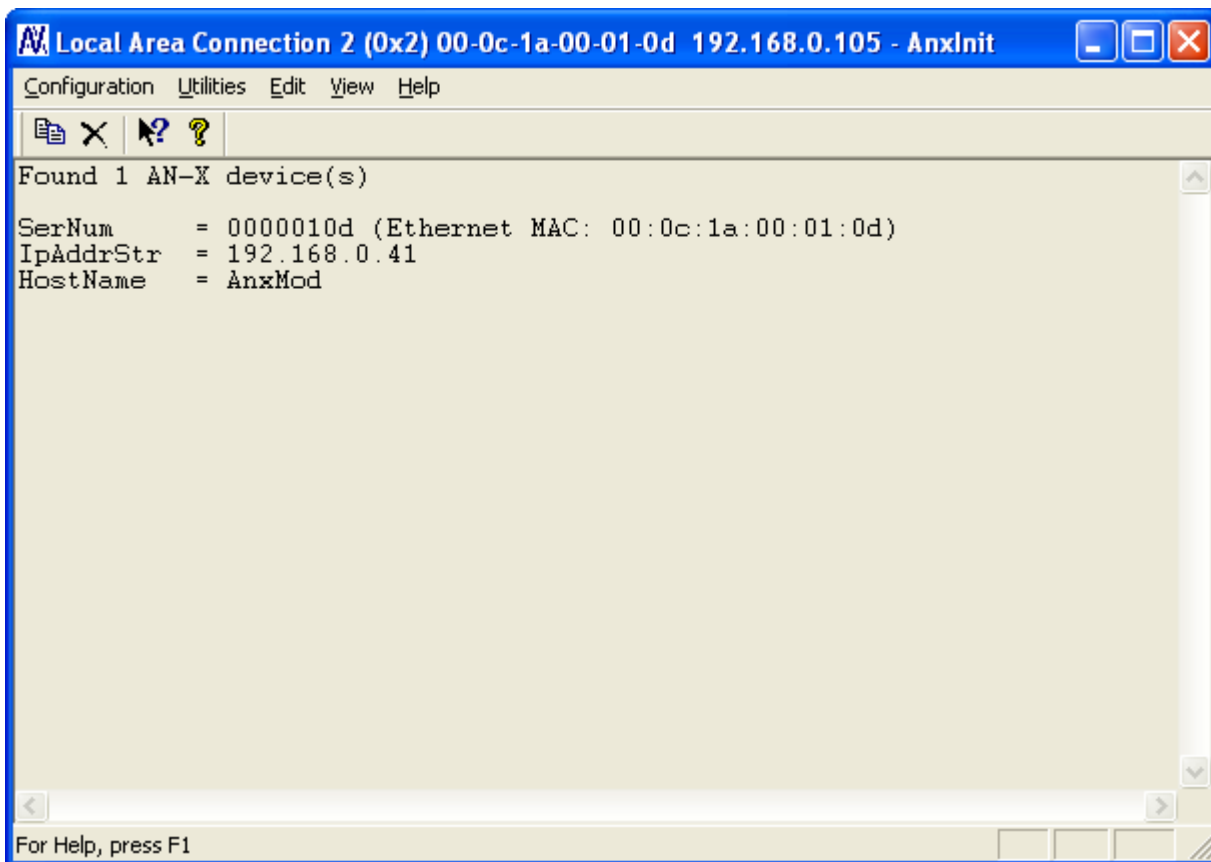
Select *Utilities/Select An AN-X* and enter the MAC Address and IP address.
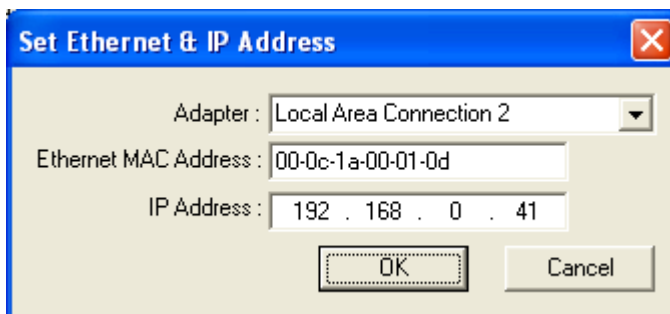
Click *OK* to accept the setting.

Select *Utilities/AN-X IP Configuration*.

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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.

```
Local Area Connection 2 (0x2) 00-0c-1a-00-01-0d  192.168.0.41 - AnxInit
Configuration   Utilities   Edit   View   Help

Found 1 AN-X device(s)

SerNum      = 0000010d (Ethernet MAC: 00:0c:1a:00:01:0d)
IpAddrStr   = 192.168.0.105
HostName    = AnxMod




For Help, press F1
```
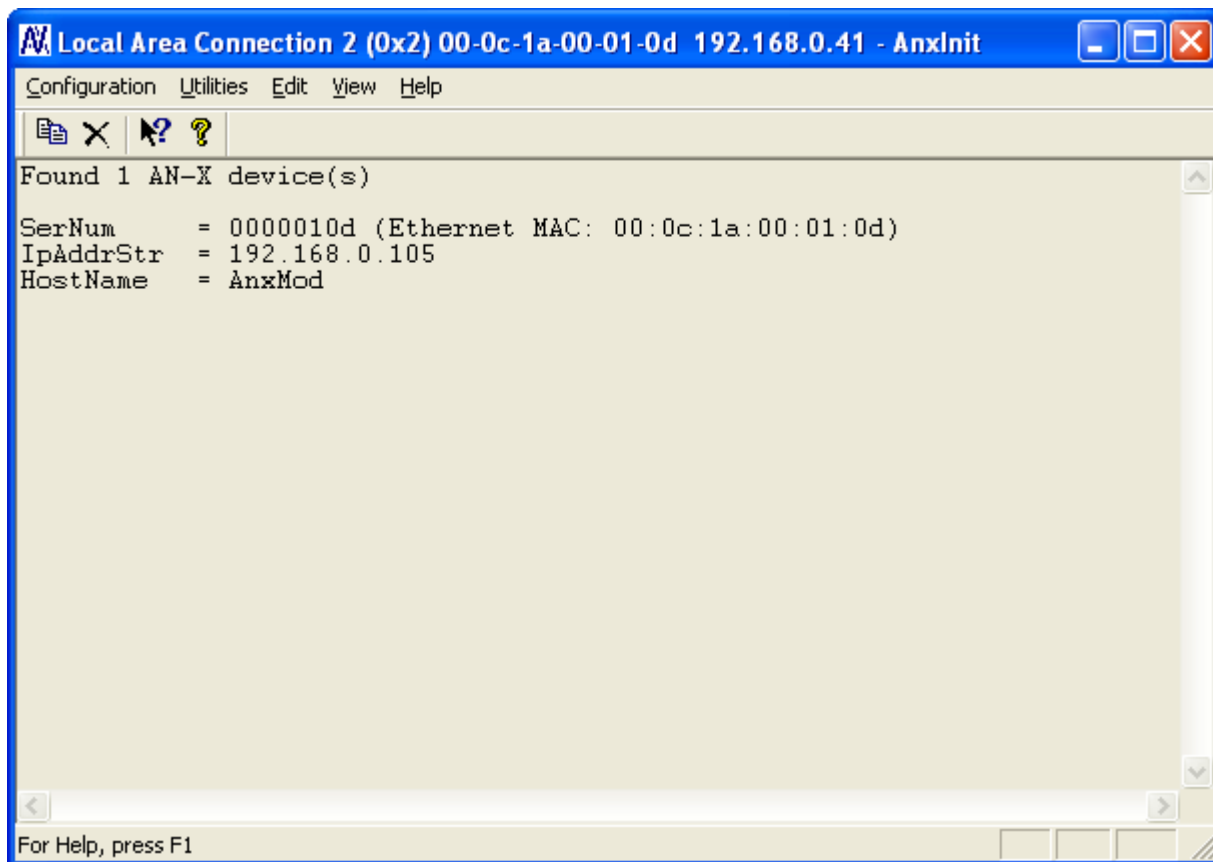
Reconfiguring an AN-X from an Unknown State

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.

Network Configuration

Before you can scan a TI remote I/O network, you must configure the network in the AN-X-TI-MAS.

There are two methods of configuring the remote I/O that the AN-X-TI-MAS is to scan:

- autoconfiguration. The AN-X-TI-MAS reads the network contents by sending messages to bases on the attached network.

- manual configuration. You build a configuration file and send it to the AN-X-TI-MAS.

You can also use autoconfiguration to build an initial configuration file, edit the file to add or change features, then perform a manual configuration with the modified file.

Autoconfiguration

Before you can perform an autoconfiguration, the remote I/O network must be connected to the AN-X.

From the AN-X web interface, select *Automation Network/TI I/O Network Configuration*.
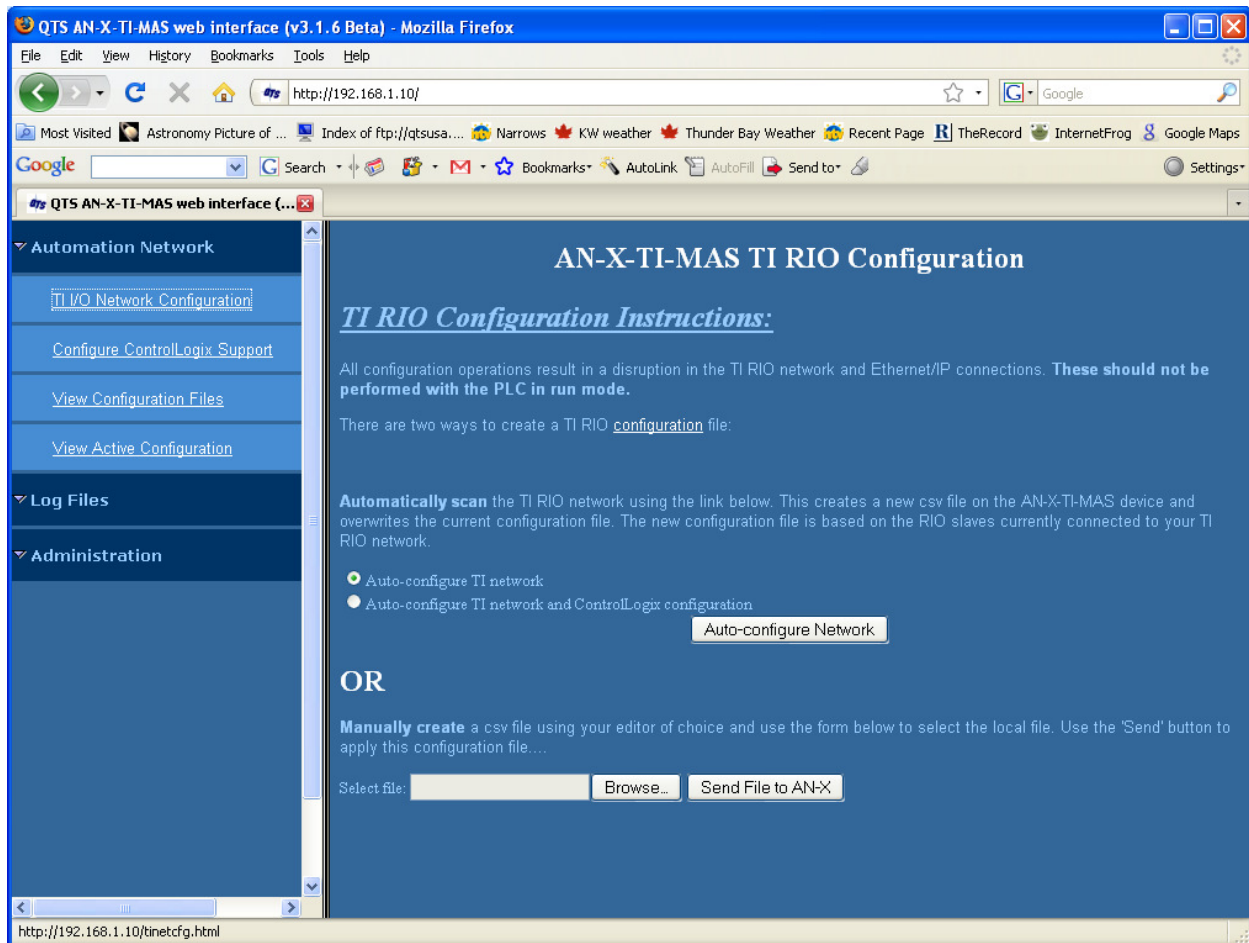
AN-X can generate a default ControlLogix data mapping configuration based on the I/O it finds (see page 24). If you want AN-X to generate the ControlLogix configuration, check *Auto-configure TI network and ControlLogix configuration*. Otherwise, check *Auto-configure TI network* (the default).

Click the *Auto-configure Network* button.

AN-X sends messages to all possible bases and builds a configuration based on the replies it receives. AN-X then displays the configuration it generated.

Example:

;QTS AN-X TI MAS Auto Configuration Utility

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;Auto Config TI MAS File

Base=1, ;

,,Slot=1,Type=8x,;Addr=b01s01, ; 8X 0Y 0WX 0WY

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```
,,Slot=2,Type=16y,;Addr=b01s02, ;  0X 16Y  0WX  0WY

,,Slot=3,Type=8wx,;Addr=b01s03, ;  0X  0Y  8WX  0WY

,,Slot=4,Type=16wy,;Addr=b01s04, ;  0X  0Y  0WX 16WY

,,Slot=5,Type=Hdm8x8y4wx4wy,;Addr=b01s05, ;  8X  8Y  4WX  4WY

EndBase
```

When AN-X creates a configuration file, it adds a comment for each that shows the number of data points of each type (X, Y, WX, WY) the module in that slot contains. If you edit the automatically generated configuration file, edit the comments as well.

See page 23 for information on how to upload the configuration from AN-X and save it to a file.

Manual Configuration

Manual configuration is useful when the TI remote I/O network is not attached to the AN-X or when you need something other than the default configuration.

Create the configuration file using a text editor or a spreadsheet such as Excel and save it as a comma separated variable (CSV) file, with extension *csv*. The file format is described on page 21.

To send the configuration to AN-X:

1. From the AN-X web interface, select *Automation Network/TI I/O Network Configuration*.

2. Type or browse the configuration file name into the *Select file:* area

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

AN-X parses the file and shows either the current configuration if configuration was sent successfully or an error message if there was a problem with the file.

Configuration File Format

The remote I/O configuration file defines the contents of the bases to be scanned.

It is a comma-separated variable (csv) text file, which can be created with a text editor or with a spreadsheet such as Excel.

Anything after a semicolon on a line is treated as a comment. Comments can be inserted at the end of a line or on a separate line.

The file defines the contents of the bases on the network.

Begin a base definition with a line that consists of the keyword Base, followed by an equals sign and then the base number, from 1 to 15. There should be no spaces before or after the equals sign.

Example:

Base=1

End the base definition with a line with just the keyword EndBase.

Between the Base and EndBase lines, enter the slot definitions for the base. They consist of the keyword Slot, followed by an equals sign and the slot number, a comma, then the keyword Type, an equals sign, and the module type. There should be no spaces before or after the equals signs.

Examples:

Slot=4,Type=8X

Slot=7,Type=4WY

Refer to page 64 for a list of supported module types.

Sample RIO Configuration File

;QTS AN-X TI MAS Auto Configuration Utility

;Copyright (c) 2008 Quest Technical Solutions

;Auto Config TI MAS File

Base=1

,,Slot=1,Type=8x,;Addr=b01s01, ; 8X 0Y 0WX 0WY

,,Slot=2,Type=16y,;Addr=b01s02, ; 0X 16Y 0WX 0WY

,,Slot=3,Type=8wx,;Addr=b01s03, ; 0X 0Y 8WX 0WY

,,Slot=4,Type=16wy,;Addr=b01s04, ; 0X 0Y 0WX 16WY

,,Slot=5,Type=hdm8x8y4wx4wy,;Addr=b01s05, ; 8X 8Y 4WX 4WY

EndBase

Viewing the Current Configuration

To view the remote I/O configuration currently in AN-X, access the web interface and select *Automation Network/View Active Configuration*.

You can also view the configuration file by accessing the web interface and selecting *Automation Network/View Configuration Files*. In some web browsers, for example Internet Explorer, click on the *AN-X-TI-MAS Network Configuration File* link and select Open to open the file in whatever application is associated with CSV files on your computer, usually a spreadsheet or a text editor. Other browsers just display the file contents.

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Saving the Current Configuration

To save the configuration currently in AN-X to a file, access the web interface and select *Automation Network/View Configuration Files*.

Right click on the *AN-X-TI-MAS RIO Network Configuration File* link and save the file.

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Exchanging Scheduled Data with a ControlLogix

The AN-X-TI-MAS module supports multiple scheduled connections with a ControlLogix processor over Ethernet.

The AN-X-TI-MAS module behaves like a 17-slot ControlLogix rack with an ENBT/A module in slot 16 and generic modules in slots 0 to 15.

A ControlLogix processor can open scheduled connections to each of these 16 generic modules. Each scheduled connection consists of up to 248 words of output data from the ControlLogix processor to the AN-X and up to 250 words of input data from the AN-X to the ControlLogix processor.

Each connection has its own RPI, from 5 to 750 ms. The default RPI is 5 ms.

In general, you should try to keep the number of connections small. There is significant overhead in opening and maintaining each connection.

You map the inputs and outputs for the I/O modules on the network to these scheduled connections. AN-X can create the mappings automatically or you can create the mappings manually.

Even better, you can have AN-X create the mapping file automatically, then edit the file to better suit your application. For example, in order to make the most efficient use of the available Ethernet bandwidth, you can organize the data so that items that must update quickly are mapped to connections with short RPIs and items that are less time critical are mapped to connections with longer RPIs.

In addition, the AN-X module has diagnostic data that can be mapped to ControlLogix scheduled input data.

The mapping file can also contain options that apply to the entire configuration.

The mapping file can also contain comments. Anything after a semicolon on a line is treated as a comment.

Mapping I/O Data

You map input and output data to the ControlLogix scheduled data by creating a comma separated variable file that defines the mappings and downloading the file to the AN-X.

The file consists of sections for each scheduled connection. Within each scheduled connection there are definitions for the input and output data for that connection that refer to the I/O module (base and slot) where the data is to be found.

When you create a mapping for a module, all the input or output data for the module is mapped; you cannot map individual registers.

AN-X can automatically create a default mapping file when you autoconfigure I/O. See page 19 for details.

ClxName

This line in the file identifies the AN-X module. AN-X uses this name in the address portion of the ControlLogix tags it creates for the data. The ClxName definition consists of a line with the keyword ClxName, followed by a comma and the name you give the emulated ENBT (see page 33) when you configure the AN-X in RSLogix 5000.

Example:

ClxName, TIMaster

When AN-X creates a configuration file automatically, it uses the Ethernet host name (see page 11) as the default ClxName.

ClxPrefix

The ClxPrefix is used in the name portion of the tagnames AN-X creates for import into RSLogix 5000. AN-X prefixes each tagname with the ClxPrefix. The ClxPrefix can be used to distinguish tags for the same address when the ControlLogix processor has connections to more than one AN-X-TI-MAS.

For example, if the ControlLogix has connections to two AN-X-TI-MAS modules, each controlling a different TI remote I/O network, each network could have a module with the same base and slot address. Using a different ClxPrefix in the configuration file for each AN-X-TI-MAS, for example TI1_ and TI2, ensures the tagnames for the two modules are distinct.

The ClxPrefix consists of a line with the keyword ClxPrefix, followed by a comma and the prefix text. The default is TI_

Example:

ClxPrefix,TI_

Scheduled Connection Data

Each scheduled connection to the AN-X begins with a line that consists of the keyword ClxSlot followed by a comma and then a number from 0 to 15

Example:

ClxSlot, 0

Each scheduled connection consists of output data and input data.

Scheduled outputs from the ControlLogix processor for that connection begin with a line with just the keyword DataOutput.

Scheduled inputs to the ControlLogix processor for that connection begin with a line with just the keyword DataInput.

Data definitions consist of lines that define the mapping between the ControlLogix data table and the TI remote I/O module location (base, slot, and data type).

They consist of lines of the form

CLX_offset (optional), I/O_Location, tagname

The CLX_offset is the offset into the data for the connection. You can select the offset where the data is located or you can leave it blank and AN-X will automatically assign the offset, which will be the next available offset from the previous assignment.

The I/O_location consists of an address in the form bxxsyytt where xx is the base number, from 01 to 15, ss is the slot number, from 01 to 16, and tt is the data type, either x, y, wx, or wy

Example:

To associate ControlLogix offset 27 with the X data for the module at address base 1, slot 4 and assign it tagname tag1

27, b01s04x, tag1

Example:

To map the WX data for the module at address base 14, slot 3 to the next available ControlLogix location and assign it tagname tag2

, b14s03wx, tag2

Example Configuration File:

ScanInProg ; Scan TI 505 When CLX is in Prog Mode, all outputs will be 0

ClxName,TImaster

ClxPrefix,TI_

; *** Y - TI Discrete Outputs

ClxSlot,0

DataOutput ; ,<ClxBaseTag> Outputs from ControlLogix

,b01s02y,b01s02y,; Ofs= 0 Len= 1

,b01s05y,b01s05y,; Ofs= 1 Len= 1

,b01s07y,b01s07y,; Ofs= 2 Len= 1

,b01s10y,b01s10y,; Ofs= 3 Len= 1

; *** WY - TI Word Outputs

,b01s04wy,b01s04wy,; Ofs= 4 Len= 8

,b01s09wy,b01s09wy,; Ofs= 12 Len=16

,b01s10wy,b01s10wy,; Ofs= 28 Len=28

; *** X - TI Discrete Inputs

ClxSlot,0

DataInput ; ,<ClxBaseTag> Inputs to ControlLogix

,BaseErr

,b01s01x,b01s01x,; Ofs= 2 Len= 1

,b01s05x,b01s05x,; Ofs= 3 Len= 1

,b01s06x,b01s06x,; Ofs= 4 Len= 1

,b01s10x,b01s10x,; Ofs= 5 Len= 2

; *** WX - TI Word Inputs

,b01s03wx,b01s03wx,; Ofs= 7 Len= 8

,b01s08wx,b01s08wx,; Ofs= 15 Len=16

,b01s10wx,b01s10wx,; Ofs= 31 Len=14

Program Mode Behaviour

The ControlLogix processor that is the exclusive owner of the connection in slot 0 controls how the AN-X-TI-MAS module scans the network. For that reason, when you map the data, you must always include a connection to the generic module in slot 0.

By default, when the ControlLogix processor with the exclusive owner connection to slot 0 on the AN-X is in program mode or the connection is stopped, the AN-X stops scanning the network.

You can override this program mode behaviour by including a line with the keyword ScanInProg in the configuration file. This causes the AN-X-TI-MAS module to continue to communicate with the remote I/O network when the ControlLogix processor is in program mode.

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Other Mappable Data

In addition to the I/O data, there are other items that can be mapped to connection input data.

For all these items, you can assign an offset for the data within the ControlLogix input data, or your can leave the offset blank and let AN-X assign the offset automatically.

All items are of the form

offset [optional], ItemKeyword

Base Error Table

The base error table consists of 2 16-bit words.

The first word is the base error table. Bit 1 corresponds to base 1, bit 2 corresponds to base 2, and so on.

If a configured base is in error, the bit is 1. If a configured base is responding correctly, the bit is 0. The bit is 0 for an unconfigured base.

The second word is the configuration mismatch table. Bit 1 corresponds to base 1, bit 2 corresponds to base 2, and so on.

If a configured base returns a configuration error, the bit is 1. If there is no error, the bit is 0. The bit is 0 for an unconfigured base.

To map the base error table, include a line with the keyword BaseErr.

Examples:

, BaseErr

10, BaseErr ; offset 10

TIP

Map the base error table to the first two words of input data of each connection. If the connection to the AN-X module is lost, the ControlLogix sets the first 2 words of the connection to FFFF hexadecimal. If your program monitors the base error table, it will see the error bit as set.

Diagnostics

The AN-X-TI-MAS maintains a variety of diagnostic information about the TI remote I/O network and the connections to the ControlLogix processor.

To map the diagnostic counters, include a line with the keyword AnxTiDiag in the input section of a connection. There are 240 words of diagnostic data so the diagnostics are usually mapped to a separate connection.

TIP

If you map the diagnostic data to a separate connection, use a long RPI to reduce the Ethernet traffic, since the diagnostics do not need to be updated as frequently as I/O data.

Examples:

, AnxTiDiag

2, AnxTiDiag ; mapped at offset 2

The diagnostic data consists of:

Range of offsets	Diagnostic data
0-15	Diagnostic counters
20-35	Base module fault table
40-55	Base status table
60-75	Dual power supply status table
80-240	Update time tables for ControlLogix connections

Diagnostic Counters.

Offset	Counter Description
0	Transmitted network frames
1	Received frames with good status
2	Received frames with a CRC error
3	Received frames with an abort error
4	Received frames with noise errors
5	Receive timeout. Scanner sent a message to a base but did not receive a reply within the timeout period
6	Received frames too short
7	Received frames too long
8	Received frames with protocol errors
9	Error type
10	I/O scan counter
11	I/O inits. The number of times the I/O

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Offset	Counter Description
	network was reinitialized.
12	Last I/O scan time * 100 us
13	Minimum I/O scan time * 100 us. Max and Min are updated then recalculated every 6.5536 seconds.
14	Maximum I/O scan time * 100 us. Max and Min are updated then recalculated every 6.5536 seconds.
15	Reserved

Base Module Fault Table

The base module fault table contains the status of the module in each slot. This table is updated on each scan.

There is one word per base. The status of base 1 is found at offset 21, the status of base 2 is found at offset 22, and so on. Bit 0 corresponds to slot 1, and so on.

The bit is 0 if there is no module fault and is 1 otherwise. The bit is 1 for unoccupied or unconfigured slots.

Base Status Table

The base status table contains the status returned by each base. This table is updated on each scan. The data in the base status table is returned by the base and is valid only if the base is not in error.

TIP

The base status table is used internally by the AN-X-TI-MAS and should not be used by a ControlLogix application. The values are provided here for reference only.

There is one word per base. The status of base 1 is found at offset 41, the status of base 2 is found at offset 42, and so on.

There are 8 status bits for each base. More than one bit can be set in the status for a base. The bits are assigned as follows:

7	6	5	4	3	2	1	0
MUF	TE	TCP	LR	DB	MM	MF	MTO

Bit 0, module transitioned online (MTO), is set to 1 whenever a mismatched module has been replaced. It is cleared to 0 when the scanner reads the status of the modules in the base.

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Bit 1, module failed (MF), is set to 1 whenever a module in the base fails.

Bit 2, module mismatch (MM), is set to 1 if the modules that have been installed into the slots of the base do not match those that have been configured. The module types are checked every I/O scan. This bit is cleared when the scanner reads the status of all modules in the base. If the condition still exists, the bit is immediately set again.

Bit 3, dual power supplies (DB), when set to 1, indicates that the base has dual power supplies.

Bit 4, NIM local/remote (LR), indicates what mode a NIM module is in. If this bit is 1, the NIM module is in remote mode. If this bit is 0, the NIM module is in local mode.

Bit 5, task code pending (TCP), when set to 1, indicates that a task code is pending and awaits processing.

Bit 6, task error (TE), when set to 1, indicates that a task error exists. This condition arises when the RBC receives a class 0 message and a nonzero task number. TI does not support task codes for class 0 messages for any RBCs and hence this bit is always 0 for all bases.

Bit 7, module unfail (MUF), is set to 1 when a module in the base transitions from a failed state to an unfailed state.

The base status is 0 for unconfigured bases.

Dual Power Supply Status Table

The dual power supply status table contains the status of each base. This table is updated on each scan with values returned by the base.

There is one word per base. The status of base 1 is found at offset 61, the status of base 2 is found at offset 62, and so on.

The value is 255 if the base has a dual power supply with good status and is 0 otherwise. The value is 0 if the base does not have a dual power supply or if the base is unconfigured.

Connection Statistics

The module maintains statistics for each exclusive owner scheduled connection. There are 10 words of data for the connection:

Offset	Description
0	Average time for last 100 CLX=>AN-X updates
1	Minimum time for last 100 CLX=>AN-X updates
2	Maximum time for last 100 CLX=>AN-X updates

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Offset	Description
3	Maximum CLX=>AN-X time since connection opened
4	Reserved
5	Average time for last 100 AN-X=>CLX updates
6	Minimum time for last 100 AN-X=>CLX updates
7	Maximum time for last 100 AN-X=>CLX updates
8	Maximum AN-X=>CLX time since connection opened
9	Reserved

The units for the times are 0.1 milliseconds. A value of 87 means 8.7 ms.

The tables for each connection are found at the following offsets:

Connection to slot	Starting offset
0	80
1	90
2	100
3	110
4	120
5	130
6	140
7	150
8	160
9	170
10	180
11	190
12	200
13	210
14	220
15	230

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Viewing the Current Configuration

To view the ControlLogix configuration currently stored in the AN-X, start the web interface and select *Automation Network/View Active Configuration*.

Click the *Ethernet/IP* link to view the current ControlLogix scheduled data configuration.

Saving the Current Configuration

To save the ControlLogix configuration currently stored in the AN-X to a file, start the web interface and Select *Automation Network/View Active Configuration*.

Right click the *Ethernet/IP* link and select *Save target* to save the current ControlLogix scheduled data configuration to a file.

Configuring the AN-X Module in RSLogix 5000

To configure the AN-X-TI-MAS in RSLogix 5000:

1. Right click on the ControlLogix Ethernet bridge module that will be communicating with the AN-X and select *Add Module*. Add a 1756-ENBT/A module. Set the Major Rev to 1.

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Enter the *Name*. Use the host name you assigned to AN-X when you configured its IP properties.

Set the Slot to 16. Set the chassis size to 17.

Set the *Comm Format* to None.

Set the IP address to match the AN-X module.

Set *Electronic Keying* to *Disable Keying*.

Record the *Name* as it is used to create tags to access the data.

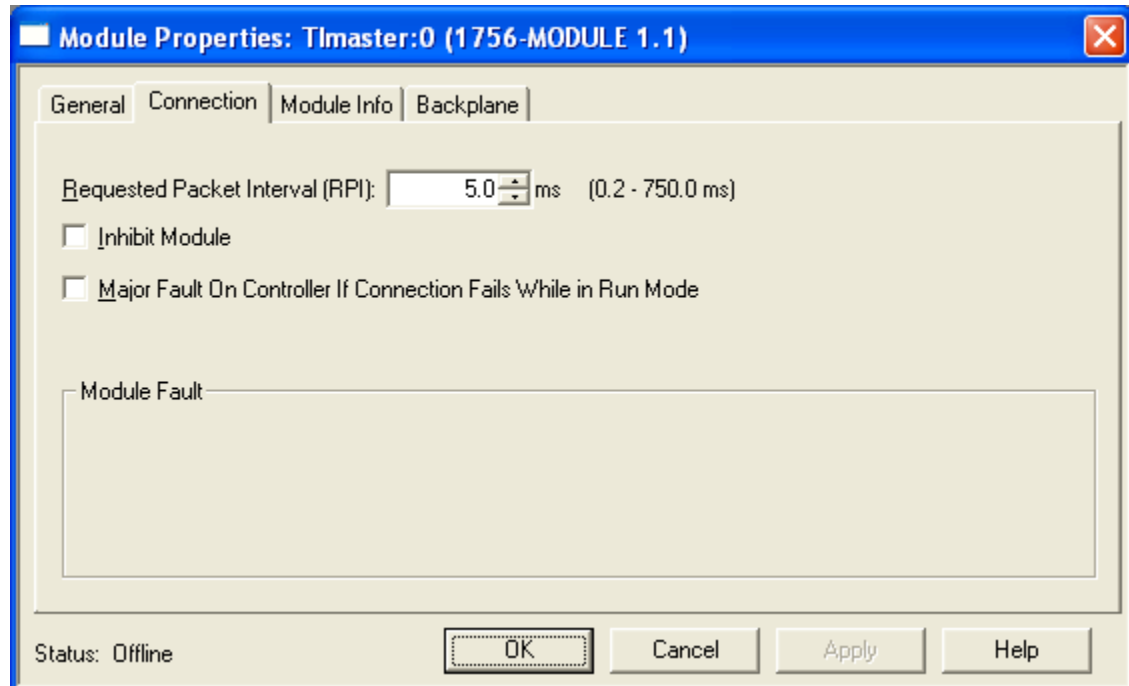2. Add Generic modules for each required connection

Set the parameters as shown. Set the Slot to 0 for the first connection, 1 for the second connection, and so on.

3. Set the RPI for each connection.

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AN-X supports RPIs from 5 to 750 ms.

Select an RPI appropriate to the remote I/O network scan time. You can use the diagnostic counters (see page 29) to obtain the network scan time.

IMPORTANT!   Ensure that any check box that refers to Unicast connections is unchecked.

Input Only Connections

The AN-X-TI-MAS supports one input only connection from a ControlLogix processor. The ControlLogix will be able to read the same input data as the ControlLogix processor with the exclusive owner connection to the AN-X-TI-MAS.

To configure the input only connection to the AN-X-TI-MAS in RSLogix 5000:

1. Right click on the ControlLogix Ethernet module that will be communicating with the AN-X and select *Add Module*. Add a 1756-ENBT/A module. Set the Major Rev to 1.

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Set the Slot to 16. Set the chassis size to 17.

Set the *Comm Format* to None.

Set the IP address to match the AN-X module.

Set *Electronic Keying* to *Disable Keying*.

Record the *Name* as you will use it if you create tags to access the data.

2. Add Generic modules for each required connection

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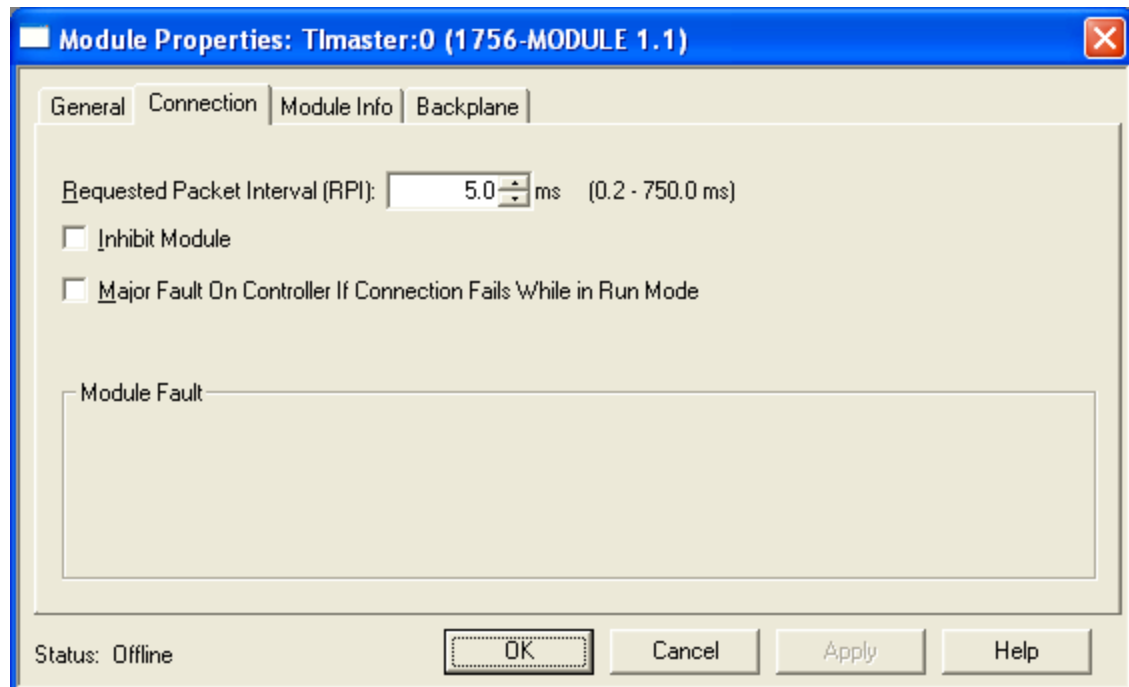ProSoft Technology Inc.
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Set the parameters as shown. Set the Slot to 0 for the first connection, 1 for the second connection, and so on.

3. Set the RPI for each connection to match the RPI of the exclusive owner connection.

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IMPORTANT!   Ensure that any check box that refers to Unicast connections is unchecked.

ControlLogix Alias Tags

AN-X uses the Ethernet/IP configuration to create alias tags that can be imported into RSLogix 5000. Use these tags in your RSLogix 5000 program to access the data on the AN-X. Even if the ControlLogix address for an I/O address changes, all you have to do is re-import the tags.

WARNING!   If you change the remote I/O or ControlLogix configuration, re-import tags so that the ControlLogix processor uses the correct addresses.

There are two sets of tag files, one for exclusive owner connections and one for input only connections.

In the web interface, select *Automation Network/View Configuration Files*.
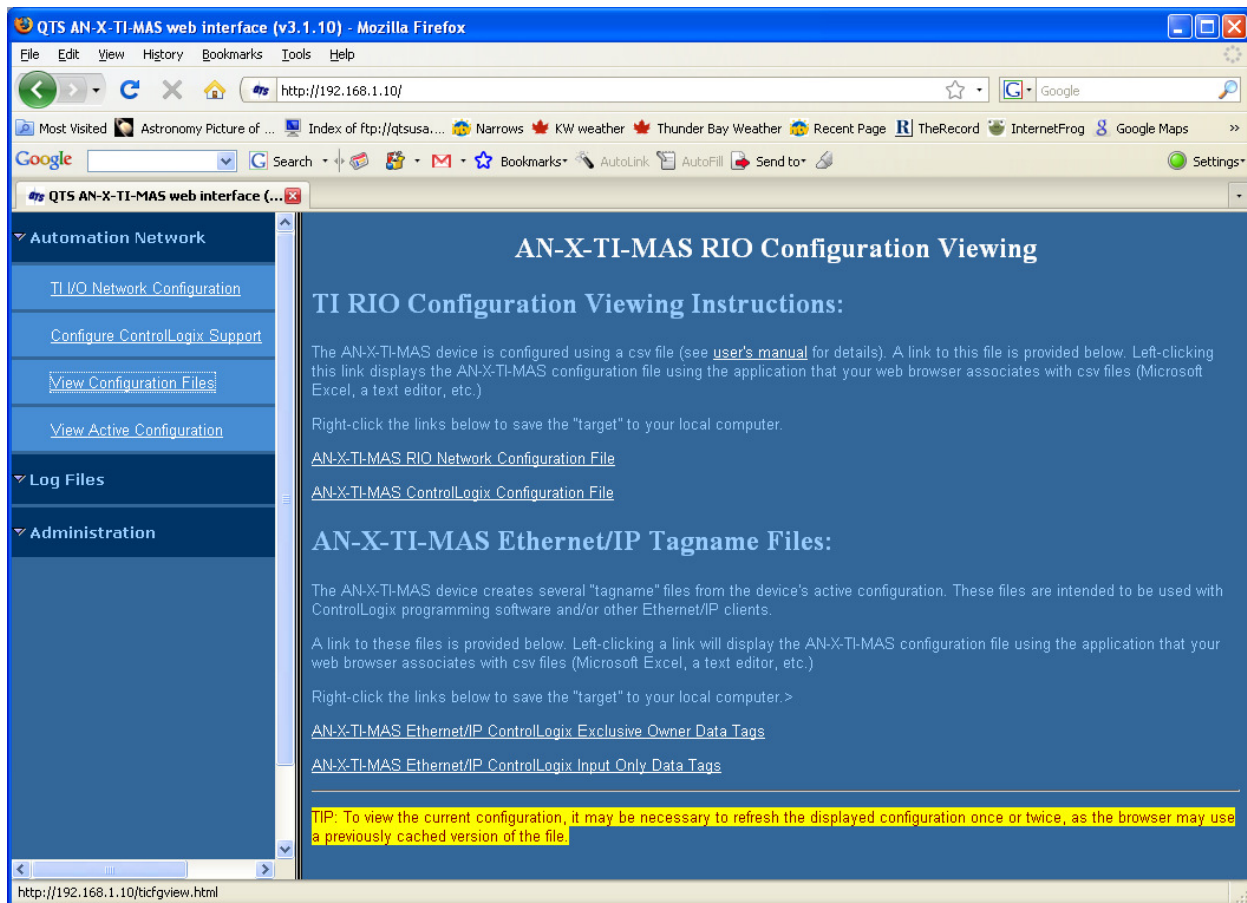
To view the files, click either *AN-X-TI Ethernet/IP ControlLogix Exclusive Owner Data Tags* or *AN-X-TI Ethernet/IP ControlLogix Input Only Data Tags*.

To save the file to your computer, right click on the link and select *Save Target As…*

Importing Tags in RSLogix 5000

To import the tags into RSLogix 5000, you must be offline. Select *Tools/Import Tags* and import the tag file.

Tag Format

AN-X builds the tags from the ControlLogix configuration. Each tag is a ControlLogix alias. For example,

ALIAS,"","TI_b01s01x","TI_ Base 1 Slot 1 8x Module","","TImaster:0:I.Data[2]"

In this example, the tag name is TI_b0101x. The name is made up of the ClxPrefix and the tagname from the configuration file. If there is more that one word of data for the module, AN-X appends an underscore and a number to the tagname, for example

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ALIAS,"","TI_b01s03wx_00","TI_ Base 1 Slot 3 8wx Module (Word 0)","","TImaster:0:I.Data[3]"

ALIAS,"","TI_b01s03wx_01","TI_ Base 1 Slot 3 8wx Module (Word 1)","","TImaster:0:I.Data[4]"

ALIAS,"","TI_b01s03wx_02","TI_ Base 1 Slot 3 8wx Module (Word 2)","","TImaster:0:I.Data[5]"

ALIAS,"","TI_b01s03wx_03","TI_ Base 1 Slot 3 8wx Module (Word 3)","","TImaster:0:I.Data[6]"

ALIAS,"","TI_b01s03wx_04","TI_ Base 1 Slot 3 8wx Module (Word 4)","","TImaster:0:I.Data[7]"

ALIAS,"","TI_b01s03wx_05","TI_ Base 1 Slot 3 8wx Module (Word 5)","","TImaster:0:I.Data[8]"

ALIAS,"","TI_b01s03wx_06","TI_ Base 1 Slot 3 8wx Module (Word 6)","","TImaster:0:I.Data[9]"

ALIAS,"","TI_b01s03wx_07","TI_ Base 1 Slot 3 8wx Module (Word 7)","","TImaster:0:I.Data[10]"

The ControlLogix data address in the first example is TImaster:0:I.Data[2]. The address is made up of the ClxName and the data location.

Comments

The tag file contains comments for data points for which there are no aliases, such as the diagnostic counters. If you view the data points in RSLogix 5000, the comments are displayed.

Using the ControlLogix Log

If there are problems with scheduled connections to the AN-X, use the ControlLogix log to identify the cause.

From the web interface, select *Log Files/ControlLogix Log* to display the log. Look for error messages that describe in detail the cause of any problem with the current configuration.

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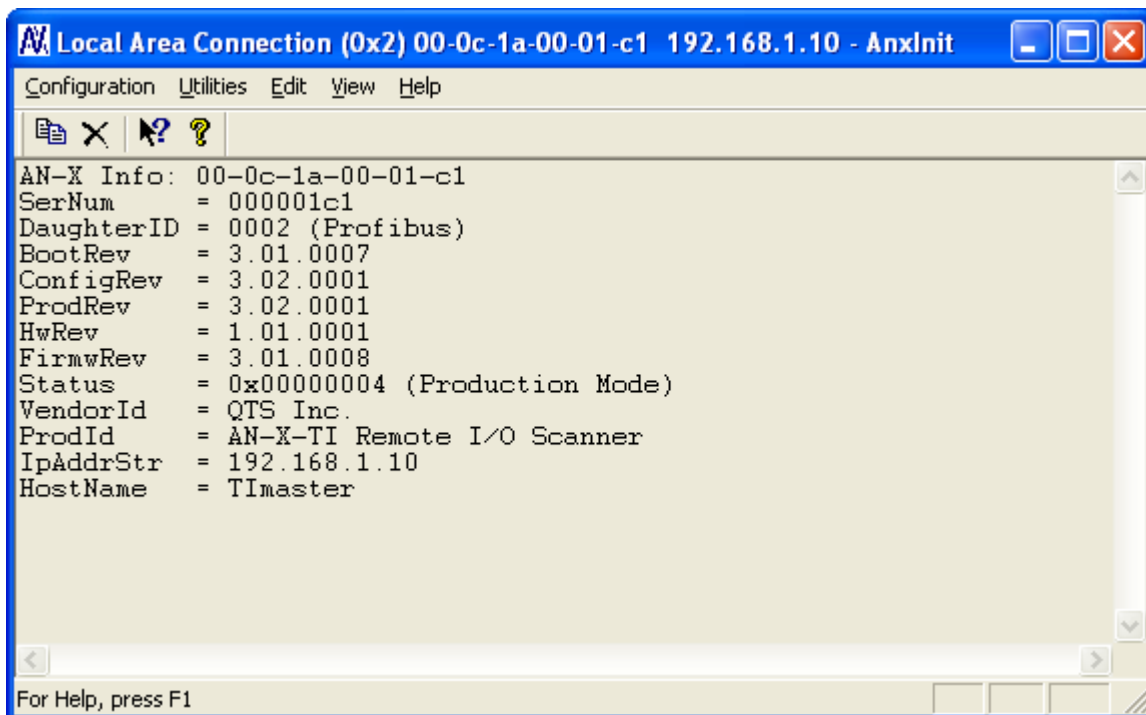
To clear the log, select *Edit/ClearLog*.

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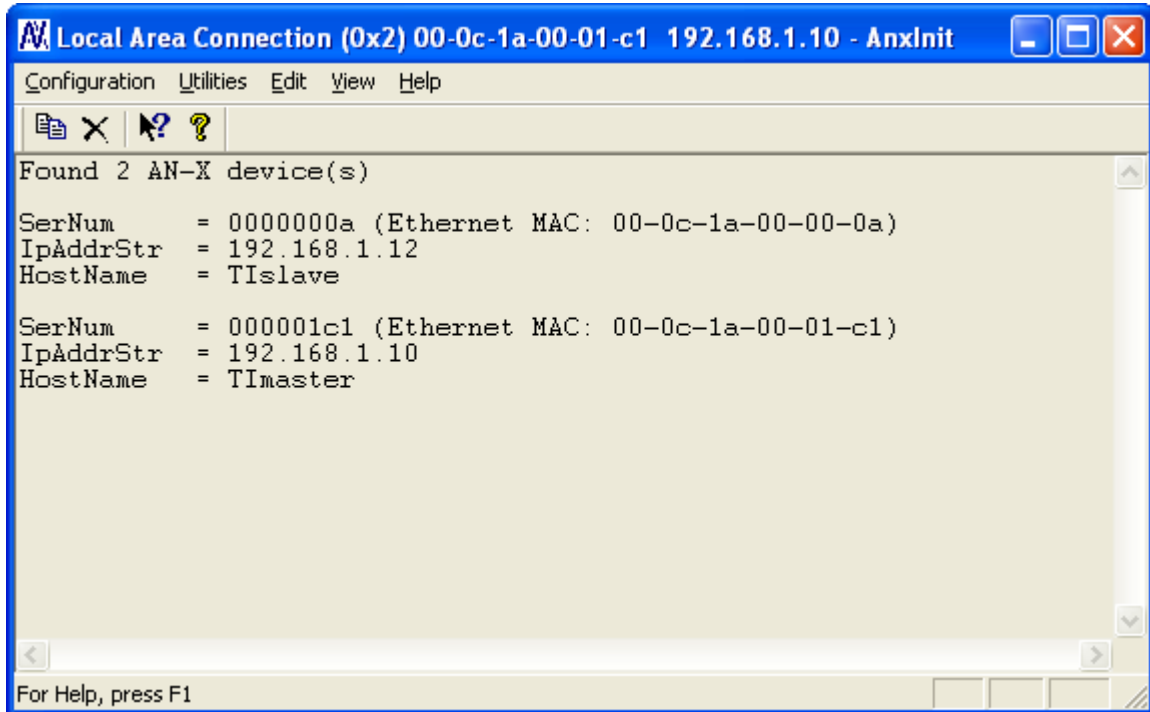
AnxInit displays a list of the AN-X modules it finds, showing their MAC IDs, IP addresses and host names.

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.
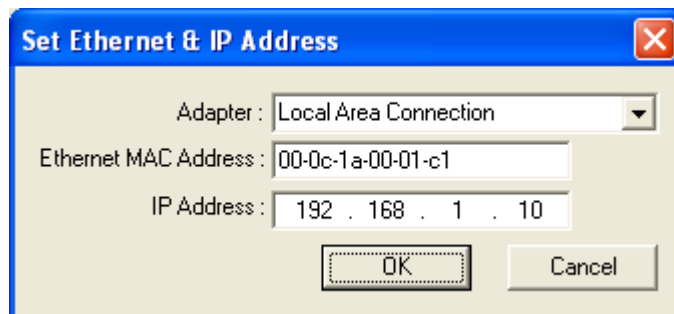
```
AV Local Area Connection (0x2) 00-0c-1a-00-01-c1  192.168.1.10 - AnxInit
Configuration  Utilities  Edit  View  Help

Found 2 AN-X device(s)

SerNum      = 0000000a (Ethernet MAC:  00-0c-1a-00-00-0a)
IpAddrStr   = 192.168.1.12
HostName    = TIslave

SerNum      = 000001c1 (Ethernet MAC:  00-0c-1a-00-01-c1)
IpAddrStr   = 192.168.1.10
HostName    = TImaster

For Help, press F1
```

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.

```
Set Ethernet & IP Address

              Adapter :  Local Area Connection        ▼
Ethernet MAC Address :  00-0c-1a-00-01-c1
           IP Address :  192 . 168 . 1 . 10

                             OK            Cancel
```

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.

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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.

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- 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, 2 for AN-X-TI-MAS
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

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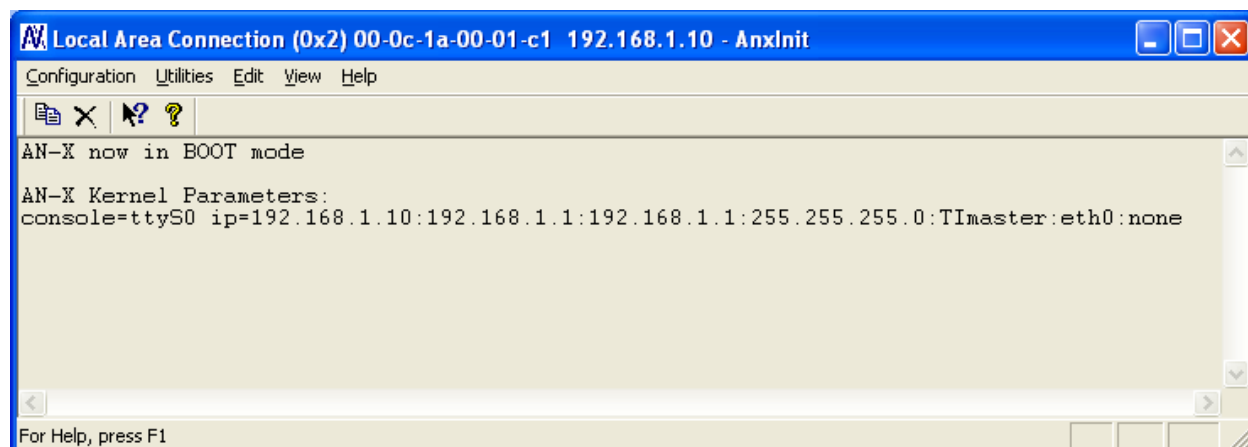
Possible status values are:

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.
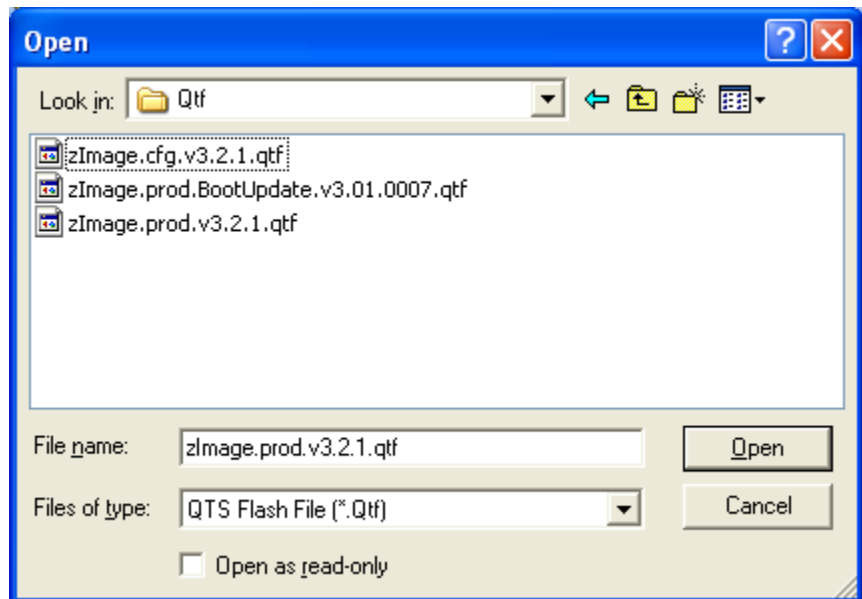
Update Firmware

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*.

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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-00-00-09.

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

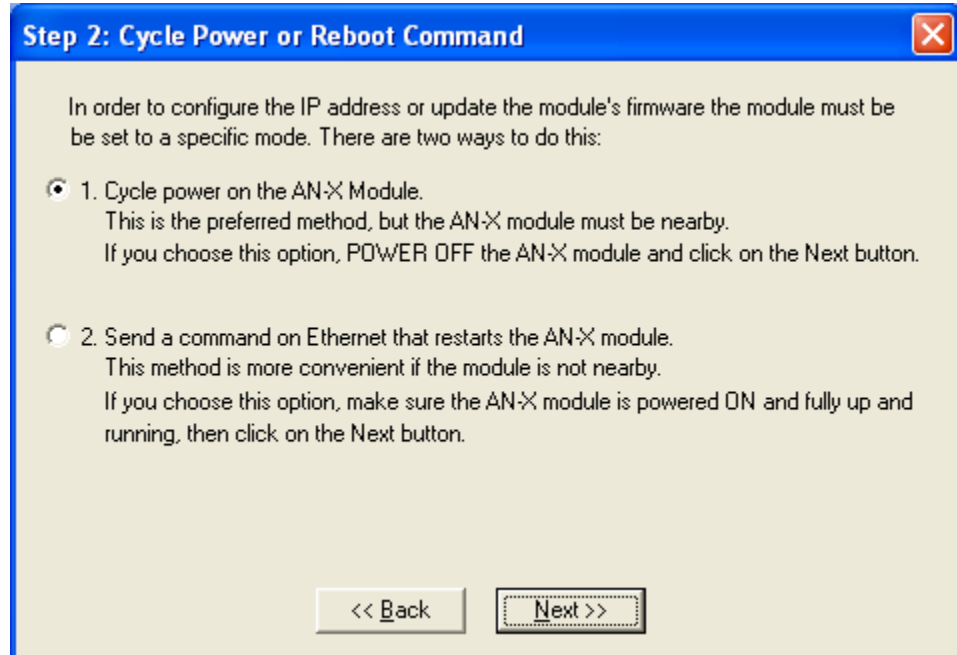3. Enter the IP address of the AN-X you want to update

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.

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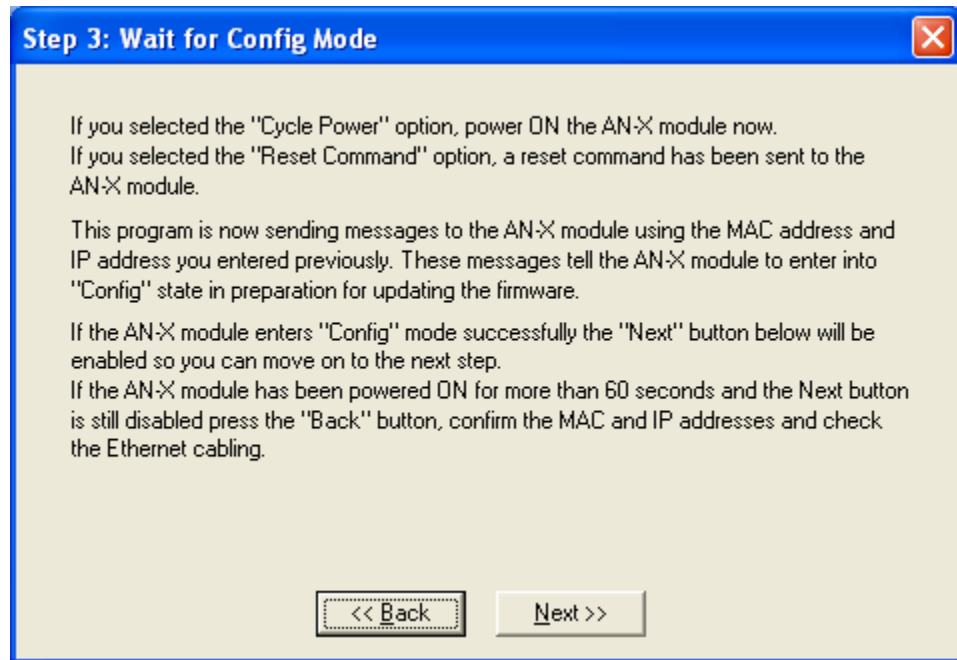
If the AN-X does not enter config mode within about 60 seconds, return
to the previous screens and check the entries.

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.

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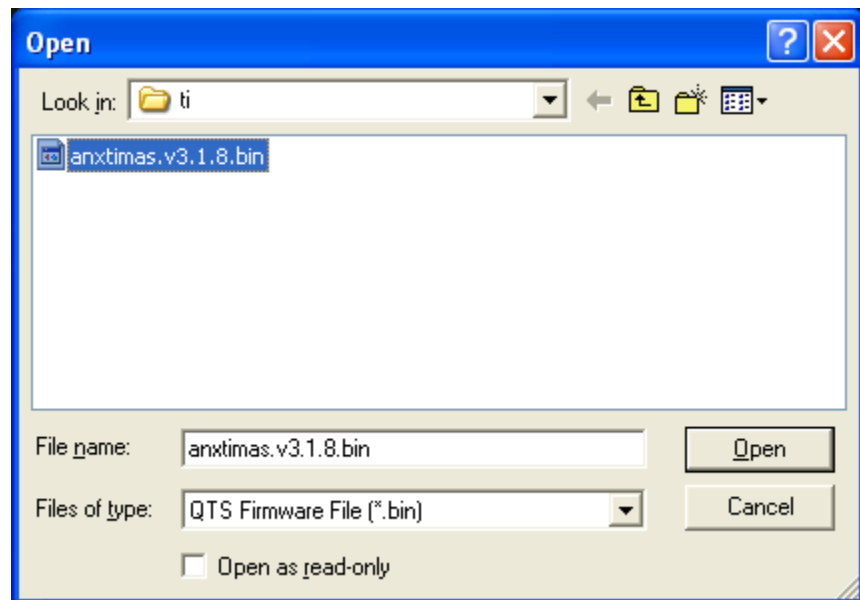
This command resets the AN-X. You will receive a warning and be given the opportunity to Cancel the command.

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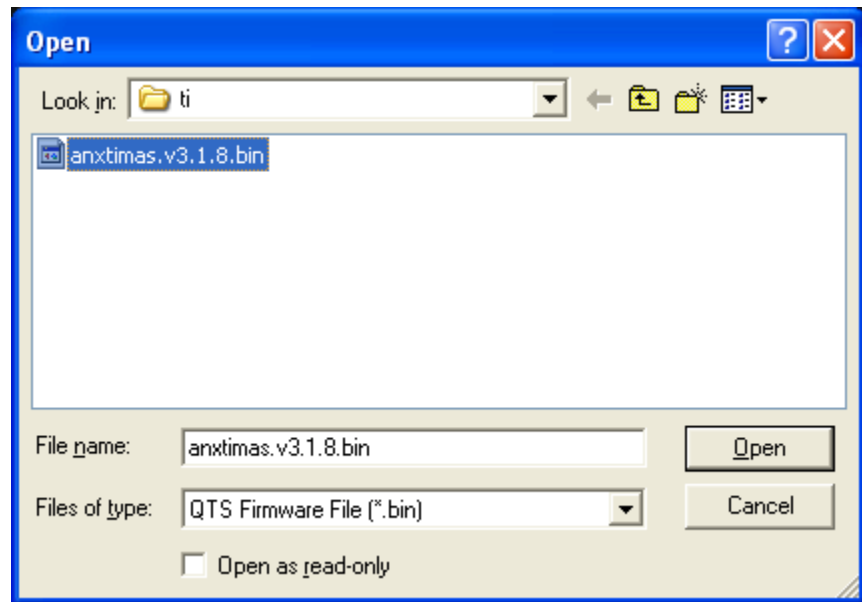
AnxInit transfers the firmware file and restarts the AN-X.

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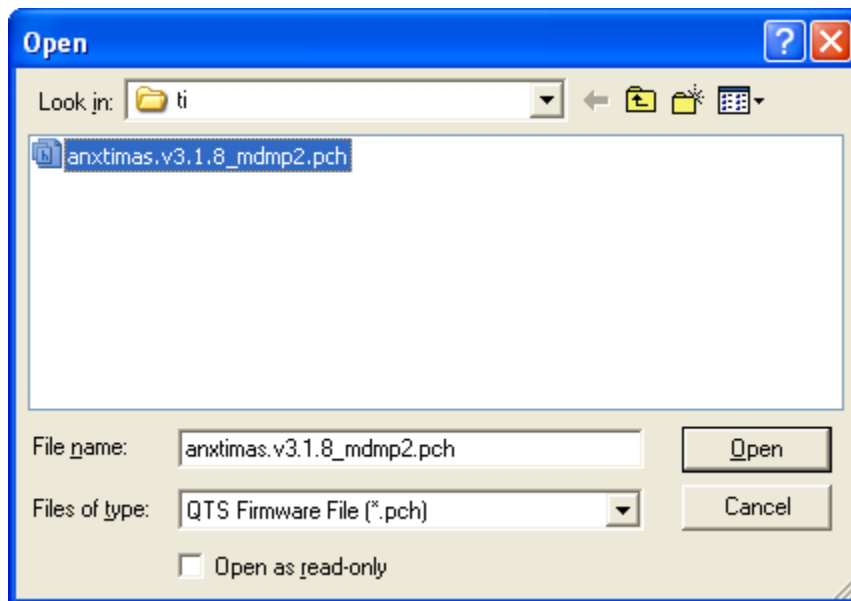
This command resets the AN-X. You will receive a warning and be given the opportunity to Cancel the command.

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.

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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:

• set the remote I/O network configuration

• set the ControlLogix scheduled data configuration

• view the current configuration

• view AN-X logs

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.

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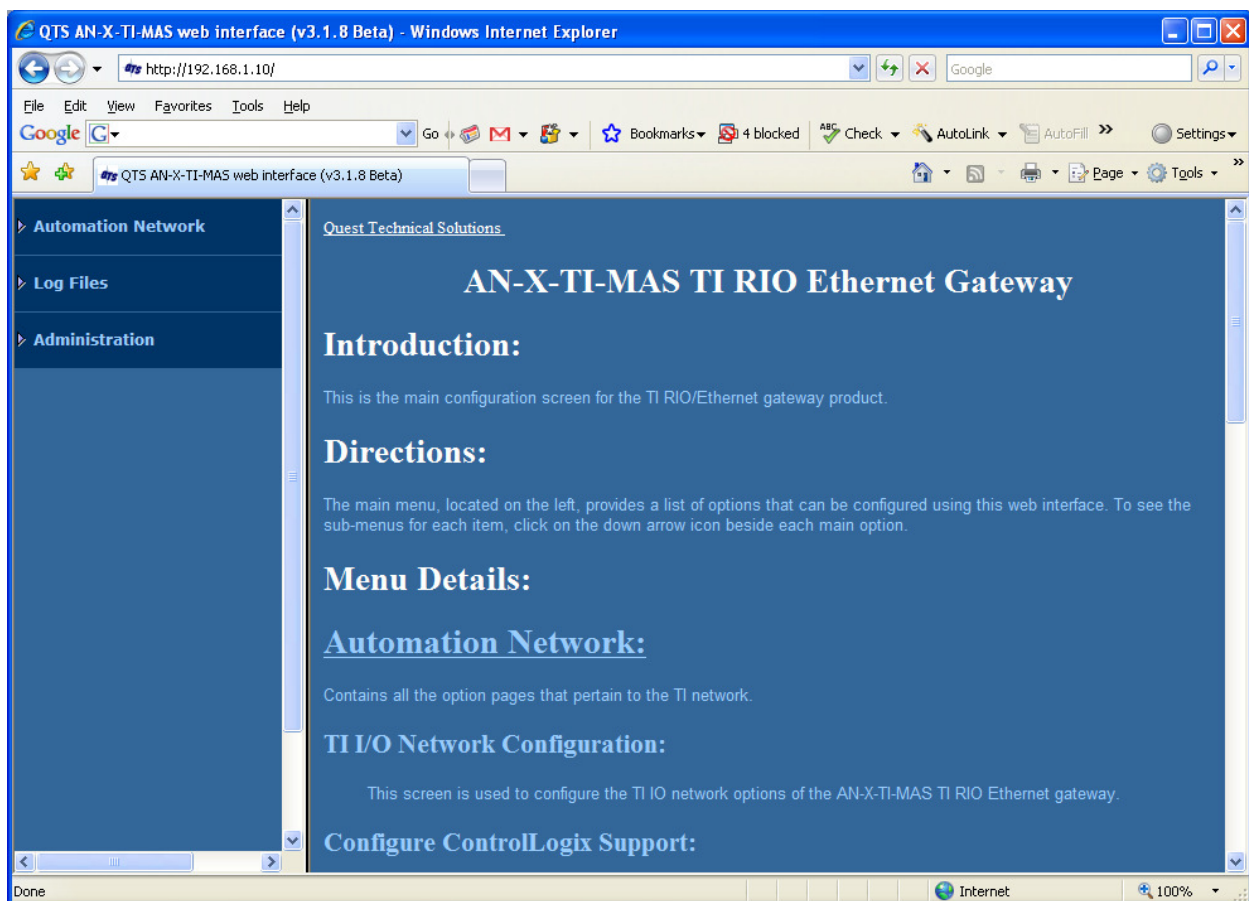ProSoft Technology Inc.
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The contents of the right pane depend on the current command being executed.

I/O Network

Select *Automation Network/ I/O Network Configuration* to configure the I/O the AN-X-TI-MAS is to scan.

Autoconfiguration

If you are autoconfiguring the remote I/O network, make sure the network is connected to the AN-X-TI-MAS.

To configure only the I/O, check *Auto-configure TI network*.

To configure the remote I/O network and also generate a default ControlLogix configuration on the AN-X, check *Auto-configure TI network and ControlLogix configuration*

Click the *Auto-configure Network* button.

Manual Configuration

Manual configuration does not require that the remote I/O network be online.

Create a configuration file. Refer to page 24 for details on the file format.

Browse or type the file name.

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

Configure ControlLogix Support

AN-X exchanges scheduled data with a ControlLogix processor over Ethernet. Refer to section Exchanging Scheduled Data with a ControlLogix on page 24 for information on configuring scheduled data exchange.

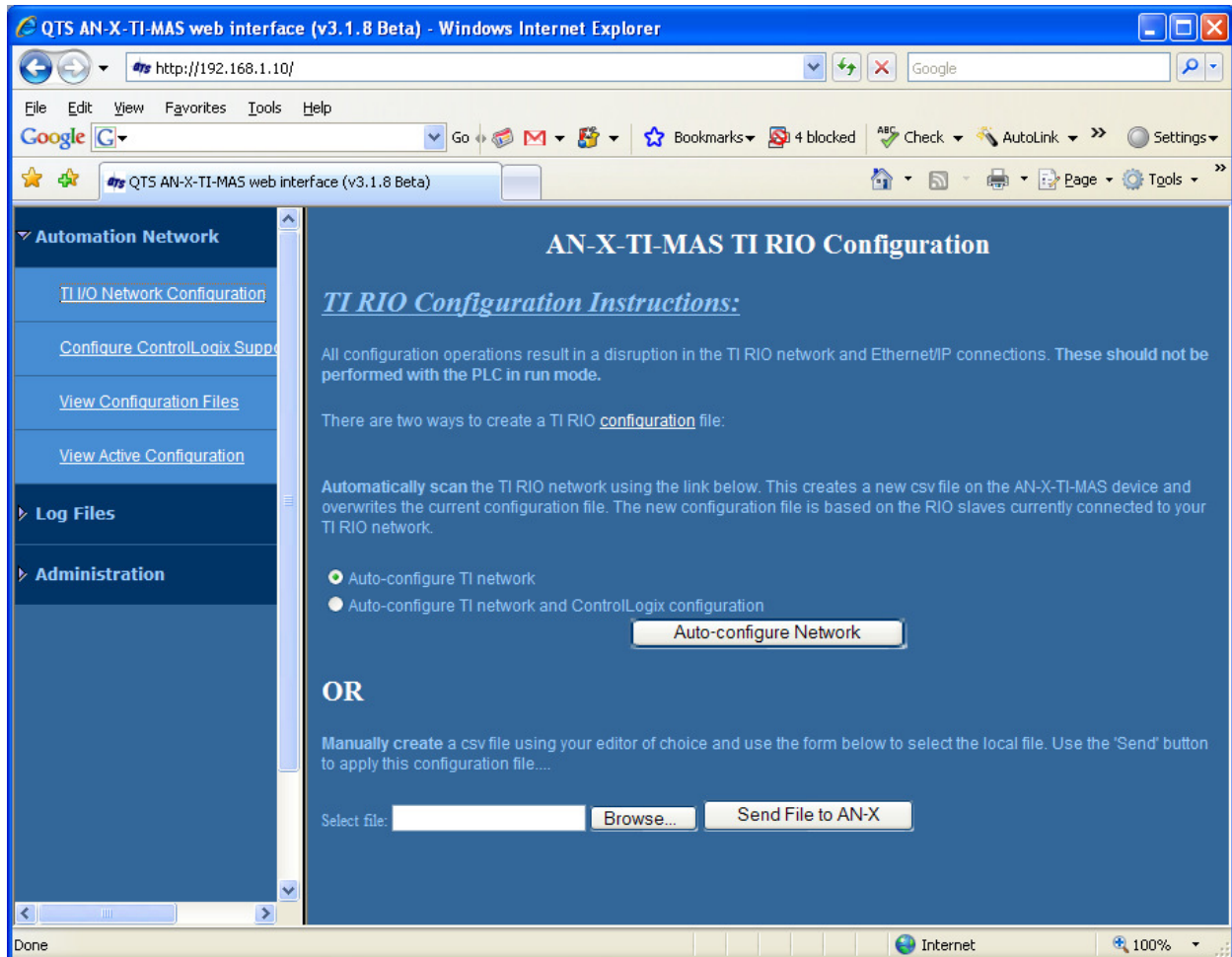Select *Automation Network/Configure ControlLogix Support* in the web interface to upload the configuration.

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Type or browse the configuration file name into the *Select file:* area.
Then click the *Send To AN-X* button to send the file to AN-X.

Check the ControlLogix Log to determine if there have been any errors
with the upload.

View Configuration Files

Select *View Configuration Files* to view the remote I/O and
ControlLogix configuration files.
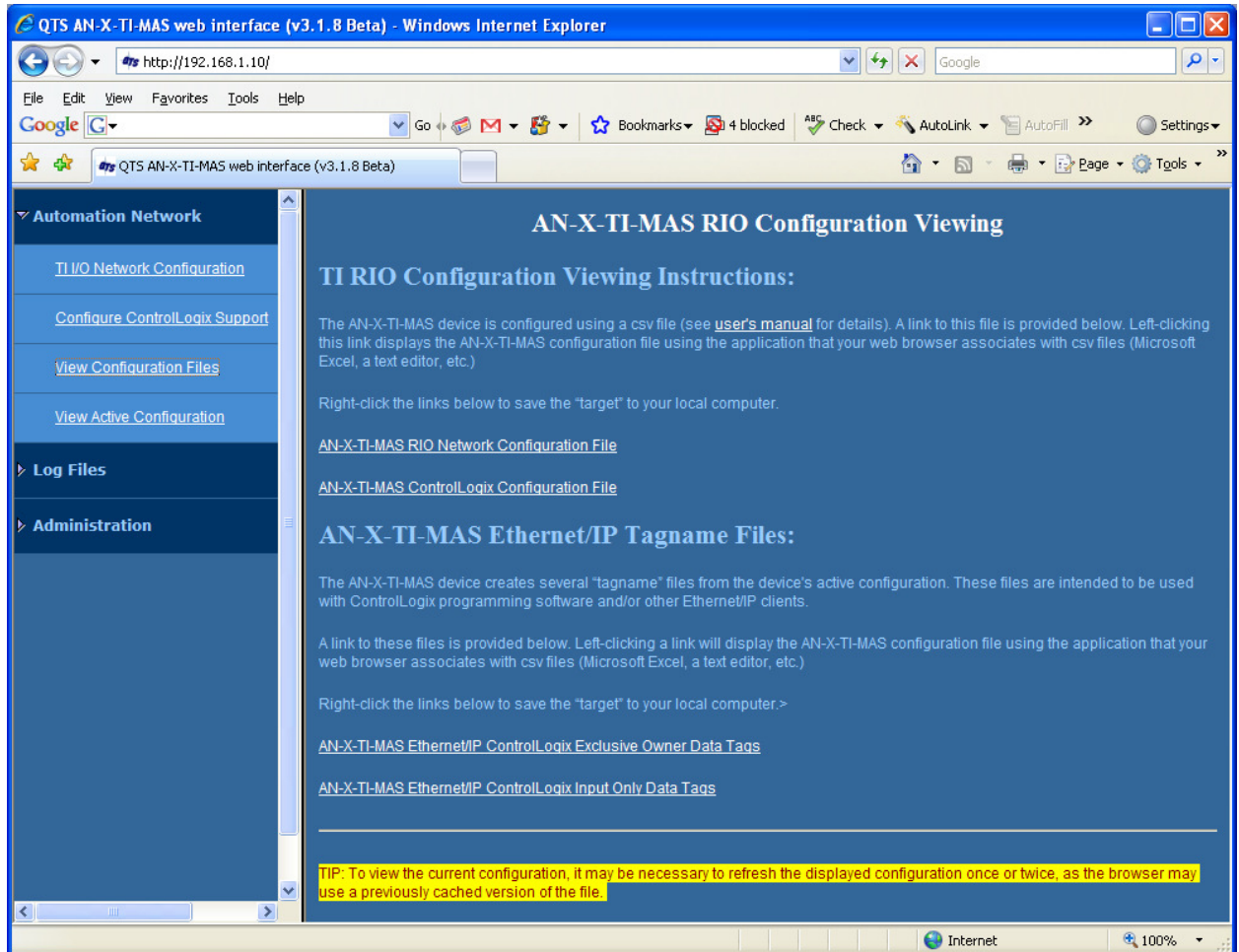
Click on the links to view the files using the application that is associated
with CSV files.

Right click on the links to retrieve the files from AN-X and store them on
your computer.

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View Active Configuration

Select *View Active Configuration* to view the remote I/O or ControlLogix configuration file in the web browser.

Click the *TI network* link to view the current I/O network configuration.

Click the *Ethernet/IP* link to view the current ControlLogix scheduled data configuration.

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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.

System Info Log

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

ControlLogix Log

The Ethernet/IP log shows messages and errors associated with the ControlLogix scheduled data 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*.
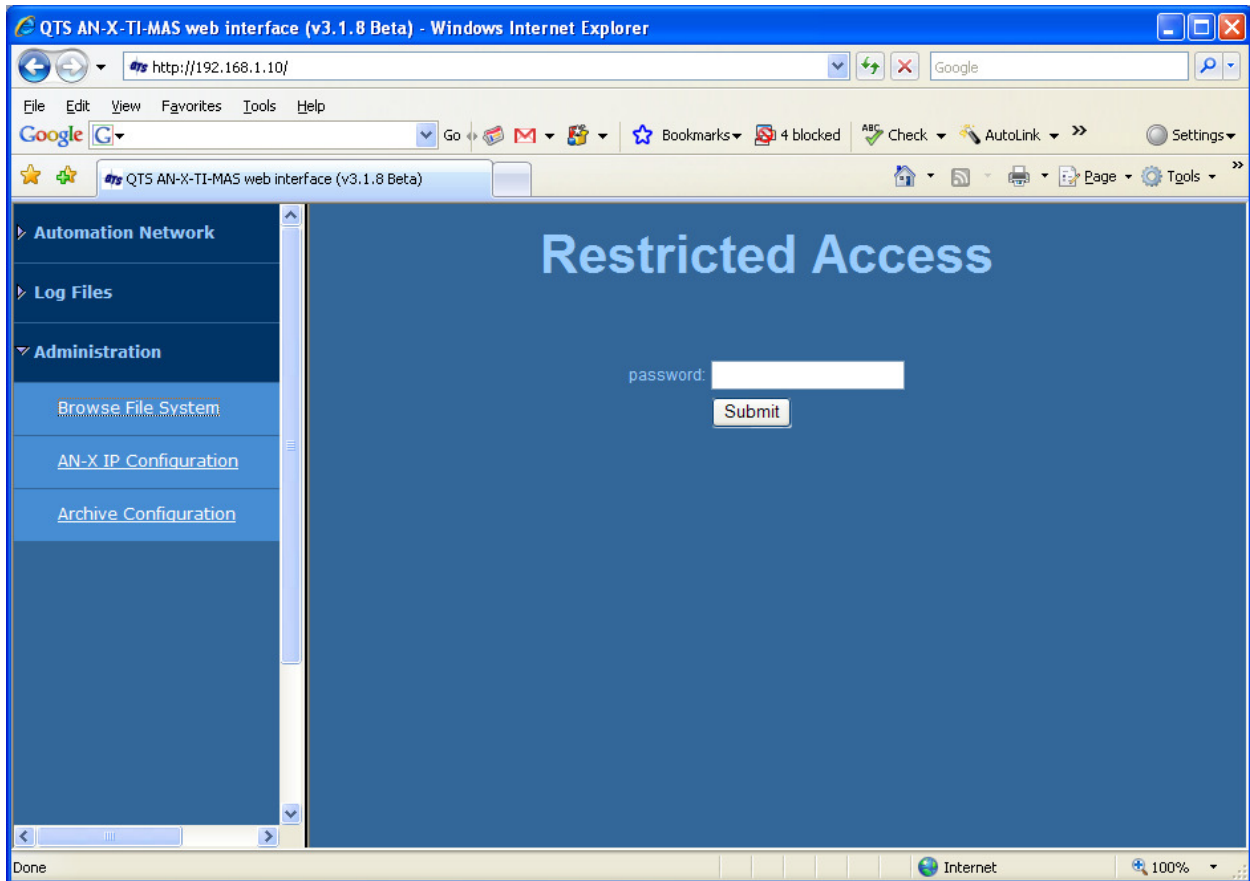
Technical support will provide the password and supply detailed information on any further steps.

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.
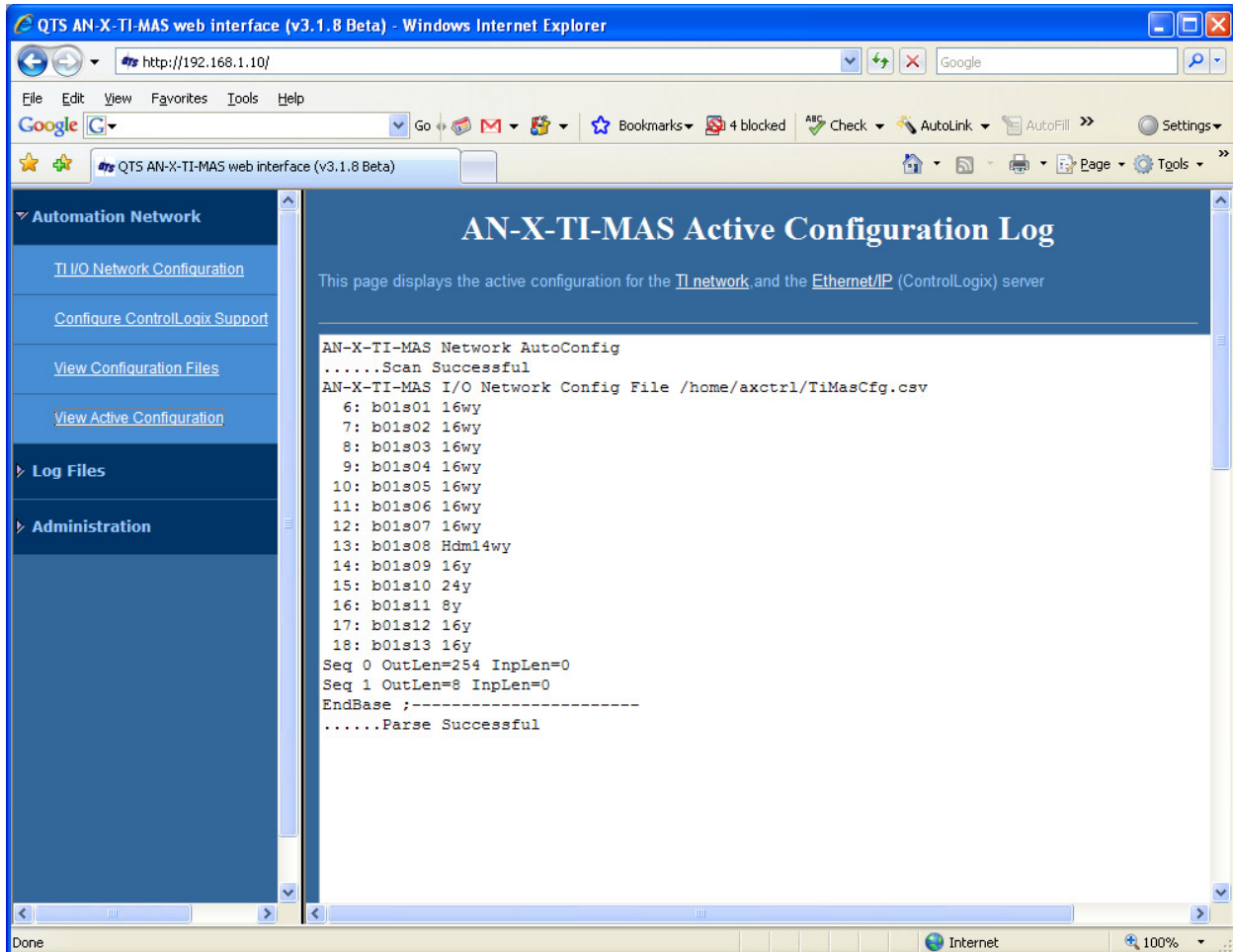
Select *Administration/AN-X IP Configuration*.

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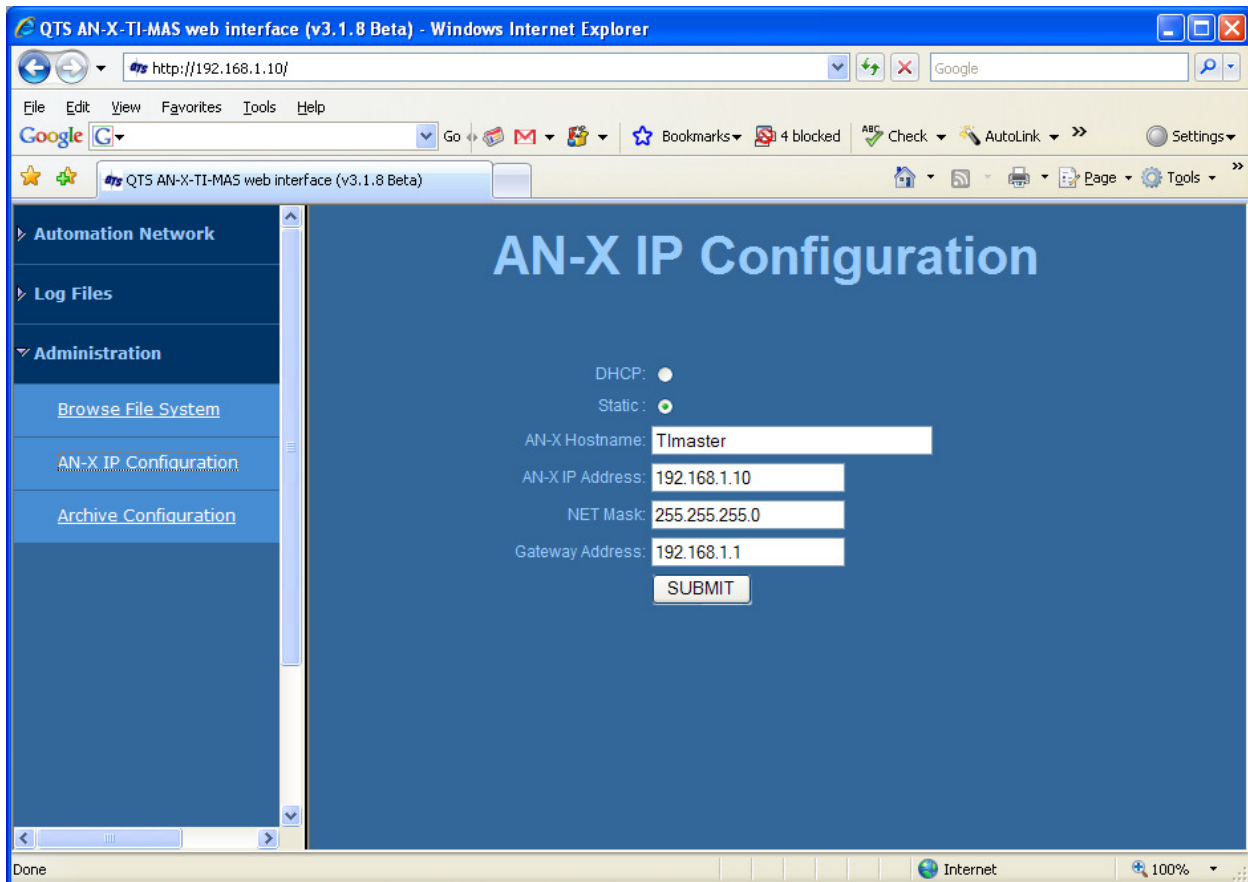
You can configure the AN-X to use DHCP or to use a static IP address.

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

Select *Administration/Archive configuration.*

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

Troubleshooting

LEDs

The AN-X-TI-MAS 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 (set station number and baud rate) failed
Single red flash	Unscheduled messaging, addressing or connection problem
Slow red flash	Script or application problem during startup

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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 indicates the status of the remote I/O network connection.

Solid green	Good communication to all configured bases
Yellow	No configured bases
Flashing red	A network error (CRC, Noise or abort error) has occurred within the last 1 second
Solid red	A configured base is not responding

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 47 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 47 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 51 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

Supported Module Types

The following tables show all the module types supported by the
AN-X-TI-MAS. The AN-X Type= column shows what you enter in the
base configuration and the I/O configuration that results.

Special function modules are not supported.

Low Density Modules

AN-X Type=	X	Y	WX	WY
8X	8	0	0	0
7X1Y	7	1	0	0
6X2Y	6	2	0	0
5X3Y	5	3	0	0
3X5Y	3	5	0	0
2X6Y	2	6	0	0
1X7Y	1	7	0	0
8Y	0	8	0	0
8WX	0	0	8	0
7WX1Y	0	1	7	0
6WX2Y	0	2	6	0
5WX3Y	0	3	5	0
4WX4Y	0	4	4	0
3WX5Y	0	5	3	0
2WX6Y	0	6	2	0
1WX7Y	0	7	1	0
8WY	0	0	0	8
7WY1X	1	0	0	7
6WY2X	2	0	0	6
5WY3X	3	0	0	5
4WY4X	4	0	0	4
3WY5X	5	0	0	3
2WY6X	6	0	0	2
1WY7X	7	0	0	1
7WX1WY	0	0	7	1

AN-X Type=	X	Y	WX	WY
6WX2WY	0	0	6	2
5WX3WY	0	0	5	3
4WX4WY	0	0	4	4
3WX5WY	0	0	3	5
2WX6WY	0	0	2	6
1WX7WY	0	0	1	7

Examples:

Slot=7,Type=8X

Slot=5,Type=5WX3WY

High-Density Non-mixed Modules

AN-X Type=	X	Y	WX	WY
16X	16	0	0	0
24X	24	0	0	0
32X	32	0	0	0
64X	64	0	0	0
16Y	0	16	0	0
24Y	0	24	0	0
32Y	0	32	0	0
64Y	0	64	0	0
16WX	0	0	16	0
24WX	0	0	24	0
32WX	0	0	32	0
64WX	0	0	64	0
16WY	0	0	0	16
24WY	0	0	0	24
32WY	0	0	0	32
64WY	0	0	0	64

Examples:

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Slot=1,Type=16X

Slot=3,Type=24WY

High-Density Mixed Modules

In the I/O configuration file, the type for high-density mixed modules begins with hdm, followed by any combination of the following:

0X,8X,16X,24X,32X

0Y, 8Y, 16Y,24Y,32Y

0WX,2WX,4WX,6WX,8WX,10WX,12WX,14WX,16WX,18WX,20WX ,22WX,24WX,26WX,28WX,30WX,32WX

0WY,2WY,4WY,6WY,8WY,10WY,12WY,14WY,16WY,18WY,20WY ,22WY,24WY,26WY,28WY,30WY,32WY

Examples:

Slot=7,Type=hdm8X16Y4WX32WY

The combination 0X0Y0WX0WY is forbidden.

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Specifications

Parameter	Specification
Function	Bridge between Ethernet and TI 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

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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:

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