

afi

120 Belmont Drive
Somerset, NJ 08873-1204

american fibertek Phone: 732.302.0660 Fax: 732.302.0667



N-TAH User's Manual

Revision 11/22/2013

WARRANTY INFORMATION

American Fibertek, Inc warrants that at the time of delivery the products delivered will be free of defects in materials and workmanship. Defective products will be repaired or replaced at the exclusive option of American Fibertek. A Return Material Authorization (RMA) number is required to send the products back in case of return. All returns must be shipped prepaid. This warranty is void if the products have been tampered with. This warranty shall be construed in accordance with New Jersey law and the courts of New Jersey shall have exclusive jurisdiction over this contract. **EXCEPT FOR THE FOREGOING WARRANTY, THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, EXPRESSED OR IMPLIED, WHICH EXTENDS BEYOND THE WARRANTY SET FORTH IN THIS AGREEMENT.** In any event, American Fibertek will not be responsible or liable for contingent, consequential, or incidental damages. No agreement or understanding, expressed or implied, except as set forth in this warranty, will be binding upon American Fibertek unless in writing, signed by a duly authorized officer of American Fibertek.



Table of contents

Introduction	4
Overview	
Package Checklist	
Product Features	
Product Specifications	
Getting Started	7
Panel Layout	
Connecting the Hardware	
LED indicators	
Real-time clock	
Initial IP configuration.....	13
Factory default IP	
Reset sequence	
NTP/timeserver configuration	
Operating modes.....	17
Overview	
Alarm input forwarding	
Aux outputs	
Pilot interface	
Web Interface.....	22
Connecting to the N-TAH	
Interface layout	
Operator setup	
Global settings	
IP Ethernet Setup	
NTP Setup	
Alarm Setup	
Aux Setup	
Watchdog	
Probe Setup	
Upload Firmware	
SNMP	
Reboot Net I/O	
Pinouts and connectors.....	36
Power	
Ethernet	
Aux/Alarm	

1 Introduction

Overview
Package Checklist
Product Features
Product Specifications

Overview

Thank you purchasing your American Fibertek N-TAH. Please take a few minutes to read these installation instructions in order to obtain maximum performance from this product.

The AFI N-TAH device allows contact closure signals to be made accessible on and linked over a network, with N-TAH devices acting as transparent bridges to link together customer equipment. This permits contact closure signals – such as door opening sensors, alarm buttons, or motion detectors – to be linked to remote alarm annunciation. The N-TAH provides aux output relays which may be activated by alarm input events or direct network commands. N-TAH devices can be linked together over a standard Ethernet connection, making it possible to use a pre-existing LAN or the Internet for device communication.

The N-TAH has a watchdog feature which allows it to monitor the function of up to two network connected devices. The N-TAH can monitor a network device by periodically sending ping requests to the device over the network. After a number of pings without responses from the target device, the N-TAH takes an action which can be configured by the user. This action can consist of either setting an aux contact output on the N-TAH for a set period of time, sending a TCP message over the network to a user-defined destination, or sending an alarm email to a user-supplied address

This feature permits the N-TAH to monitor an external piece of network-connected equipment, and on detection of a failure trigger an alarm, notify a technician, or power-cycle an external device through a relay.

The N-TAH also acts as an environmental sensor which is capable of monitoring the temperature, relative airflow, and humidity at the location where the unit is installed.

The N-TAH is powered either from a PoE source over the UTP cable or from a 12Vdc power supply which is provided with the unit.

Product Features

- Auto-detect 10/100 Ethernet connection
- 2 Contact outputs (Normally Open NO and Normally Closed NC)
- 2 Alarm inputs (configurable as NO/NC)
- Environmental monitoring of ambient temperature, humidity, and relative airflow
- Alarm transmission over network with verification and retry

Package Checklist

- N-TAH
- Installation guide
- Power supply 12Vdc/1.2A

Product Specifications

LAN

Ethernet	10/100 Mbps, RJ45
Protection	1500KV magnetic isolation

Contact closures

Contact type	NO and NC
Number of contact outputs	2
Current rating	1A
Voltage rating	42VDC 29VAC RMS

Battery backup

Real-time clock	10 years
User settings	Indefinite

Power requirements

Connector type	Screw terminal block
Power input voltage	12 VDC
Power required	5W maximum
POE class	Class 0
POE type	802.3af

Mechanical

Dimensions	4.43" x 4.175" x 1.125" 113mm x 106mm x 29mm
Weight	8 oz (0.226kg)
Mounting	Surface mount

Environmental

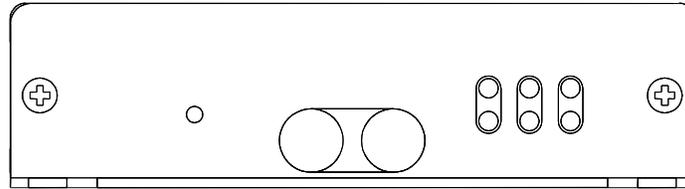
Storage temperature	-20C to +85C
Operating temperature	-40C to +75C
Operating humidity range	10 - 95%RH

2 Getting Started

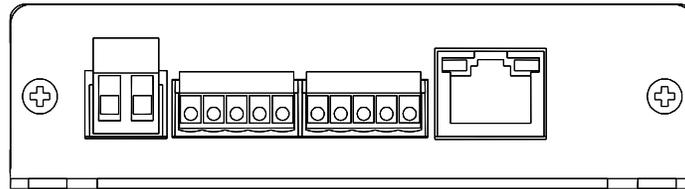
Panel Layout
Connecting the Hardware
LED indicators
Real-time clock

Panel Layout

N-TAH Front



N-TAH Rear



Connecting the Hardware (See photo on the next page)

Connecting power

The N-TAH has a two position screw terminal which accepts input from an external 12VDC power supply. To connect an external power supply, use two wires, 16-28 AWG in size. Strip about ¼” of the insulation from the end of the wires before inserting them into the terminal block. Tighten the terminal screws to secure the wires in the terminal block. Be sure that the polarity of the applied power is as indicated. Connecting power with incorrect polarity may damage the N-TAH.

The N-TAH is also capable of being powered over the network connection through 802.3af Power over Ethernet (PoE). To power a N-TAH over POE connect one end of an Ethernet cable to the N-TAH’s Ethernet port and the other end to a PSE network switch, midspan injector, or similar device capable of providing power over an Ethernet connection in accordance with the 802.3af POE standard. When used in this configuration the DC power input terminal block should not be connected to a power supply.

Connecting to the network

Connect one end of an Ethernet cable to the N-TAH’s Ethernet port and the other end of a cable to the Ethernet network.



Connecting contacts

The N-TAH has two ports for contact input (alarms) and contact output (aux). These ports are five pin headers with supplied plugs with screw terminals. Customer connections to the contact ports are made by securing stripped wire ends into the screw terminals.

Note: All connections to the screw terminals should be made with the terminal plug removed from the unit, and with power disconnected from any customer equipment being connected to the terminals.

Connecting an alarm input

The contact blocks have two terminals which are used as an alarm/contact input. Viewing the left side of the N-TAH, these two terminals are the two on the left side of each contact block. These terminals are intended to be connected to customer equipment which will make or break a connection between the two terminals, such as a door open switch or motion detector contact output. It can be designated through the configuration web page if an alarm condition will correspond to the connection being made or the connection being broken.

To connect an alarm source such as a door switch or motion detector to the N-TAH, use two wires, 16-28 AWG in size. Strip about ¼” of the insulation from the end of the wires before inserting them into the terminal block. Tighten the terminal screws to secure the wires in the terminal block.

Note: the electrical connection to the alarm inputs are to be connected only to dry (relay) contact closure devices, and must not be directly connected to any external power or ground source. Directly connecting either terminal of the alarm input to any voltage source or external ground may damage the N-TAH.

Connecting a supervised contact

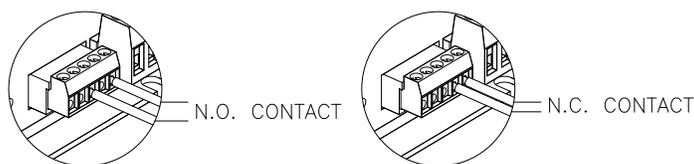
In supervised contact mode a 1K resistor is connected in series with the contact closure. This resistor should be located at or close to the contact device, so that short circuits and open circuits across the contact lines will be detected. A valid contact closure will be registered only when the resistance across the contact input lines is measured to be 1K ohm.

Connecting an aux output



The contact blocks have three terminals which are used for the aux contact out function. The contact outputs are form C contact closures.

To connect an external device to an aux contact out on the N-TAH, use two wires, 16-28 AWG in size. Strip about ¼” of the insulation from the end of the wires before inserting them into the terminal blocks. Tighten the terminal screws to secure the wires in the terminal block.



Aux Contact Out

When an output is not active, the Common terminal will be electrically connected inside the N-TAH to the Normally Closed terminal. When the output becomes active, the connection between the Common terminal and the Normally Closed terminal will be broken, and a connection will then be made inside the N-TAH between the Common terminal and the Normally Open terminal.

The Aux Output terminals are electrically isolated from the N-TAH and from each other, and can be safely connected to external power sources or grounds.

LED indicators

Within 5 seconds of the power cable being connected, the N-TAH will perform a self test of its front panel indicator LEDs. The LEDs will first light green, then red, then turn off. Once the sequence has finished the LEDs will resume their normal function and the unit will be ready for use.

The N-TAH has six LED indicators on the right side of the unit. The action of individual LEDs is as follows:

Power indicator LED

The upper right LED is the Power Indicator. This LED indicates that power is applied to the unit. During initial powering up of the unit, the power LED will briefly flash green, then red for a moment. It should then light green and remain green while the unit is on.

Probe LED

The lower right LED indicates the status of the environmental probe function. During initial powering up of the unit, this LED will briefly flash green, then red for a moment. If any of the measured environmental conditions exceed their warning or alarm thresholds, this LED will then illuminate red, otherwise it will illuminate green.

Alarm LEDs

The top center and top left LEDs indicate the status of the alarm inputs. During initial powering up of the unit, these LEDs will briefly flash green, then red for a moment. They will then be illuminated red if the corresponding alarm input is active, or off when the corresponding alarm input is not active.

Aux Status LEDs

The bottom center and bottom left LEDs indicate the status of the aux contact outputs. During initial powering up of the unit, these LEDs will briefly flash green, then red for a moment. They will then be illuminated green if the corresponding aux contact output is active, or off when the corresponding aux contact output is not active.

Real-time clock

The N-TAH's real-time clock and calendar (RTC) uses a lithium battery to retain time and date settings while the unit is not powered. It is strongly recommended that you not attempt to replace this battery without technical assistance from AFI.

3

Initial IP configuration

Factory default IP
Reset sequence
NTP/timeserver configuration

Factory default IP

The N-TAH is factory programmed with the following default network settings:

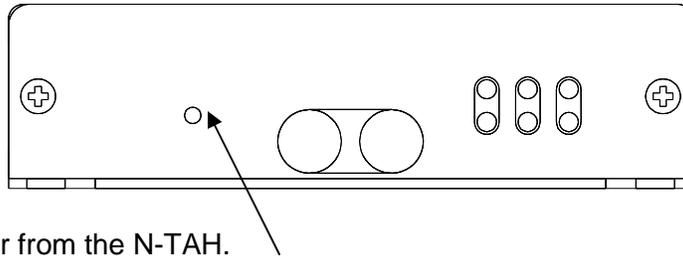
IP address	192.168.0.246
Netmask	255.255.255.0
Gateway	192.168.0.143
DNS	None programmed

If the N-TAH has not had its IP address changed by the user it will be possible to connect to it at this network address. If you do not know the IP address of the unit, you can reset the unit back to factory defaults and then connect at the default address.

Reset sequence

If the IP address or username and password to log in are not know, it will be necessary to reset the N-TAH to factory defaults in order to access the administration web interface. The reset procedure will set all unit settings to their factory defaults.

To reset the N-TAH perform the following steps:



Disconnect power from the N-TAH.

With a paperclip or other small object, press and hold the reset button.

Connect power to the N-TAH.

Wait ten seconds.

Release the reset button.

The N-TAH will now be reset to factory default configuration. This will reset all user-configurable settings, including network address, username and password, and all contact and serial interface settings.

NTP/timeserver configuration

The N-TAH has a real time clock/calendar which keeps track of the current **Coordinated Universal Time** (UTC). This battery-backed time and date setting can be updated by regular **Network Time Protocol** (NTP) packets from a server connected to the same network as the N-TAH. Alternately, the N-TAH can be set to actively connect to a UTC server for routine clock/calendar updates. The default setting is to accept NTP packets.

4

Operating modes

- Overview
- Alarm input forwarding
- Aux outputs
- Watchdog Function
- Pilot interface
- Environmental Probe

Overview

The N-TAH permits devices which use contact closure signals to communicate with each other to be connected over an Ethernet network. The N-TAH acts as a virtual cable connection, permitting signals to be sent between units as if there was a direct connection between them. This allows the distance between customer equipment to be greatly increased, and reduces the number of cables needed to connect multiple pieces of customer equipment.

The N-TAH makes contact inputs and outputs accessible on a network. Other devices on the network (including other AFI devices such as the N-111 or Commander) can connect to these ports, or accept connections from them, allowing contact closure events to be transmitted between devices. The N-TAH comes with a configuration web interface which can be used to link contact ports on multiple N-TAH devices together to provide a transparent connection between customer equipment over the network.

In addition to providing transparent contact connections between customer equipment, the N-TAH is also intended to work as part of a system with V'NES Pilot software. This permits features such as logging of contact events or environmental sensor data.

Alarm input forwarding

The N-TAH has two contact inputs which can be connected to customer supplied contact closure devices such as motion detectors or door switches. Each alarm input can be linked through the N-TAH to trigger an aux contact output on that device, or another N-TAH device or other AFI devices elsewhere on the network.

The conditions which will be considered an alarm can be set through the configuration web page. Thus the N-TAH can be used with alarms where a contact is broken (such as a wire break or emergency stop switch) or where a contact is made (such as a motion detector). The minimum duration that the contact must be made or broken before an alarm is registered can also be set by the user, so that the user can set an alarm to trigger only if an alarm condition has been present for a certain amount of time.

Each aux input may also be configured to operate in 'supervised' mode, where the contact will only be triggered when a 1K resistance is detected across the input. Either an open circuit or a short circuit will be detected as no contact made. This can be set by the user through the configuration screen.

When an alarm is triggered, the N-TAH can be set to activate aux output contacts either on that same N-TAH, or on other N-TAH or AFI devices on the network. The user can set which output to set and whether to turn it on or off in response to the triggered alarm. The user can also set the target aux contact out to be set on or off for a specific duration in response to a local alarm condition. Alternately the user can set the target aux contact out to be set on or off indefinitely in response to a local contact, so that a local contact will cause an aux out to be set or cleared until some other trigger clears or sets that aux output.

The permitted targets of aux contact actions to be taken in response to local alarms are any N-TAH devices, or any other compatible AFI devices such as the N-111 or C10

Commander devices, on the same network as the N-TAH. Up to two independent actions can be taken by an N-TAH in response to a local alarm condition.

Local actions – where a local alarm condition is set to activate an aux contact output on the same local unit – will be taken immediately.

Remote actions – where a local alarm condition is set to trigger an aux contact on another unit – are stored in a queue and acted on sequentially. The N-TAH will for each queued action attempt to open a connection to the target device and send it a command to take the set aux output action. If it fails to connect, or fails to get a confirmation response from the target device, it will retry the action after a 5 second delay. The N-TAH will attempt to take an action 15 times before abandoning it.

The user may also set up to two messages to be sent to specified IP addresses for each alarm input. Separate messages can be specified for alarm detection and alarm clearing.

The N-TAH will also send messages to up to four Pilot servers on alarm input change, as well as periodic updates of all alarm and aux status. These messages can trigger events in the CMS Pilot Software.

Aux outputs

The N-TAH makes two aux contact outputs available to devices on the network. Any device on the network (with a properly formatted and authenticated message signal) can connect to a port on the N-TAH and trigger one of those output ports to change state. The N-TAH will verify that the indicated aux output did in fact change state and will respond to the device which sent the message to confirm. The N-TAH's aux outputs can accept state change commands from any number of sources.

The N-TAH outputs are controlled by relays. The user can set, through the configuration web page, the behavior for the contacts to take when power is applied to the unit after a power outage. The output can be configured to switch on or switch off. Switching off is the default condition. The contact will turn off on power loss, this cannot be changed.

The aux output can also be manually controlled by the user through the configuration web page. The web page will indicate the current state of the aux output and permit the user to change that state.

The N-TAH will also send messages to up to four Pilot servers on aux contact output change, as well as periodic updates of all alarm and aux status. These messages can trigger events in the CMS Pilot Software.

Watchdog function

The N-TAH has a watchdog feature which allows it to monitor the function of up to two network connected devices. The N-TAH can monitor a network device by periodically sending ping requests to the device over the network. After a number of pings without responses from the target device, the N-TAH takes an action which can be configured by the user. This action can consist of either setting an aux contact output on the N-TAH

for a set period of time, sending a TCP message over the network to a user-defined destination, or sending an alarm email to a user-supplied address

This feature permits the N-TAH to monitor an external piece of network-connected equipment, and on detection of a failure trigger an alarm, notify a technician, or power-cycle an external device through a relay.

Pilot interface

The N-TAH is intended to communicate over the network with up to four Pilot server devices. The user will provide an address and port number for each of the Pilot servers he wishes the N-TAH to communicate with. The N-TAH will automatically attempt to connect to Pilot servers when a valid IP address and port number have been provided.

Once connected to a Pilot server, the N-TAH will send updates of the status of all alarm inputs and aux outputs, along with the latest readings from all the embedded environmental sensors (temperature, relative airflow, and humidity), to each Pilot server every 5 seconds. It will also send immediate updates every time an alarm input or aux output changes state, or when a probe reading exceeds warning or alarm thresholds. These messages can trigger events in the Pilot VMS software.

Environmental Sensors

The N-TAH monitors temperature, relative airflow, and relative humidity of the environment where the unit is located. The airflow and temperature sensors are located in the black shroud which extends from the right side of the unit and which should be exposed to the airflow being measured.

The N-TAH will measure the environmental conditions and take a new set of readings every ten seconds. The latest readings will be displayed on the web page, and forwarded to any connected Pilot servers. If any of the readings are outside the set warning or alarm levels, the N-TAH can take several programmed actions:

1. Setting an aux contact output on the N-TAH for a set period of time.
2. Sending an alarm email to a user-supplied address.
3. Notify any connected Pilot servers of the alarm condition.

5

Web Interface

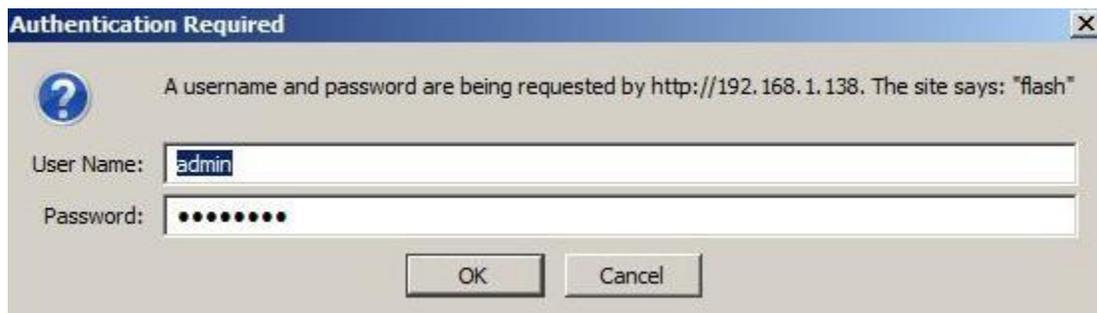
Connecting to the N-TAH
Interface layout
Operator setup
Global settings
IP Ethernet Setup
NTP Setup
Alarm Setup
Aux Setup
Watchdog
Probe Setup
Upload Firmware
SNMP
Reboot Net I/O

Connecting to the N-TAH

Use a Windows PC or similar computer connected to an Ethernet network. Connect the N-TAH to the same network. Ensure that the network is one where the IP address of the N-TAH (Default address is 192.168.0.246) is legal and not already in use.

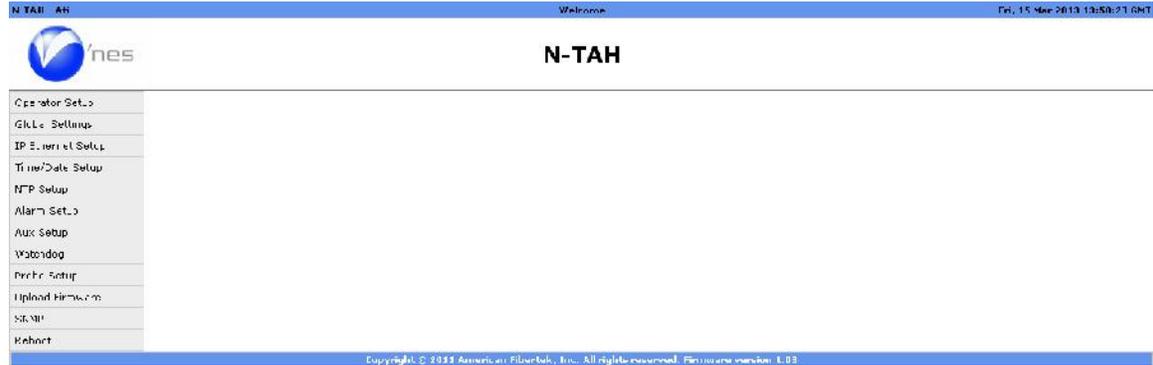
You will need to use a browser program such as Internet Explorer with cookie functionality enabled to connect to the N-TAH.

Type 192.168.0.246 in to the Address bar of your browser window and then press Enter. (If you have changed the IP address of the N-TAH, you will need to type that address in instead.) You should see a prompt for a User Name and Password to access the unit.



The default User Name and Password are "Admin" and "Password" respectively. It is strongly recommended that you change these when you first install and set up your unit.

Interface layout



The N-TAH web interface screens use a common design in which the screen is divided into three sections. Across the top of the screen is a title bar which contains the user-settable device name and device location strings, and the current time and date setting.

Down the left side of each screen is a menu used to access the configuration sub-pages. Clicking on one of the selections in that menu will bring up that configuration sub-page. The name of currently selected sub-page will be indicated in bold.

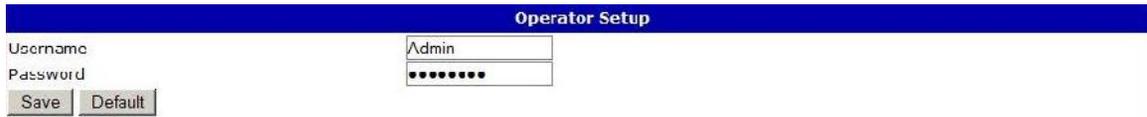
When an individual sub-page has been selected, that sub-page will display in the main part of the interface screen. The name of that sub-page will be shown in a header just below the main title bar. Controls specific to each sub-page will be shown below that, and at the bottom of the screen will be buttons labeled "Save" and "Default"



The Save button at the bottom of each screen will cause the specific settings on that screen to be saved to the N-TAH's nonvolatile configuration files, and then will return the user to the main configuration screen.

The Default button will cause all settings on that screen to be reset back to their factory defaults. It will also save the default settings to the nonvolatile configuration memory and return the user to the main configuration screen. These changes will take place immediately.

Operator setup



Operator Setup

Username

Password

The Operator Setup screen permits the user to set the Username and Password used to log in to the operator web page. A username and password combination are required. It is recommended that you change these from the default settings.

Setting	Default Value	Range
Username	"Admin"	15 characters
Password	"Password"	15 characters

Changes to this page take place immediately. If you change the username or password and save changes, you will then have to enter the new username and password to continue using the web interface.

Global settings

The Global Settings screen permit the user to change the Device Name and Device Location strings associated with the N-TAH. These strings are shown at the header at the top of every configuration web page. They are also provided in the configuration data sent to any Pilot server which the N-TAH communicates with to identify the N-TAH.

The user may optionally enter contact information for this unit. This string is used as part of the unit identification information during SNMP reporting. It is also included as part of the configuration data set to Pilot servers.

The Global Settings screen also permits the user to change which authentication will be used for the API. The user may select for the fixed internal username and password to be used, or for the user-supplied username and password to be used.

The Temperature setting controls whether temperature is displayed to the user in Celsius or Fahrenheit units. The default setting is Celsius. If Fahrenheit is selected, the temperature displayed to the user and available through the SNMP interface will be in Fahrenheit.

Setting	Default Value	Range
Device Name	"N-TAH"	39 characters
Device Location	"Afi"	39 characters
Contact Information		39 characters
API Authentication	Internal Authentication	Internal Authentication User Authentication
Temperature	Celsius	Celsius Fahrenheit

Changes to the Device Name and Device Location settings take effect immediately.

Changes to the API Authentication will take effect at the next unit startup. Note that when tunneling contacts between units, both units must have the same API Authentication setting and the same Username and Password set.

IP Ethernet Setup

IP Ethernet Setup			
IP Address	192.168.1.1	<input type="checkbox"/> Use DHCP	<input type="checkbox"/> Show IP Address
Subnet Mask	255.255.255.0		
Default Gateway	192.168.1.1		
DNS	0.0.0.0		
MAC address	08:90:02:aa:36:30		
Event Server1	0.0.0.0	:	8E03
	NOT CONNECTED		
Event Server2	0.0.0.0	:	8E03
	NOT CONNECTED		
Event Server3	0.0.0.0	:	8E03
	NOT CONNECTED		
Event Server4	0.0.0.0	:	8E03
	NOT CONNECTED		
To address			
Mail server			
Login name			
Password			
Retries	3	every	15 minutes
Mail status			
<input type="button" value="Save"/> <input type="button" value="Default"/>			

Network Settings:

The IP Ethernet Setup page permits the user to set the network address and network access settings of the N-TAH. It also permits the user to designate up to four Pilot servers for the N-TAH to connect and sent configuration data and status updates to.

Setting	Default Value	Range
IP Address	" 192.168.0.246 "	15 characters
Subnet Mask	"255.255.255.0"	15 characters
Default Gateway	" 192.168.0.143 "	15 characters
DNS	"0.0.0.0"	15 characters
MAC address	Unique for each unit	6 bytes hexadecimal

These four IP configuration strings must be provided in dotted-quad format and have a maximum length of 15 characters. Note that changes to these settings take place immediately, so if you change the unit's IP address in this screen and then save the settings you will have to enter the new IP address in the browser address bar to reconnect to the unit. Changes to the IP address or subnet mask will also cause any active Pilot or serial port network connections to disconnect. Those connections will then attempt to reconnect with the new network settings.

The DNS is an optional field. If a valid DNS address is provided, it will be used to look up the address of the mail server provided by the user.

Event Server Settings:

Setting	Default Value	Range
Pilot Server	1 - 4	Fixed
IP	"0.0.0.0"	15 characters
Port	8800	8000 - 32767

Settings for four Pilot servers are provided. Default settings for each are "0.0.0.0" and port "8800". An N-TAH will not attempt to connect to a Pilot server whose address is still "0.0.0.0", but will begin attempting to connect as soon as a valid address is entered and saved.

For each of the four target servers, an indication of "CONNECTED" or "NOT CONNECTED" is provided to show if the N-TAH has successfully connected to that server.

Email Settings:

Setting	Default Value	Range
To address		80 characters
SMTP Mail server		64 characters
Login name		64 characters
Password		16 characters
Retries	3 tries every 15 minutes	0-999, 0-999

In order to send email notifications the N-TAH needs to connect to an SMTP mail server. The server may be an IP Address or mail server URL. In the case of a URL, at least one DNS server must be specified on the IP Ethernet set up page.

A 'Mail status' indication is provided to indicate the status of any attempt to send an Email message.

NTP Setup

The NTP Setup screen is used to control how the real-time clock/calendar of the N-TAH is updated. The user can select one of three update modes: No updates, NTP broadcast updates, or polling a NTP server.

If “None” is selected for the NTP update mode, the N-TAH will never update its real-time clock/calendar. If the time was set accurately before updating was disabled and a working battery is installed it should retain a fairly accurate time and date for some time. There will be some drift from true time and date over time, so this mode is not recommended.

If “Accept NTP Broadcast” is selected, the N-TAH will update its time and date settings every time it received a NTP broadcast packet on the network. This is the default setting.

If “Poll NTP Server” is selected, the N-TAH will periodically connect to a NTP server to update its RTC setting. No server is specified by default, so if the user wishes to use this function they will have to specify a server address. The time between updates can be set. The default setting for update rate is to update once every 12 hours.

Setting	Default Value	Range
Mode	Accept NTP Broadcast	None Accept NTP Broadcast Poll NTP Server
Server Address	"0.0.0.0"	15 characters
Hours	12	0 - 32767
Minutes	0	0 - 59

Alarm Setup

The Alarm Setup screen is used to configure the N-TAH’s alarm inputs, and the actions to be taken when each input is triggered. The hardware alarm contact inputs can have their trigger conditions and actions independently configured.

Alarm settings

Setting	Default Value	Range
Name	“alarm-N”	15 characters
Input Type	Normally Open	Normally Open Normally Closed
Supervision	Normal	Normal Supervised
Duration	1 second	Static 1,5,15,30,or 45 seconds 1 or 5 minutes

Each alarm input has an associated user-settable text label. The alarm name label is supplied along with the number when reporting the status of an alarm input to a Pilot server. This label may be up to 15 characters long.

The Input Type setting selects if the normal (non-alarm) state is contact input closed or contact input open. In Normally Open mode an alarm will be registered when the two contact input terminals are shorted to each other. In Normally Closed mode an alarm will be registered when the two contact inputs are not shorted to each other. The default mode is Normally Open.

The Supervision setting selects if the alarm input is a normal contact closure or a supervised contact closure. In supervised mode the contact closure will only be registered if a 1K resistance value is measured across the alarm input terminals. An open circuit and a short circuit will both be detected as no contact closure. The default mode for Supervision is Normal (non-supervised) contact mode.

The duration setting sets a minimum time for which the alarm condition must be maintained before an alarm is triggered. Setting the duration to “Static” will cause the N-TAH to trigger an alarm the instant it detects an alarm condition. If a longer duration is selected the N-TAH will not trigger an alarm until the input has been maintained continuously for that duration.

Alarm actions

Each alarm input can have set multiple actions to be taken on that alarm's triggering. These actions consist of setting the contact outputs on that same N-TAH, or on other N-TAH devices or other AFI devices on the network, of sending specific text messages to a target over the network, or of sending an email message or SNMP trap.

Alarm settings

Setting	Default Value	Range
Email	Off	Check box on/off
SNMP	On	Check box on/off

Each alarm input can be configured to send an email message when the associated alarm input changes state. Multiple alarm inputs which occur within 5 seconds will be combined and sent as separate lines in a single email. Each event line in the email contains a time stamp indicating when that event occurred, and the entire email will also include information on the name and location of the N-TAH which sent the email.

If the unit is configured to send trap messages to a SNMP server, then a change of state on each alarm will trigger the sending of an appropriate trap message. This feature can be individually enabled or disabled for each alarm input.

Remote Aux Actions

Setting	Default Value	Range
Action address	"0.0.0.0"	15 characters
Action aux	1-6	1-99
Action state	On	On Off
Action duration	5 seconds	Follow 1,5,15,30,or 45 seconds 1 or 5 minutes Indefinitely

Address indicated the network IP address of the target device. This may be up to 15 characters long and must be in dotted-quad format. The default setting of "0.0.0.0" indicates no action to be taken. Set this to the IP address of this N-TAH to indication an action to be taken on the local unit. Setting it to another valid IP address will cause the N-TAH to attempt to connect to that target on the network and set an output on it when the alarm is triggered.

Aux is the number of the aux contact out on the target device to trigger. The valid range of this number depends on the device being contacted. The N-TAH does not know what the target unit is, so it is the responsibility of the user to select a valid output number for the target device.

Action selects if the target aux output is to be set ON or OFF in response to the local alarm condition.

Duration sets how long to set the target output for. If a duration is set, the N-TAH will set the target aux contact out to the selected status (ON or OFF) for the chosen duration, and then will set the target to the opposite setting. Thus, if an alarm is set to trigger a certain aux ON for 5 seconds, the N-TAH will when that alarm is triggered contact the target unit, set the indicated aux to ON, wait five seconds, and then set the indicated aux to OFF.

Selecting "Follow" for the duration will cause the N-TAH to make the targeted aux contact out follow the state of the alarm input. If the action selected is ON, the target will be turned ON whenever the local alarm goes ON, and OFF when the local alarm goes OFF. Selecting an action of OFF will invert the behavior, causing the targeted aux to go OFF when the local alarm is triggered and ON when it is not.

Selecting "Indefinitely" for the duration will simply cause the N-TAH to set the target aux contact ON or OFF once and leave it so set.

Buttons are provided which force an ON or OFF message to be sent to the indicated remote aux output immediately. These are used to test unit configuration and network connectivity.

IP Message Actions

Setting	Default Value	Range
IP:PORT	"0.0.0.0:23"	24 characters
Message – Alarm		31 characters
Message – Clear		31 characters
Repeat	Off	On or off
Repeat time	15 seconds	0-9999 seconds

Address indicates the network IP address and port of the target device. This may be up to 24 characters long and must consist of an IP address in dotted-quad format, followed by a colon, followed by a port number in the range of 0 to 32767. The default setting of "0.0.0.0:23" indicates no action to be taken.

Message – Alarm holds a text message of up to 31 characters. When the local alarm is triggered this message will be sent to the entered IP address.

Message – Clear holds a text message of up to 31 characters. When the local alarm is cleared this message will be sent to the entered IP address.

Repeat – This checkbox enables a function which will cause the N-TAH to send the current status of this alarm to the entered IP address repeatedly.

Repeat time – this holds a numerical value from 0 to 9999 which gives the interval in seconds at which the status of the alarm will be sent to the entered IP address if the Repeat checkbox is enabled.

Local Aux Actions

Setting	Default Value	Range
Local aux	1-2	1-2
Action state	On	On Off
Action duration	5 seconds	Follow 1,5,15,30,or 45 seconds 1 or 5 minutes Indefinitely

Aux is the number of the aux contact out on the local device to trigger. This number may be from 1 to 6.

Action selects if the target aux output is to be set ON or OFF in response to the local alarm condition.

Duration sets how long to set the target output for. If duration is set, the N-TAH will set the target aux contact out to the selected status (ON or OFF) for the chosen duration, and then will set the target to the opposite setting. Thus, if an alarm is set to trigger a certain aux ON for 5 seconds, the N-TAH will when that alarm is triggered contact the target unit, set the indicated aux to ON, wait five seconds, and then set the indicated aux to OFF.

Selecting "Follow" for the duration will cause the N-TAH to make the targeted aux contact out follow the state of the alarm input. If the action selected is ON, the target will be turned ON whenever the local alarm goes ON, and OFF when the local alarm goes OFF. Selecting an action of OFF will invert the behavior, causing the targeted aux to go OFF when the local alarm is triggered and ON when it is not.

Selecting "Indefinitely" for the duration will simply cause the N-TAH to set the target aux contact ON or OFF once and leave it so set.

Timing of actions on local / remote units

Actions to set aux contact outputs on the local unit will be acted on immediately. Actions to set aux contact outputs on other units on the network, or to send text messages to other units on the network, may be delayed up to a few seconds according to network conditions.

The N-TAH stores actions to be taken in a queue. Each action is attempted in turn, and if an action is unable to be completed (unable to reach target address or target device did not acknowledge the command) it is pushed back on the queue and re-attempted after 5 seconds. After 15 failed attempts an action will be abandoned.

The N-TAH is capable of attempting 6 remote actions simultaneously, so a long wait for a target to respond will not prevent other actions from being attempted.

When an action is taken to set a target aux out for a specific time duration, the beginning of that duration will be from when the N-TAH first succeeded in contacting the target unit, not from when the alarm was triggered. Thus if a N-TAH is set to set a specific aux contact out ON for 5 seconds when an alarm input is triggered, and it takes 3 seconds to initially contact the target, the N-TAH will turn the target OFF 5 seconds after turning it ON and therefore 8 seconds after the alarm.

Aux Setup

The Aux Setup screen is used to configure the N-TAH's aux contact outputs.

Setting	Default Value	Range
Name	"aux-N"	15 characters
Email	Off	On/Off checkbox
SNMP	On	On/Off checkbox
State on Startup	Off	Off On
Current state	N/A	On Off

Each aux out also has a user-settable text label which may be up to 15 characters long. The aux name label is supplied along with the number when reporting the status of an aux contact output to a Pilot server.

Each aux contact can be configured to send an email message when it changes state. Multiple aux changes which occur within 5 seconds will be combined and sent as separate lines in a single email. Each event line in the email contains a time stamp indicating when that event occurred, and the entire email will also include information on the name and location of the N-TAH which sent the email.

If the unit is configured to send trap messages to a SNMP server, then a change of state on each aux will trigger the sending of an appropriate trap message. This feature can be individually enabled or disabled for each aux contact.

As each contact output has terminals for normally closed and normally open, there is no setting to change the action of a contact in software.

The default behavior of the N-TAH is set the output contact OFF when power is applied. Optionally, the user can select for the relay to turn ON when power is first applied.

The Aux Setup screen indicates the current state of each aux output, showing it as ON or OFF. These indications are updated every few seconds. Buttons are provided for each state so that the user may manually switch the output ON or OFF through the setup screen.

The aux contacts automatically accept commands from other devices on the network, such as other N-TAH devices, Scout or Commander devices, or other Pilot servers. This function cannot be disabled.

Watchdog

Watchdog

Watchdog 1 Enabled
 Ping IP Address every seconds, wait seconds for reply
 Trigger restart after failures
 Restart Delay Time minutes
 Trigger Aux for seconds
 TCP Message on Failure
 Email Message

The N-TAH has a watchdog function which can be used to monitor up to two network-connected devices for failure, and perform user-configurable actions when that device fails to respond.

Setting	Default Value	Range
Enabled	Not Enabled	Enabled Not Enabled
Ping IP Address	0.0.0.0	15 characters
Interval	15 seconds	1-9999 seconds
Timeout	3 seconds	1-9999 seconds
Failures	3	1-9999
Restart Delay	5 minutes	1-9999 minutes

When the Watchdog feature is enabled, the N-TAH will send ping requests to the target IP address at a frequency determined by the Interval setting. The N-TAH will wait for a period of time determined by the Timeout setting for a response to each ping message. If it does not receive a ping response for a ping, it will increment a counter which records the number of consecutive failed pings. A single successfully received ping response will set this counter to zero. When a number of failed ping responses equal to the Failures setting has occurred, the unit will take some action as determined by user settings. It will then wait for a number of minutes determined by the Restart Delay setting before sending any more ping messages.

Watchdog failure actions

Setting	Default Value	Range
Aux time	15 seconds	1-9999 seconds
TCP Message		40 characters
IP:PORT	"0.0.0.0:23"	24 characters
Email Message		80 characters

When the N-TAH fails to receive a number of consecutive pings from the target device, it will trigger the local AUX contact output for a time period determined by the Aux Time setting. This output is intended to be used to trigger an alarm buzzer or light, or to cycle power on a small DC-powered device. The contact is rated for 42 volts, up to 1 Amp current, and should not be used to switch line voltage or any device which draws more than 1 Amp.

The N-TAH can also optionally send a TCP message of up to 40 characters to a target address on the network. IP:PORT indicates the network IP address and port of the target device. This may be up to 24 characters long and must consist of an IP address in dotted-quad format, followed by a colon, followed by a port number in the range of 0 to 32767. The default setting of "0.0.0.0:23" indicates no action to be taken.

The TCP Message field holds a text message of up to 40 characters. When a lack of ping response occurs, this message will be sent to the specified network address.

The Email Message field holds a text message up to 80 characters long which will be sent to the email address specified in the IP Ethernet Setup screen. If a message is specified here, it will be sent to this address when a watchdog failure occurs.

The Test Restart button is used to manually trigger a Watchdog reset. This will trigger the aux output to occur, and if specified will trigger a TCP message to be sent and an Email notification to be sent.

Probe Setup

Probe Setup

TCP Message IP: 0.0.0.0																			
Temperature = 20.01C																			
Warning: <0C:10.0C	Email: <input type="checkbox"/>	SNMP: <input type="checkbox"/>	Set Airflow Reference																
Alarm: 4C:10.0C	Warning: <input type="checkbox"/>	Alarm: <input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Aux Action 1</th> <th>Duration</th> <th>Aux Action 2</th> <th>Duration</th> </tr> <tr> <td>auxiliary-1</td> <td>0-sec</td> <td>auxiliary-1</td> <td>0-sec</td> </tr> <tr> <td>auxiliary-1</td> <td>0-sec</td> <td>auxiliary-1</td> <td>0-sec</td> </tr> <tr> <td>Alarm:</td> <td><input type="checkbox"/></td> <td>Repeat every:</td> <td>15 seconds</td> </tr> </table>	Aux Action 1	Duration	Aux Action 2	Duration	auxiliary-1	0-sec	auxiliary-1	0-sec	auxiliary-1	0-sec	auxiliary-1	0-sec	Alarm:	<input type="checkbox"/>	Repeat every:	15 seconds
Aux Action 1	Duration	Aux Action 2	Duration																
auxiliary-1	0-sec	auxiliary-1	0-sec																
auxiliary-1	0-sec	auxiliary-1	0-sec																
Alarm:	<input type="checkbox"/>	Repeat every:	15 seconds																
TCP Message Normal:																			
Airflow = 27.95%																			
Warning: 50%	Email: <input type="checkbox"/>	SNMP: <input type="checkbox"/>	Set Airflow Reference																
Alarm: 50%	Warning: <input type="checkbox"/>	Alarm: <input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Aux Action 1</th> <th>Duration</th> <th>Aux Action 2</th> <th>Duration</th> </tr> <tr> <td>auxiliary-1</td> <td>0-sec</td> <td>auxiliary-1</td> <td>0-sec</td> </tr> <tr> <td>auxiliary-1</td> <td>0-sec</td> <td>auxiliary-1</td> <td>0-sec</td> </tr> <tr> <td>Alarm:</td> <td><input type="checkbox"/></td> <td>Repeat every:</td> <td>15 seconds</td> </tr> </table>	Aux Action 1	Duration	Aux Action 2	Duration	auxiliary-1	0-sec	auxiliary-1	0-sec	auxiliary-1	0-sec	auxiliary-1	0-sec	Alarm:	<input type="checkbox"/>	Repeat every:	15 seconds
Aux Action 1	Duration	Aux Action 2	Duration																
auxiliary-1	0-sec	auxiliary-1	0-sec																
auxiliary-1	0-sec	auxiliary-1	0-sec																
Alarm:	<input type="checkbox"/>	Repeat every:	15 seconds																
TCP Message Normal:																			
Humidity = 13.69%																			
Warning: 10C%	Email: <input type="checkbox"/>	SNMP: <input type="checkbox"/>	Set Airflow Reference																
Alarm: 10C%	Warning: <input type="checkbox"/>	Alarm: <input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Aux Action 1</th> <th>Duration</th> <th>Aux Action 2</th> <th>Duration</th> </tr> <tr> <td>auxiliary-1</td> <td>0-sec</td> <td>auxiliary-1</td> <td>0-sec</td> </tr> <tr> <td>auxiliary-1</td> <td>0-sec</td> <td>auxiliary-1</td> <td>0-sec</td> </tr> <tr> <td>Alarm:</td> <td><input type="checkbox"/></td> <td>Repeat every:</td> <td>15 seconds</td> </tr> </table>	Aux Action 1	Duration	Aux Action 2	Duration	auxiliary-1	0-sec	auxiliary-1	0-sec	auxiliary-1	0-sec	auxiliary-1	0-sec	Alarm:	<input type="checkbox"/>	Repeat every:	15 seconds
Aux Action 1	Duration	Aux Action 2	Duration																
auxiliary-1	0-sec	auxiliary-1	0-sec																
auxiliary-1	0-sec	auxiliary-1	0-sec																
Alarm:	<input type="checkbox"/>	Repeat every:	15 seconds																
TCP Message Normal:																			

The Probe Setup screen will display all current environmental readings for the N-TAH, and configuration data for actions to be taken when a reading is outside warning or alarm levels.

A button is provided to set a reference airflow point. When this button is pressed the attached probe will take the current airflow reading as a 100% reference level. All following airflow readings will be a percentage of the reference airflow level.

The TCP Message IP field is used to set a target network address and port which TCP messages indicating the status of each monitored environmental data value will be sent to on change and optionally at periodic intervals.

Each measured environmental parameter has a set of alarm and warning thresholds programmed. The user may set the alarm and warning values, along with the actions to be taken when a value exceeds them, through this page.

Setting	Default Value	Range
Warning	Varies	
Email	Not Enabled	Enabled Not Enabled
Aux Action 1	Local Auxiliary-1	1-2
Duration	0 seconds	Follow : 10, 30, or 60 seconds 15 or 30 minutes : 1 or 4 hours Indefinitely
Aux Action 2	Local Auxiliary-2	1-2
Duration	0 seconds	Follow :10, 30, or 60 seconds 15 or 30 minutes : 1 or 4 hours Indefinitely
Alarm	Varies	
Email	Off	On/Off Checkbox
SNMP	On	On/Off Checkbox
Aux Action 1	Local Auxiliary-1	1-2
Duration	0 seconds	Follow :10, 30, or 60 seconds 15 or 30 minutes : 1 or 4 hours Indefinitely
Aux Action 2	Local Auxiliary-2	1-2
Duration	0 seconds	Follow :10, 30, or 60 seconds 15 or 30 minutes : 1 or 4 hours Indefinitely

The warning and alarm levels are preset according to the type of values being measured by the probe. The threshold settings may be upper or lower bounds, according to the measurement type. (For example, Temperature and Humidity are upper bounds, while Airflow is a lower bound).

The N-TAH will measure all environmental data every ten seconds, and will compare the readings to the warning and alarm thresholds. If any of the readings exceed the warning or alarm levels it will take an action as determined by the settings on this screen.

The Email checkbox, when set, will tell the N-TAH to send an email to the email address set on the 'IP Ethernet Settings' screen. This email will indicate which reading on which probe exceeded the alarm or warning level, along with a timestamp and the name and location of the N-TAH unit.

The SNMP checkbox, when set, will tell the N-TAH to send a trap message to the SNMP server(s) configured on the SNMP setup page. This message will be sent when any of the probe readings goes into or out of the alarm or warning levels, and will contain the current value of the measured reading.

The 'Aux Action 1' and 'Aux Action 2' settings are used to signal the N-TAH to trigger up to two local aux outputs in response to a measurement exceeding alarm or warning values. The N-TAH will trigger the set aux contact outputs for the indicated time when a value exceeds the alarm or warning levels.

Setting	Default Value	Range
Normal		31 characters
Warning		31 characters
Alarm		31 characters
Repeat	Off	Off On
Repeat Interval	15	0-9999 seconds

Each measured environmental data value can have a text message associated with each of its normal, warning, and alarm states. If a valid TCP address and port number are provided in the "TCP Message IP" field at the top of the screen, the message associated with each of the normal, warning, and alarm states will be sent to that address and port whenever the environmental data value changes state between normal, warning, and alarm.

If the 'Repeat' checkbox is selected, the N-TAH will send the message associated with the current state of the environmental data value to the entered IP address periodically. The Repeat Interval setting is used to set how frequently this message will be sent.

Upload Firmware



The screenshot shows a web interface for uploading firmware. At the top, there is a blue header bar with the text "Upload Firmware". Below the header, there is a text input field, a "Browse..." button, and an "Upload" button.

The Upload Firmware page is used to update the firmware in the N-TAH in the field, without having to open the unit or return it to American Fibertek. This feature is only to be used to upload firmware binaries supplied by AFI.

To use the feature click on the 'Browse...' button. A dialog box will open requesting the file to upload. Navigate to the binary file provided by AFI and open it. The dialog box will close, and the name of the selected binary file will appear in the text box. Press the 'Upload' button to start uploading the new binary file.

The file upload may take up to a minute to complete. Once it has completed you should see either a screen indicating that the firmware file was uploaded properly, or that some error occurred and the N-TAH was unable to use the uploaded firmware file.

To complete the firmware upload process and begin using the new firmware, you must power-cycle the N-TAH. Rebooting the unit with the Reboot Net I/O function will not be sufficient to finish updating the firmware. The unit must be turned off, let to sit for at least 5 seconds with no power, and then turned back on.

SNMP

The SNMP screen allows the user to configure the N-TAH's SNMP function. This function allows the N-TAH to automatically share information regarding the state of alarm inputs, aux contacts, and monitored environmental conditions with the user's SNMP management software over the network.

Setting	Default Value	Range
SNMP Enable	Enabled	Enable/Disable
Get Community	public	39 characters
Set Community	private	39 characters
Set Enable	Enabled	Enable/Disable
SNMP Server 1	0.0.0.0	15 characters
SNMP Server 2	0.0.0.0	15 characters
SNMP Server 3	0.0.0.0	15 characters
SNMP Server 4	0.0.0.0	15 characters

The entire SNMP function can be enabled or disabled by selecting either of the Enable or Disable radio buttons. This causes the entire SNMP function to be enabled or disabled.

The names of the Get and Set communities can be changed from their default settings to any text string of up to 39 characters. The Get community is used when retrieving the current values from the N-TAH. The Set community is used when changing values on the N-TAH, for example turning an aux contact on or off or changing an environmental measurement warning or alarm value. The names of the communities must match the community names set in the user's management software. This enables a degree of security for controlling contacts or changing warning levels. The Set function can also be independently disabled, so that it will only be possible to read data from the N-TAH.

Up to four SNMP servers can be programmed into the N-TAH. When an alarm input or aux contact output changes state, or when an environmental probe reading goes in or out of alarm or warning state, the N-TAH will send SNMP trap messages to every configured SNMP server on the list. This function can be independently enabled or disabled for every alarm, aux, or environmental reading.

Reboot

Reboot

[Click here to Reboot](#)

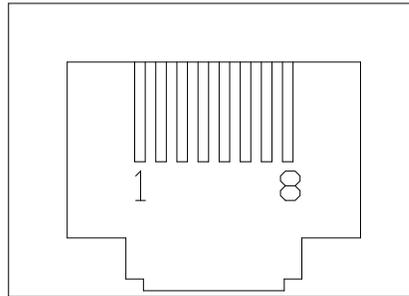
The Reboot screen allows the user to perform a hardware reset of the N-TAH. This will not affect the state of the stored configuration files, but will cause all N-TAH systems to reset as if a power interruption had occurred. A single button, "Click here to reboot", is provided to restart the system.

The N-TAH takes approximately 10 seconds to reboot and return to full function after this function is used. When the N-TAH is being reset, the aux contact outputs turn OFF until the reset cycle is completed, at which time it will behave as configured on the 'Aux Setup' page. Any messages to change aux outputs from other devices on the network will be ignored while the device is rebooting. Alarm conditions on the alarm input terminals will also be ignored while the device is rebooting.

A

Pinouts and connectors

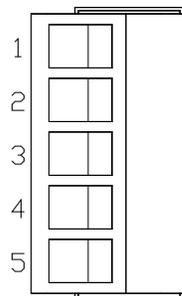
Ethernet



Pins

1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

Aux/Alarm

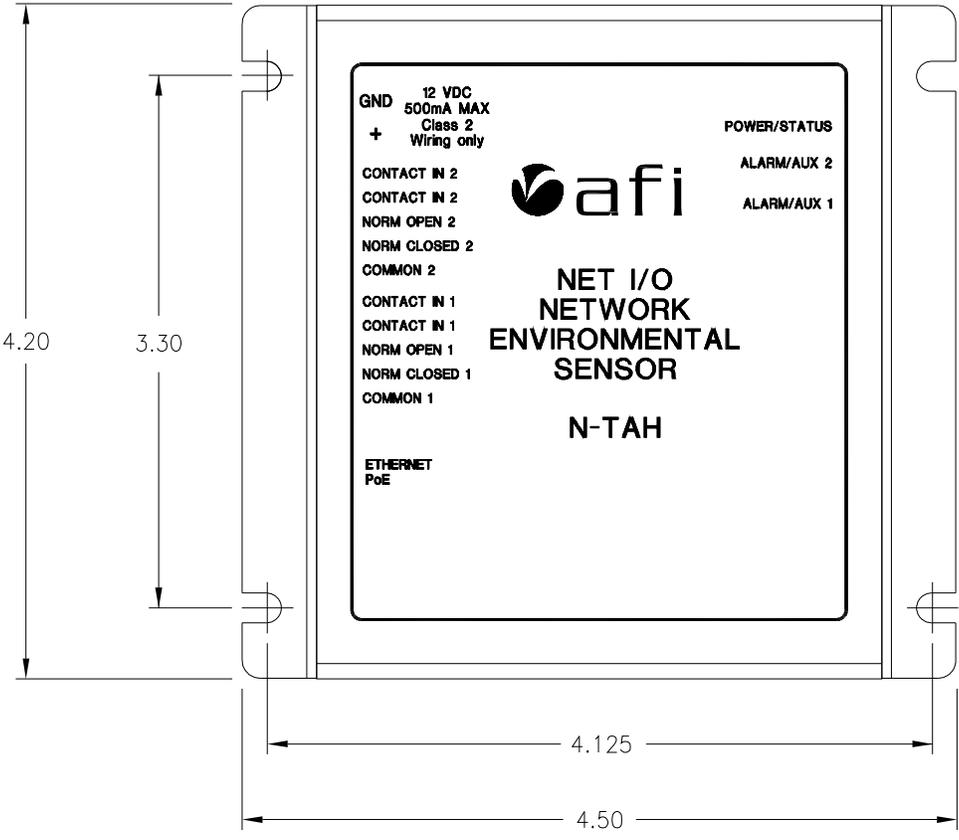


Pins

1	Alarm Contact In
2	Alarm Contact In
3	Aux Contact Normally Open
4	Aux Contact Normally Closed
5	Aux Contact Common

B

Outline Dimensions



C Service Information

Technical Assistance

If any questions arise concerning the installation of American Fibertek products, please allow us to assist you by calling, faxing or by E-mail.

Phone: + 732 302 0660

FAX: + 732 302 0667

techinfo@americanfibertek.com

afi

120 Belmont Drive
Somerset, NJ 08873-1204

american fibertek Phone: 732.302.0660 Fax: 732.302.0667