

ENVIROMUX® Series

ENVIROMUX-MINI-LX

Mini Server Environment Monitoring System Installation and Operation Manual



Front and Rear View of ENVIROMUX-MINI-LX

TRADEMARK

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INTRODUCTION

The ENVIROMUX-MINI-LX (ENVIROMUX) are Server Environment Monitoring Systems designed to monitor, from a remote location, the critical environmental conditions in cabinets and rooms containing servers, hubs, switches and other network components. Remote monitoring is provided via a 10/100BaseT Ethernet web interface, secure web interface, SSH, or Telnet. The input data is filtered, collected, analyzed and processed to allow the user to configure it to meet individual requirements. The user is able to specify parameters for all monitored signals. When a sensor exceeds the configured threshold, the unit will signal an alert. Alert methods include email, SMS, SNMP traps (MIBs), web-page alerts, and a visual indicator (red LED).

The ENVIROMUX-MINI-LX will monitor temperature, humidity, and detect the presence of water on a flat surface (such as the floor). The unit also has four sets of terminal block pairs for the connection of contact-closure sensors.

Features and Applications

- Monitor and manage server room environmental conditions over IP.
- Monitors and operates at temperatures from 32°F to 122°F (0°C and 50°C) and 20% to 90% relative humidity.
- Sensors supported:
 - 2 temperature/humidity sensors
 - 1 dedicated liquid detection sensor (more can be connected to CONTACT terminals)
 - 4 dry contact input devices
- Operates and configures via HTTP web page.
- 4 remote users can access the system simultaneously.
- Supports SMS alert messages via GSM modem
- Supports SMTP protocol
- Supports SNMP V1 and V2 MIB
- Supports Microsoft Internet Explorer 6.0 and higher, Firefox 2.0 and higher, and Netscape Navigator 9
- Sensor alerts and log messages are sent using email, Syslog, and SNMP traps when any monitored environmental condition exceeds a user-specified range.
- Sensor alerts, end of alerts, and log-ins are posted in message log, which is accessible through web interface.
- SNMP trap messages can be imported into Microsoft Excel
- Use in data centers, co-lo sites, web hosting facilities, telecom switching sites, POP sites, server closets, or any unmanned area that needs to be monitored.
- Security: HTTPS, SSHv2, SSLv3, IP Filtering, LDAPv3, AES 256-bit encryption, 3DES, Blowfish, RSA, EDH-RSA, Arcfour, SNMPv3, IPV6, Sntp support, 16-character username/password authentication, user account restricted access rights.
- Monitor (ping) up to 8 IP network devices.
 - Configure the timeout and number of retries to classify a device as unresponsive.
 - Alerts are sent if devices are not responding.
- Monitored sensors and devices can be individually named (up to 80 characters).
- Monitor environmental conditions.
 - Supports two sensors, including: temperature, humidity, up to 5 dry contacts or water detection sensors.
 - When a sensor goes out of range of a configurable threshold, the system will notify you via email, syslog, LEDs, web page, and network management (SNMP).
- Operates on a hardened Linux system.
- Firmware upgradeable "in-field" through Ethernet port.

Options:

- The ENVIROMUX can be ordered with a DIN rail mounting bracket- Add "D" to the part number (i.e. ENVIROMUX-LX-D)
- The ENVIROMUX can be ordered with battery backup support installed, providing up to 2.3 hours of operation in the event of a power failure- to order, add "B" to the part number (i.e. ENVIROMUX-MINI-LXB)

SUPPORTED WEB BROWSERS

Most modern web browsers should be supported. The following browsers have been tested:

- Microsoft Internet Explorer 6.0 or higher
- Netscape 7.2 or higher
- Mozilla FireFox 1.5 or higher
- Opera 9.0
- Google Chrome
- Safari 4.0 or higher for MAC and PC

MATERIALS

Materials supplied with this kit:

- NTI ENVIROMUX-MINI-LX Mini Server Environment Monitoring System
- 1- 120VAC or 240VAC at 50 or 60Hz-9VDC/1.5A AC Adapter (PS4074)
- 1- Line cord- country specific
- 1- USB2-AB-2M-5T 2 meter USB 2.0 male type A-male type-B transparent cable (CB4306)
- CD containing a pdf of this manual, a SNMP MIB file, and the NTI Discovery Tool

Additional materials may need to be ordered;

CAT5/5e/6 unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. for Ethernet connection

Available Sensors (Sold separately) :

FYI: Temperature and Humidity Sensors are available in 3, 7, 10 and 25 foot cable lengths.

- ENVIROMUX-T-xx Temperature Sensor for ENVIROMUX-MINI-LX
- ENVIROMUX-T-**IND**-xx Industrial Temperature Sensor for ENVIROMUX-MINI-LX
 - * Applications from 32°F to 104°F (0°C to 40°C) for the ENVIROMUX-T-xx.
 - * Applications from -4°F to 167°F (-20°C to 75°C) for the ENVIROMUX-T-**IND**-xx.
 - * High resistance to external influences on the cable due to digital output signal.
 - * Accurate to within $\pm 1.35^{\circ}\text{F}$ ($\pm 0.75^{\circ}\text{C}$).
 - * Includes mounting hardware.

- ENVIROMUX-RH-xx Humidity Sensor
 - * Applications from 20% to 80% relative humidity at temperatures between 0°C and 40°C.
 - * High resistance to external influences on the cable due to digital output signal.
 - * Accurate to within $\pm 5\%$ relative humidity.
 - * Includes mounting hardware.

- ENVIROMUX-TRH-xx Temperature/Humidity Combination Sensor
 - * Applications from 32°F to 104°F (0°C and 40°C) and 20% to 80% relative humidity.
 - * High resistance to external influences on the cable due to digital output signal.
 - * Accurate to within $\pm 1.35^{\circ}\text{F}$ ($\pm 0.75^{\circ}\text{C}$) and $\pm 5\%$ relative humidity.
 - * Includes mounting hardware.

- ENVIROMUX-LDx-y Liquid Detection Sensor
 - * For warning of flooding.
 - * Applications from 32°F to 167°F (0°C to 75°C)
 - * 100% waterproof electronics.
 - * Detects any conductive liquid.

- ENVIROMUX-M-DCS Door Contact Sensor
 - * Monitors access with a magnetic bridge sensor
 - * Screw terminals for 2-wire interface
 - * Wide actuating gap - approximately 1"
 - * Normally closed circuit connection
 - * Dimensions WxDxH (in.)- 0.5x0.5x2 (Switch), 0.5x0.5x2 (Magnet)

- ENVIROMUX-TDS Tamper Switch
 - * Sends activation signal when released
 - * Normally closed contact when depressed
 - * 2-wire interface
 - * Dimensions: 0.8 inner diameter, 0.9 outer diameter, 2.9 height

- ENVIROMUX-EBS Emergency/Panic Button
 - * Sends activation signal when button is pressed
 - * For Normally closed or open circuit connections
 - * 2-wire screw-terminal interface
 - * Dimensions WxDxH: 0.4x0.9x3

- ENVIROMUX-IMD-CMP Ceiling Mount Motion Detector
 - * Detects movement across the detection field.
 - * 360° detection pattern.
 - * 113° conical detection angle from ceiling.
 - * 36' diameter protection when mounted 12' high.
 - * Provides substantial immunity to false alarms caused by environmental disturbances.
 - * Pulse count or single shot triggering.
 - * Good RFI protection
 - * Maximum cable length: 1000 ft.
 - * 2-wire screw-terminal interface
 - * Dimensions WxDxH: 0.4x0.9x3

- ENVIROMUX-CMD-P Carbon Monoxide Detector
 - * Continuous air monitoring.
 - * Pre-set alarm points alert at:
 - * 70 ppm after 60 to 240 minutes
 - * 150 ppm after 10 to 50 minutes
 - * 400 ppm after 4 to 15 minutes
 - * Flush or surface mount.
 - * Test functionality of electrochemical CO sensing cell.
 - * Screw terminal.
 - * LED indicators for operation status and system test.
 - * Includes 9V/1A power supply.
 - * Regulatory approvals: UL

- ENVIROMUX-IMD-P Infrared Motion Sensor
 - * Registers movement in the area covered.
 - * Condition display via LED
 - * Provides immunity from common-mode signals such as the effect of strong hot or cold air currents, variation in ambient temperature, background radiation and acoustic noise.
 - * 24 dual-element detection zones for long, mid and short range protections
 - * Surface or corner mounting
 - * Pulse count or single shot triggering
 - * Good RFI protection
 - * Screw terminal
 - * Maximum cable length: 1000 ft.
 - * Includes 9V/1A power supply.
 - * Includes mounting bracket for installing the sensor to a ceiling or wall.
 - * For use with ENVIROMUX-MINI and ENVIROMUX-MINI-LX only.
 - * Regulatory approvals: CE, RoHS

- ENVIROMUX-GBS-P Glass Break Detection Sensor
 - * Acoustically detects the cracking of glass.
 - * Adjustable sensitivity.
 - * Includes mounting hardware.
 - * Screw terminal.
 - * Maximum cable length: 1000 ft
 - * Includes 9V/1A power supply.

- ENVIROMUX-SDS-PA Smoke Detection Sensor
 - * For warning of smoke.
 - * Built-in 135° F (57° C) thermal heat sensor.
 - * Includes mounting hardware.
 - * Photoelectric smoke detector.
 - * Screw terminal.
 - * Includes 9V/1A power supply.
 - * Regulatory approvals: UL

- ENVIROMUX-2W-xx Sensor Cables
 - * 2-wire sensor cable
 - * Used to connect dry contact sensors to the ENVIROMUX-MINI-LX
 - * Available lengths (ft): 3/6/10/25/50/100

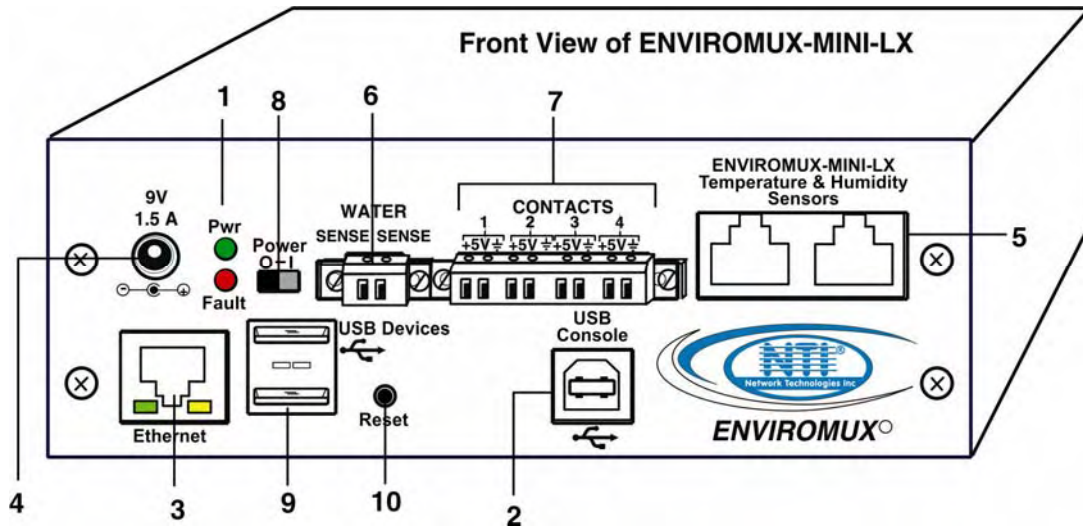
There are more sensors to be added. See our webpage for the latest available.

Available Accessories (Sold separately) :

- ENVIROMUX-POE Power Over Ethernet Adapter
 - * Enables ENVIROMUX-MINI-LX to be powered over Ethernet connection.
 - * Eliminate the need to place Ethernet-enabled devices near power outlets, giving more freedom of placement.
 - * Supply Power and Data up to 300 feet using standard Ethernet cabling.
 - * Outputs Power on an attached DC power cable, and Data on an attached Ethernet cable.
 - * Ethernet Pin Usage:
 - * Data: 1,2,3,6
 - * Power: 4,5,7,8
 - * No tools or software necessary for installation.
 - * Overload and short circuit protection.
 - * Standards: 802.3af
 - * Dimensions WxDxH (in): 3x3.25x1.5
 - * Maximum power output: 9VDC @ 1.3A.
 - * Regulatory approvals: RoHS, FCC, CE
- ENVIROMUX-3GU 3G Serial Modem
 - * Sends SMS text messages to a cell phone when a sensor goes out of range of a configurable threshold.
 - * Supports third generation (3G) digital cellular standards.
 - * SIM card supporting 3G SMS messaging required (not included)
 - * USB 2.0 stick with retractable Male USB Type A connector
 - * Supports one configurable authorized phone number for sending SMS text messages.
 - * E-GPRS: Quad band 850/900/1800/1900MHz
 - * GSM Power Class 4 (2W) 850/900 MHz bands
 - * GSM Power Class 1 (1W) 1800/1900 MHz bands
 - * 3G: Quad band 850/AWS/1900/2100 MHz
 - * GPRS/EGPRS multi-slot class 12
 - * GPRS CS1-CS4
 - * AT command compatible

Contact your nearest NTI distributor or NTI directly for all of your cable needs at 800-RGB-TECH (800-742-8324) in US & Canada or 330-562-7070 (Worldwide) or at our website at <http://www.networktechinc.com> and we will be happy to be of assistance.

CONNECTORS AND LEDS



#	LABEL	CONNECTOR/LED	DESCRIPTION
1	Pwr	Green LED	green — indicates device is powered
	Fault	Red LED	red — illuminates if a sensor goes out of range of a configurable threshold
2	USB Console	USB Type B female connector	For connection of terminal for control through Text Menu
3	ETHERNET	RJ45 female connector	for connection to an Ethernet for remote multi-user control and monitoring <ul style="list-style-type: none"> • Yellow LED- indicates 100Base-T activity when illuminated, 10Base-T activity when dark • Green LED – illuminated when Ethernet link is present, strobing indicates activity on the Ethernet port
4	9V 1.5A	2.1x5.5mm Power Jack	for connection of power supply
5	Temperature & Humidity Sensors	RJ45 female connectors	for connection of optional ENVIROMUX-T, ENVIROMUX-RH, or ENVIROMUX-TRH sensors (The left port is "#1", the right port is "#2" as listed in the Summary Page on Page 22.)
6	WATER	Wire terminal block	for connection of ENVIROMUX-LD liquid detection sensor
7	CONTACTS 1-4	Wire terminal block	for connecting dry-contact sensors
8	Power	Slide switch	For powering the ENVIROMUX On (I) and Off (O)
9	USB Devices	USB Type A female connector	For connecting USB Flashdrive and USB Modem
10	Reset	Push button	For resetting the ENVIROMUX back to default settings

INSTALLATION

Connect Sensors

Connect the desired sensors (sold separately) to the available ports on the ENVIROMUX. Plug the RJ45 connectors to either of the two RJ45 ports marked "TEMPERATURE/HUMIDITY". Mount the sensors according to their individual operating characteristics. Power-cycle the ENVIROMUX after sensors have been plugged-in.

Note: The maximum CAT5 cable length for attachment of temperature and humidity sensors in the ENVIROMUX-MINI-LX is 25 feet.

Note: Mounting the temperature sensor in the path of a fan or on a heated surface may affect the accuracy of the sensor's readings.

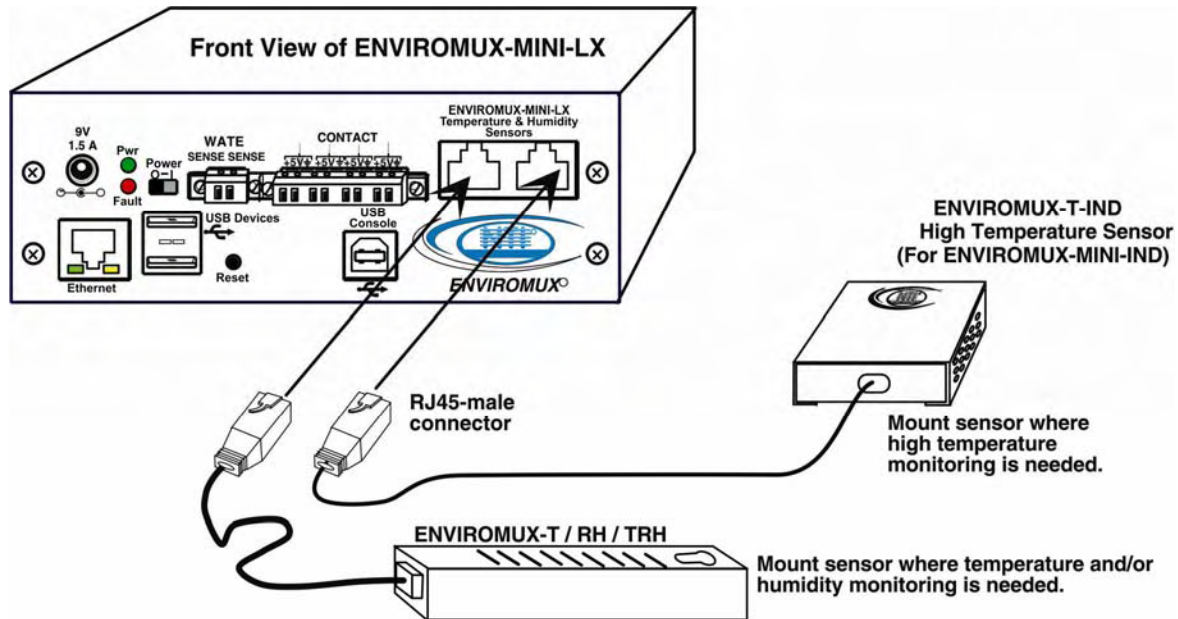


Figure 1- Connect Sensors

Connect the two-wire cable from the optional liquid detection sensor (ENVIROMUX-LD shown below- sold separately) to the terminals marked "WATER".

The twisted orange sensing cable should be placed flat on the surface (usually the floor) where liquid detection is desired. If tape is required to hold the sensor in place, be sure to only apply tape to the ends, exposing as much of the sensor as possible. At least 5/8" of the sensor must be exposed for it to function. (See Figure 2)

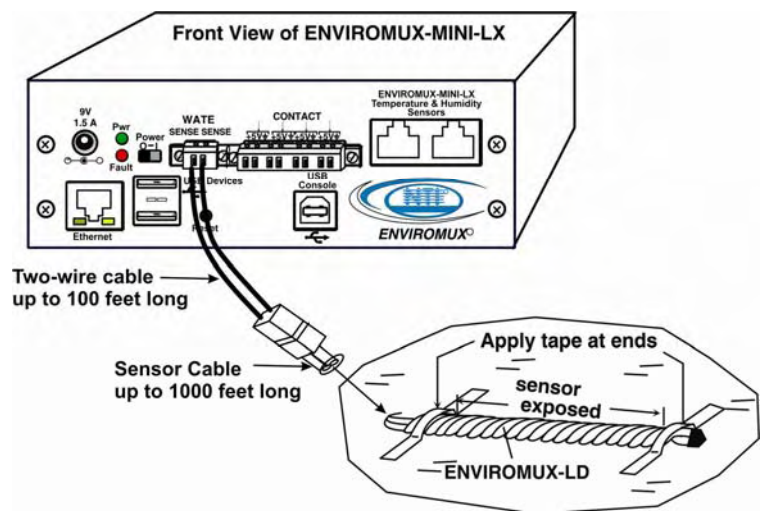


Figure 2- Secure liquid detection sensor with tape

Note: Up to four additional liquid detection sensors may be connected to the terminals labeled "CONTACTS".

To test the ENVIROMUX-LD;

1. Configure the sensor (page 28). (Normal Status set to "Open", Refresh Rate set to 5 seconds.)
2. Submerge at least ½ inch of the exposed twisted orange wire (not the wrapped end) for up to 30 seconds. Do NOT use distilled water as water must be conductive.
3. Monitor the sensor (page 22) to see the sensor "Value" change from "Open" (dry) to "Closed" (wet).
4. Dry the exposed area of sensor and the sensor "Value" should change back to "Open" within 30 seconds.

Water Sensor Configuration

The screenshot shows a configuration window titled "Sensor Settings". It contains the following fields:

- Description:** A text input field containing "Server Room Water De". Below it is the text "Descriptive name for the sensor".
- Group:** A dropdown menu showing "1". Below it is the text "Select which group the sensor belongs to".
- Normal Status:** A dropdown menu showing "Open". Below it is the text "Select the normal status for the sensor".
- Refresh Rate:** A text input field containing "20" and a dropdown menu showing "Sec". Below it is the text "The refresh rate at which the digital input view is updated".

Figure 3- Portion of Water (Contact) Sensor Configuration Page

3. Up to four dry-contact sensors can also be connected. Sensors with 16-26 AWG connection wires, that operate on 5V at 10mA maximum current may be used. A contact resistance of 10kΩ or less will be interpreted by the ENVIROMUX as a closed contact. The maximum cable length for attachment of contact sensors is 1000 feet.

To install the dry-contact sensor(s) to "CONTACTS" terminals:

- A. Attach the positive lead to a terminal corresponding to a "+5V" marking on the ENVIROMUX and the ground lead to the next terminal to the right that will correspond to a \perp marking on the ENVIROMUX. Tighten the set screw above each contact. Terminal sets are numbered 1-4.

- B. Mount the sensors as desired.

Example:

Device with potential-free break/make contact relay (i.e. door switch)

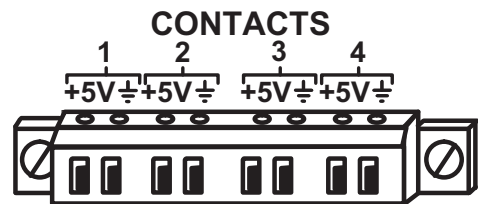
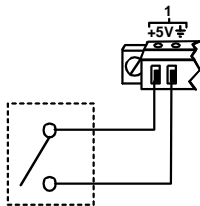


Figure 4- Terminal block for dry-contact sensors

Note: The terminal block is removable for easy sensor wire attachment if needed.

Shielded cable must be used to connect to the CONTACTS ports in order to meet CE emission requirements. Connect the drain wire of the shield to the ground (\perp) terminal of the dry contact in addition to the contact return wire.

Ethernet Connection

Connect a CAT5 patch cable (RJ45 connectors on each end wired pin 1 to pin 1, pin 2 to pin 2 etc) from the local Ethernet network connection to the connector on the ENVIROMUX marked "ETHERNET".

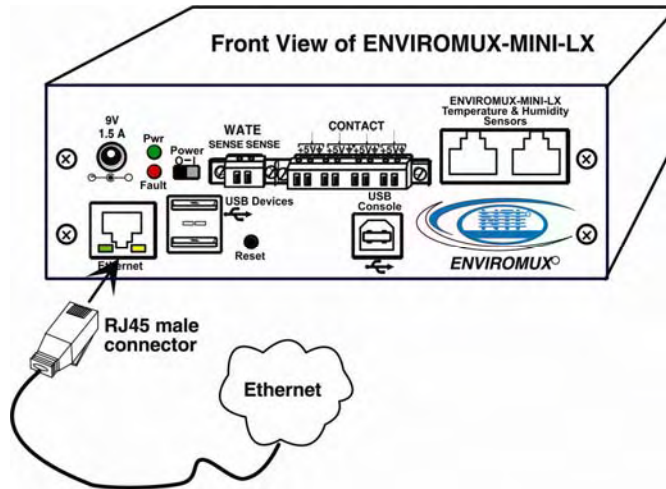


Figure 5- Connect ENVIROMUX-MINI-LX to the Ethernet

Note: A direct Ethernet connection can be made with a PC using a crossover cable. For the pinout of this cable, see page 91.

USB Console Port

Your ENVIROMUX includes a USB Type B connector labeled “USB Console”. If you connect a USB cable between the ENVIROMUX and your PC you will be able to control your ENVIROMUX serially from a terminal console using this connection.

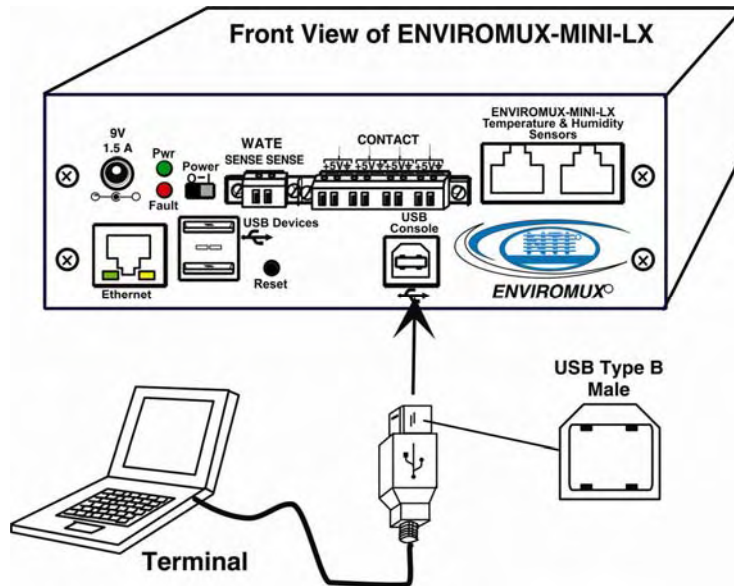


Figure 6- Connect terminal to USB Console port

Installing Drivers

You will only need to install drivers the first time the ENVIROMUX is connected to your PC. After the first time, when the ENVIROMUX is connected, your PC should recognize the ENVIROMUX and re-assign the COM port. Follow the steps below to install the drivers.

1. Make sure the USB cable is connected between the ENVIROMUX and your PC.
2. Power ON the ENVIROMUX. The PC will see the ENVIROMUX as “New Hardware” and create a virtual COM port to communicate with it.
3. You will be prompted to load drivers. A driver file compatible with Windows XP, 2000, Vista and 7 (32 and 64 bit versions) can be found on the CD that came with your ENVIROMUX. Browse to the drive your Product Manual CD is in and locate and select the file named “`enviromux.inf`” in a directory named “`windows-drivers\32bit` or `\64bit`” depending upon your operating system.

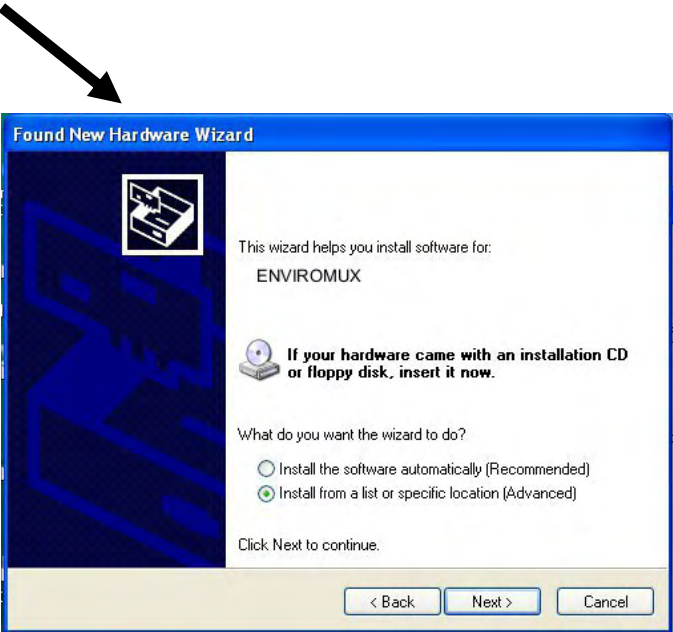
The .inf file will direct your PC to locate and install the file `usbser.sys` (already on your PC, comes with Windows). Installing the `usbser.sys` file should happen automatically. When finished, Windows will indicate installation is successful.

Windows XP-32 bit Installation

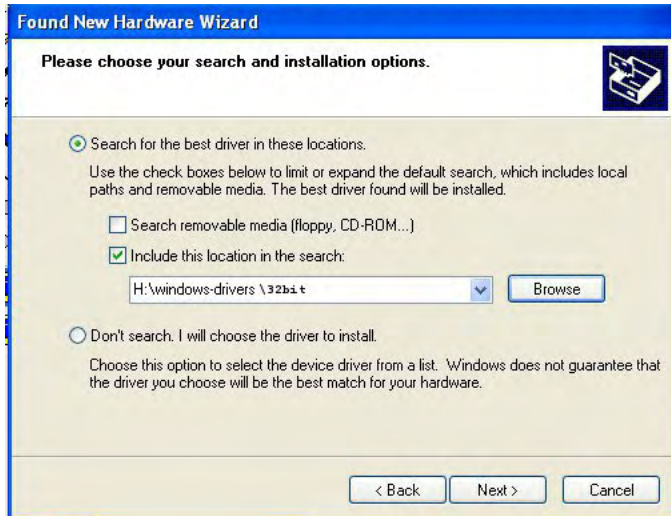
Your typical installation will include windows like the ones that follow. The images below are from a Windows XP SP2 32 bit installation.



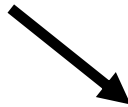
A. Windows will want to check the internet for drivers. Choose **“No, not this time”** because the drivers are unique to the ENVIROMUX.



B. You can try to **“Install the software automatically”** but if windows doesn't check the CD, you will need to use **“Install from a list or specific location”** instead.



C. Let the New Hardware Wizard search for the driver, but direct it to the drive the Product Manual CD is in and the directory of either the 32 bit driver or the 64 bit driver.



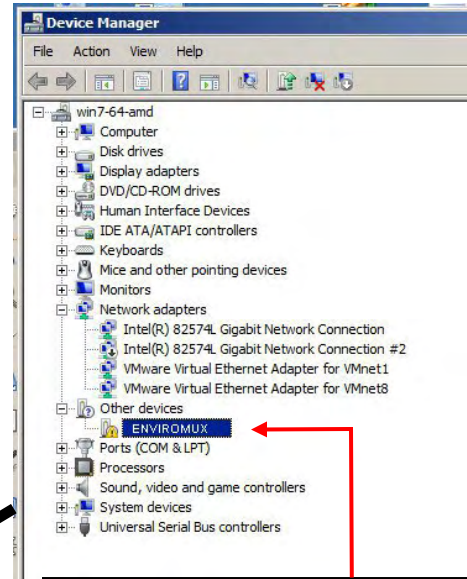
D. Once the driver is installed, you will get this screen and the ENVIROMUX USB Console Port will be ready to use.

Windows 7-64 bit Installation

A Windows 7 64 bit installation has a few extra steps. The images below are from a Windows 7, 64-bit installation.

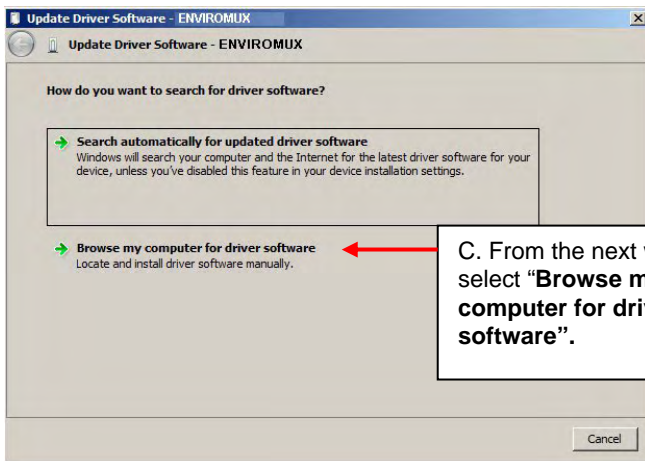


A. Upon VEEMUX power ON, the driver cannot be found. Press **“Close”**.

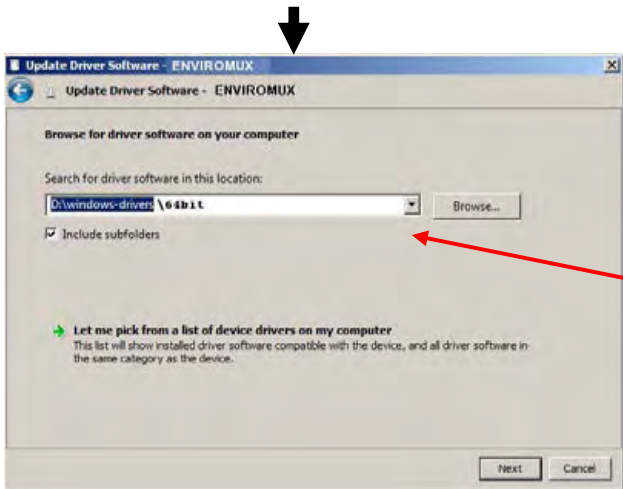


B. Open the Device Manger and select the ENVIROMUX in the device list. Right-click and open **“Properties”**. Select **“Update Driver Software”**.

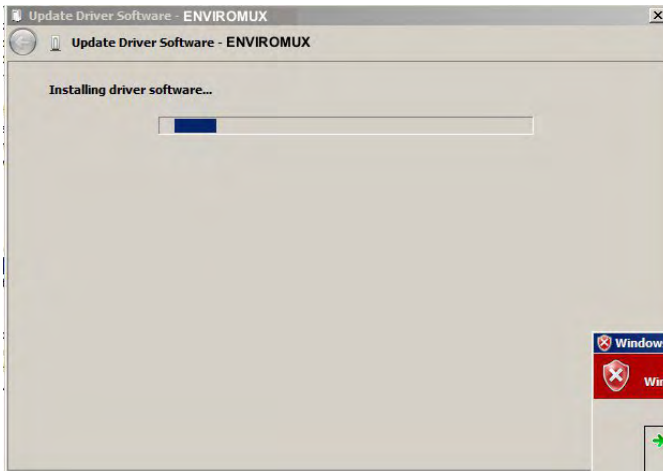
Tip: The Device Manager can be opened by right-clicking on “My Computer” on the desktop, selecting “Properties”, and selecting “Device Manager”.



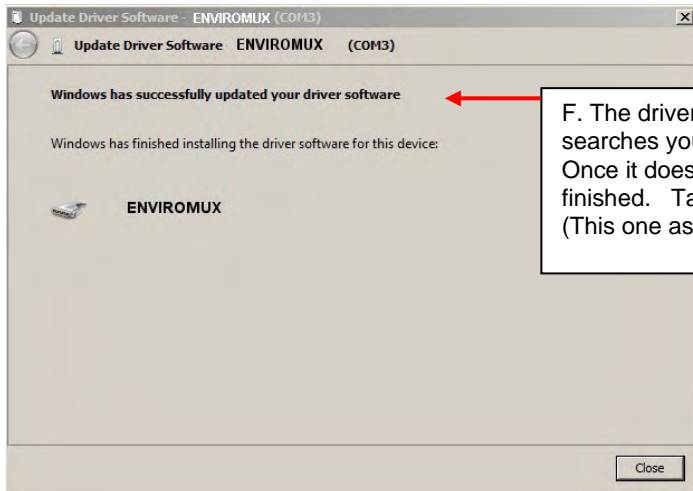
C. From the next window, select **“Browse my computer for driver software”**.



D. In the next window, enter the path to the .inf driver file (on the Product Manual CD). Press **“Next”**.



E. You will probably get this warning that Windows can't verify the publisher of the driver software. Select **“Install this driver software anyway.”**



F. The driver will load. This might take a minute while it searches your computer for the `usbser.sys` file it needs. Once it does, you will get a window telling you Windows is finished. Take note of the COM port number it assigned. (This one assigned COM3.)

4. During the installation, your PC will assign a COM port number to the USB port attached to the ENVIROMUX. You will need to identify the COM port number assigned. This information can be viewed in your Device Manager list (below) if you didn't take note of it during installation.

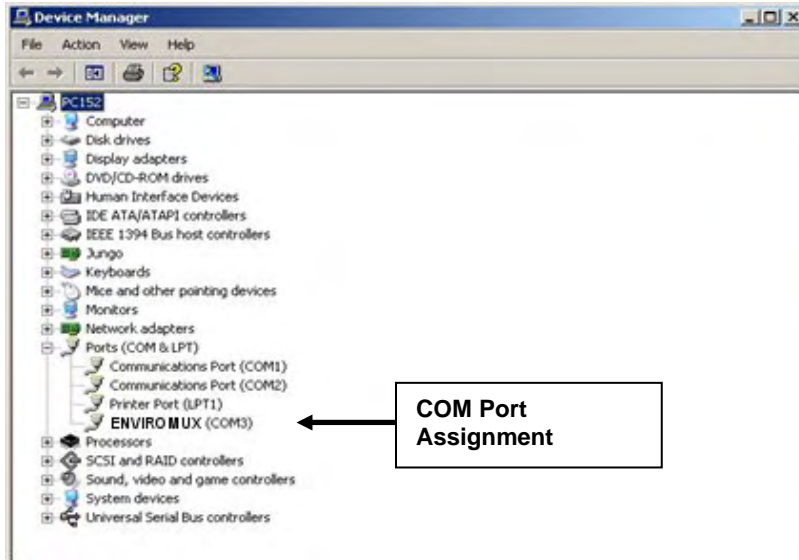


Figure 7- COM port assigned to ENVIROMUX

Using the USB Console Port

The virtual COM port will be used to enable serial control over the ENVIROMUX (see Operation Via Text Menu on page 51). When you open a terminal program be sure to use the correct COM port (see Figure 7 and Figure 8).



Figure 8- Configure COM port in HyperTerminal

Connect the Power

Note: Sensors should be connected before supplying power to the ENVIROMUX.

1. Connect the AC adapter to the connection marked "PWR" on the ENVIROMUX and plug it into an outlet.

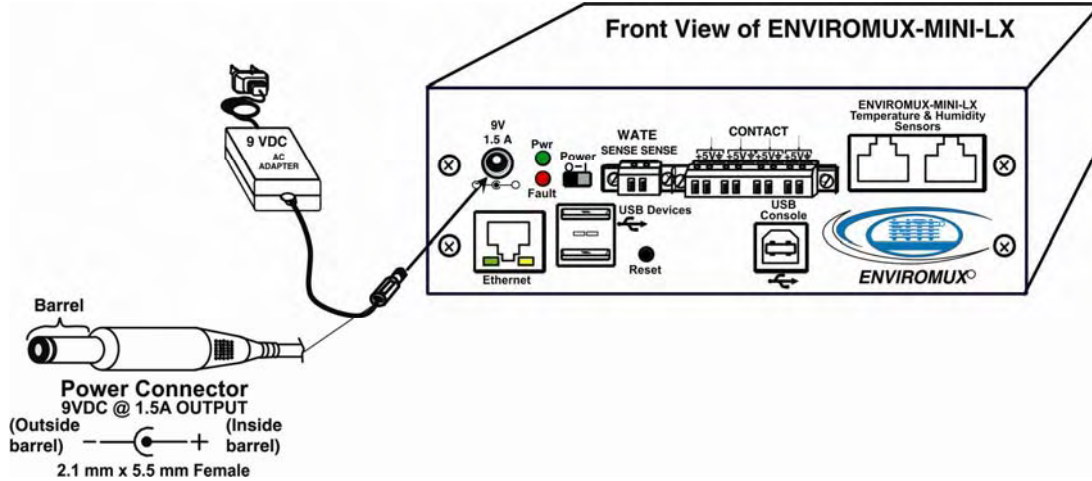


Figure 9- Connect the AC adapter and power-up

2. Use the NTI Discovery Tool (page 20) to configure network settings.

Front Panel LEDs Indicate Status

With proper connections made, the ENVIROMUX is now ready to power ON. With the power cord attached and plugged into an AC outlet, the "Power" green LED should be illuminated on the front of the ENVIROMUX. The red "Fault" LED will illuminate when power is first applied and while the ENVIROMUX boots up (for up to 60 seconds). Once the red LED goes OFF, the ENVIROMUX is ready for use. After a completed boot-up, the red LED will only illuminate when one of the connected sensors is in alert.

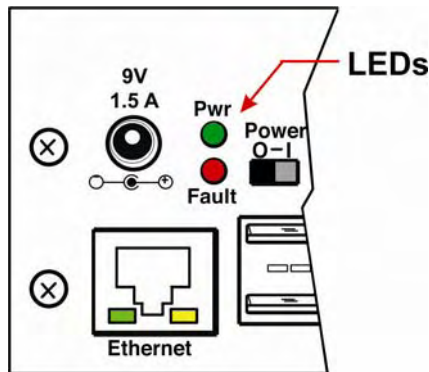


Figure 10- LEDs on front of ENVIROMUX

Connect a Modem

A USB GSM modem may be connected (ENVIROMUX-3GU) to use to send SMS alert messages to a contact's cell phone. The ENVIROMUX-3GU modem will connect to the ENVIROMUX at the "USB Devices" port (either USB Type A connector, it doesn't matter which one) . The remaining USB Type A connector on the ENVIROMUX is available for the connection of a USB Flash Drive for data logging (page 49).

The phone number to be called for each user is configured under "User Configuration-Contact Settings" (page 40).

Note: A Mini SIM card (not included) must be installed in the modem for the modem to send messages.

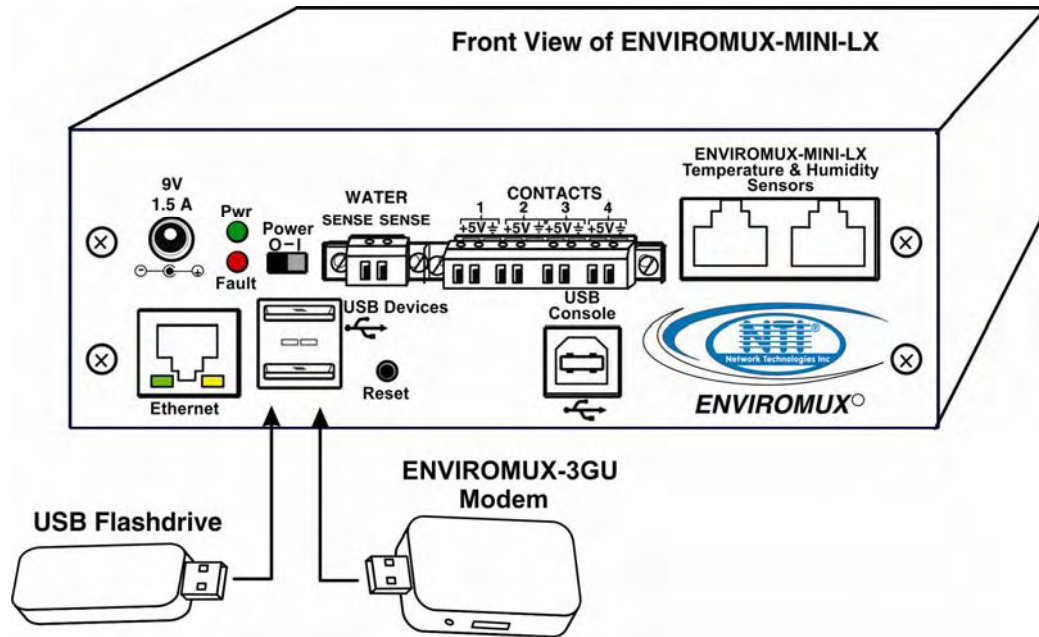


Figure 11- Connect a Modem

Cell phone Mini SIM card for GSM modem

A SIM card or *Subscriber Identity Module* is a portable memory chip used in some models of cellular telephones. It can be thought of as a mini hard disk that automatically activates the phone (or in this case the GSM modem) into which it is inserted.

SIM cards are available in two standard sizes. The first is the size of a credit card (85.60 mm x 53.98 mm x 0.76 mm). The newer, more popular miniature-version has a width of 25 mm, a height of 15 mm, and a thickness of 0.76 mm.

Some cellular service providers use Mini SIM cards. Verify with your service provider that their Mini SIM card will work with GSM / 3G GSM modems before making a purchase.

Note: The ENVIROMUX-3GU will send SMS messages only. No access to the ENVIROMUX is possible through the modem.

OVERVIEW

Administration

The ENVIROMUX can be administered in any one of the following ways:

- Using Telnet or SSH protocol via the Ethernet Port.
- Using a terminal program via the USB Console Port
- Using the web interface (HTTP/HTTPS protocol) via the Ethernet Port.

The following administrative controls are available in the ENVIROMUX, thru the menu.

- View or modify the administrator & user parameters (passwords, sensor alert subscriptions, admin access, etc.)
- View or modify the network parameters (e.g. IP Address, Gateways, DNS, etc.)
- View and clear system event logs
- Clear, import, export and restore configuration parameters
- Firmware upgrades for the ENVIROMUX (over Ethernet)
- View or modify sensor, and IP device configurations

General Functions

Sensor Alerts

A high and low threshold limit can be set for each temperature or humidity sensor. When a sensor takes a reading that is outside a threshold, an alert notification is generated. The user can specify the frequency of alert notifications to match his or her schedule. Also, there will be some hysteresis involved with alert notifications. This means if a sensor's readings are moving in and out of the threshold boundaries within a configurable period of time, additional alert notifications will not be sent. After an alert is activated, it remains persistent even if the condition of the sensors returns back to normal, until the user acknowledges or dismisses that alert. The user has the option to set the unit to auto-clear the alert if the sensor's status returns to normal, and the user can be notified if the condition goes back to normal. Alert notifications will be provided through four main methods: visible notification via one of the user interfaces (red "Fault" LED on front panel, alert on webpage, alert in text menu), emails, syslog message and/or SNMP traps.

IP Monitoring & Alerts

Individual IP addresses can be monitored. The ENVIROMUX will ping each address, and if a response is received, the IP address status is considered to be "OK". If no response, the user will have the option to configure the ENVIROMUX for an alert will be logged and sent. The user can configure the timeout for a response and the number of retries before signaling an alert. The ENVIROMUX can also be configured to monitor the IP addresses of the network switches and routers to which these devices are connected, so as to determine if the problem is due to a lack of response from the device or a network failure. Alert notifications will be provided through four main methods: visible notification via one of the user interfaces (red "Fault" LED on front panel, alert on webpage, alert in text menu), emails, syslog messages, SMS messages and/or SNMP traps.

Event Log

The ENVIROMUX maintains an event log. The event log includes power-ON, system, and alert notifications, as well as user login/logout, and user alert handling. The maximum number of log entries is 1000, and these entries are sorted in chronological order. The log can be viewed at any time through the web interface or text menu, and can be saved as a text file. Log entries can be removed individually or all at once.

Data Log

The ENVIROMUX maintains a data log. The data log includes readings taken from sensors, IP devices, and connected accessories being monitored. The maximum number of log entries is 1000, and these entries are sorted in chronological order. The log can be viewed at any time through the web interface or text menu, and can be saved as a text file. Log entries can be removed individually or all at once.

Email

The ENVIROMUX can access an SMTP server to send outgoing email. Outgoing email would contain pre-formatted alert notifications. SMTP server information can be configured using one of the interfaces. Email addresses can be configured through web pages or text menu. Each user (up to 15) can have their own email address.

The email messages sent by the ENVIROMUX have a fixed format. Alert emails contain 6 fields and will have a configurable title. The title is configurable for each sensor, device, or IP address. The title is the "email subject" in all configuration pages. A sample message is shown below:

```
ENTERPRISE: Enterprise name here
LOCATION: Danner Drive
CONTACT: John Smith
DESCRIPTION: Undefined #5
TYPE: Humidity
MESSAGE: Sensor value exceeded thresholds
```

SNMP

The ENVIROMUX can send alerts as SNMP traps when a sensor or IP device enters/leaves alert mode and for all log events. Using an SNMP MIB browser, a user can monitor all sensor statuses and system IP settings.

The destination for SNMP traps can be configured for each user.

Note: The SNMP MIB file (*mini-lx-v1-xx.mib*), for use with an SNMP MIB browser or SNMP trap receiver, can be found on the manual CD. Click on the link to open the file, then save the file to your hard drive to use with the SNMP MIB browser or SNMP trap receiver.

GSM Modem

An external GSM modem can be connected to allow the system to send alert notifications via SMS messages. When a sensor crosses a threshold or IP device become inactive, an alert notification can be formatted to SMS message (see page 26) and the modem can transmit the message to all users that subscribe to the applicable sensor group.

Security

User Settings

In order to configure and operate the ENVIROMUX, each user must login with a unique username and password. The Administrator can configure each user's settings as User or Administrator. An Administrator has access to all configurations and controls. A user can monitor sensors, accessories, and IP devices. A user can edit his/her own account. Users cannot configure the sensor settings.

IP Filtering

The ENVIROMUX allows the administrator to block access to the device from certain IP addresses. The ENVIROMUX can accept or drop requests based on the IP filter settings. IP Filtering provides an additional mechanism for securing the ENVIROMUX. Access to the ENVIROMUX network services (SNMP, HTTP(S), SSH, Telnet) can be controlled by allowing or disallowing connections from various IP addresses, subnets, or networks.

Secure Connections

The ENVIROMUX supports secure connections using SSHv2 and HTTPS.

Authentications

The ENVIROMUX supports local authentication with up to 16 character usernames and passwords, and it also supports LDAPv3.

Encryption

The ENVIROMUX supports 256-bit AES encryption.

DEVICE DISCOVERY TOOL

In order to easily locate the ENVIROMUX on a network, the NTI Device Discovery Tool may be used. A link to the Discovery Tool is provided on the web page that appears when you insert the instruction manual CD provided into your CD ROM drive. Click on the link or browse the CD and click on the file *discover.html*. This will open your browser and display the Device Discovery Tool page.

Note: The Device Discovery Tool requires the Java Runtime Environment to operate. A link to the web page from which it can be downloaded and installed is provided on the CD.

Note: The computer using the Device Discovery Tool and the ENVIROMUX must be connected to the same physical network in order for the Device Discovery Tool to work.

Network Technologies Inc Device Discovery Tool

- **START**
 - When you load this page, the NTI Device Discovery Applet should load. Accept the Certificate to allow this applet access to your network. Press the button entitled **Detect NTI Devices** to start the discovery process. After a short time, the tool will display all NTI devices on your network, along with their network settings.

Note: Do not close this page while the NTI Discovery Tool is running. Close the NTI Device Discovery Application first, **then** this webpage.

- **How To Use the Discovery Tool**
 - **To Change A Device's Settings**, within the row of the device whose setting you wish to change, type in a new setting and press the **Enter** key or the **Submit** button on that row. You can also press the **Submit All** button to submit all changes at once.
 - **To Refresh the list of devices**, press the **Refresh** button.
 - **To Blink the LEDs of the unit**, press the **Blink LED** button (This feature not supported on all products). The **Blink LED** button will change to a **Blinking...** button. The LEDs of the unit will blink until the **Blinking...** button is pressed, or the NTI Device Discovery Application is closed. The LEDs will automatically cease blinking after 2 hours.
 - **To Stop the LEDs of the unit**, press the **Blink LED** button.

The "Blink LED" button is not supported on the ENVIROMUX-MINI-LX

Detect NTI Devices

0%

Figure 12- Device Discovery Tool page

Use the Device Discovery Tool to display all NTI ENVIROMUX units on the network, along with their network settings. Follow the instructions on the Device Discovery Tool page to use the tool and to change the device settings if so desired.

Device	MAC Address	IP Address	Mask	Gateway		
IPDU-S2	00:0C:82:05:00:04	192.168.3.119	255.255.255.0	192.168.3.3	Submit	Blink LED
IPDU-S2	00:0C:82:05:00:02	192.168.3.113	255.255.255.0	192.168.3.3	Submit	Blink LED
		Submit All	Refresh	Close		

OPERATION VIA WEB INTERFACE

A user may monitor and configure the settings of the ENVIROMUX and any sensor connected to it using the Web Interface via any web browser (see page 2 for supported web browsers). To access the Web Interface, connect the ENVIROMUX to the Ethernet (page 9). Use the Device Discovery Tool (page 20) to setup the network settings. Then, to access the web interface controls, the user must log in.

Log In and Enter Password

To access the web interface, type the current IP address into the address bar of the web browser. (The default IP address is shown below):

http://192.168.1.21

Note: If “Allow HTTP Access” (page 35) is not checked to be enabled (disabled by default), only an SSL-encrypted connection will be possible. The software will automatically redirect to an HTTPS (secure) connection. The user will likely see a warning about the SSL certificate and a prompt to accept the certificate. The ENVIROMUX uses a self-signed NTI certificate. Accept the NTI certificate.

A log in prompt requiring a username and password will appear:

The screenshot displays the web interface for the ENVIROMUX-MINI-LX. At the top left is the NTI Network Technologies logo. On the top right, system information is shown: Unit: E-MINI-LX, Model: ENVIROMUX-MINI-LX, Uptime: 39 mins, and Current Time: 04-04-2011 03:14:09 PM. Below this is a navigation bar with 'Home' and 'Login' links. A 'Support' button is visible on the left. The main heading is 'ENVIROMUX-MINI-LX'. The central form is titled 'Enter login credentials' and contains two input fields: 'Username' with the placeholder 'Enter the username to log in with' and 'Password' with the placeholder 'Enter the associated password'. A 'Login' button is positioned below the password field. In the bottom right corner, there is a 'goahead WEBSERVER' logo. The footer contains the text 'Copyright © 2011 Network Technologies Inc. All rights reserved.'

Figure 13- Login prompt to access web interface

Username = root

Password = nti

(lower case letters only)

Note: usernames and passwords are case sensitive

With a successful log in, the “Summary” page with a menu at left will appear on the screen:

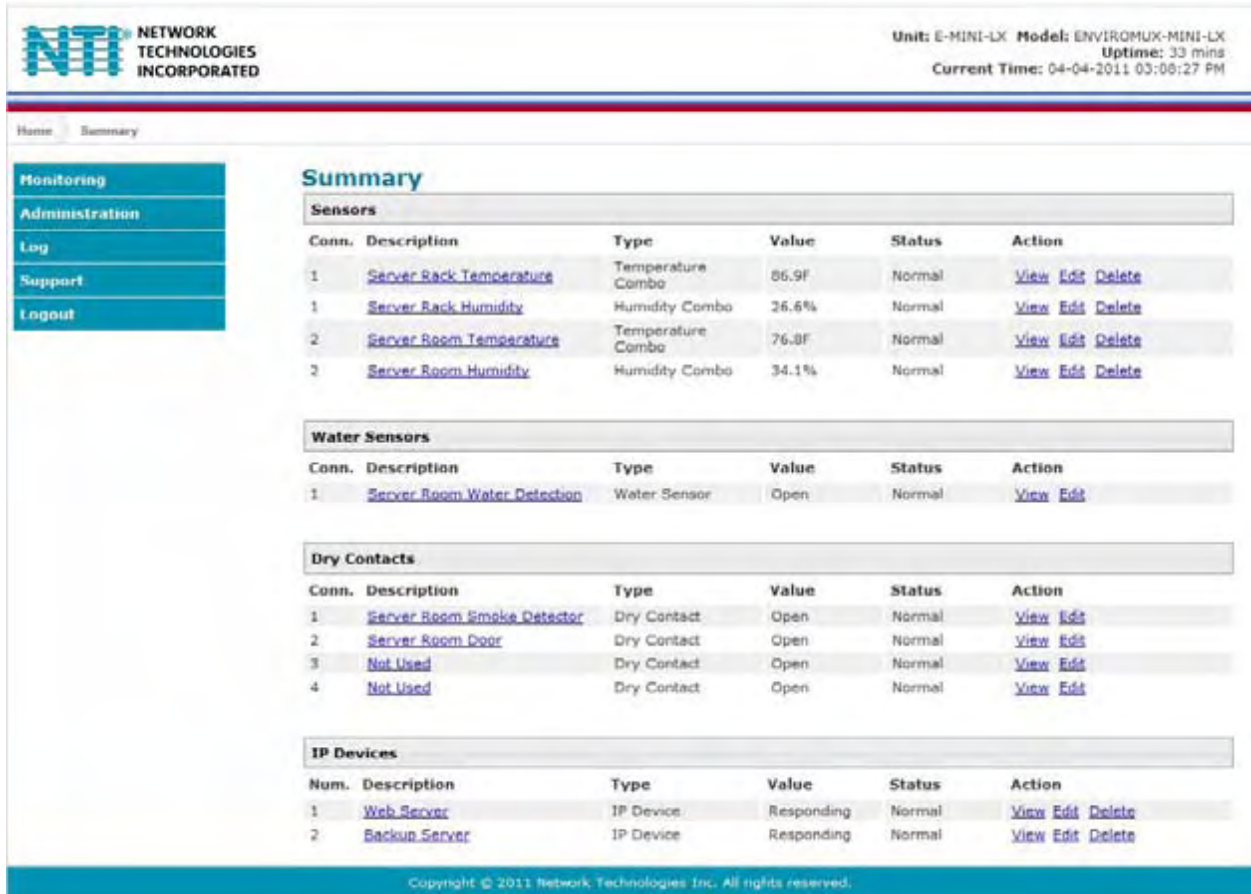


Figure 14- Summary page

From this initial page, the user can use the menu to the left to manage all the functions of the ENVIROMUX.

Function	Description
MONITORING	Monitor the sensors, accessories, and IP devices of the ENVIROMUX (below)
ADMINISTRATION	Configure all system, network, multi-user access, and security settings as well as upgrade firmware (page 32)
LOG	View and configure the Event and Data Logs (page 47)
SUPPORT	Links for downloading a manual, the MIB file, or firmware upgrades
LOGOUT	Log the user out of the ENVIROMUX web interface

Monitoring

Under Monitoring, there are links to view the status of all sensors and IP Devices being monitored by the ENVIROMUX.

Link	Description
Summary	Lists all items being monitored, including their description, type, value, and status
Sensors	Provides a link to view the status of only the Sensors and a link to add them (page 24)
Water Sensors	Provides a link to view the status of the Water Sensor and a link to add them (page 24)
Dry Contacts	Provides a link to view the status of any sensors connected to the CONTACT terminals (1-4) a link to view or edit their configuration (page 24)
IP Devices	Provides a link to view the status of only the IP Devices and a link to add them (page 29)

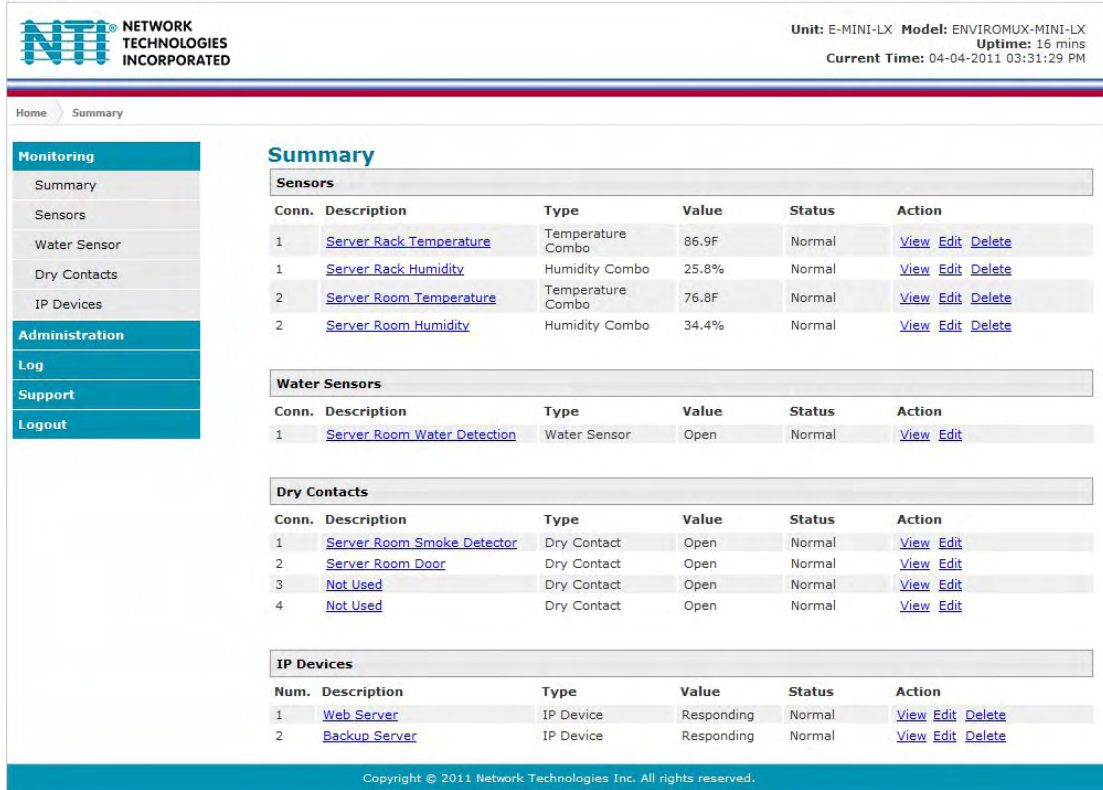


Figure 15- Summary page and the Monitoring menu

From the Summary page, the user can view the status of all sensors and the IP Devices being monitored by the ENVIROMUX. Each item listed has a link that when selected will open the status page for that item.

E-MINI-LX-P2 Temperature 1 Status

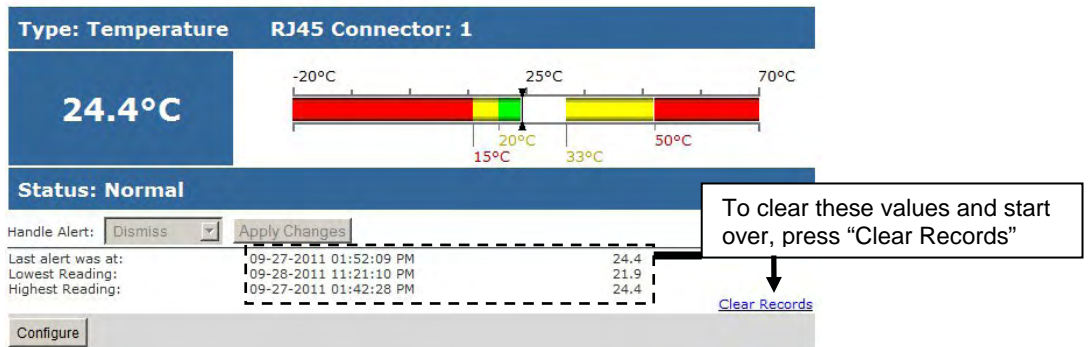


Figure 16- Status page for a temperature sensor

If the temperature sensor is in alert status, the user has the option to either **acknowledge** the alert or **dismiss** it. If the user acknowledges the alert, no additional alert messages will be sent during that alert status cycle. If the user dismisses the alert, another alert message will be sent once the "notify again after" time designated on the configuration page (page 25) elapses.

After selecting **acknowledge** or **dismiss**, click **Apply Changes**.

The administrative user can open the sensor configuration page by clicking on the **Configure** button at the bottom of the sensor status page (above) or by clicking on **Edit** from the Summary page. From the sensor configuration page the user can apply settings to control how or if alert messages are sent in the event the sensor is in alert status, threshold settings, and data logging settings.

Configure Sensors

The Sensor Configuration page is broken into three sections; Sensor Settings, Alert Settings and Data Logging. To explore the window to see settings for a section, click on the section heading (Figure 17).

E-MINI-LX-P2 Temperature 1 Configuration (Type: Temperature)

Sensor Settings

Description Descriptive name for the sensor

Group Select which group the sensor belongs to

Units Select the units for the sensor

Min. Level Min. supported value for the sensor

Max. Level Max. supported value for the sensor

Min. Non-Critical Threshold Min. threshold below which indicates a non-critical alert condition

Max. Non-Critical Threshold Max. threshold above which indicates a non-critical alert condition

Min. Critical Threshold Min. threshold below which indicates an alert condition

Max. Critical Threshold Max. threshold above which indicates an alert condition

Refresh Rate The refresh rate at which the sensor view is updated

Non-Critical Alert Settings

Critical Alert Settings

Data Logging

Alert Simulation

Figure 17- Sensor Configuration page

Threshold Settings

A sensor designed for connection to the RJ45 ports often has a range of reporting values (for example ENVIROMUX-T has a range of 32°-104°F). Two levels of threshold values for each end of that range can be configured (above) to initiate two different alert messages, depending upon the severity of the alert. These levels are identified as “Non-critical” and “Critical”. Use these variations in alert communication as needed to inform users of the severity of sensor reading changes. Each level of alert has its own configuration for how or if the user will be alerted as to a sensor’s status (see Figure 18).

Non-Critical Alert Settings	
Disable Alerts	<input type="checkbox"/> Disable alert notifications for this sensor
Alert Delay	<input type="text" value="10"/> <input type="text" value="Sec"/> Duration the sensor must be out of thresholds before alert is generated
Notify Again Time	<input type="text" value="44"/> <input type="text" value="Hr"/> Time after which alert notifications will be sent again
Notify on return to normal	<input checked="" type="checkbox"/> Send a notification when this sensor returns to normal status
Enable Syslog Alerts	<input checked="" type="checkbox"/> Send alerts for this sensor via syslog
Enable SNMP Traps	<input checked="" type="checkbox"/> Send alerts for this sensor via SNMP traps
Enable E-mail Alerts	<input checked="" type="checkbox"/> Send alerts for this sensor via e-mail
E-mail Subject	<input type="text" value="E-MINI-LX-P2 Temperal"/> Subject of e-mails sent for alerts
Enable SMS Alerts	<input type="checkbox"/> Send alerts for this sensor via SMS
Critical Alert Settings	
Disable Alerts	<input type="checkbox"/> Disable alert notifications for this sensor
Alert Delay	<input type="text" value="30"/> <input type="text" value="Sec"/> Duration the sensor must be out of thresholds before alert is generated
Notify Again Time	<input type="text" value="30"/> <input type="text" value="Min"/> Time after which alert notifications will be sent again
Notify on return to normal	<input checked="" type="checkbox"/> Send a notification when this sensor returns to normal status
Auto acknowledge	<input checked="" type="checkbox"/> Automatically acknowledge alert when sensor returns to normal status
Enable Syslog Alerts	<input checked="" type="checkbox"/> Send alerts for this sensor via syslog
Enable SNMP Traps	<input checked="" type="checkbox"/> Send alerts for this sensor via SNMP traps
Enable E-mail Alerts	<input checked="" type="checkbox"/> Send alerts for this sensor via e-mail
E-mail Subject	<input type="text" value="E-MINI-LX-P2 Temperal"/> Subject of e-mails sent for alerts
Enable SMS Alerts	<input type="checkbox"/> Send alerts for this sensor via SMS
Data Logging	
Add to data log	<input checked="" type="checkbox"/> Add readings to the data log
Logging Period	<input type="text" value="30"/> <input type="text" value="Sec"/> Frequency at which readings are added to the data log.
<input type="button" value="Save"/>	
Alert Simulation	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

Figure 18- Sensor Configuration- exploded view of additional settings

Sensor Settings	Description
Description	The description of the sensor that will be viewed in the Summary page and in the body of alert messages
Group	Assign the sensor to any group 1 -8 (see also page 38)
Units	This lets the operator choose between Celsius and Fahrenheit as the temperature measurement unit.
Min. Level	Displays the minimum value that this sensor will report
Max. Level	Displays the maximum value that this sensor will report
Minimum Non-Critical Threshold	<p>The user must define the lowest acceptable value for the sensors. If the sensor measures a value below this threshold, the sensor will move to non-critical alert status. The assigned value should be</p> <ul style="list-style-type: none"> ➤ within the range defined by Minimum Level and Maximum Level and ➤ lower than the assigned Maximum Threshold value. <p>If values out of the range are entered, and error message will be shown.</p>
Maximum Non-Critical Threshold	<p>The user must define the highest acceptable value for the sensors. If the sensor measures a value above this threshold, the sensor will move to non-critical alert status. The assigned value should be</p> <ul style="list-style-type: none"> ➤ within the range defined by Minimum Level and Maximum Level and ➤ higher than the assigned Minimum Threshold value. <p>If values out of the range are entered, and error message will be shown.</p>
Minimum Critical Threshold	<p>The user must define the lowest acceptable value for the sensors. If the sensor measures a value below this threshold, the sensor will move to alert status. The assigned value should be</p> <ul style="list-style-type: none"> ➤ within the range defined by Minimum Level and Maximum Level, ➤ lower than the assigned Maximum Threshold value, and ➤ lower than the Minimum Non-Critical Threshold value. <p>If values out of the range are entered, and error message will be shown.</p>
Maximum Critical Threshold	<p>The user must define the highest acceptable value for the sensors. If the sensor measures a value above this threshold, the sensor will move to alert status. The assigned value should be</p> <ul style="list-style-type: none"> ➤ within the range defined by Minimum Level and Maximum Level, ➤ higher than the assigned Minimum Threshold value, and ➤ higher than the Maximum Non-Critical Threshold value. <p>If values out of the range are entered, and error message will be shown.</p>
Refresh Rate	Determines how often the displayed sensor value is refreshed on the Sensor page. A numeric value and a measurement unit (minimum 1 seconds, maximum 999 minutes) should be entered.
Alert Settings (Applies to Critical and Non-Critical Alerts except where noted)	
Disable Alerts	Place a checkmark in the box to prevent alerts from being sent when this sensor's status changes
Alert Delay	The alert delay is an amount of time the sensor must be in an alert condition before an alert is sent. This provides some protection against false alarms. The Alert Delay value can be set for 0-999 seconds or minutes.
Notify Again Time	Enter the amount of time in seconds, minutes, or hours (1-999) before an alert message will be repeated
Notify on Return to Normal	The user can also be notified when the sensor readings have returned to the normal range by selecting the " Notify when return to normal " box for a sensor.
Auto Acknowledge	<p>Place a checkmark in this box to have alert notifications in the summary page return to normal state automatically when sensor readings return to normal.</p> <p>Note: The Non-Critical alert settings do not have this option. Instead, non-critical alert notifications are always auto-acknowledged when sensor readings return to normal</p>
Enable Syslog Alerts	Place a checkmark in this box to have alert notifications sent via Syslog messages
Enable SNMP traps	Place a checkmark in this box to have alert notifications sent via SNMP traps (v2c)
Enable Email Alerts	Place a checkmark in this box to have alert notifications sent via Email
Email Subject	Enter the subject to be viewed when an email alert message is received
Enable SMS Alerts	Place a checkmark in this box to have alert notifications sent via SMS messages (requires a modem)

Data Logging	
Add to data log	This is a check-box that lets the user decide if the data sampled should be recorded in the Data Log.
Logging Period	Enter the time period between logged measurements

Be sure to press the **Save** button to save the configuration settings.

More about Groups

Groups are used to create a common relationship between sensors, IP devices, etc. and their alert messages. All items being monitored are assigned to groups 1-8. Users (a maximum number of 16 including the root user) can receive alert messages from items in any group.

Test Alerts

With all the configuration settings completed, each sensor and how the ENVIROMUX will react to an alert condition can be tested. Press the **Simulate Alert** button at the bottom of the configuration page to test each of the notification methods configured. To cancel the simulation, press the **Clear** button.

Note: A simulated alert will test all settings including any delay that has been configured (i.e. if a 2 minute delay is configured, it will delay sending the email for 2 minutes)

To perform a test, the ENVIROMUX must be properly setup for a user to receive alert messages. Use the chart below to make sure the ENVIROMUX is setup properly.

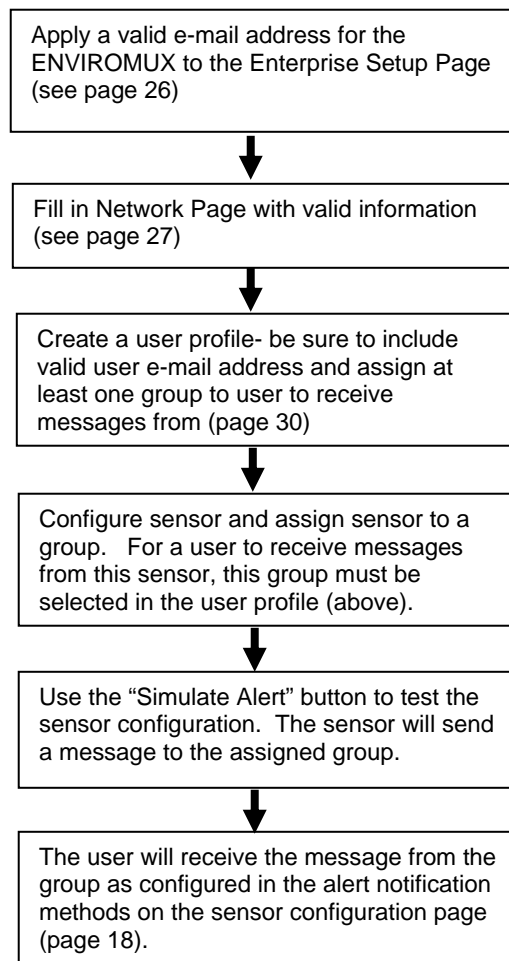


Figure 19- Chart to setup alert notification

Configure Water Sensors and Dry Contacts

The configuration page for water sensors and dry contacts are almost the same as that for temperature and humidity sensors, with a few differences. Instead of threshold and minimum/maximum levels settings, water sensors and contact sensors are either open contact or closed contact sensors. Therefore, the field "Normal Status" is provided to select the status of the sensor when it is not in an alert state. Select between **Open** contacts, or **Close** contacts for the normal status of the sensor. (Water sensors are open contact when not in alert state.)

Alert settings and data logging features are the same as those described on page 26.

Water Sensor Configuration

[-] Sensor Settings	
Description	Server Room Water De <small>Descriptive name for the sensor</small>
Group	1 <small>Select which group the sensor belongs to</small>
Normal Status	Open <small>Select the normal status for the sensor</small>
Refresh Rate	20 Sec <small>The refresh rate at which the digital input view is updated</small>
[-] Alert Settings	
Disable Alerts	<input type="checkbox"/> <small>Disable alert notifications for this sensor</small>
Alert Delay	30 Sec <small>Duration the sensor must be out of thresholds before alert is generated</small>
Notify Again Time	30 Min <small>Time after which alert notifications will be sent again</small>
Notify on return to normal	<input type="checkbox"/> <small>Send a notification when this sensor returns to normal status</small>
Auto acknowledge	<input type="checkbox"/> <small>Automatically acknowledge alert when sensor returns to normal status</small>
Enable Syslog Alerts	<input type="checkbox"/> <small>Send alerts for this sensor via syslog</small>
Enable SNMP Traps	<input type="checkbox"/> <small>Send alerts for this sensor via SNMP traps</small>
Enable E-mail Alerts	<input checked="" type="checkbox"/> <small>Send alerts for this sensor via e-mail</small>
E-mail Subject	<input type="text"/> <small>Subject of e-mails sent for alerts</small>
Enable SMS Alerts	<input type="checkbox"/> <small>Send alerts for this sensor via SMS</small>
[+] Data Logging	
Save	
Alert Simulation	
Simulate Alert Clear Alert	

Select between "Open" or "Closed"

Figure 20- Sensor Configuration for Contact Sensors

Monitor IP Devices

IP devices such as servers, routers, cameras, etc. can be monitored to make sure network connections are open to them. In order to monitor an IP Device the devices must be added to the list of IP Devices being monitored. From the **Monitoring** section of the menu, click on **IP Devices**. A page listing IP Devices being monitored will open, with a link to add IP Devices. Click on **Add New IP Device**.

IP Devices

IP Devices					
Num.	Description	Type	Value	Status	Action
Add New IP Device					

Figure 21- IP Devices listing-none monitored yet

The page shown below will open. Enter a description for the new IP Device and the IP Address of the device.

Add New IP Device

☐ Add New IP Device

Description
Descriptive name for the IP Device

IP Address
IP Address of the device to ping

Figure 22- Add New IP Device page

With the address is entered in the block, click on the **“Add”** button.

The IP Device Configuration page will immediately open. Here you can configure the ENVIROMUX to ping the IP Device as often as desired and to react to a lack of response by sending alert messages.

IP Device Configuration

IP Device Settings

Description
Descriptive name for the IP Device

IP Address
IP Address of the device to ping

Group
Select which group the device belongs to

Ping Period
The frequency at which to ping the device

Timeout
Duration, in seconds, to wait for a response to a ping

Retries
The number of tries before device is considered in alarm

Alert Settings

Data Logging

Alert Simulation

Figure 23- IP Device Configuration page

IP Device Settings	Description
Description	The description of the IP Device that will be viewed in the Summary page and in the body of alert messages
IP Address	The IP address of the IP Device
Group	Assign the IP Device to any group 1 -8
Ping Period	Enter the frequency in minutes or seconds that the ENVIROMUX should ping the IP Device
Timeout	Enter the length of time in seconds to wait for a response to a ping before considering the attempt a failure
Retries	Enter the number of times the ENVIROMUX should ping a non-responsive IP device before changing its status from normal to alarm and sending an alert

The alert settings and data logging are the same as for sensor configuration, described on page 26.

With a couple of IP devices having been configured for monitoring, the IP Device list will provide links to them for viewing their status, editing their configuration, or deleting them from the list.

IP Devices

IP Devices					
Num.	Description	Type	Value	Status	Action
1	Web Server	IP Device	Responding	Normal	View Edit Delete
2	Backup Server	IP Device	Responding	Normal	View Edit Delete

[Add New IP Device](#)

Figure 24- IP Device list with new devices added

To view the graphic image showing the status of an IP address, click on the IP Device description or click **View**. From the IP Device status page, the user can view the current status, either dismiss or acknowledge an alert, or open the IP Device configuration page (if the user has administrative privileges). If you have found the device to be in an alert state and have either dismissed or acknowledged it, be sure to click the **Apply Changes** button.

Web Server Status

Type: IP Device

Responding

Status: Normal

Handle Alert: Dismiss Apply Changes

Last alert was at: Never

Configure

Figure 25- IP Device Status page

Administration

From the Administration section there are several sub sections for configuring the ENVIROMUX:

Administration	System	Fields for applying time zone, date, time, NTP server, and backup and restore configuration settings
System	Enterprise	Fields for assigning the unit name, address, contact person, the ENVIROMUX e-mail address, and phone number of a contact person
Enterprise	Network	Fields for providing all the network settings the ENVIROMUX including IP address, DNS, SMTP and SNMP settings
Network	Users	Fields for assigning users, access privileges, passwords, contact settings, and schedule settings
Users	Security	Fields for setting authentication method and IP Filtering
Security	System Information	For viewing ENVIROMUX system information
System Information	Firmware	For updating the firmware of the ENVIROMUX when improved software becomes available.
Firmware	Reboot	Enables user to reboot the ENVIROMUX using the web interface
Reboot		

System Configuration

The System Configuration section is where all the settings necessary for proper time reporting within alert messages and log records are configured. To view the System Configuration page, click on **System** from the **Administration** section of the menu.

System Configuration

Time Settings

Time zone ▼
Select your time zone

Enable Daylight Saving Automatically adjust clock for daylight saving changes

Set Date ▼
Manually set the system date

Set Time ▼
Manually set the system time (format hh:mm:ss)

Enable NTP Get system time via Network Time Protocol

NTP server
Address of the NTP server

NTP Frequency
Frequency, in minutes, at which to query NTP server (minimum 5 minutes)

E-mail Time Stamp Add time stamp to e-mail alerts

SMS Time Stamp Add time stamp to SMS alerts

Configuration Backup & Restore

Choose File
Choose configuration file to restore.
Note: system will reboot to apply the configuration.

Figure 26- System Configuration page

The Date and Time of the ENVIROMUX can be either manually setup to use an onboard clock or set to be synchronized with an NTP server. The configuration of the ENVIROMUX can also be easily backed up to a file on your PC and restored from that file as needed.

Time Settings	Description
Time Zone	Enter the appropriate time zone
Enable Daylight Saving	Apply a checkmark to have the time change according to Daylight Saving Time rules
Set Date	Enter the system date in MM-DD-YYYY format
Set Time	Enter the system time of day in hh:mm:ss format
Enable NTP	Place a checkmark to enable the ENVIROMUX to automatically sync up with a time server via NTP
NTP server	If the NTP is enabled, enter the Domain Name or IP address of the NTP server
NTP Frequency	Enter the frequency (in minutes) for the ENVIROMUX to query the NTP server (minimum is 5 minutes)
E-mail Time Stamp	Place a checkmark to have the ENVIROMUX apply a time of day stamp in the alert message sent via email
SMS Time Stamp	Place a checkmark to have the ENVIROMUX apply a time of day stamp in the alert message sent via SMS
Configuration Backup & Restore	
Choose file	Browse for a saved configuration file to be restored to the ENVIROMUX. Upon selection, the ENVIROMUX will restore the configuration settings and reboot. Allow 1 minute before trying to reconnect and log in again. Note: The IP address will be set to the IP address in the file and may be different
Download Configuration File	Click this button to save the configuration of the ENVIROMUX to a location on your PC. This file can be restored using the "Choose file" field in the event you wish to return the ENVIROMUX to a former state
Restore Defaults	Click this button to restore the ENVIROMUX to the configuration settings it had upon receipt from the factory. Be careful! This will erase <u>all</u> user configuration settings. Upon restoration, the ENVIROMUX will reboot. Allow 1 minute before trying to reconnect and log in again. Confirmation is required.

Note: If "Restore Defaults" is used, the IP address will also be restored to its default address of 192.168.1.21 with a login name "root" and password "nti". To restore the root password to "nti" without having to restore all default settings, contact NTI for assistance.

To identify the IP address of the ENVIROMUX without restoring defaults, use the Discovery Tool (page 20).

Click on **Save** when finished with Time Setting changes.

Enterprise Configuration

The Enterprise Configuration page is used to enter basic company information to be applied to the body of alerts. To view the Enterprise Configuration, click on **Enterprise** from the **Administration** section of the menu. Enter in the blocks your unit name, location, the contact person that alert e-mails should refer to, the phone number to reach them, and the e-mail address assigned to the ENVIROMUX.

If a GSM modem is properly installed (page 17), the “Modem Status” found in the GSM Modem Status section will indicate “Connected” and the IMEI number for the modem will be indicated. Once the modem makes connection with the cell tower, “Connected” will change to “Ready” (as seen below).

Note: It may take several minutes for the GSM modem to be detected by the ENVIROMUX.

Enterprise Configuration

The screenshot displays the 'Enterprise Configuration' interface. It is divided into two main sections: 'Enterprise Settings' and 'GSM Modem Status'.
Enterprise Settings: Contains five input fields with labels and descriptions: 'Enterprise Name' (Name to identify this unit), 'Location' (Location/Address), 'Contact' (Contact person), 'Phone' (Phone number of contact person), and 'E-mail' (E-mail address for messages sent from this unit).
GSM Modem Status: Displays the following information:
 Modem Type: USB Modem
 IMEI: 353254030124511,PZ2996N2VN
 Modem Status: Ready
 Signal Power: -103 dBm
 A signal strength indicator shows five bars, with the first two being green and the remaining three being grey.
 A callout box with an arrow points to the 'Ready' status, containing the text: 'GSM modem is properly installed'.
 A 'Save' button is located at the bottom left of the configuration area.

Figure 27- Enterprise Configuration- Modem Status “Ready”

If no modem is installed, the modem type will be “Not Available” and the status will be “Not Connected”.

The screenshot shows the 'GSM Modem Status' section of the configuration page. It displays the following information:
 Modem Type: Not Available
 IMEI: (blank)
 Modem Status: Not Connected
 Signal Power: No Signal
 A signal strength indicator shows five bars, all of which are grey, indicating no signal.
 A 'Save' button is located at the bottom left of the configuration area.

Figure 28- No Modem Installed

Network Configuration

From the Network Setup page the administrator can either choose to have the IP address and DNS information filled in automatically by the DHCP server, or manually fill in the fields (use a static address). Settings can be entered for either the IPv4 or IPv6 protocols. To view the Network Configuration page, click on **Network** from the **Administration** section of the menu.

Note: If you select “DHCP”, make sure a DHCP server is running on the network the ENVIROMUX is connected to.

Network Configuration

The screenshot shows the Network Configuration page with the following details:

- IPv4 Settings:**
 - IPv4 Mode: Static (Method of acquiring IP settings)
 - IPv4 Address: 192.168.1.21 (Statically assigned IPv4 address)
 - IPv4 Subnet Mask: 255.255.255.0 (Statically assigned IPv4 subnet mask)
 - IPv4 Default Gateway: 192.168.1.1 (Statically assigned IPv4 default gateway)
 - Preferred DNS: (Statically assigned preferred name server)
 - Alternate DNS: (Statically assigned alternate name server)
- IPv6 Settings:**
 - IPv6 Mode: Disabled (Method of acquiring IPv6 settings)
 - IPv6 Address: (Statically assigned IPv6 address)
 - IPv6 Default Gateway: (Statically assigned IPv6 default gateway)
 - Enable 6to4 tunnel: Disabled (Enable 6to4 Tunneling)
 - Local IPv4 Address: (IPv4 Address of local interface for 6to4 tunnel)
 - Remote IPv4 Address: (IPv4 Address of Remote interface for 6to4 tunnel)
- SMTP Settings** (Collapsed)
- SNMP Settings** (Collapsed)
- Server Settings** (Collapsed)
- Save** button

Note: The values shown here are for local (static) address configuration only.

Address values for DHCP configuration will only be displayed in the System Information page (page 32).

Figure 29- Network Configuration page

IPv4 Settings	Description
Mode	Select between Static (manual) , or DHCP (automatic IP and DNS) settings
IP Address	Enter a valid IP address (default address shown above)
Subnet Mask	Enter a valid subnet mask (default value shown above)
Default Gateway	Enter a valid gateway (default gateway shown above)
Preferred DNS	Enter a preferred domain name server address
Alternate DNS	Enter an alternate domain name server address

Enter IPv6 settings as applicable.

For descriptions of SMTP, SNMP, and Server Settings, see page 37.

The Network Configuration page is broken into four sections; IP Settings, SMTP Settings, SNMP Settings, and Server Settings. To explode the window to see settings for a section, click on the section heading.

SMTP Settings	
SMTP Server	<input type="text"/> SMTP server used when sending e-mails
Port	<input type="text" value="25"/> SMTP server port
Use SSL	<input type="checkbox"/> SMTP server requires the use of SSL
Use Authentication	<input type="checkbox"/> SMTP server requires authentication to send e-mail
Username	<input type="text"/> Username for sending e-mails
Password	<input type="text"/> Password for sending e-mails

SNMP Settings	
Enable SNMP Agent	<input type="checkbox"/> Allow access to SNMP agent on this device
Enable SNMP Traps	<input type="checkbox"/> Enable sending of SNMP traps from this device
Read-write community name	<input type="text" value="private"/> Read-write community name for SNMP agent
Read-only community name	<input type="text" value="public"/> Read-only community name for SNMP agent

Server Settings	
Enable Telnet	<input checked="" type="checkbox"/> Enable access to this device via telnet
Enable SSH	<input checked="" type="checkbox"/> Enable access to this device via ssh
Enable HTTP Access	<input checked="" type="checkbox"/> Enable access to this device via standard (non-secure) HTTP requests. HTTPS is always enabled.
HTTP Port	<input type="text" value="80"/> Port for standard HTTP requests
HTTPS Port	<input type="text" value="443"/> Port for HTTPS requests
Web Timeout	<input type="text" value="20"/> Minutes after which idle web users will be logged out (0 disables idle logout)

Figure 30- Network Configuration- more settings

More Network Settings (see Figure 30)

SMTP Settings	Description
SMTP Server	Enter a valid SMTP server name (e.g. yourcompany.com)
Port	Enter a valid port number (default port is 25)
Use SSL	Place a checkmark in the box if the SMTP server supports SSL
Use Authentication	Place a checkmark in the box if the SMTP server requires authentication to send email
Username	Enter a valid username to be used by the ENVIROMUX to send emails
Password	Enter a valid password assigned to the ENVIROMUX username
SNMP Settings	
Enable SNMP agent	Place a checkmark in the box to enable access to the SNMP agent
Enable SNMP traps	Place a checkmark in the box to allow SNMP traps to be sent
Read-write community name	Enter applicable name (commonly used- "private") Not applicable as of this printing
Read-only community name	Enter applicable name (commonly used- "public")
Server Settings	
Enable Telnet	Place a checkmark in the box to enable access to the ENVIROMUX via Telnet The default is disabled.
Enable SSH	Place a checkmark in the box to enable access to the ENVIROMUX via SSH
Enable HTTP access	Place a checkmark in the box to enable access to the ENVIROMUX via standard (non-secure) HTTP requests
HTTP Port	Port to be used for standard HTTP requests
HTTPS Port	Port to be used for HTTPS requests
Web Timeout	Number of minutes after which idle web uses will be logged-out (enter 0 to disable this feature)

If the administrator chooses to have the IP and DNS information filled in automatically via DHCP, the SMTP server and port number still need to be entered for email alerts to work. If the SMTP server requires a password in order for users to send emails, the network administrator must first assign a user name and password to the ENVIROMUX.

Note: The SMTP server port number is shown in Figure 30 as "25". This is a common port number assigned, but not necessarily the port number assigned to your SMTP server. For SMTP servers that support SSL, the common port number is 465.

The administrator may assign a different HTTP Server Port than is used by most servers (80).

Note: If the port number is changed and forgotten, to determine what it has been changed to connect the ENVIROMUX for control using the text menu (page 51) and review the Miscellaneous Service Settings (page 71).

Read-Only Community Name

The SNMP Read-only community name enables a user to retrieve "read-only" information from the ENVIROMUX using the SNMP browser and MIB file. This name must be present in the ENVIROMUX and in the proper field in the SNMP browser.

Read-Write Community Name

(not applicable as of this printing)

The SNMP Read-Write community name enables a user to read information from the ENVIROMUX and to modify settings on the ENVIROMUX using the SNMP browser and MIB file. This name must be present in the ENVIROMUX and in the proper field in the SNMP browser.

User Configuration

The Users page is a list of all configured users of the ENVIROMUX. A maximum of 15 users (other than root) can be configured. From this page the user can choose to add more users, go to the user configuration page to edit a user's access to the ENVIROMUX, or delete a user from the list. To view the Users page, click on **Users** from the **Administration** section of the menu.

Users

Users					
Num.	Username	Enabled	Admin	Last Login	Action
1	root	yes	yes	09-06-2009 11:58:56 PM	Edit
2	user1	no	no	Never	Edit Delete

[Add New User](#)

Figure 31- Users page

To add a user, click on the “Add New User” link.
 To edit a user's configuration, either click on the listed username, or on the “Edit” link.
 To delete a user and their configuration, click on “Delete” link.

When adding a new user, the Configure User page will open with the username “userx” assigned, where x = the next consecutive number (up to 15) based on the quantity of users in the list (other than the root user). You can either leave the name as “userx”, or change it to what you would like to see listed. With the name assigned, fill in the remaining information as needed.

Configure User

[-] Account Settings

Username
The username for this user

Admin
Grant this user administrative privileges

Enabled
Users can only access the system if their account is enabled

Password
The user's password to login to the system (for local authentication)

Confirm
Confirm the entered password

Title
The user's title within the company

Department
The user's department within the company

Company
The name of the user's company

[+] Group Settings

[+] Contact Settings

[+] Schedule Settings

Figure 32- Configure Users page

Group Settings	
Group 1	<input type="checkbox"/> User receives notifications for Group 1
Group 2	<input type="checkbox"/> User receives notifications for Group 2
Group 3	<input type="checkbox"/> User receives notifications for Group 3
Group 4	<input type="checkbox"/> User receives notifications for Group 4
Group 5	<input type="checkbox"/> User receives notifications for Group 5
Group 6	<input type="checkbox"/> User receives notifications for Group 6
Group 7	<input type="checkbox"/> User receives notifications for Group 7
Group 8	<input type="checkbox"/> User receives notifications for Group 8

Contact Settings	
E-mail Alerts	<input type="checkbox"/> User receives alerts via e-mail
E-mail Address	<input type="text"/> E-mail address for the user
Syslog Alerts	<input type="checkbox"/> User receives alerts via syslog
SNMP Traps	<input type="checkbox"/> User receives alerts via SNMP traps
Syslog/SNMP IP Address	<input type="text"/> IP address where syslog messages/SNMP traps are sent for this user
SMS Alerts	<input type="checkbox"/> User receives alerts via SMS
SMS Number	<input type="text"/> Phone number where SMS messages are sent for this user

Schedule Settings	
Schedule Type	Always active <input type="button" value="v"/> Configure the user's schedule type
Start Day	Sun <input type="button" value="v"/> First day of the week when the user active
End Day	Sun <input type="button" value="v"/> Last day of the week when the user active
Start Hour	00:00 <input type="button" value="v"/> Starting hour for the user's daily schedule
End Hour	00:00 <input type="button" value="v"/> Ending hour for the user's daily schedule

SNMP Settings	
Authentication Protocol	None <input type="button" value="v"/> Select authentication protocol
Authentication Passphrase	12345678 <input type="text"/> The authentication passphrase
Privacy Protocol	None <input type="button" value="v"/> Select privacy protocol
Privacy Passphrase	12345678 <input type="text"/> The privacy passphrase
Traps Type	SNMPv1 <input type="button" value="v"/> Select type of traps accepted by user

Figure 33- Configure User- more options

Account Settings	Description
Username	Enter the desired username for this user
Admin	Place a checkmark here if this user should have administrative privileges
Enabled	Place a checkmark here to enable this user to access the ENVIROMUX
Password	Enter a password that a user must use to login to the system A password must be assigned for the user's login to be valid Passwords must be at least 1 keyboard character.
Confirm	Re-enter a password that a user must use to login to the system
Title	Enter information as applicable
Department	Enter information as applicable
Company	Enter information as applicable
Group Settings	
Group 1-8	Place a checkmark if the user should receive messages from sensors, accessories, or IP devices in Group 1, 2, 3... thru 8 (see also pages 26 and 30 for group assignments)
Contact Settings	
Email alerts	Place a checkmark if the user should receive messages via email
Email address	Enter a valid email address if this user should receive email alert messages
Syslog alerts	Place a checkmark if the user should receive alerts via syslog messages
SNMP traps	Place a checkmark if the user should receive alerts via SNMP traps
Syslog/SNMP IP address	Enter a valid syslog/SNMP IP address for the user to receive syslog/SNMP messages
SMS Alerts	Place a checkmark if the user should receive alerts via SMS messages
SMS Number	Enter a phone number for the GSM modem to call to alert the user via SMS message
Schedule Settings	
Schedule Type	Always active - user will receive messages at all hours of each day Active during defined times - user will only receive alert messages during times as outlined below
Start Day	First day of the week the user should begin receiving messages
End Day	Last day of the week the user should receive messages
Start Hour	First hour of the day the user should begin receiving messages
End Hour	Last hour of the day the user should receive messages
SNMP Settings	
Authentication Protocol	Choose between MD5 or SHA to require authentication, or none to disable it
Authentication Passphrase	Assign the passphrase to be used to enable the receipt of SNMP v3 messages
Privacy Protocol	Choose between DES or AES to encrypt SNMP readings or traps or none to disable encryption. If encryption is enabled, then the Authentication Protocol must also be set at "MD5" or "SHA".
Privacy Passphrase	Assign the passphrase to be used to open and read readings or alert messages received via SNMP v3
Traps Type	Choose between SNMPv1, SNMPv2C, or SNMPv3

After changing any settings in the user profile, press "Apply".

More about User Privileges

The root user (or any user with administrator rights) can change the root password and configure how the root user will receive alert messages. Users with administrative rights can change all configuration settings except for the root user name.

Users with user rights can only see the current readings of monitored items and change their own passwords.

Unit: E-MINI-LX Model: ENVIRONMENT-MINI-LX
Uptime: 33 mins
Current Time: 04-04-2011 03:00:27 PM

Home Summary

Monitoring
Administration
Log
Support
Logout

Summary

Sensors

Conn.	Description	Type	Value	Status	Action
1	Server Rack Temperature	Temperature Combo	86.9F	Normal	View Edit Delete
1	Server Rack Humidity	Humidity Combo	26.6%	Normal	View Edit Delete
2	Server Room Temperature	Temperature Combo	76.8F	Normal	View Edit Delete
2	Server Room Humidity	Humidity Combo	34.1%	Normal	View Edit Delete

Water Sensors

Conn.	Description	Type	Value	Status	Action
1	Server Room Water Detection	Water Sensor	Open	Normal	View Edit

Dry Contacts

Conn.	Description	Type	Value	Status	Action
1	Server Room Smoke Detector	Dry Contact	Open	Normal	View Edit
2	Server Room Door	Dry Contact	Open	Normal	View Edit
3	Not Used	Dry Contact	Open	Normal	View Edit
4	Not Used	Dry Contact	Open	Normal	View Edit

IP Devices

Num.	Description	Type	Value	Status	Action
1	Web Server	IP Device	Responding	Normal	View Edit Delete
2	Backup Server	IP Device	Responding	Normal	View Edit Delete

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Figure 34-Summary page for User without Admin privileges

Security

Security in the ENVIROMUX can be managed one of two ways; through the local settings (passwords assigned in user settings on page 40) or through an LDAP server. If security is configured to use LDAP mode, then the passwords for users must be those found on a configured LDAP server. To view the Security Configuration page, select **Security** in the **Administration** section of the menu.

Security Configuration

[-] **User Authentication**

Mode Authentication method for logging into the system

LDAP Primary Server Primary LDAP server

LDAP Secondary Server Secondary LDAP server

LDAP Server Type The type of LDAP server being connected to

LDAP User Base DN Base DN for users (ex: ou=People,dc=mycompany,dc=com)

[+] **IP Filtering**

Save

Figure 35- Security Configuration page

When in LDAP mode, usernames on the LDAP server must match those in the user settings of the ENVIROMUX or access will be denied.

Note: When in LDAP mode, if the LDAP server is not responding, local authentication will be tried.

User Authentication	
Mode	Select Local to use authentication based on passwords in the ENVIROMUX user configuration Select LDAP to use authentication based on passwords in an LDAP server
LDAP Primary Server	Enter Hostname or IP address of Primary LDAP Server
LDAP Secondary Server	Enter Hostname or IP address of Secondary LDAP Server (optional)
LDAP Server Type	Choose from drop down list: Generic LDAP server Novell Directory server Microsoft Active Directory
LDAP User Base DN	Enter the Base DN for users (ex: ou=People,dc=mycompany,dc=com)

Even though LDAP authentication is being used, each user must also have a local account. User permission level is established by the local account.

Included in the Security Configuration options is IP Filtering. IP Filtering provides an additional mechanism for securing the ENVIROMUX. Access to the ENVIROMUX network services (SNMP, HTTP(S), SSH, Telnet) can be controlled by allowing or disallowing connections from various IP addresses, subnets, or networks.

Up to 16 IP Filtering rules can be defined to protect the ENVIROMUX from unwanted access from intruders. Each rule can be set as Enabled or Disabled. Rules can be set to explicitly drop attempts to connect, or to accept them.

Be sure to press **Save** after changes are made.

☰ **IP Filtering**

Num.	Enabled	Mode	Filter Rule
1	Disabled ▾	DROP ▾	192.168.1.0/24
2	Disabled ▾	DROP ▾	192.168.1.0/24
3	Disabled ▾	DROP ▾	192.168.1.0/24
4	Disabled ▾	DROP ▾	192.168.1.0/24
5	Disabled ▾	DROP ▾	192.168.1.0/24
6	Disabled ▾	DROP ▾	192.168.1.0/24
7	Disabled ▾	DROP ▾	192.168.1.0/24
8	Disabled ▾	DROP ▾	192.168.1.0/24
9	Disabled ▾	DROP ▾	192.168.1.0/24
10	Disabled ▾	DROP ▾	192.168.1.0/24
11	Disabled ▾	DROP ▾	192.168.1.0/24
12	Disabled ▾	DROP ▾	192.168.1.0/24
13	Disabled ▾	DROP ▾	192.168.1.0/24
14	Disabled ▾	DROP ▾	192.168.1.0/24
15	Disabled ▾	DROP ▾	192.168.1.0/24
16	Disabled ▾	DROP ▾	192.168.1.0/24

DROP
ACCEPT

Figure 36- Security Configuration- IP Filtering Rules

More on IP Filtering

The most common approach is to only allow “white-listed” IP addresses, subnets, or networks to access the device while blocking all others. The IP Filters are processed sequentially from top to bottom, so it is important to place the most precise rules at the top of the list and the most generic rules at the bottom of the list.

As an example, assume we wish to block all connections except those which come from the IP address 192.168.1.100. To allow connections from 192.168.1.100, we need to configure and enable an ACCEPT rule at the top of the list:

1

Then, to block all other IP addresses from connecting to the ENVIROMUX, we add a rule to drop all other connections.

16

If the preceding “drop all connections” rule was placed in position one, no connections at all would be allowed to the unit. Remember: rules are processed from top to bottom. As soon as a rule matches, the processing stops and the matching rule is executed.

To match a particular IP address, simply enter in the desired IP address (e.g. 192.168.1.100).

To match a subnet, enter in the subnet with the associated mask (e.g. 192.168.1.0/24).

To match all IP address, specify a mask of 0 (e.g. 0.0.0.0/0).

System Information

The system information page displays the model name of the ENVIROMUX, the firmware version in the ENVIROMUX, the MAC address of the Ethernet port, the IP mode, and the network configuration. To view the System Information, select **System Information** in the **Administration** section of the main menu.

System Information

System Information	
Product:	ENVIROMUX-MINI-LX Mini Server Environment Monitoring System
Revision:	1.0
Build Date:	09-27-2011 01:21:22 PM
MAC Address:	00:0C:82:0B:00:03
IP Mode:	Static
IP Address:	192.168.3.85
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.3.3
Primary DNS:	166.102.165.11
Secondary DNS:	166.102.165.13
SNMPv3 Engine ID:	0x80001F8803000C820B0003

Figure 37- System Information page

Update Firmware

The Update Firmware page is used to change the firmware of the ENVIROMUX. Occasionally new features or changes to existing features will be introduced and new firmware with these changes will be made available on the NTI website (<http://www.networktechinc.com/download/d-enviro-mini-lx.html>). To view the Update Firmware page, select **Firmware** in the **Administration** section of the main menu. Once a user has downloaded the required file for firmware upgrade, this page will be used to upload it to the ENVIROMUX.

Update Firmware

Firmware Update

Caution! You have asked to update the firmware. Failure to update firmware properly can permanently damage the product.

Update file Browse...

Choose the firmware update file.
Current firmware version is **1.0**.
Build date: **10-06-2011 09:17:17 AM**

Update

Figure 38- Update Firmware page

1. Download the most current firmware file from <http://www.networktechinc.com/download/d-enviro-mini-lx.html> to a location on your PC.
2. Click on the “Browse” button and locate and select the firmware file for the ENVIROMUX (*webupdate-enviromux-mini-lx-vx-x.bin, for example*).
3. Click on the “Update” button to perform the firmware update. The firmware update process will take approximately 5 minutes while the ENVIROMUX installs the firmware. Once the update file has been installed, the unit will automatically reboot and the login screen will appear.

Reboot the System

The ENVIROMUX can be remotely rebooted by anyone with administrative privileges. To view the Reboot System page, select **Reboot** in the **Administration** section of the main menu. Click the **Reboot Now** button to cause the ENVIROMUX to reboot. This will disconnect any user and shut down all activity.

Reboot System



Figure 39- Reboot System page

The message "System is rebooting, please wait..... " will appear and after approximately 45 seconds the login screen will appear. Log in to resume activity.

System Reboot

System is rebooting, please wait...

Figure 40- System is rebooting

Log

From the Log section there are three sub sections for configuring the ENVIROMUX:

Monitoring	View Event Log	View a log listing the date and time of events such as startups, shut downs, user logins
Administration	View Data Log	View data readings from sensors and IP addresses
Log	Log Settings	Configure how the logs are sent to users, how they handle reaching capacity, which users will be notified that it has reached capacity, and how they will be notified
View Event Log		
View Data Log		
Log Settings		
Support		
Logout		

View Event Log

The Event Log provides the administrative user with a listing of many events that occur within the ENVIROMUX. The event log will record the date and time of:

- each ENVIROMUX startup,
- each user login and logout time,
- any time an unknown user tries to login,
- sensor and IP device alerts
- an alert handled by a user

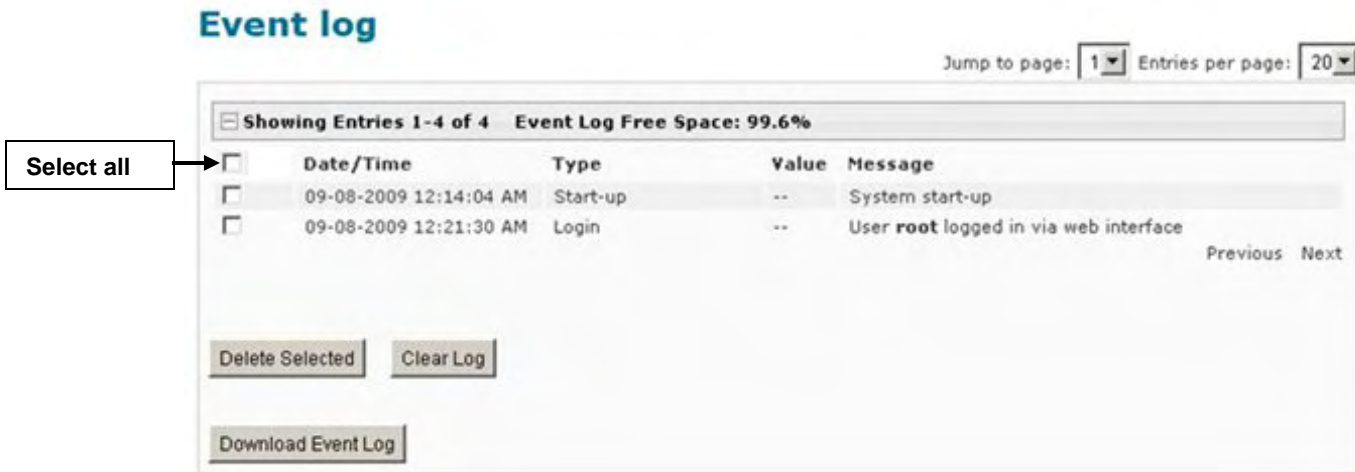


Figure 41- Event Log page

From the Event Log page the administrative user can view the logs, select specific logs to be deleted or press **Clear Log** to delete them all. The number of entries per page can be changed for the user's reading preference. Navigating between pages is as easy as clicking **Previous** or **Next** buttons, or jumping to a specific page if you know where the log entry you are interested in is listed.

To clear only specific log entries, place a checkmark in each line item to be deleted, and press **Delete Selected**. To select all entries at once, place a checkmark in the uppermost box. Before deleting, the user may want to save the log for future reference and to make space for more logs by downloading the event log to a file on a PC. Press **Download Event Log** to save the log file before clearing it.

View Data Log

The Data Log provides the administrative user with a listing of all the readings taken by the ENVIROMUX pertaining to the sensors and IP Devices being monitored. The event log will record the date and time of each reading.

The screenshot shows the 'Data log' interface. At the top right, there are dropdown menus for 'Jump to page: 1' and 'Entries per page: 20'. Below this is a header bar that says 'Showing Entries 1-4 of 4 Data Log Free Space: 99.6%'. The main content is a table with the following data:

<input type="checkbox"/>	Date/Time	Type	Value	Description
<input type="checkbox"/>	09-08-2009 12:41:13 AM	Temperature Combo	29.2C	Undefined #1
<input type="checkbox"/>	09-08-2009 12:41:30 AM	Humidity Combo	30.6%	Undefined #1
<input type="checkbox"/>	09-08-2009 12:41:54 AM	IP Device	Responding	ENVIROMUX-MINI-no.1
<input type="checkbox"/>	09-08-2009 12:42:13 AM	IP Device	Responding	ENVIROMUX-MINI-no.2

Below the table are buttons for 'Delete Selected', 'Clear Log', and 'Download Data Log'. A 'Select all' box with an arrow points to the first checkbox in the table. At the bottom right of the table, there are 'Previous' and 'Next' navigation links.

Figure 42- Data Log page

From the Data Log page the administrative user can view the logs, select specific logs to be deleted or press **Clear Log** to delete them all. The number of entries per page can be changed for the user's reading preference. Navigating between pages is as easy as clicking **Previous** or **Next** buttons, or jumping to a specific page if you know where the log entry you are interested in is listed.

To clear only specific log entries, place a checkmark in each line item to be deleted, and press **Delete Selected**. To select all entries at once, place a checkmark in the uppermost box. Before deleting, the user may want to save the log for future reference and to make space for more logs by downloading the event log to a file on a PC. Press **Download Data Log** to save the log file before clearing it.

Log Settings

The Log Settings page (Figure 43) provides settings for how the ENVIROMUX will react when its Data and Event logs reach capacity.

Each log can be assigned to a group and any user that receives messages from that group can be notified when capacity is being reached.

The log can be set to either :

- Discontinue- stop logging information
- Clear and restart- delete all log entries and restart with new entries
- Wrap- continue logging but delete the oldest entries so new ones can be recorded

The Data and/or Event log can be set to send alerts to users via email, syslog, and/or SNMP traps once it has reached 90% of capacity, allowing them time to react.

The Data log can also be set to send log entries via email, syslog, or SNMP traps to users in addition to the entries it records internally. Enable Remote Logging for email, syslog, of SNMP as desired.

Log Settings

Event Log Settings	
Group	1 <small>Select which group the event log belongs to</small>
Overflow Action	Wrap <small>Choose the action to take when the event log overflows</small>
Enable Syslog Alerts	<input type="checkbox"/> <small>When event log reaches 90% of capacity, send alerts via syslog</small>
Enable SNMP Traps	<input type="checkbox"/> <small>When event log reaches 90% of capacity, send alerts via SNMP traps</small>
Enable E-mail Alerts	<input checked="" type="checkbox"/> <small>When event log reaches 90% of capacity, send alerts via e-mail</small>
Data Log Settings	
Group	1 <small>Select which group the data log belongs to</small>
Overflow Action	Wrap <small>Choose the action to take when the data log overflows</small>
Enable Syslog Alerts	<input type="checkbox"/> <small>When data log reaches 90% of capacity, send alerts via syslog</small>
Enable SNMP Traps	<input type="checkbox"/> <small>When data log reaches 90% of capacity, send alerts via SNMP traps</small>
Enable E-mail Alerts	<input checked="" type="checkbox"/> <small>When data log reaches 90% of capacity, send alerts via e-mail</small>
Enable Syslog Remote Logging	<input type="checkbox"/> <small>Send data log entries via Syslog messages</small>
Enable SNMP Remote Logging	<input type="checkbox"/> <small>Send data log entries via SNMP Traps</small>
Enable E-mail Remote Logging	<input type="checkbox"/> <small>Send data log entries via e-mail</small>
Log To Usb Flash Settings	
Enable Log to Flash drive	<input type="checkbox"/> <small>Enable log to USB flash drive. Disable this before removing the flash drive</small>
<input type="button" value="Save"/>	

Apply a checkmark in this box to enable the recording of logs to the flash drive.

Note: Be sure to remove the checkmark before removing a flash drive from the ENVIROMUX. Otherwise data on the drive may be lost.

Figure 43- Log Settings page

Log to USB Flash Settings

Event and Data log messages are automatically sent to users as configured above in addition to being recorded in the logs. The logs can also be downloaded as a tab-delimited plain text file. If a USB flash drive is present, logs will also be recorded on the flash drive to make them portable provided the feature is enabled.

The number of logs that can be recorded depends on the capacity of the flash drive installed. To begin recording to the flash drive, place a checkmark in the “Enable Log to Flash drive” box. Be sure to remove the checkmark before removing the flash drive from the ENVIROMUX or the data on the drive may be lost.

Support

The Support section of the menu includes two links, Manual and Downloads.

The Manual link will open the pdf manual for the ENVIROMUX on the NTI website. You must have Adobe Reader installed on your PC to open this.

The Downloads link will take you to the Firmware Downloads page for the ENVIROMUX on the NTI website. All versions of firmware and MIB files for the ENVIROMUX will be found there, available for immediate download to your PC.

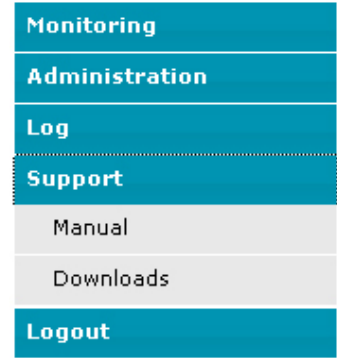


Figure 44- Support

Logout

To logout of the ENVIROMUX user interface, click on the “Logout” section in the menu. A gray menu label will drop down. Click on the gray label to be immediately logged out. The login screen will appear, at which you can close your browser or log back in.

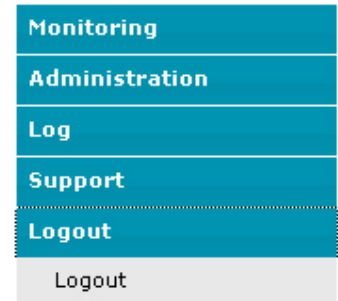


Figure 45- Logout

OPERATION VIA TEXT MENU- ENVIROMUX

The ENVIROMUX can be controlled through a text menu using a terminal program (e.g. HyperTerminal) connected to the USB Console Port (page 10), or using the Telnet or the SSH protocol provided a connection has been made to the Ethernet Port (page 9). Either of these methods will work to access the ENVIROMUX text menu. The text menu can be used to control all functions of the ENVIROMUX as an alternative to the Web Interface (page 21).

Connect to ENVIROMUX from a Terminal Program

The following instruction will enable the user to quickly make connections using a terminal connected to the “USB CONSOLE” port after the drivers have been loaded (page 10). For instruction to make quick connection using the Ethernet port and Web Interface, see page 21.

Note: Drivers must first be installed on the PC (page 10) before the terminal program and USB CONSOLE port can be used.

1. Make sure the ENVIROMUX is powered ON.
2. Using the serial console device connected to the port labeled "USB CONSOLE", start the terminal program (e.g. Windows HyperTerminal) and configure it as follows:
 - direct connection (using the appropriate CPU local serial Com port)
 - 115200 bps
 - 8 bits
 - no parity
 - 1 stop bit
 - no flow control
 - VT100 terminal mode.
3. Press <Enter> and a login prompt will appear- “minilx login:” , type <root> (all lowercase letters) and press <Enter>.
4. At “Username: “ type <root> (all lowercase letters) and press <Enter>.
5. At “Password” type <nti> (all lowercase letters) and press <Enter>.

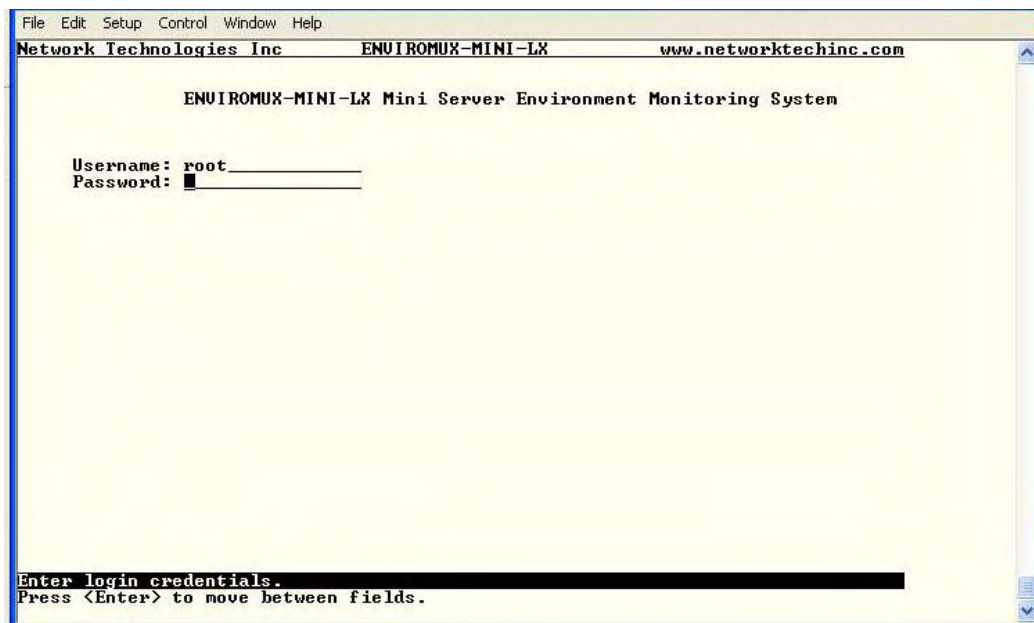


Figure 46- Text Menu Login screen

Note: User names and passwords are case sensitive. It is important to know what characters must be capitalized and what characters must not.

Note: Only the user “root” can access the text menu when connected through the “USB CONSOLE” port.

Connect to ENVIROMUX from Command Line

To access the Text Menu from the command line, the ENVIROMUX must first be connected to the Ethernet (page 9).

Connect Via Telnet

Note: Telnet must be enabled for a connection via Telnet to be possible (page 36)

To open a telnet session to the ENVIROMUX, Issue the following command from the command line:

```
telnet <ENVIROMUX hostname or IP address>
```

<ENVIROMUX hostname> is the hostname configured in the workstation where the telnet client will run (through /etc/hosts or DNS table). It can also be just the IP address of the ENVIROMUX (default is 192.168.1.21).

The user will be prompted for username and password to connect to the ENVIROMUX.

Connect Via SSH

To open an SSH session to a serial port, issue the following command from the command line:

```
ssh -l <Username> <ENVIROMUX hostname or IP address>
```

<Username> is any user configured to access the ENVIROMUX (as defined in the list of users (page 38).

<ENVIROMUX hostname> is the hostname configured in the workstation where the SSH client will run (through /etc/hosts or DNS table). It can also be just the IP address of the ENVIROMUX (default is 192.168.1.21).

The user will be prompted for a password to connect to the ENVIROMUX.

The main menu of the Text Menu will be displayed whether you are connecting via USB Console, Telnet, or SSH.

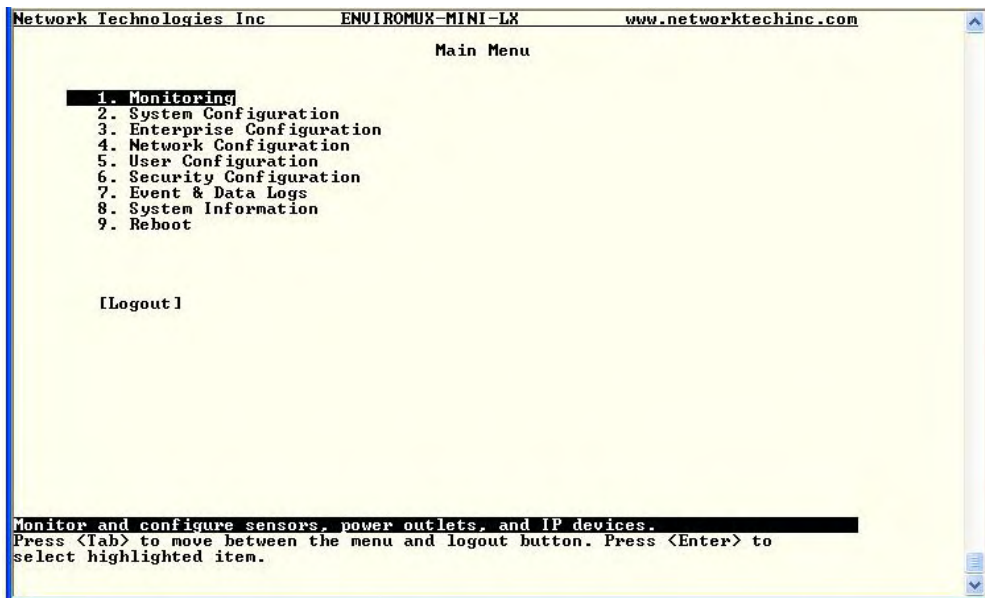


Figure 47- Text Menu- Administrator Main Menu

If you are a user with only user privileges (no administrative privileges), the text menu will have more limited options.

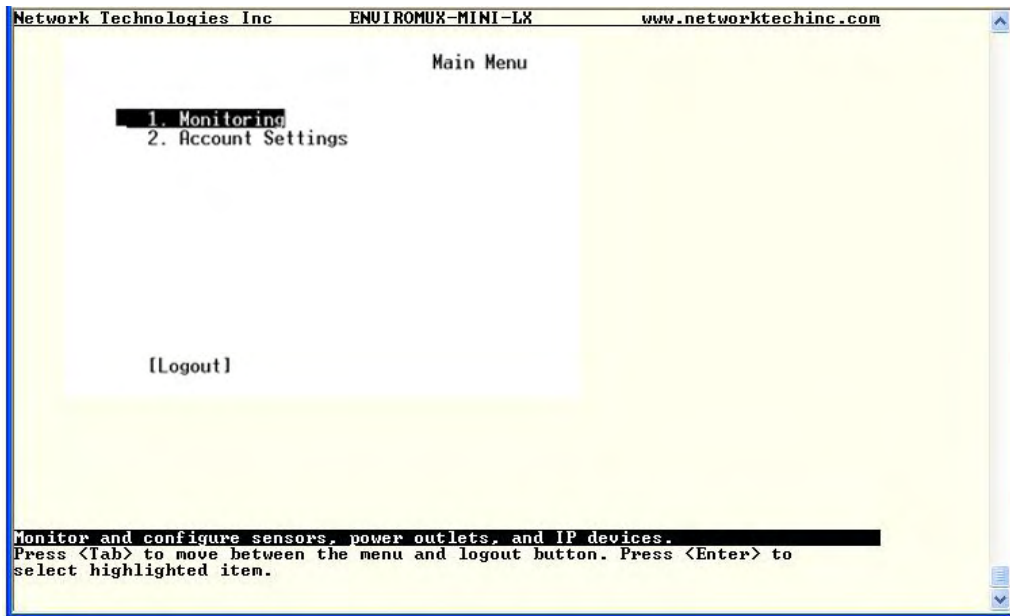


Figure 48- Text Menu- User Main Menu

For more on the Text Menu options for non-administrative users, see page 84.

Using the Text Menu

Text Menu Navigation

- To move up and down the numbered menu items, use the arrow keys.
- To jump from menu item to another quickly, press the numbered key above the QWERTY keys (**the numberpad number keys are not used**).
- To move from menu list to action key (such as “Logout” in Figure 48 above), press <Tab>.
- To exit an action or menu, press <Esc>.
- To select a highlighted item or move to another field in a configuration page, press <Enter>.
- Be sure to Tab to “Save” and press <Enter> when configuration changes are made.
- To return from “Save” back to a field on the configuration page, press <Tab>.

The Administrators Main Menu is broken into 9 categories:

Function	Description
Monitoring	Monitor and configure the sensors, accessories and IP devices
System Configuration	Set the ENVIROMUX time settings or reset the unit to factory default settings
Enterprise Configuration	Configure system settings
Network Configuration	Configure network settings
User Configuration	Configure user access settings
Security Configuration	Configure security settings
Event and Data Logs	View and configure the Event and Data Logs (page 80)
System Information	View system and network settings
Reboot	Enables the user to reboot the ENVIROMUX

Monitoring

The Monitoring menu lists choices for viewing the status of items monitored by the ENVIROMUX as well as for configuring how they are monitored and how or if alert messages will be sent.

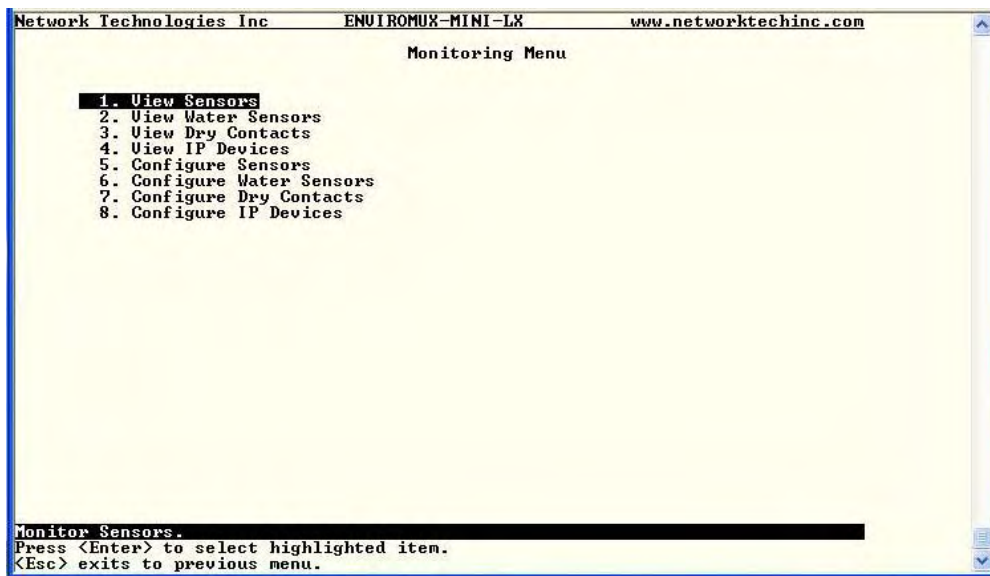


Figure 49- Text Menu-Monitoring Menu

View Sensors

The View Sensors selection will show the present status of each sensor connected to the ENVIROMUX.

The current value being reported by the sensor and the state (whether Normal or Alert) will be shown. If the sensor is in alert status, pressing the <Enter> key would provide the option to either **acknowledge** the alert or **dismiss** it.

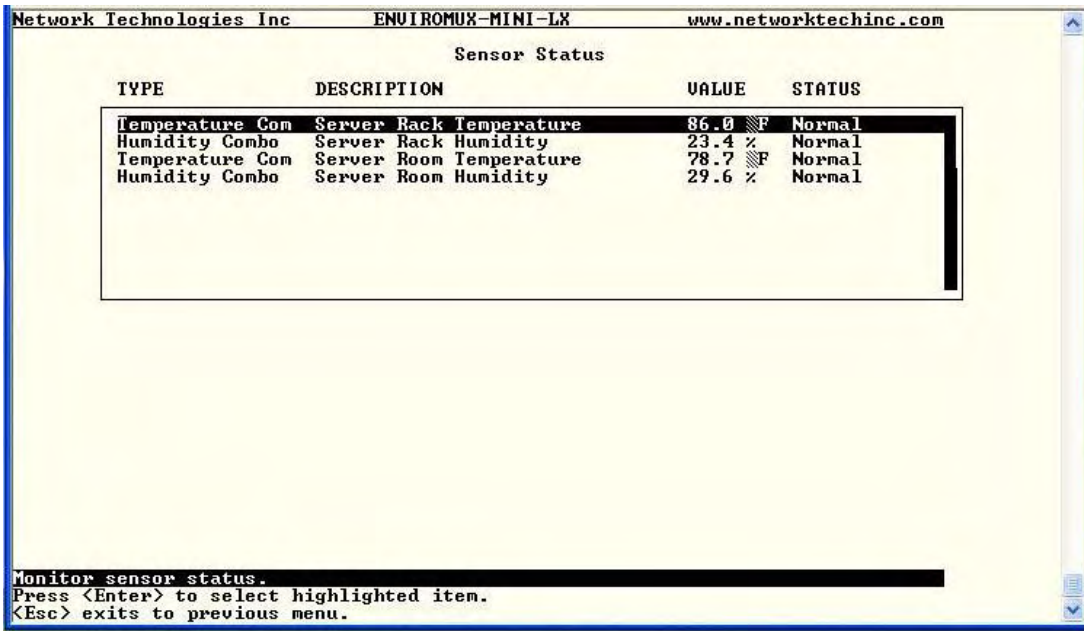


Figure 50- Text Menu-Sensor Status

View IP Devices

The View Sensors selection will show the present status of each IP Device monitored by the ENVIROMUX.

The current value being reported by the IP Device and the state (whether Normal or Alert) will be shown. If the IP Device is in alert status, pressing the <Enter> key would provide the option to either **acknowledge** the alert or **dismiss** it.

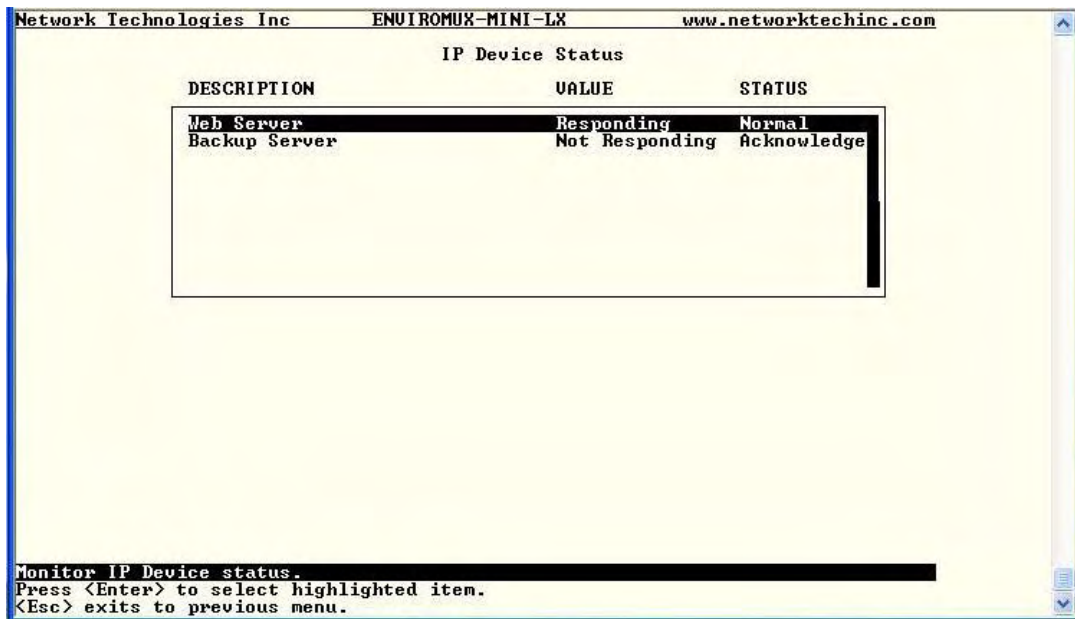


Figure 51- Text Menu-View IP Devices

Configure Sensors

The Configure Sensors menu lists the temperature and humidity sensors connected to the ENVIROMUX. Press <Enter> to open the configuration menu for the selected sensor.

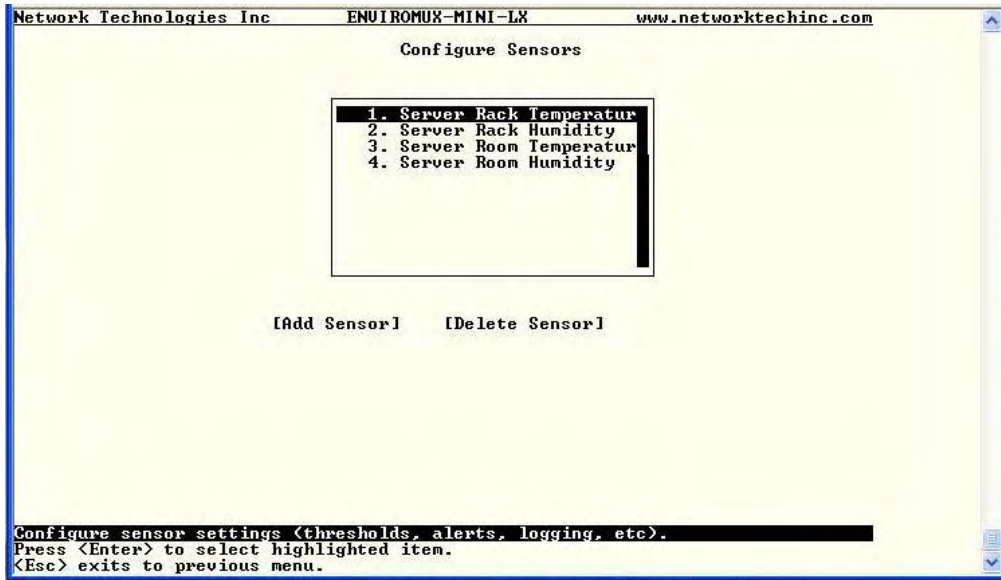


Figure 52- Text Menu-Configure Sensors list

The configuration menu for the sensor includes options to enter the Sensor Settings, Critical Alert Settings, and Data Logging.

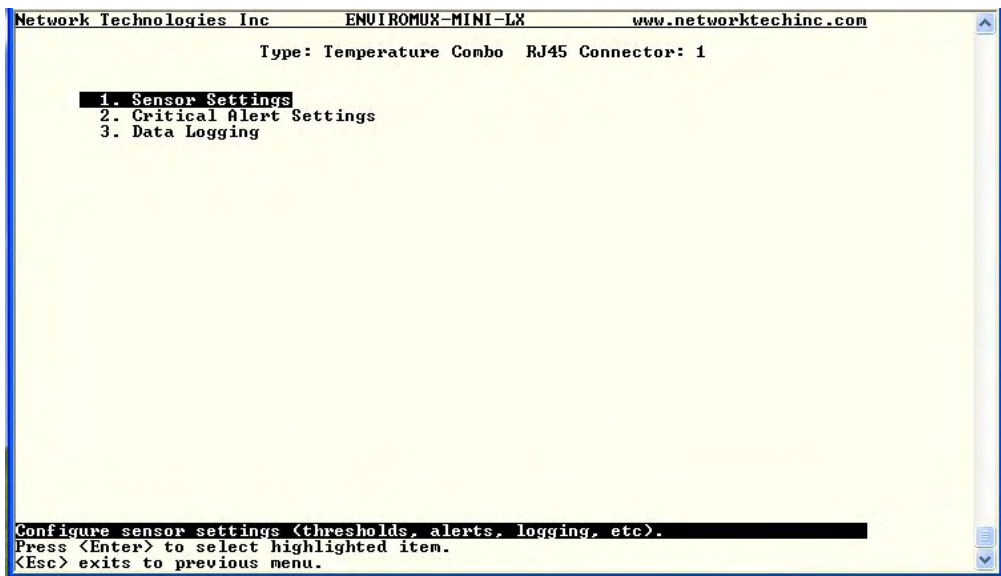


Figure 53- Text Menu-Configuration Menu for Sensor

From the Sensor Settings menu enter the Description for the sensor and select which sensor group the sensor should belong to (1 or 2).

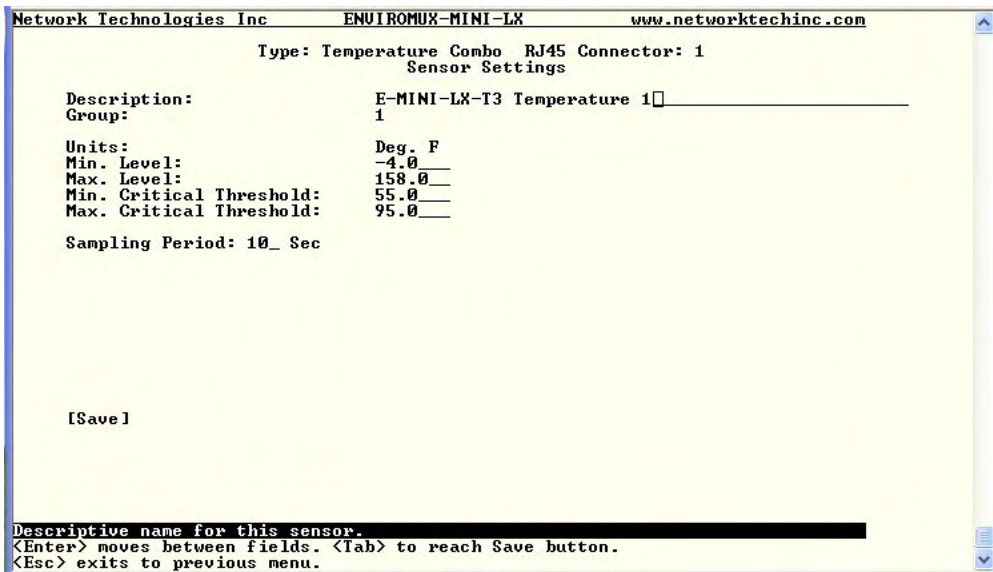


Figure 54- Text Menu-Sensor Settings

Sensor Settings	Description
Description	The description of the sensor that will be viewed in the Summary page and in the body of alert messages
Group	Assign the sensor to a group (1 -8) (see also page 74)
Units	This lets the operator choose between Celsius and Fahrenheit as the temperature measurement unit.
Min. Level	Displays the minimum value that this sensor will report
Max. Level	Displays the maximum value that this sensor will report
Minimum Critical Threshold	The user must define the absolute lowest acceptable value for the sensors. If the sensor measures a value below this threshold, the sensor will move to critical alert status. The assigned value should be within the range defined by Minimum Level and Maximum Level and lower than the assigned Minimum Non-Critical Threshold value(page 26). If values out of the range are entered, an error message will be shown.
Maximum Critical Threshold	The user must define the absolute highest acceptable value for the sensors. If the sensor measures a value above this threshold, the sensor will move to critical alert status. The assigned value should be within the range defined by Minimum Level and Maximum Level and higher than the assigned Maximum Non-Critical Threshold value (page 26). If values out of the range are entered, an error message will be shown.
Sampling Period	Determines how often the displayed sensor value is refreshed on the Sensor page. A numeric value and a measurement unit (minimum 1 seconds, maximum 999 minutes) should be entered.

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

From the Alert Settings menu, the user can enable/disable alert messages to be sent when the sensor is in an alert state and configure when and how alert messages are sent.

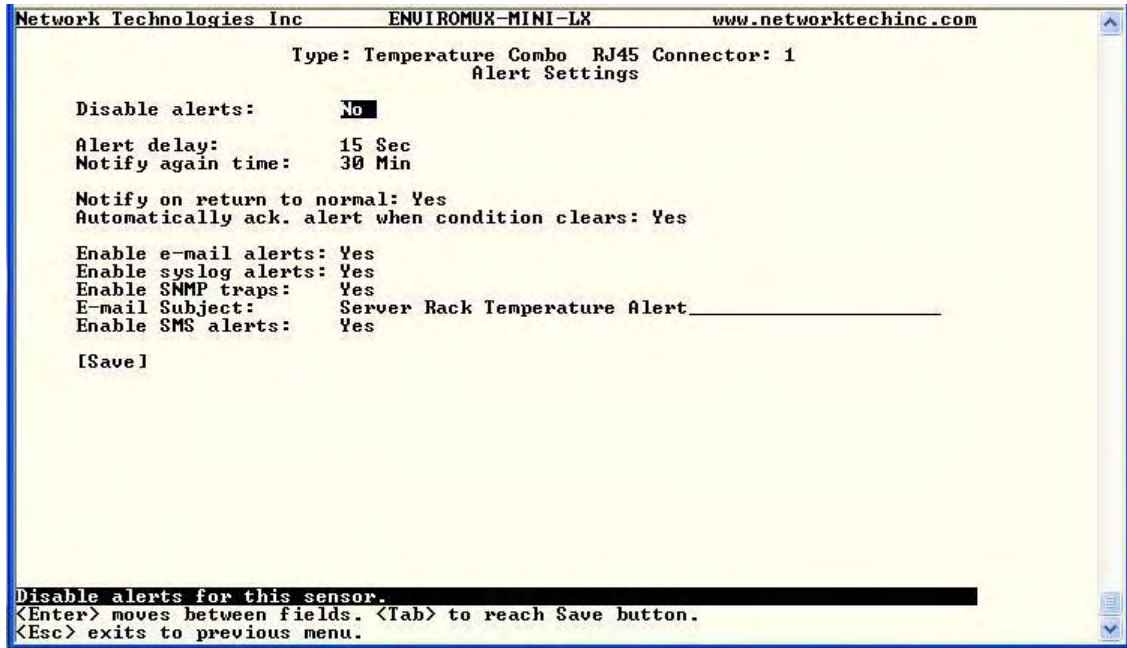


Figure 55- Text Menu-Sensor Alert Settings

Alert Settings	
Disable alerts	Change to "Yes" to prevent alerts from being sent when this sensor's status changes
Alert Delay	The alert delay is an amount of time the sensor must be in an alert condition before an alert is sent. This provides some protection against false alarms. The Alert Delay value can be set for 0-999 seconds or minutes.
Notify Again Time	Enter the amount of time in seconds, minutes, or hours (1-999) before an alert message will be repeated
Notify on Return to Normal	The user can also be notified when the sensor readings have returned to the normal range by changing to "Yes" for " Notify on return to normal " for a sensor.
Auto Acknowledge	Change to "Yes" to have alert notifications in the summary page return to normal state automatically when sensor readings return to normal.
Enable Email Alerts	Change to "Yes" to have alert notifications sent via Email
Enable Syslog Alerts	Change to "Yes" to have alert notifications sent via Syslog messages
Enable SNMP traps	Change to "Yes" to have alert notifications sent via SNMP traps (v2c)
Enable SMS Alerts	Change to "Yes" to have alert notifications sent via SMS (requires GSM modem)
Email Subject	Enter the subject to be viewed when an email alert message is received

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

From the Data Logging menu for the sensor, the user can decide if the data sampled should be recorded in the Data Log and how frequently.

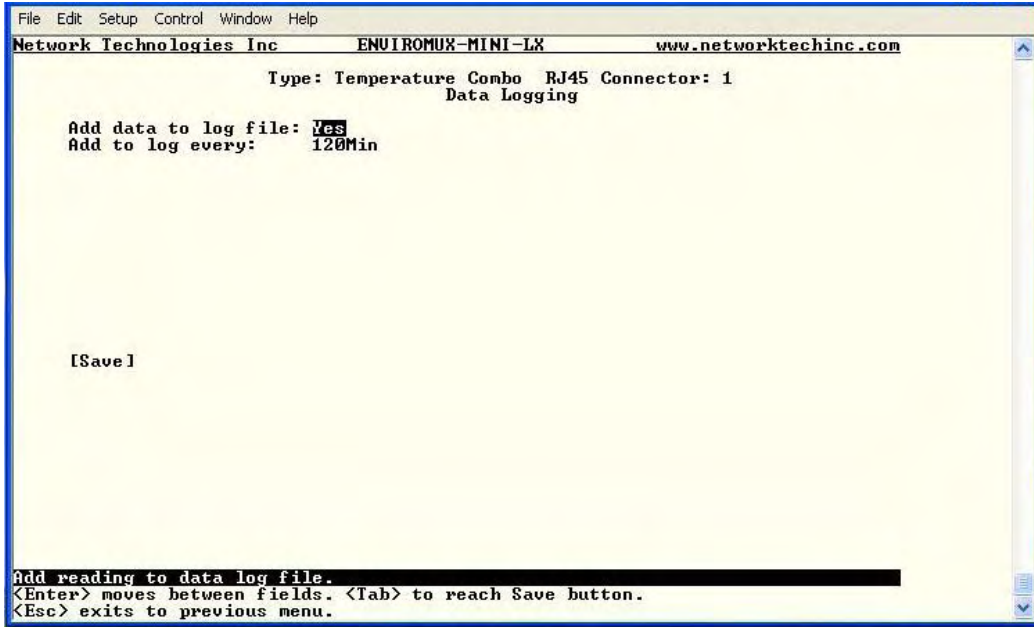


Figure 56- Text Menu-Sensor Data Logging

Configure Contact Sensors

The Configure Dry Contact Sensors menu lists the contact sensors connected to the ENVIROMUX. Press <Enter> to open the configuration menu for the selected contact sensor. (The Water Sensor menu contains the same options as the contact sensor menus.)

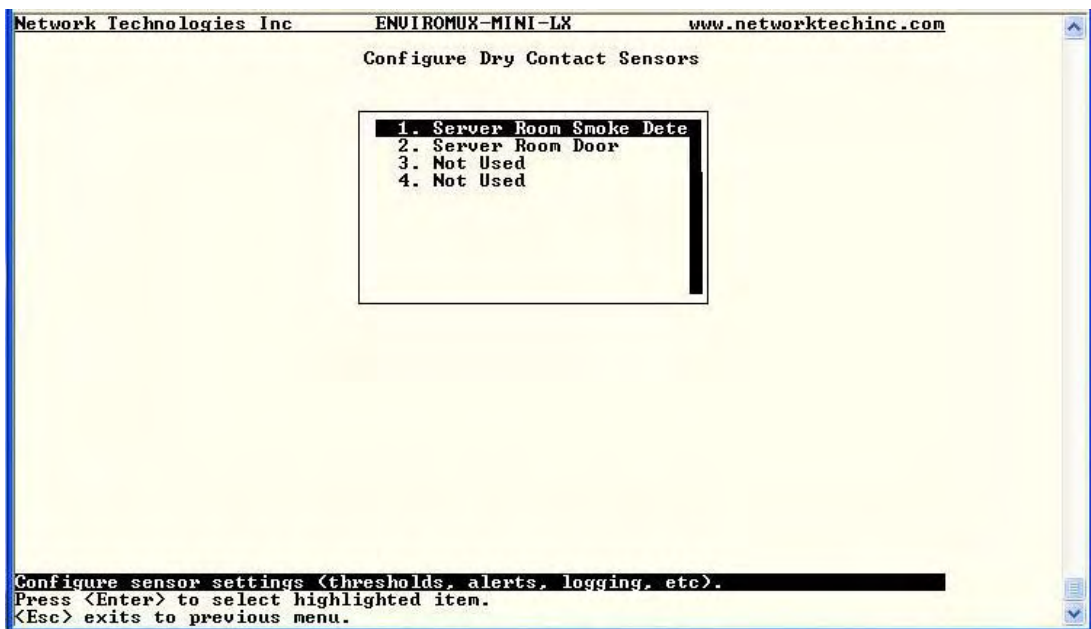


Figure 57- Configure Dry Contact Sensors

Water sensors and contact sensors are each configured much like the temperature and humidity sensors previously described. Only the Sensor Settings menu (below) is different. Alert settings and data logging menus are as seen in Figure 55 and Figure 56.

Instead of threshold and minimum/maximum levels settings, water sensors and contact sensors are either open contact or closed contact sensors. Therefore, the field “**Normal Status**” is provided to select the status of the sensor when it is not in an alert state. Select between **Open** contacts, or **Close** contacts for the normal status of the sensor. (Water sensors are open contact when not in an alert state.)

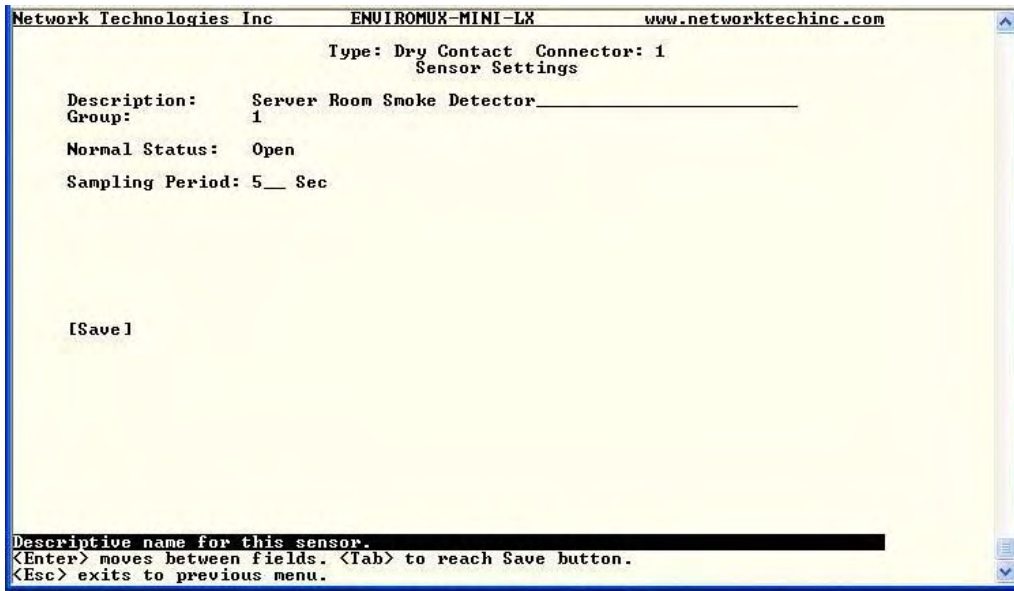


Figure 58- Dry Contact Sensor Settings Menu

From the Alert Settings menu, the user can enable/disable alert messages to be sent when the sensor is in an alert state and configure when and how alert messages are sent.

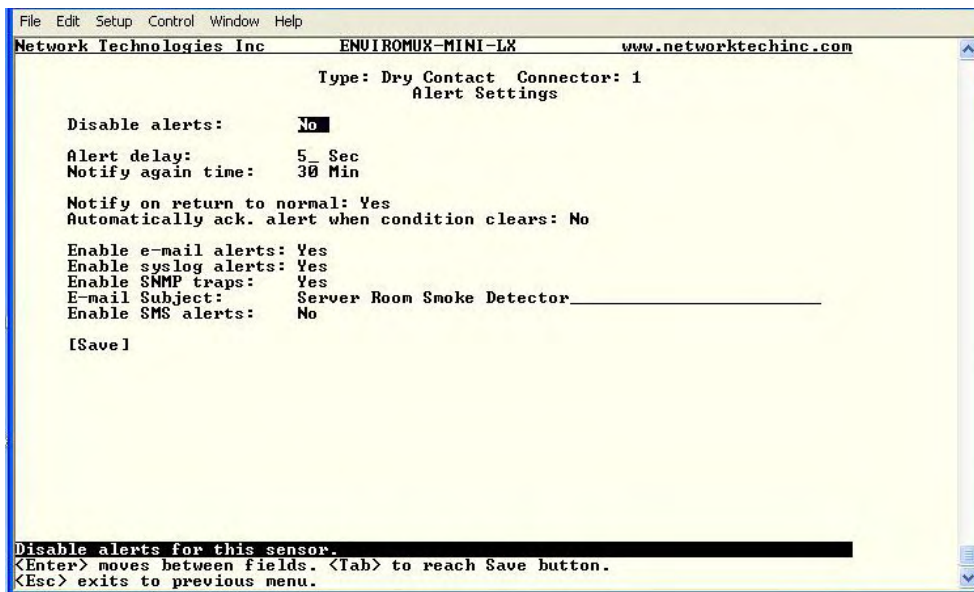


Figure 59- Dry Contact Alert Settings

Alert Settings	
Disable alerts	Change to "Yes" to prevent alerts from being sent when this sensor's status changes
Alert Delay	The alert delay is an amount of time the sensor must be in an alert condition before an alert is sent. This provides some protection against false alarms. The Alert Delay value can be set for 0-999 seconds or minutes.
Notify Again Time	Enter the amount of time in seconds, minutes, or hours (1-999) before an alert message will be repeated
Notify on Return to Normal	The user can also be notified when the sensor readings have returned to the normal range by changing to "Yes" for " Notify on return to normal " for a sensor.
Auto Acknowledge	Change to "Yes" to have alert notifications in the summary page return to normal state automatically when sensor readings return to normal.
Enable Email Alerts	Change to "Yes" to have alert notifications sent via Email
Enable Syslog Alerts	Change to "Yes" to have alert notifications sent via Syslog messages
Enable SNMP traps	Change to "Yes" to have alert notifications sent via SNMP traps (v2c)
Enable SMS Alerts	Change to "Yes" to have alert notifications sent via SMS (requires GSM modem)
Email Subject	Enter the subject to be viewed when an email alert message is received

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

From the Data Logging menu for the dry contact sensor, the user can decide if the data sampled should be recorded in the Data Log and how frequently.

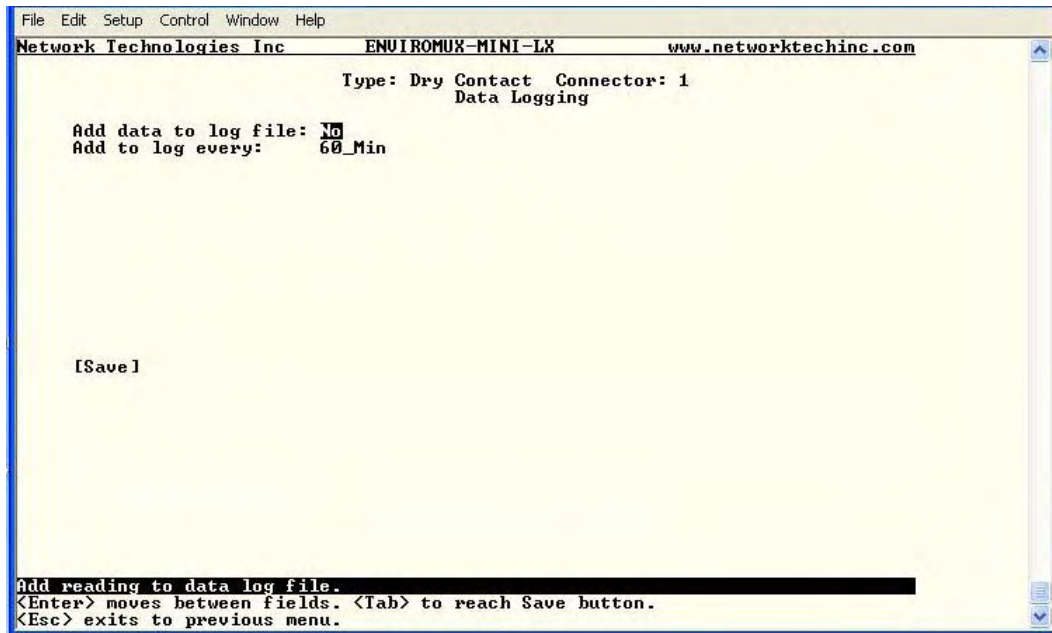


Figure 60- Data Logging for Dry Contact Sensors

Configure IP Devices

The Configure IP Devices menu lists the IP Devices monitored by the ENVIROMUX. Press <Enter> to open the configuration menu for the selected IP Device.



Figure 61- Text Menu-Configure IP Devices List

The configuration menu for the IP Device includes options to enter the IP Device Settings, Alert Settings, and Data Logging.



Figure 62- Text menu-Configuration Menu for IP Devices

From the IP Device Settings menu, the user can enter the name and address of the IP Device, assign a sensor group, and define how the IP Device will be monitored.

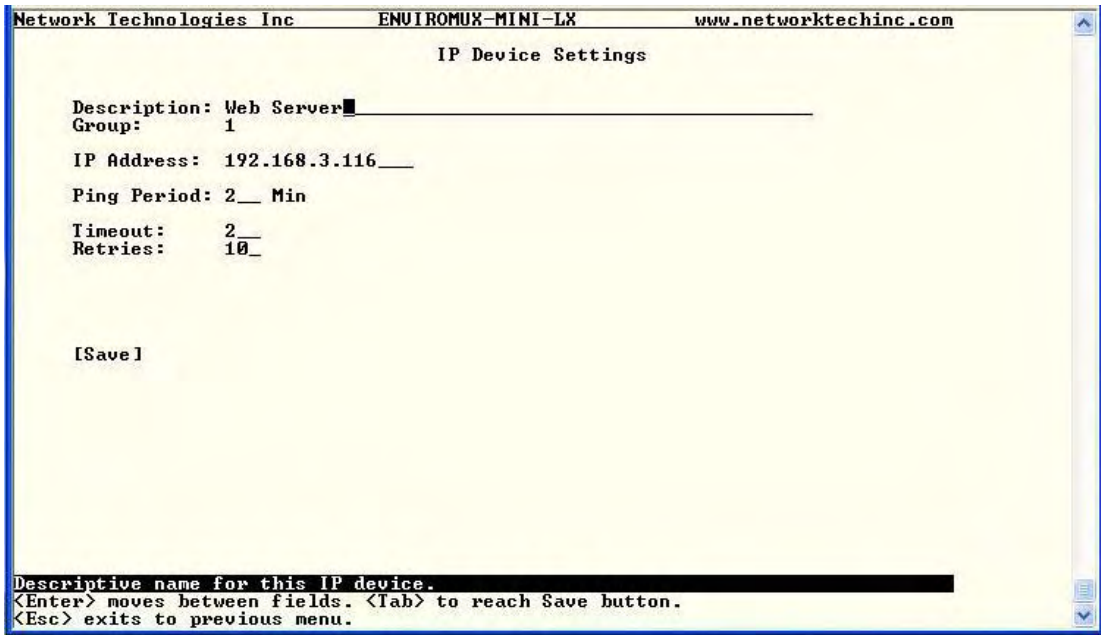


Figure 63-Text Menu-IP Device Settings

IP Device Settings	Description
Description	The description of the IP Device that will be viewed in the Summary page and in the body of alert messages
Group	Assign the IP device to a group (1 -8)
IP Address	The IP address of the IP Device
Ping Period	Enter the frequency in minutes or seconds that the ENVIROMUX should ping the IP Device
Timeout	Enter the length of time in seconds to wait for a response to a ping before considering the attempt a failure
Retries	Enter the number of times the ENVIROMUX should ping a non-responsive IP device before changing its status from normal to alarm and sending an alert

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

From the Alert Settings menu, the user can enable/disable alert messages to be sent when the IP Device is not responding and configure when and how alert messages are sent.

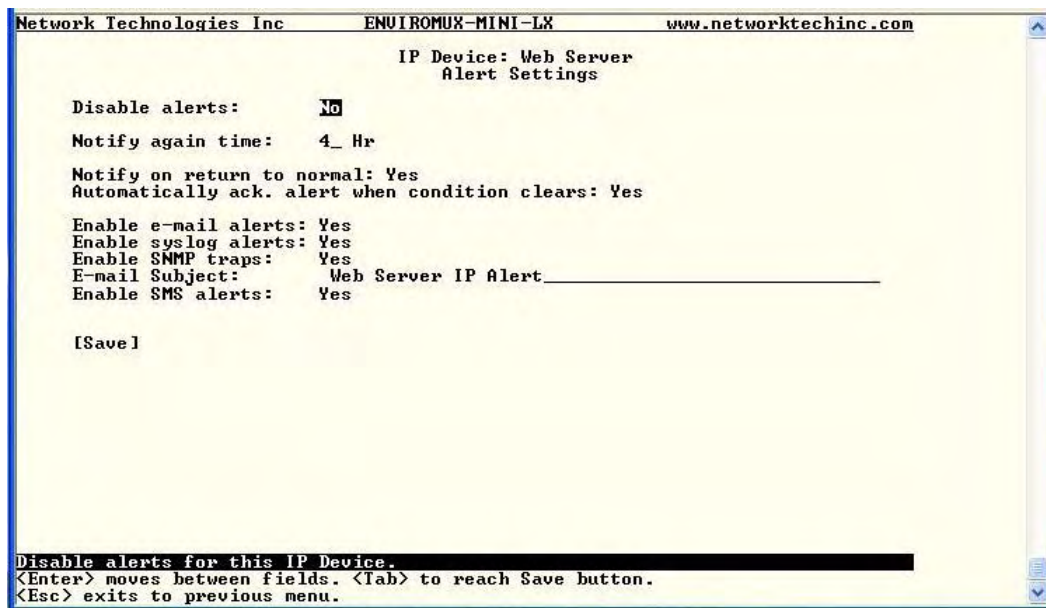


Figure 64- Text Menu-IP Device Alert Settings

Alert Settings	
Disable alerts	Change to “Yes” to prevent alerts from being sent when this IP Device’s status changes
Alert Delay	The alert delay is an amount of time the IP Device must be in an alert condition before an alert is sent. This provides some protection against false alarms. The Alert Delay value can be set for 0-999 seconds or minutes.
Notify Again Time	Enter the amount of time in seconds, minutes, or hours (1-999) before an alert message will be repeated
Notify on Return to Normal	The user can also be notified when the IP Device’s state has returned to the normal by changing to “Yes” for “ Notify on return to normal ” for a sensor.
Auto Acknowledge	Change to “Yes” to have alert notifications in the summary page return to normal state automatically when sensor readings return to normal.
Enable Email Alerts	Change to “Yes” to have alert notifications sent via Email
Enable Syslog Alerts	Change to “Yes” to have alert notifications sent via Syslog messages
Enable SNMP traps	Change to “Yes” to have alert notifications sent via SNMP traps (v2c)
Enable SMS Alerts	Change to “Yes” to have alert notifications sent via SMS (requires GSM modem)
Email Subject	Enter the subject to be viewed when an email alert message is received

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

From the Data Logging menu for the IP Device, the user can decide if the data sampled should be recorded in the Data Log and how frequently.

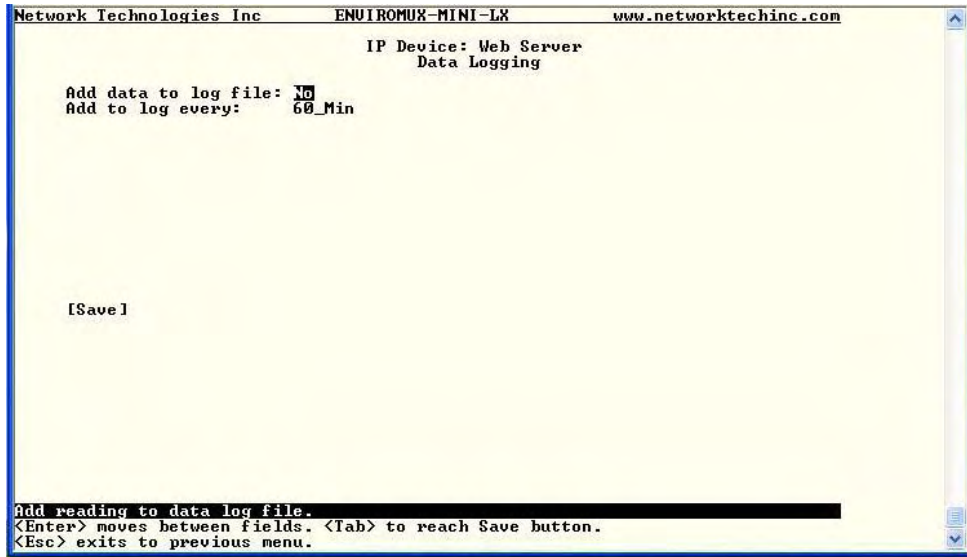


Figure 65- Text Menu-IP Device Data Logging

System Configuration

Under System Configuration (from the Main Menu), select “Time Settings” to enter the time of day, time zone, enable daylight saving time, or NTP server settings. Also, select “Restore Settings to Defaults” to clear all configuration and user settings and restore the ENVIROMUX to settings as received from the factory.

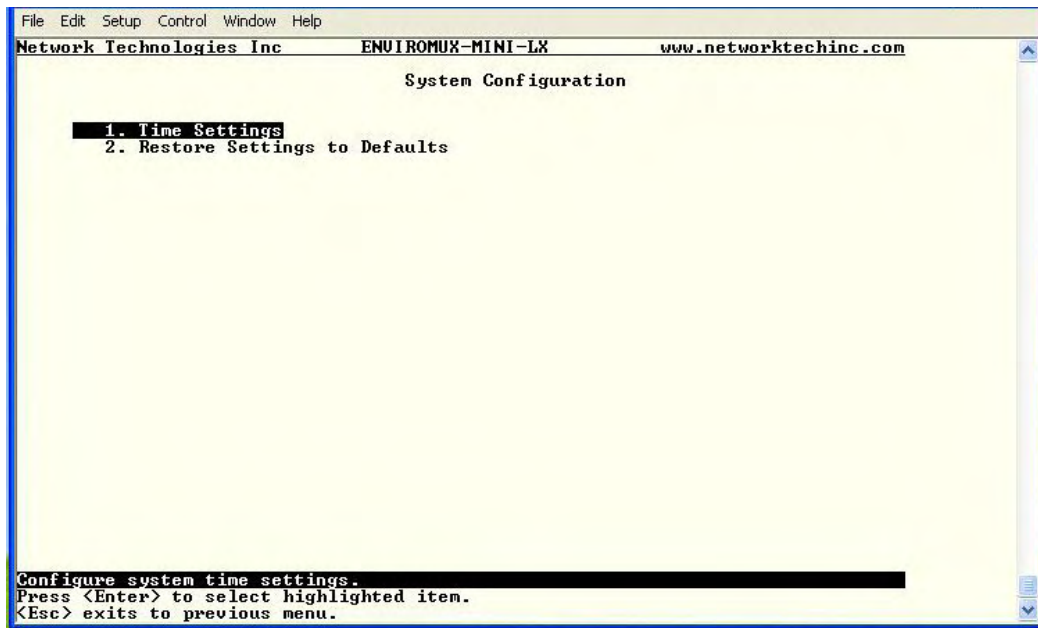


Figure 66- Text Menu- System Configuration

Time Settings

On the Time Settings menu, the user can designate what time zone the unit is associated with, set the date and time manually or configure the ENVIROMUX to get this information from an NTP server.

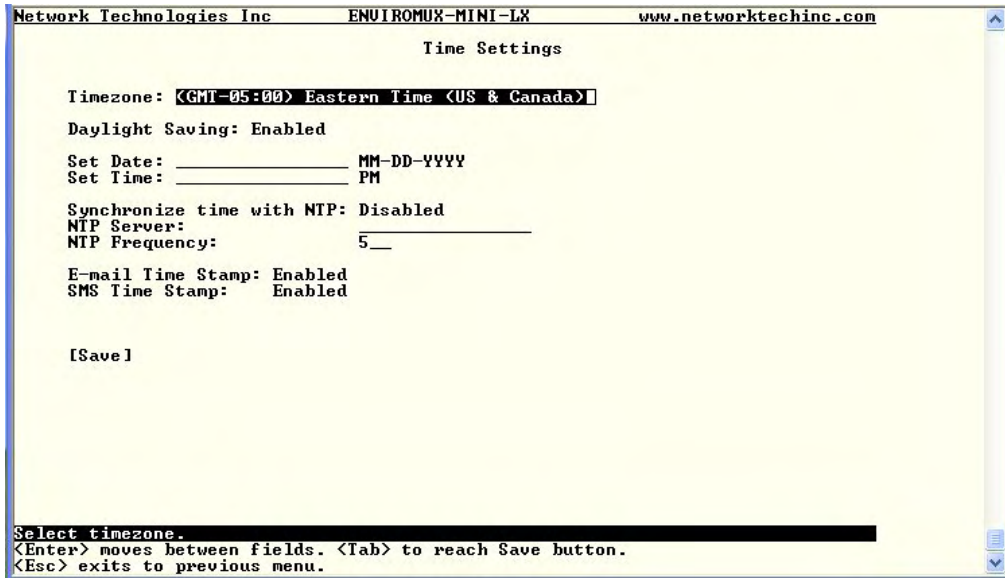


Figure 67- Text Menu-Time Settings menu

Time Settings	Description
Time Zone	Enter the appropriate time zone
Enable Daylight Saving	Change to “Yes” to have the time change in accordance Daylight Saving Time rules
Set Date	Enter the system date in MM-DD-YYYY format
Set Time	Enter the system time of day in hh:mm:ss format
Enable NTP	Change to “Enabled” to allow the ENVIROMUX to automatically sync up with a time server via NTP
NTP server	If the NTP is enabled, enter the Domain Name or IP address of the NTP server
NTP Frequency	Enter the frequency (in minutes) for the ENVIROMUX to query the NTP server (minimum is 5 minutes)
E-mail Time Stamp	Change to “Enabled” to allow the ENVIROMUX to automatically apply a time stamp to e-mail messages sent to users
SMS Time Stamp	Change to “Enabled” to allow the ENVIROMUX to automatically apply a time stamp to SMS messages sent to users

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

Restore Default Settings

Select this option to restore the ENVIROMUX to the configuration settings it had upon receipt from the factory. **Be careful!** This will erase all user configuration settings. Upon restoration, the ENVIROMUX will reboot. Allow 1 minute before trying to reconnect and log in again.

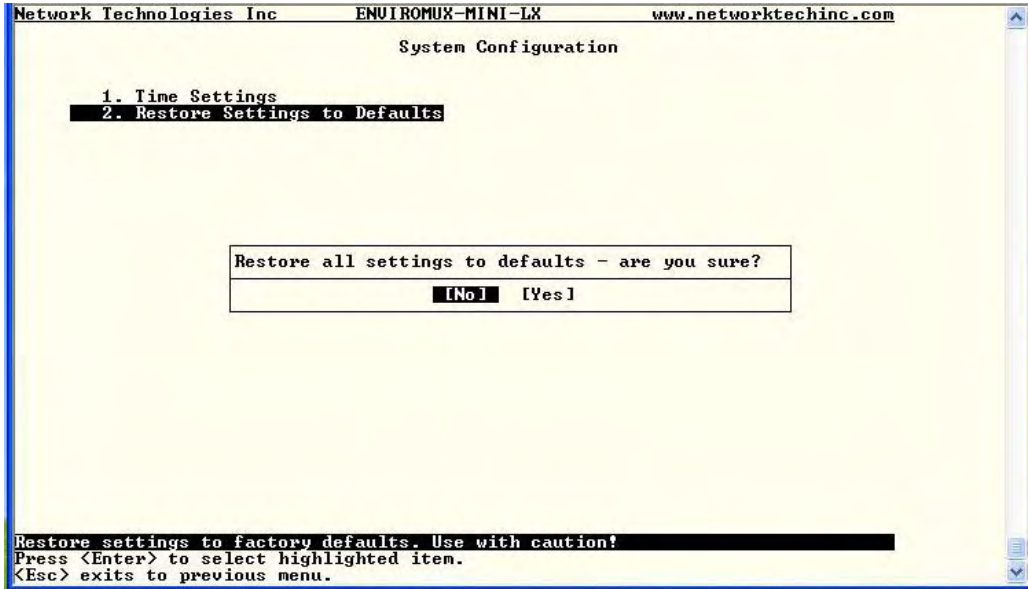


Figure 68- Text Menu-Restore Default Settings

Note: If “Restore Defaults” is used, the IP address will also be restored to its default address of 192.168.1.21 with a login name “root” and password “nti”. To restore the root password to “nti” without having to restore all default settings, contact NTI for assistance.

To identify the IP address of the ENVIROMUX without restoring defaults, use the Discovery Tool (page 20).

Enterprise Configuration

Under Enterprise Configuration (from the Main Menu), enter the unit name, location, the contact person emails should refer to and their phone number, and the email address of the ENVIROMUX to be used for outgoing alert messages.

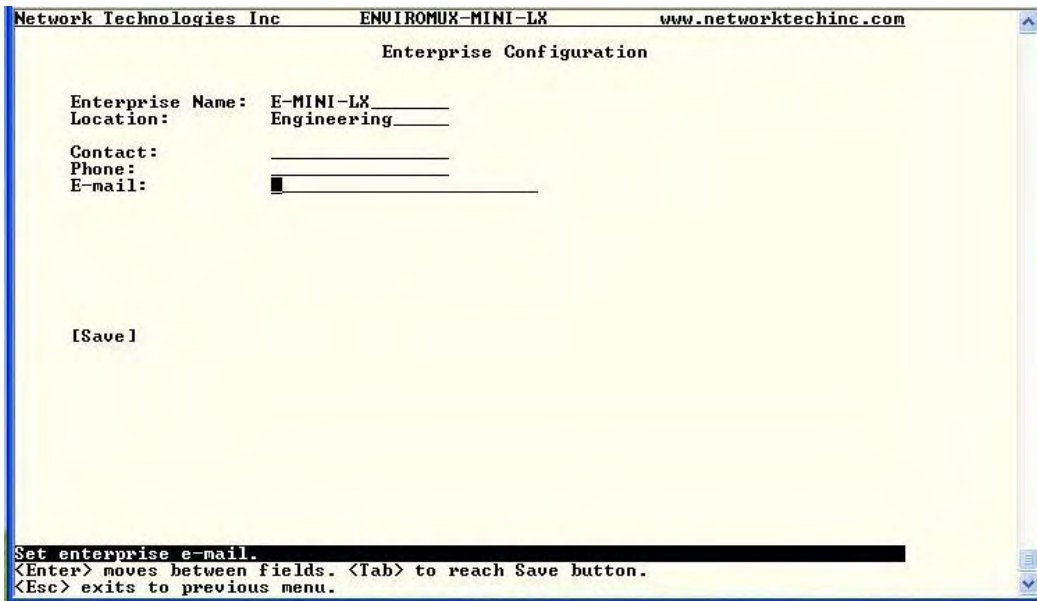


Figure 69- Text Menu-Enterprise Configuration

Network Configuration

The Network Configuration menu (from the Main Menu) includes submenus for applying IPv4 and IPv6 Settings, SMTP server settings, SNMP settings, and miscellaneous settings to enable services for SSH, Telnet, HTTP, HTTPS and Web Timeout.

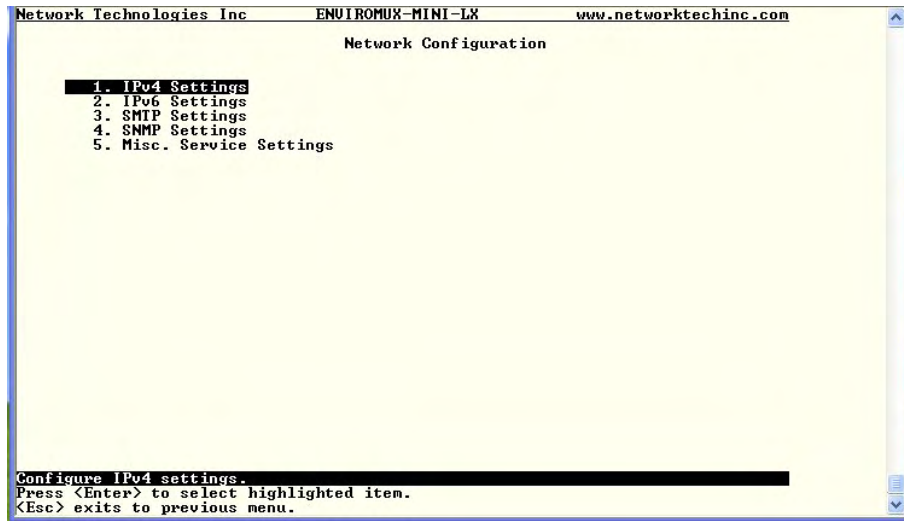


Figure 70- Text Menu-Network Configuration

IPv4 Settings

The IP Settings menu contains the network connection settings for the ENVIROMUX.

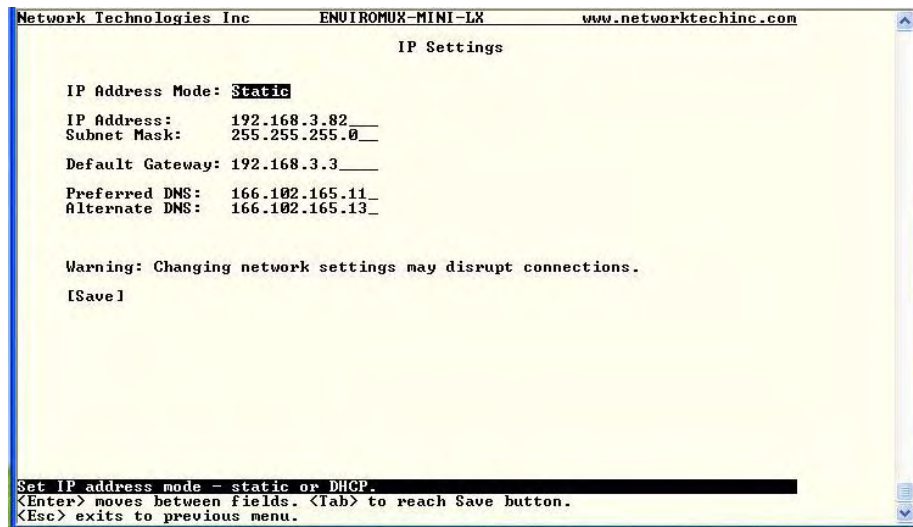


Figure 71- Text Menu-IPv4 Settings Menu

IP Settings	Description
Mode	Select between Static (manual) , or DHCP (automatic IP and DNS) settings
IP Address	Enter a valid IPv4 address (default value is 192.168.1.21)
Subnet Mask	Enter a valid subnet mask (default value is 255.255.255.0)
Default Gateway	Enter a valid gateway (default gateway value is 192.168.1.1)
Preferred DNS	Enter a preferred domain name server address
Alternate DNS	Enter an alternate domain name server address

If the administrator chooses to have the DNS and IP address information filled in automatically via DHCP, the SMTP server and port number still need to be entered for email alerts to work. If the SMTP server requires a password in order for users to send emails, the network administrator must first assign a user name and password to the ENVIROMUX.

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

IPv6 Settings

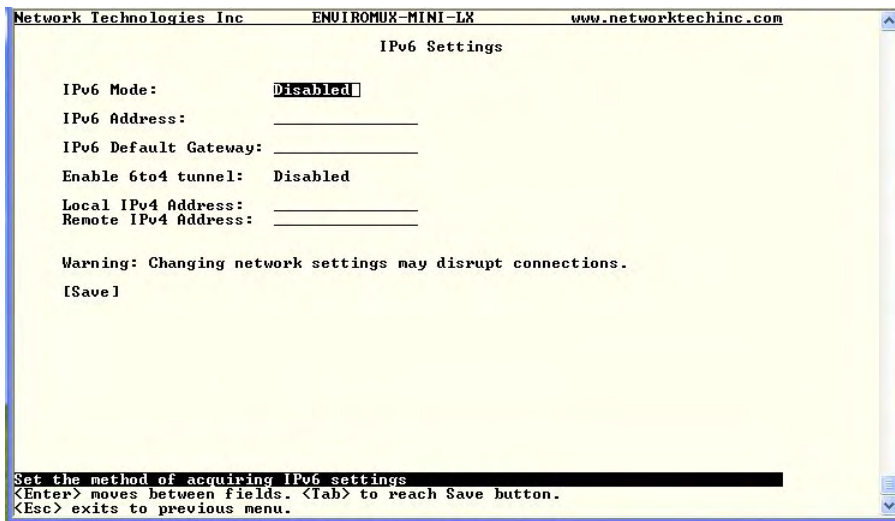
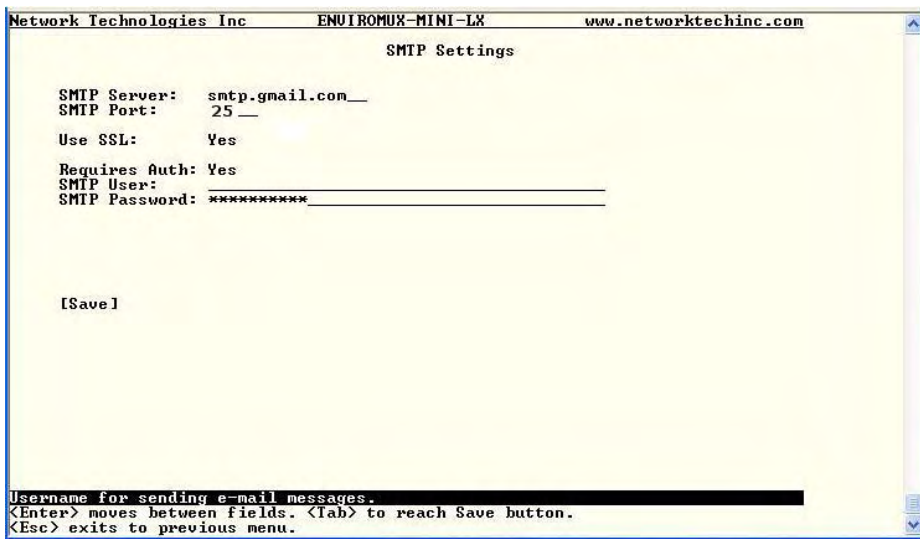


Figure 72- Text Menu-IPv6 Settings Menu

If IPv6 protocol will be used, change the mode to “Enabled” and apply valid in addresses for the IPv6 address and gateway. To use a 6to4 tunnel, change “Disabled” to “Enabled” and apply valid local and remote addresses.

SMTP Settings

The SMTP Settings menu contains the SMTP server settings for the ENVIROMUX.



Note: The SMTP server port number is shown in Figure 73 as “25”. This is a common port number assigned, but not necessarily the port number assigned to your SMTP server. For SMTP servers that support SSL, the common port number is 465.

Figure 73- Text Menu-SMTP Server Settings

SMTP Settings	Description
SMTP Server	Enter a valid SMTP server name (e.g. yourcompany.com)
Port	Enter a valid port number (default port is 25)
Use SSL	Change to “Yes” if the SMTP server supports SSL
Requires Authentication	Change to “Yes” if the SMTP server requires authentication to send email
SMTP User	Enter a valid username to be used by the ENVIROMUX to send emails
SMTP Password	Enter a valid password assigned to the ENVIROMUX username

SNMP Settings

The SNMP Settings menu contains the SNMP server settings for the ENVIROMUX.

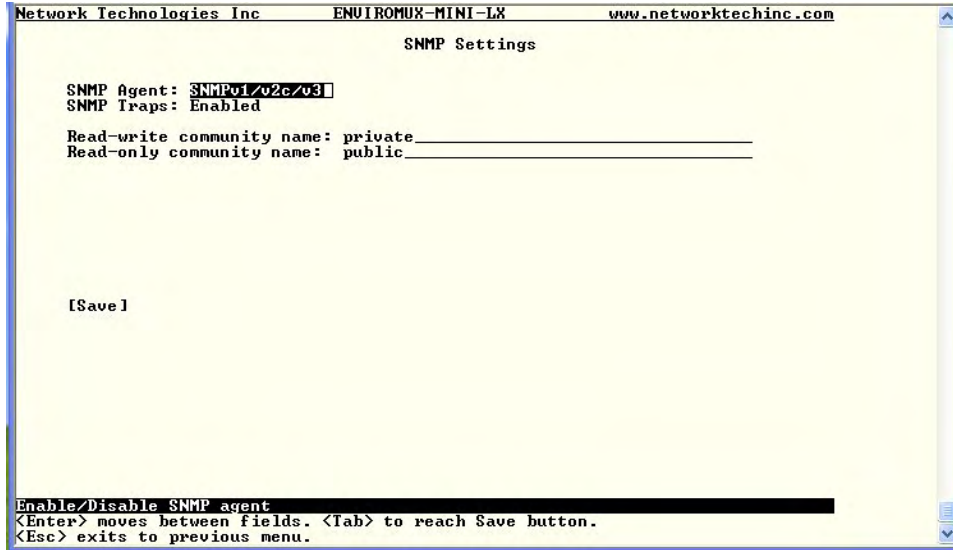


Figure 74- Text Menu-SNMP Server Settings

SNMP Settings	
Enable SNMP agent	Choose between v1/v2c, v3 , and v1/v2c/v3 SNMP agent version settings
Enable SNMP traps	Change to “Enabled” to enable SNMP traps to be sent
Read-write community name	Enter applicable name (commonly used- “private”) (not applicable as of this printing)
Read-only community name	Enter applicable name (commonly used- “public”)

Read-Only Community Name

The SNMP Read-only community name enables a user to retrieve “read-only” information from the ENVIROMUX using the SNMP browser and MIB file. This name must be present in the ENVIROMUX and in the proper field in the SNMP browser.

Read-Write Community Name

(not applicable as of this printing)

The SNMP Read-Write community name enables a user to read information from the ENVIROMUX and to modify settings on the ENVIROMUX using the SNMP browser and MIB file. This name must be present in the ENVIROMUX and in the proper field in the SNMP browser.

Miscellaneous Service Settings

The Misc. Service Settings menu contains selections to configure services running on the ENVIROMUX.

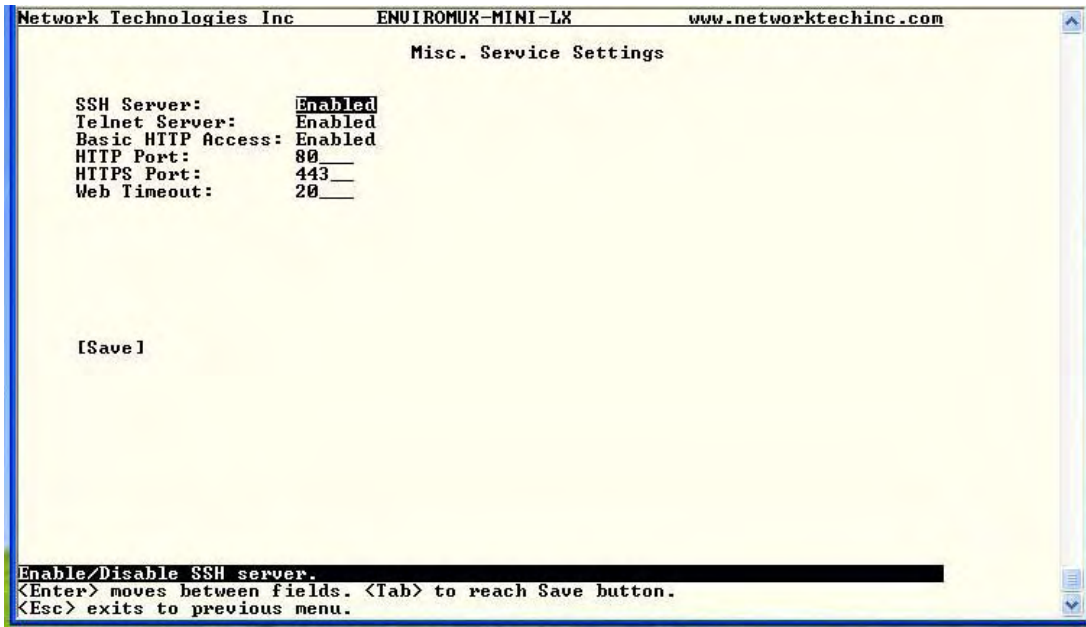


Figure 75- Text Menu-Misc. Service Settings menu

Server Settings	
Enable SSH	Enable this to allow access to the ENVIROMUX via SSH
Enable Telnet	Enable this to allow access to the ENVIROMUX via Telnet The default setting is Disabled.
Enable HTTP access	Enable this to allow access to the ENVIROMUX via standard (non-secure) HTTP requests
HTTP Port	Port to be used for standard HTTP requests
HTTPS Port	Port to be used for HTTPS requests
Web Timeout	Number of minutes after which idle web uses will be logged-out (enter 0 to disable this feature)

The administrator may assign a different HTTP Server Port than is used by most servers (80).

User Configuration

The User Configuration menu lists all configured user names of the ENVIROMUX. A maximum of 15 users (other than root) can be configured. From this screen the administrative user can add users, go to the user configuration page to edit a user's access to the ENVIROMUX, or delete a user from the list.

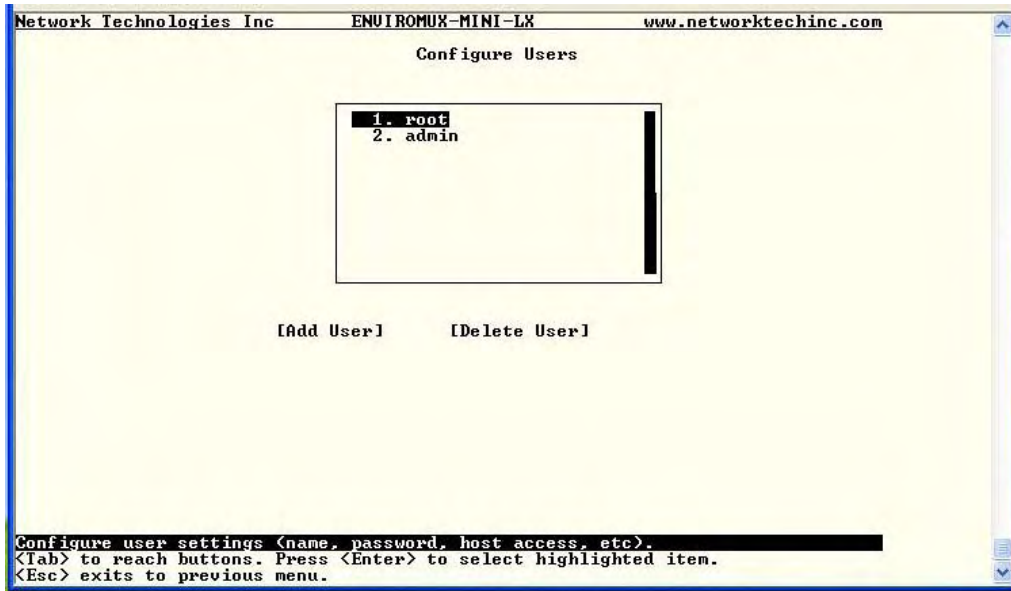


Figure 76- Text Menu-User Configuration

To add a user, Tab to “Add User” and press <Enter>.

To edit a user's configuration, select the listed username and press <Enter>

To delete a user and their configuration, select a listed username, Tab to “Delete User”, and press <Enter>. You will be prompted for confirmation before deleting the user and configuration.

When adding a new user, you will be prompted to confirm the addition of the user. At that point, the Configure User menu will open a user settings list with the username “userx” assigned, where x = the next consecutive number (up to 15) based on the quantity of users in the list (other than the root user).

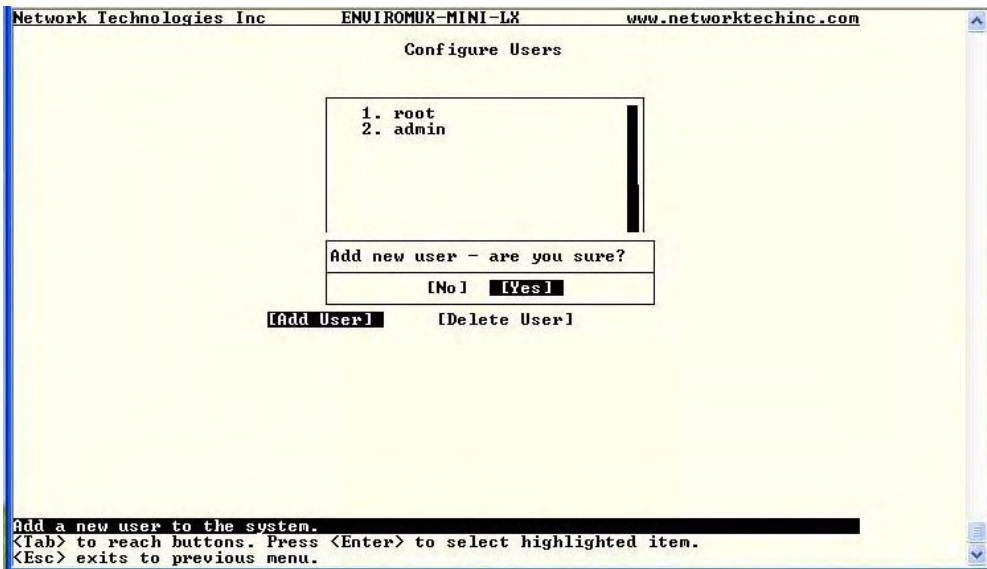


Figure 77- Text Menu-Confirm to add new user

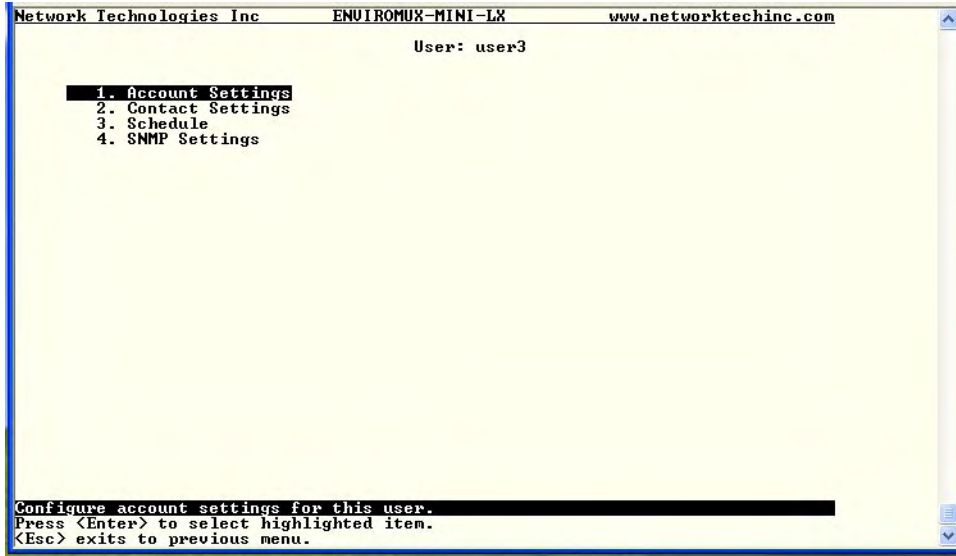


Figure 78- Text Menu-Configuration List for User

User Account Settings

Select “Account Settings” from the list and press <Enter>. A menu with the account settings for that specific user will open where you can either leave the name as “userx”, or change it. With the name assigned, fill in the remaining information as needed.

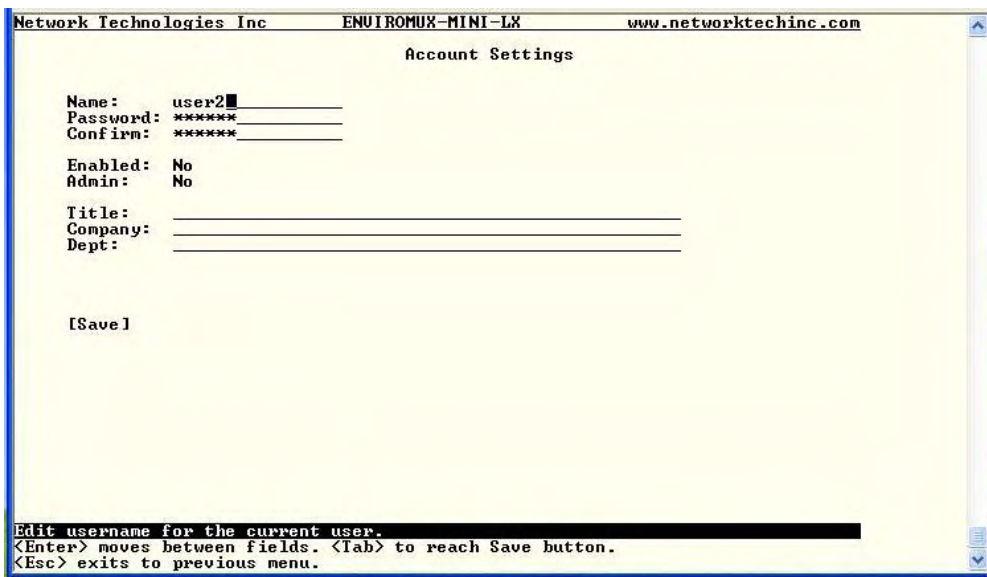


Figure 79- Text Menu-User Account Settings

Account Settings	Description
Username	Enter the desired username for this user
Password	Enter a password that a user must use to login to the system A password must be assigned for the user’s login to be valid Passwords must be at least 1 keyboard character.
Confirm	Re-enter a password that a user must use to login to the system

Account Settings	Description
Enabled	Change to "Yes" to enable this user to access the ENVIROMUX
Admin	Change to "Yes" if this user should have administrative privileges
Title	Enter information as applicable (optional)
Department	Enter information as applicable (optional)
Company	Enter information as applicable (optional)

More about User Privileges

The root user (or any user with administrator rights) can change the root password and configure how the root user will receive alert messages. Users with administrative rights can change all configuration settings except for the root user name.

User Contact Settings

Select "Contact Settings" from the list and press <Enter>. A menu with the contact settings for that specific user will open.

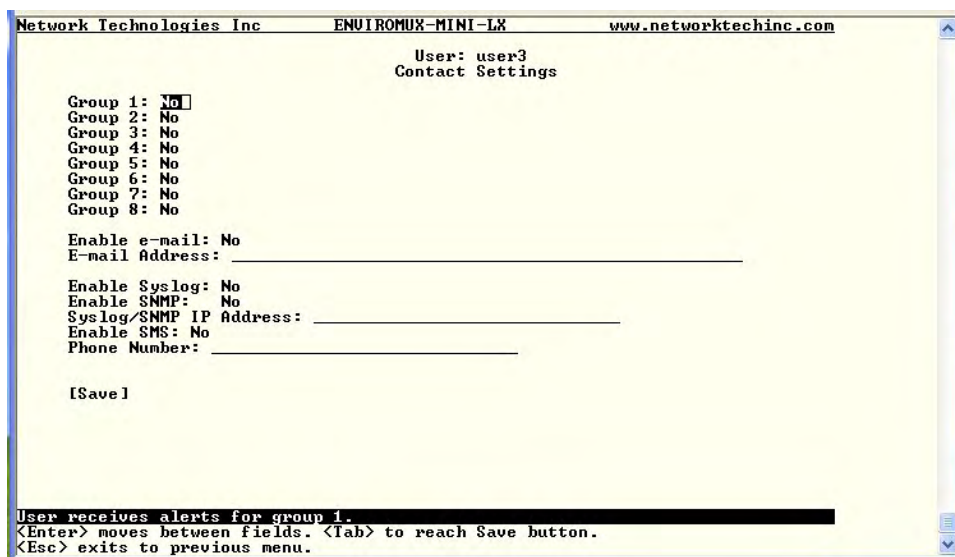


Figure 80- Text Menu-User Contact Settings

Contact Settings	Description
Group 1	Change to "Yes" if the user should receive messages from sensors, IP devices and accessories in Group 1
Group 2	Change to "Yes" if the user should receive messages from sensors, IP devices and accessories in Group 2
Enable Email	Change to "Yes" if the user should receive messages via email
Email address	Enter a valid email address if the user should receive email alert messages
Syslog alerts	Change to "Yes" if the user should receive alerts via syslog messages
SNMP traps	Change to "Yes" if the user should receive alerts via SNMP traps
Syslog/SNMP IP address	Enter a valid syslog/SNMP IP address for the user to receive syslog/SNMP messages
SMS	Change to "Yes" if the user should receive alerts via SMS messages
Phone Number	Enter a valid phone number for the user to receive SMS messages

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

User Activity Schedule

Select "Schedule" from the list and press <Enter>. A menu with the user activity settings for that specific user will open.

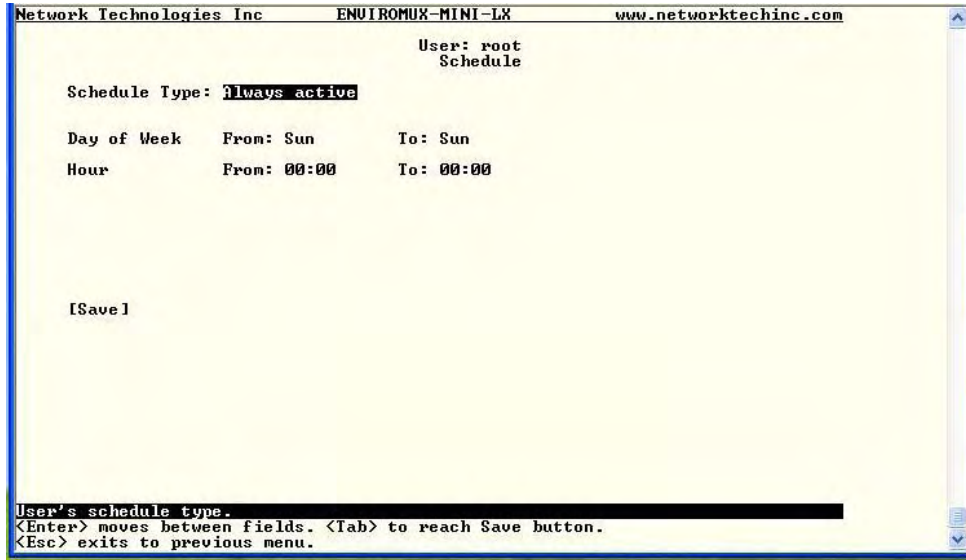


Figure 81- Text Menu-User Activity Schedule

Schedule Settings	
Schedule Type	Always active - user will receive messages at all hours of each day Active during defined times - user will only receive alert messages during times as outlined below
Day of Week-From:	First day of the week the user should begin receiving messages
Day of Week-To:	Last day of the week the user should receive messages
Hour From:	First hour of the day the user should begin receiving messages
Hour To:	Last hour of the day the user should receive messages

User SNMP Settings

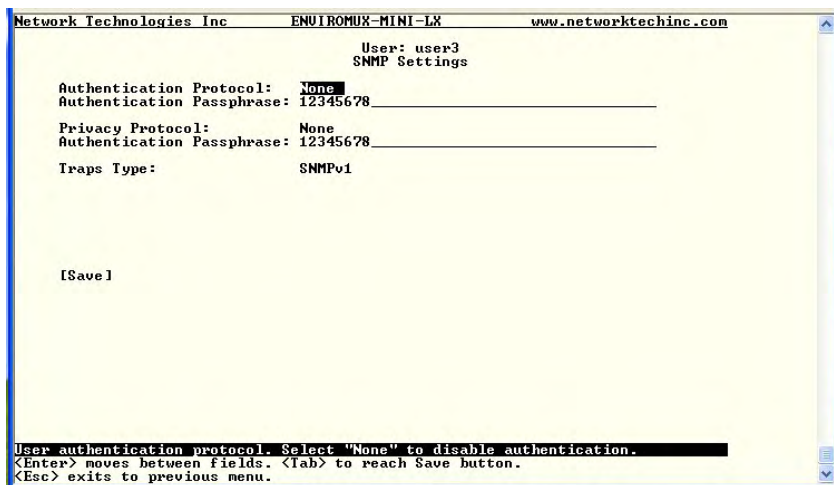


Figure 82-Text Menu- SNMP User Settings

Security settings can be configured within each user configuration if the SNMP protocol has been selected for use (page 70).

Settings	
Authentication Protocol	Choose between MD5 or SHA to require authentication, or none to disable it. This only needs to be changed from “none” if SNMPv3 is used.
Privacy Protocol	Choose between DES or AES to encrypt SNMP readings or traps or none to disable encryption. If encryption is enabled, then the Authentication Protocol must also be set at “MD5” or “SHA”.
Authentication Passphrase	Assign the passphrase to be used to enable the receipt of SNMP messages. This only needs to be changed from “none” if SNMPv3 is used.
Privacy Passphrase	Assign the passphrase to be used to open and read readings or alert messages received via SNMPv3
Traps Type	Choose which format traps should be received in, SNMP v1, v2c, or v3

After changing any settings in the user profile, press “Apply”.

Security Configuration

The Security Configuration menu provides two submenus for setting local versus LDAP authentication methods and for applying IP filtering rules to prevent unwanted access to the ENVIROMUX.

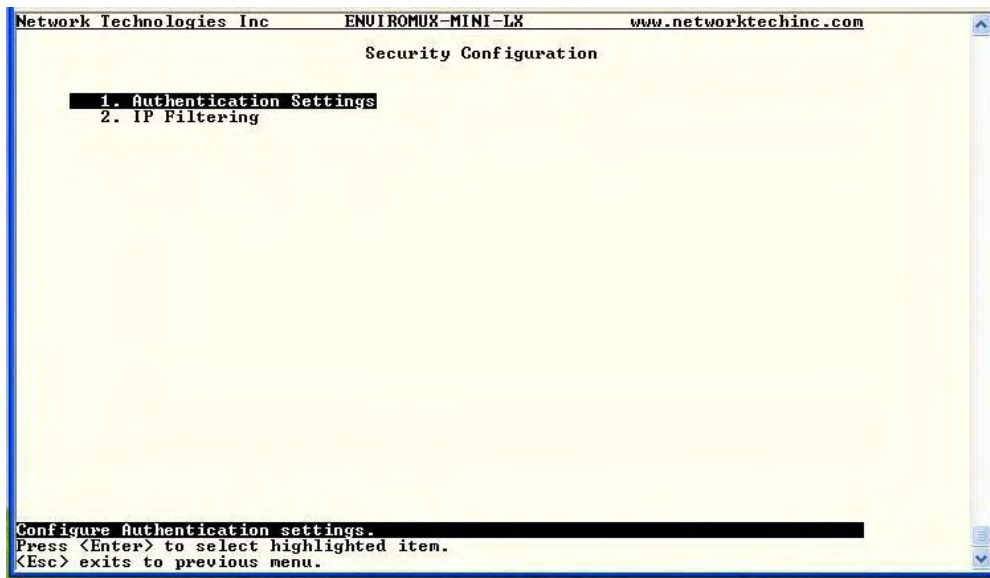


Figure 83- Text Menu-Security Configuration

Authentication Settings

Security in the ENVIROMUX can be managed one of two ways; through the local settings (passwords assigned in user settings on page 73) or through an LDAP server. If security is configured to use LDAP mode, then the passwords for users must be those found on a configured LDAP server.

Select “Authentication Settings” from the list and press <Enter>. A menu providing an option to either user Local authentication or LDAP mode. When in LDAP mode, usernames on the LDAP server must match those in the user settings of the ENVIROMUX or access will be denied.

Note: When the root user logs with the ENVIROMUX in LDAP mode, if the LDAP server is not responding, local authentication will be tried.

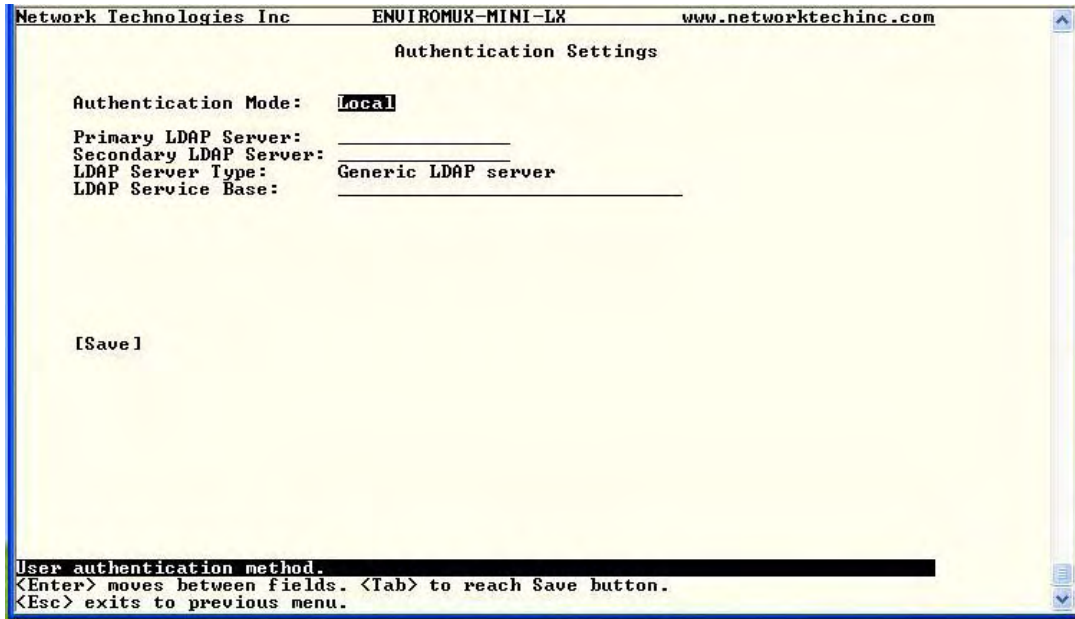


Figure 84- Text Menu-Authentication Settings

User Authentication	
Mode	Select Local to use authentication based on passwords in the ENVIROMUX user configuration Select LDAP to use authentication based on passwords in an LDAP server
Primary LDAP Server	Enter Hostname or IP address of Primary LDAP Server
Secondary LDAP Server	Enter Hostname or IP address of Secondary LDAP Server (optional)
LDAP Server Type	Tab to choose from the following: Generic LDAP server Novell Directory server Microsoft Active Directory
LDAP Service Base	Enter the Base DN for users (ex: ou=People,dc=mycompany,dc=com)

Even though LDAP authentication is being used, each user must also have a local account. User permission level is established by the local account.

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

IP Filtering

Included in the Security Configuration options is IP Filtering. IP Filtering provides an additional mechanism for securing the ENVIROMUX. Access to the ENVIROMUX network services (SNMP, HTTP(S), SSH, Telnet) can be controlled by allowing or disallowing connections from various IP addresses, subnets, or networks.

Up to 16 IP Filtering rules can be defined to protect the ENVIROMUX from unwanted access from intruders. Each rule can be set as Enabled or Disabled. Rules can be set to explicitly drop attempts to connect, or to accept them.

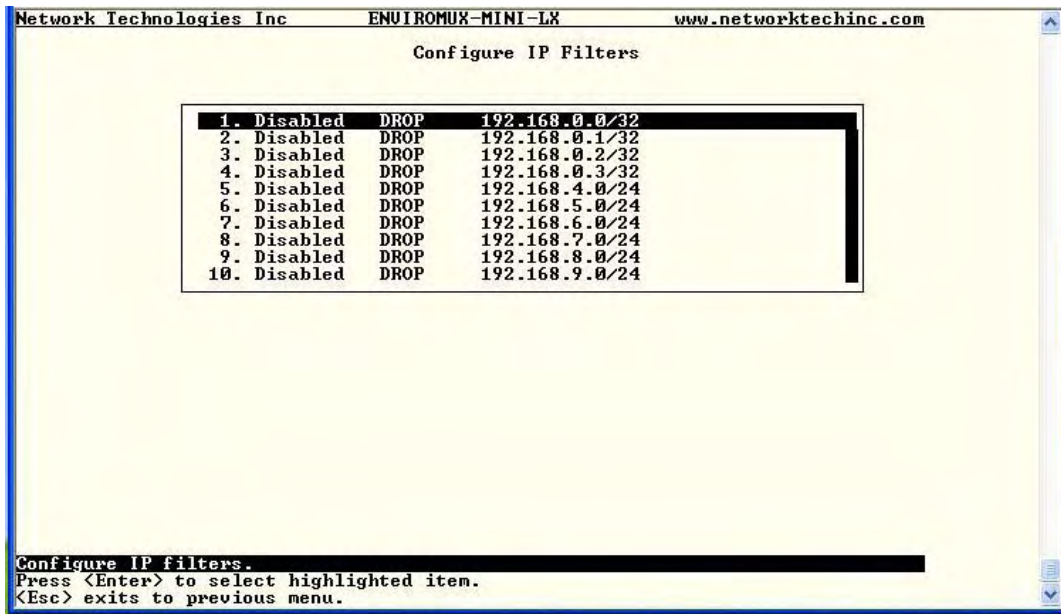


Figure 85- Text Menu-IP Filtering

To configure an IP Filter, select an IP Filter rule from the list and press <Enter>.

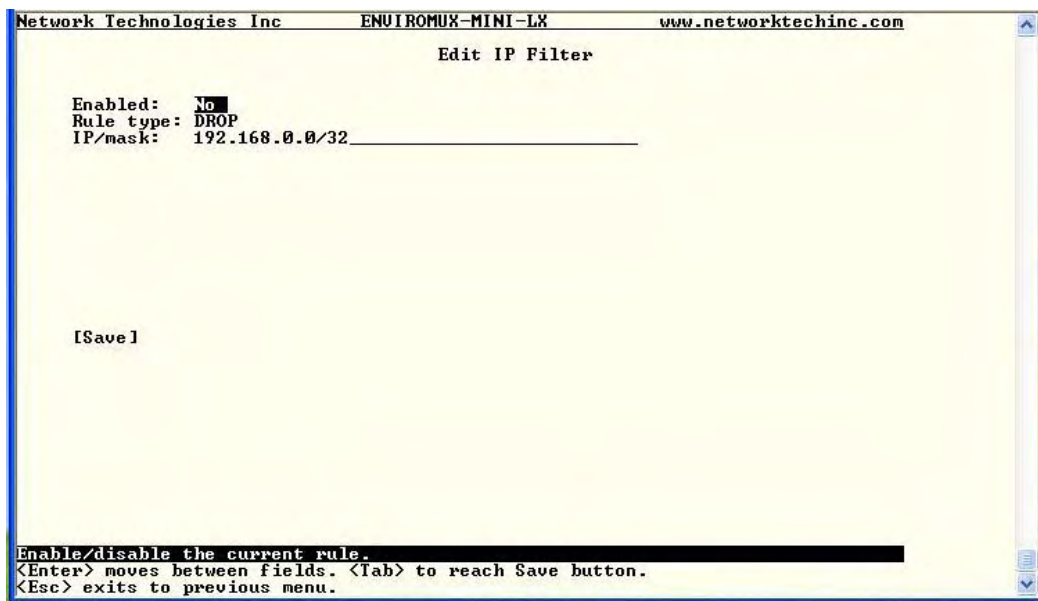


Figure 86- Text Menu-Configure IP Filter rule

The most common approach is to only allow “white-listed” IP addresses, subnets, or networks to access the device while blocking all others. The IP Filters are processed sequentially from top to bottom, so it is important to place the most precise rules at the top of the list and the most generic rules at the bottom of the list.

As an example, assume we wish to block all connections except those which come from the IP address 192.168.1.100. To allow connections from 192.168.1.100, we need to configure and enable an ACCEPT rule at the top of the list:

(Rule 1)

```
Enabled: Yes
Rule type: ACCEPT
IP/mask: 192.168.1.100
```

Then, to block all other IP addresses from connecting to the ENVIROMUX, we add a rule to drop all other connections.

(Rule 16)

```
Enabled: Yes
Rule type: DROP
IP/mask: 0.0.0.0/0
```

If the preceding “drop all connections” rule was placed in position one, no connections at all would be allowed to the unit. Remember: rules are processed from top to bottom. As soon as a rule matches, the processing stops and the matching rule is executed.

To match a particular IP address, simply enter in the desired IP address (e.g. 192.168.1.100).

To match a subnet, enter in the subnet with the associated mask (e.g. 192.168.1.0/24).

To match all IP address, specify a mask of 0 (e.g. 0.0.0.0/0).

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

Event and Data Logs

Under the Event and Data Logs menu find 4 submenus for viewing a log record of the events monitored by the ENVIROMUX and configuring how the ENVIROMUX will handle reaching the capacity of those logs.



Figure 87- Text Menu-Event & Data Logs

View Event Log

The Event Log provides the administrative user with a listing of many events that occur within the ENVIROMUX. The event log will record the date and time of:

- each ENVIROMUX startup,
- each user login and logout time,
- any time an unknown user tries to login,
- sensor and IP device alerts
- an alert handled by a user

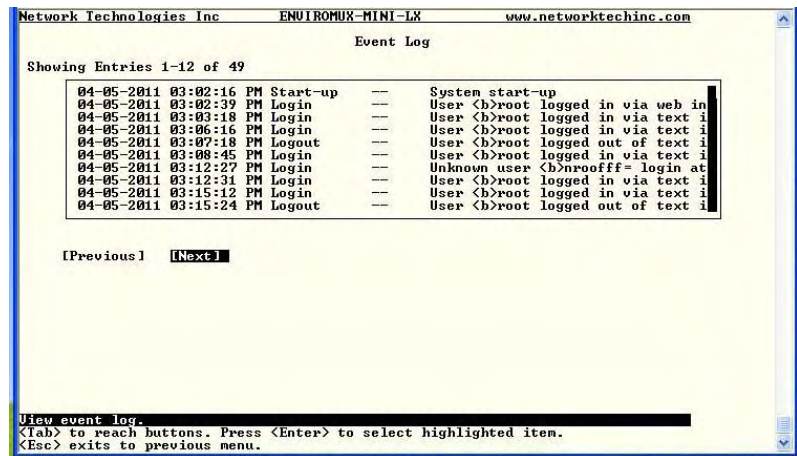


Figure 88- Text Menu-View Event Log

From the Event Log the administrative user can view the logs. In order to clear specific logs, download log entries, or clear the entire log, use the Web Interface (see page 47). To navigate between pages of logs, pres <Tab> to move between **Previous** and **Next** and press <Enter>.

View Data Log

The Data Log provides the administrative user with a listing of all the readings taken by the ENVIROMUX pertaining to the sensors and IP Devices being monitored. The data log will record the date and time of each reading.

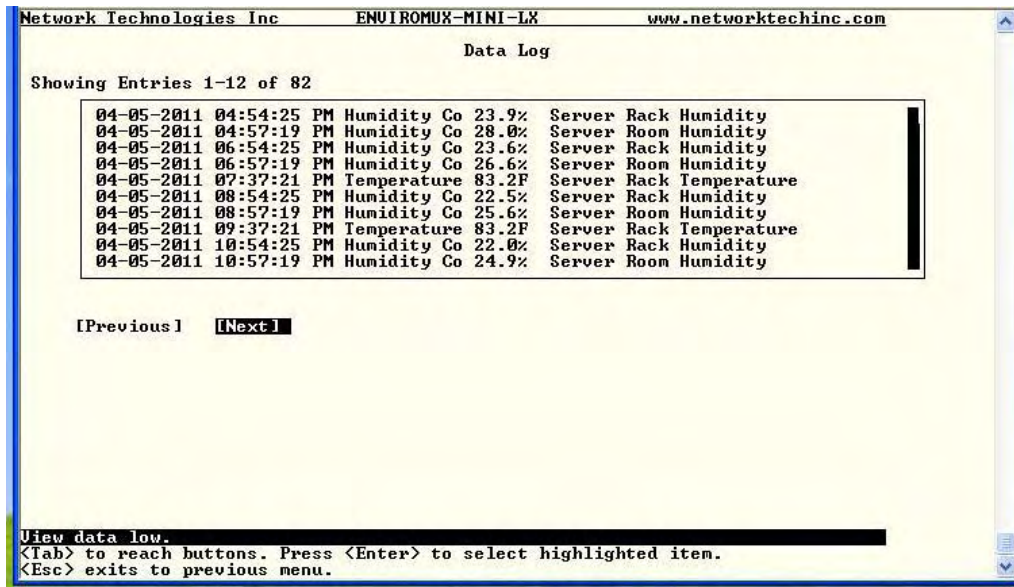


Figure 89- Text Menu-View Data Log

From the Data Log the administrative user can view the logs. In order to clear specific logs, download log entries, or clear the entire log, use the Web Interface (see page 48). To navigate between pages of logs, press <Tab> to move between **Previous** and **Next** and press <Enter>.

Log Settings Menus

The Log Settings menus (Figure 90 and Figure 91) provide settings for how the ENVIROMUX will react when its Data and Event logs reach capacity.

Each log can be assigned to a group and any user that receives messages from that group can be notified when capacity is being reached.

As a capacity overflow action the log can be set to either :

- Discontinue- stop logging information
- Clear and restart- delete all log entries and restart with new entries
- Wrap- continue logging but delete the oldest entries and new ones are recorded

The Data and/or Event log can be set to send alerts to users via email, syslog, and/or SNMP traps once it has reached 90% of capacity, allowing them time to react.

The Data log can also be set to send log entries via email, syslog, or SNMP traps to users in addition to the entries it records internally. Enable Remote Logging for email, syslog, or SNMP as desired.

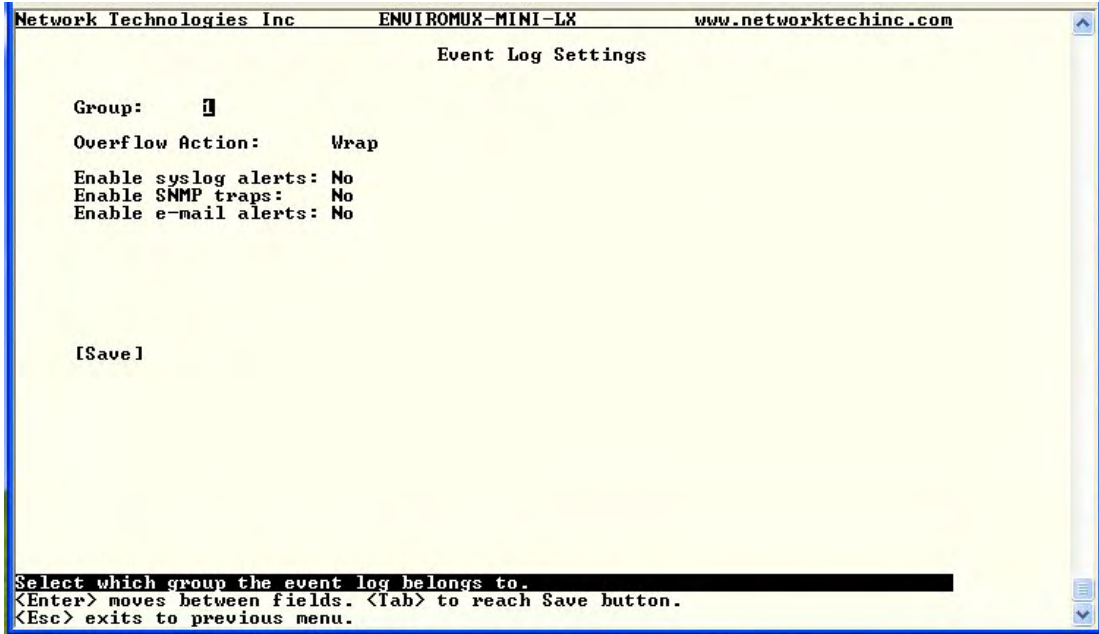


Figure 90- Text Menu-Event Log Settings

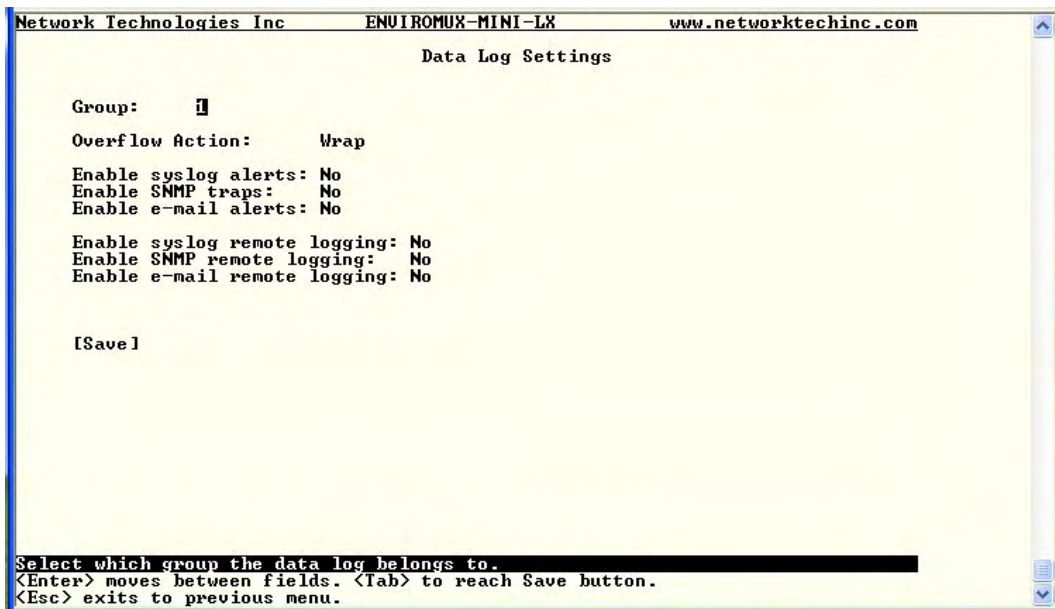


Figure 91-Text Menu-Data Log Settings

System Information

The System Information page lists current firmware, time, and network settings for the ENVIROMUX. It also lists the ENVIROMUX MAC address.

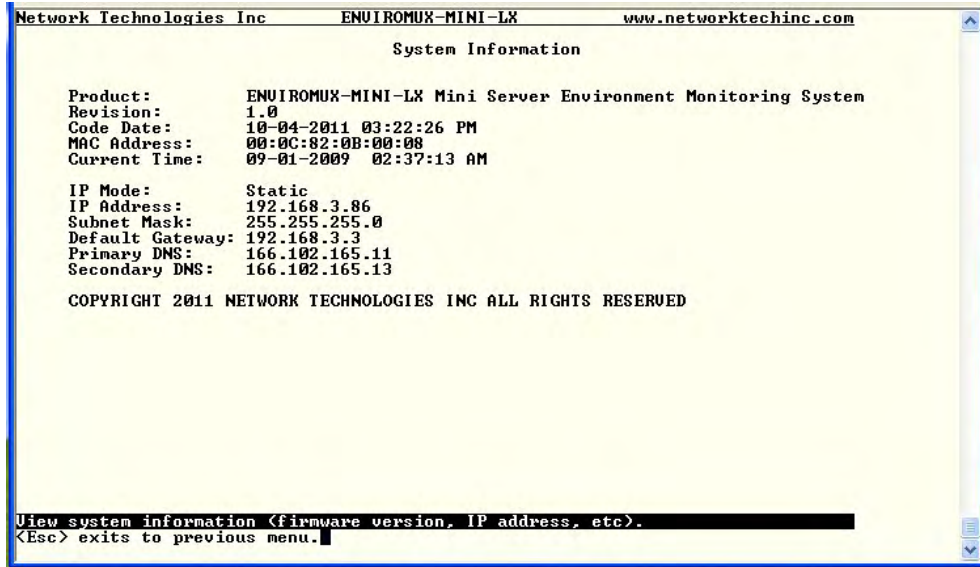


Figure 92-Text Menu-System Information

Reboot

From the Main Menu the administrative user can initiate a reboot of the ENVIROMUX. By highlighting “Reboot” and pressing <Enter> (or <9> and <Enter>), you will be prompted to confirm that you want to reboot the ENVIROMUX. Press <Enter> to cancel, or press the <Tab> or either <arrow> key to highlight “Yes” and <Enter> to reboot. The ENVIROMUX will reboot and a new connection must be initiated to reconnect, login, and resume operation.

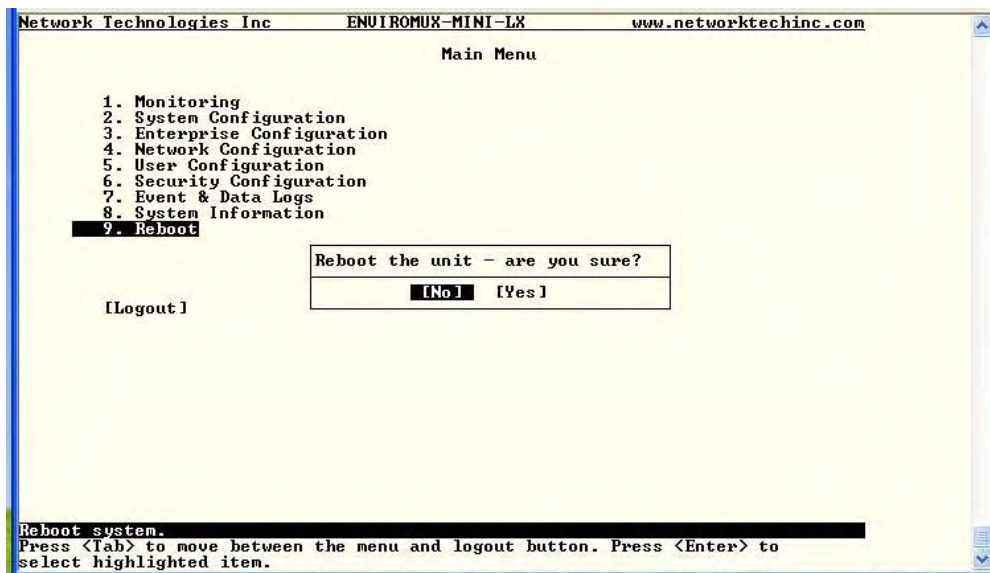


Figure 93- Text Menu-Reboot the ENVIROMUX

Text Menu for Non-Administrative Users

Users without administrative privileges are able to view sensors and IP Devices and edit their own account settings.

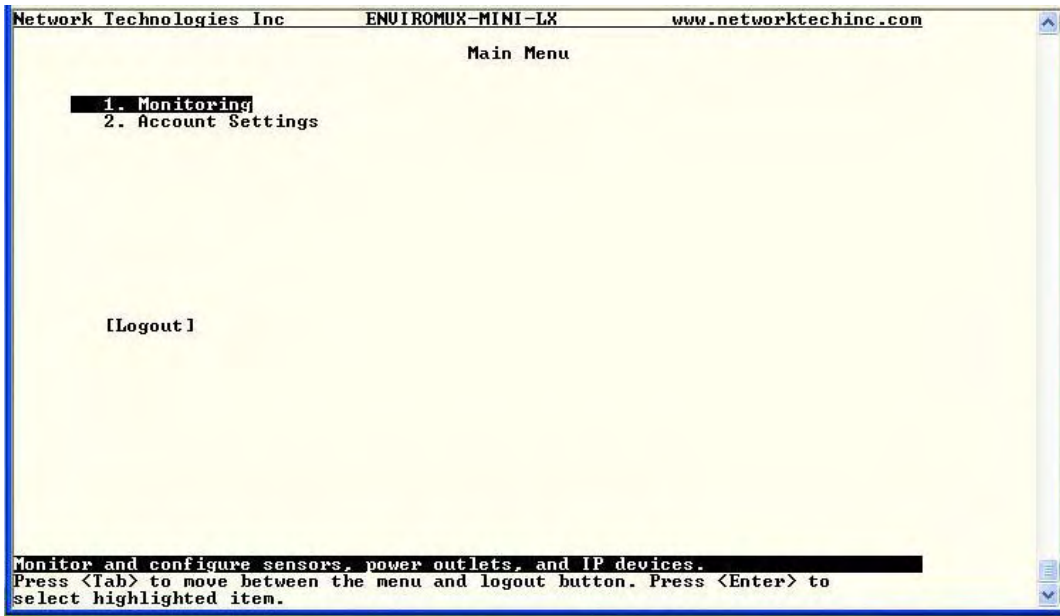


Figure 94- Text Menu-User Main Menu

Monitoring

The Monitoring menu lists 4 options for viewing the status of the items monitored by the ENVIROMUX.



Figure 95-Text Menu-User Monitoring Menu

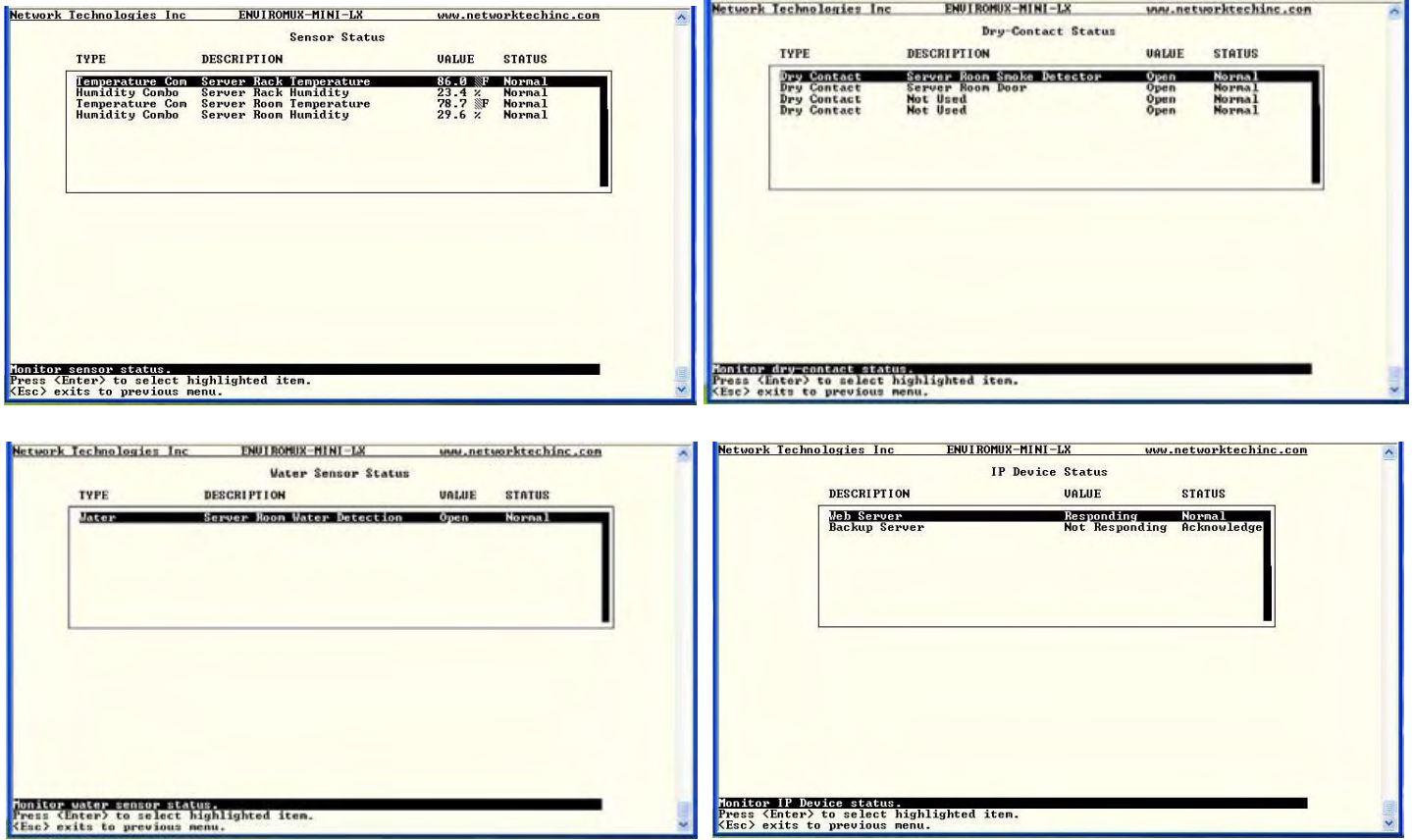


Figure 96- Text Menu-User accessible status menus

If a monitored item is in alert status, the non-administrative user can enter a response to it. By pressing the <Enter> key with the sensor selected, the user will have the option to either **acknowledge** the alert or **dismiss** it. If the user acknowledges the alert, no additional alert messages will be sent during that alert status cycle. If the user dismisses the alert, another alert message will be sent once the “notify again after” time designated on the configuration page (one example on page 25) elapses.

User Accessible Settings

The User without administrative privileges has access to setting for their own account.

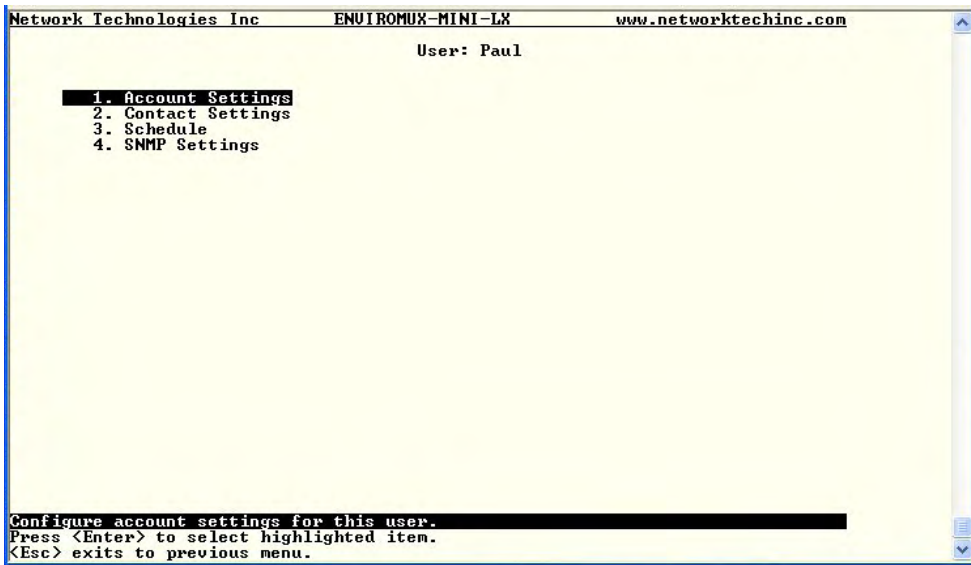


Figure 97- Text Menu-User Accessible Settings

Account Settings

Under Account Settings, the non-administrative user can edit their password, title, company, or department settings. Other settings are only accessible to the administrative user.

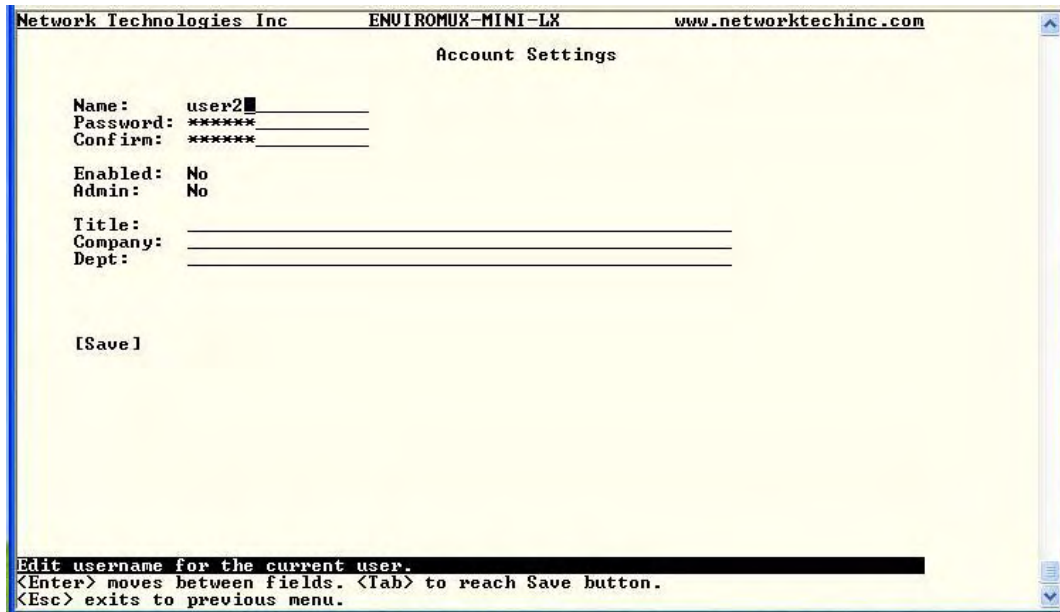


Figure 98- Text Menu-User Account Settings

Contact Settings

Under Contact Settings, the non-administrative user can decide which sensor group messages they will receive and how.

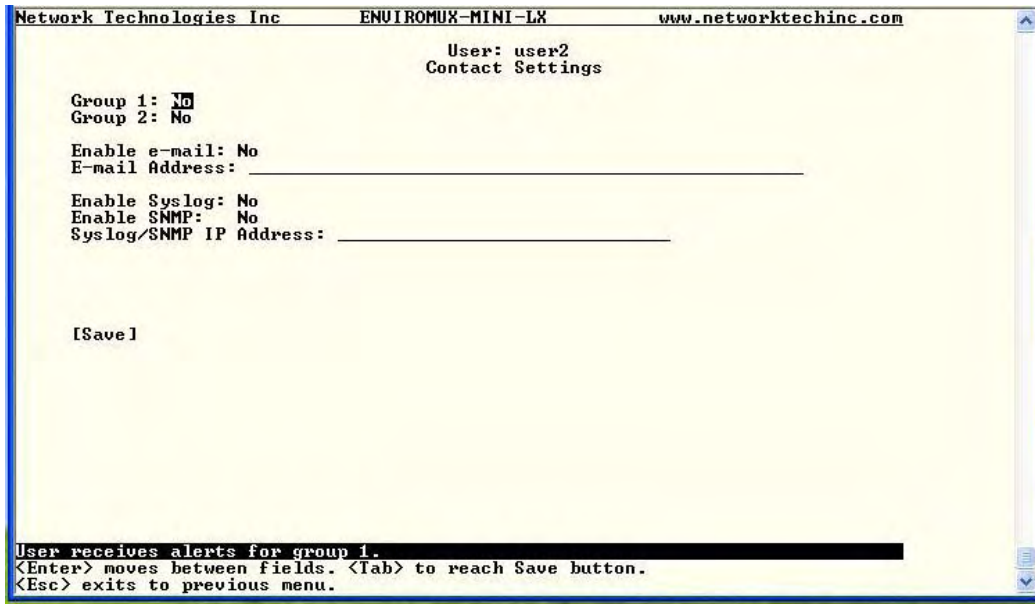


Figure 99- Text Menu-User Contact Settings

Contact Settings	
Group x	Change to “Yes” to receive messages from sensors, IP devices and accessories in any Group that sensors have been assigned to
Enable Email	Change to “Yes” to receive messages via email
Email address	Enter a valid email address to receive email alert messages
Syslog alerts	Change to “Yes” to receive alerts via syslog messages
SNMP traps	Change to “Yes” to receive alerts via SNMP traps
Syslog/SNMP IP address	Enter a valid syslog/SNMP IP address to receive syslog/SNMP messages

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

Schedule

Under Schedule, the non-administrative user can edit their activity schedule to control when messages should be sent to them.

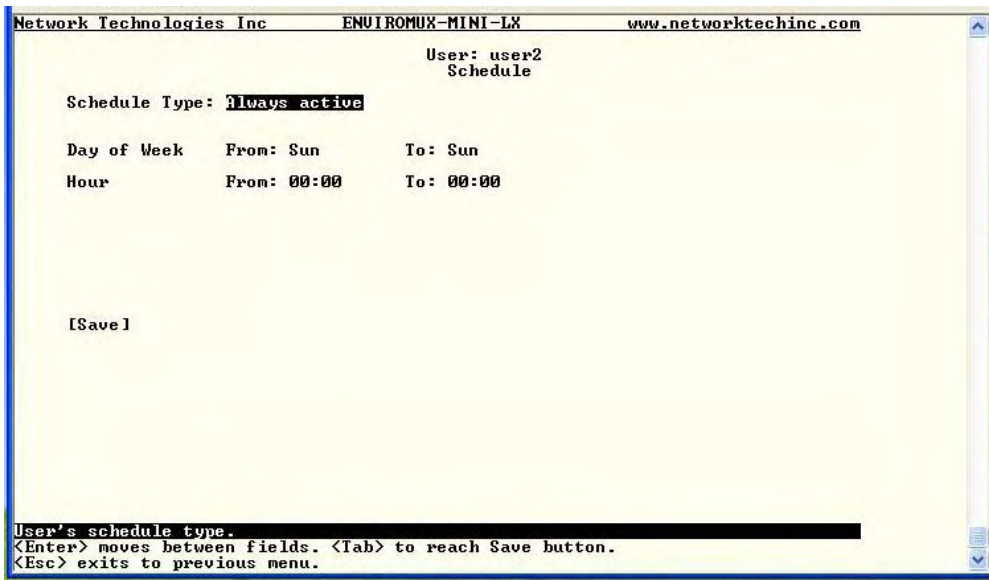


Figure 100- Text Menu-User Activity Schedule

Schedule Settings	
Schedule Type	<p>Always active- user will receive messages at all hours of each day</p> <p>Active during defined times- user will only receive alert messages during times as outlined below</p>
Day of Week-From:	First day of the week the user should begin receiving messages
Day of Week-To:	Last day of the week the user should receive messages
Hour From:	First hour of the day the user should begin receiving messages
Hour To:	Last hour of the day the user should receive messages

Press <Tab> to highlight **Save** and press <Enter> to save before pressing <Esc> to exit.

SNMP Settings

Under SNMP Settings, the non-administrative user can edit the settings required to receive SNMP messages.

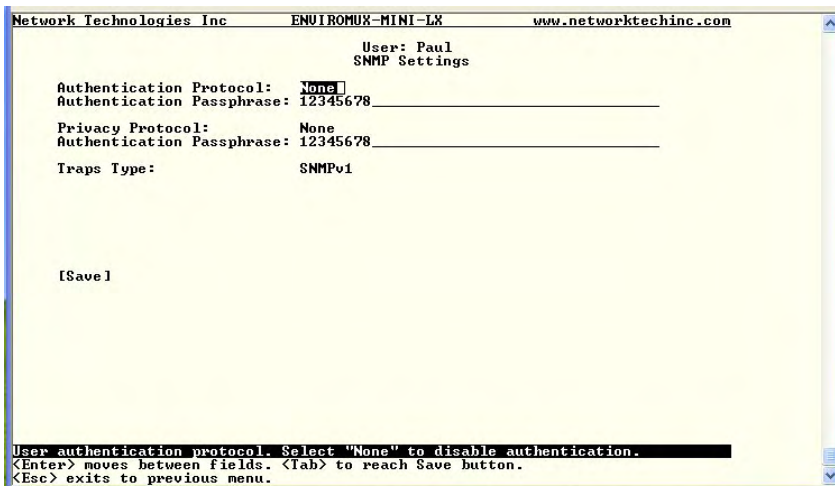


Figure 101- Text Menu-User SNMP Settings

Security settings can be configured within each user configuration if the SNMP protocol has been selected for use (page 70).

Settings	
Authentication Protocol	Choose between MD5 or SHA to require authentication, or none to disable it
Privacy Protocol	Choose between DES or AES to encrypt SNMP readings or traps or none to disable encryption. If encryption is enabled, then the Authentication Protocol must also be set at "MD5" or "SHA"
Authentication Passphrase	Assign the passphrase to be used to enable the receipt of SNMP messages
Privacy Passphrase	Assign the passphrase to be used to open and read readings or alert messages received via SNMP

After changing any settings in the user profile, press "Apply".

If any changes are made to the user's SNMP Settings, the ENVIROMUX must be rebooted (page 46) before they will take effect. If other users' settings need to be changed, the reboot can be done after all users' settings are complete.

RESET BUTTON

A Reset push-button is on the front-panel and is recessed from the panel to prevent accidental use of the button. Pressing the Reset button will cause the ENVIROMUX to restart, just as if it were power-cycled. The Reset push-button has to be pressed and held for minimum of 7-10 seconds in order to activate the reset function. The reset button can be used at any time.

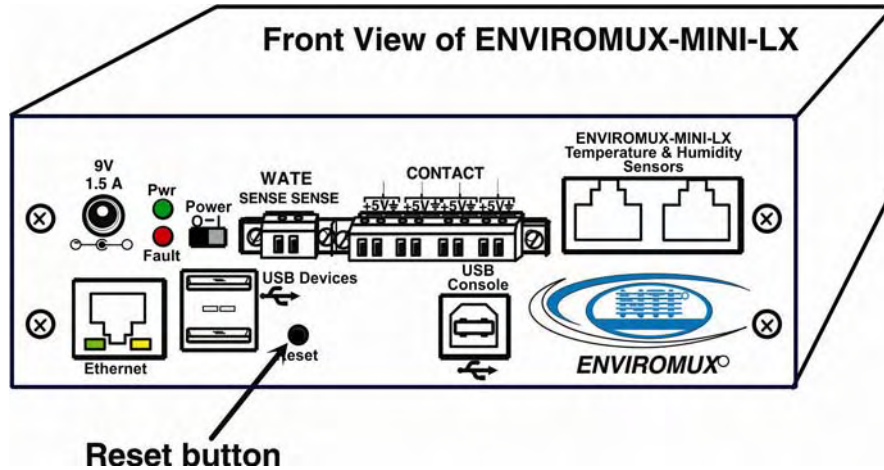


Figure 102- Location of Reset button

USB PORTS

The ENVIROMUX are each equipped with a USB Type A female ports for connection of a USB flash drive and a GSM modem (page 17) for receiving alert messages via SMS. The ports are compatible with USB 2.0 Full Speed flash drives. When enabled (page 49) and with the USB flash drive connected, the Event and Data Logs will be written to a text file on the flash drive in addition to the memory in the ENVIROMUX. When a modem is connected (page 17), it will automatically be sensed by the ENVIROMUX (page 34).

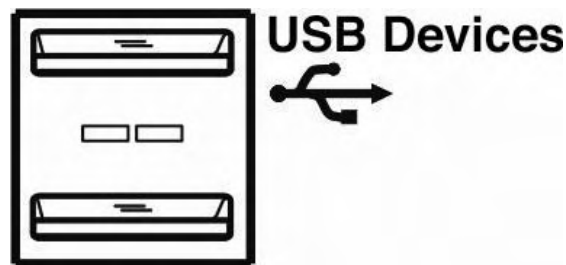


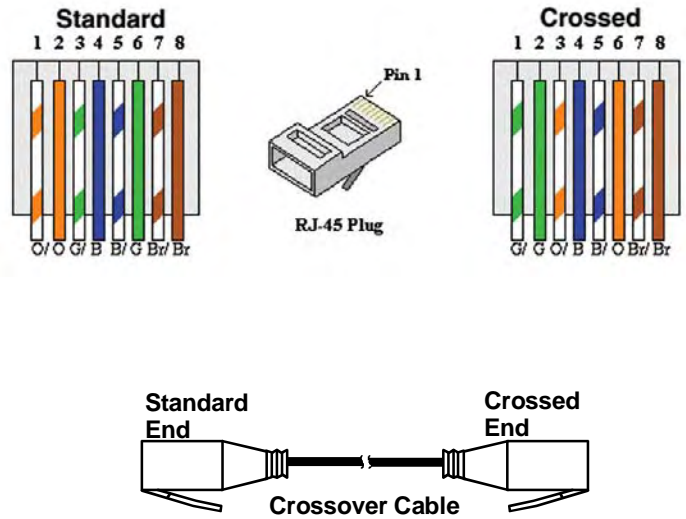
Figure 103- USB Flash Drive and GSM modem ports

WIRING METHODS

PC-to ENVIROMUX Crossover Cable

In order to make a direct connection between a PC and the ETHERNET connector of the ENVIROMUX, a crossover cable must be used. The cable is made with CAT5 cable terminated with RJ45 connectors and wired according to the chart below.

Pin assignment at Standard End	Wire Color	Pin assignment at Crossed End
1	White/Orange	3
2	Orange	6
3	White/Green	1
4	Blue	4
5	White/Blue	5
6	Green	2
7	White/Brown	7
8	Brown	8



TECHNICAL SPECIFICATIONS

Ports	
Temperature/Humidity Inputs	Two female RJ45 connectors for connecting temperature sensors, humidity sensors, and/or combined temperature/humidity sensors.
Max. Sensor Cable Length	Temperature and Humidity Sensors- 25 feet Liquid and Contact Sensors- 1000 feet
Liquid Detection Sensor	Two contact terminals for attachment of Liquid Detection Sensor
Dry Contact Closures	Four screw terminal pairs for connecting dry contact devices. <ul style="list-style-type: none"> * Potential-free. * Output voltage: +5 V DC * Current limited to 10 mA * Maximum contact resistance: 10K Ohm
Ethernet Port	One female RJ45 connector with LEDs. 10 BaseT Ethernet interface.
USB Console Port	Virtual Serial Port- USB Type B female connector
USB Devices Ports	Two female USB Type A connector Supports USB 2.0 Full Speed
Environmental	
Operating temperature	32°F to 122°F (0°C to 50°C)
Storage temperature	-13°F to 149°F (-25°C to 65°C)
Operating and Storage Relative Humidity	0 to 90% non-condensing RH
General	
Compatible Modems	ENVIROMUX-GSM-3GU (NetComm N3GS003)
Protocols	HTTP, HTTPS,SNMP, SMTP, TCP/IP, UDP, Xmodem, SSHv2, SSLv3, IP Filtering, LDAPv3, AES 256-bit encryption, SNMPv1,v2c,v3
Power Supply	120VAC or 240VAC at 50 or 60Hz-9VDC/1.5A AC Adapter
Dimensions WxDxH (in.)	2.14x5.68x2.14
Approvals	RoHS

TROUBLESHOOTING

Each and every piece of every product produced by Network Technologies Inc is 100% tested to exacting specifications. We make every effort to insure trouble-free installation and operation of our products. If problems are experienced while installing this product, please look over the troubleshooting chart below to see if perhaps we can answer any questions that arise. If the answer is not found in the chart, a solution may be found in the knowledgebase on our website at <http://information.networktechinc.com/jive/kbindex.jspa> or please call us directly at (800) 742-8324 (800-RGB-TECH) or (330) 562-7070 and we will be happy to assist in any way we can.

Problem	Cause	Solution
Cannot connect via telnet	telnet service not enabled	Enable telnet (page 37)
Cannot connect via web interface- no login screen	<ul style="list-style-type: none"> wrong IP address HTTP not enabled HTTP moved from default (port 80) 	<ul style="list-style-type: none"> Use Discovery Tool to locate configured IP address (page 20) Enable HTTP (page 35) Identify port number assigned (page 35)
Cannot get Discovery Tool to work	Java not installed	Java Runtime Environment must be installed before the Discovery Tool can be used (page 20)
LDAP user cannot login	Login username and/or password does not match same in ENVIROMUX user list	Make sure the username and password used in the LDAP server matches the username and password in the ENVIROMUX user configuration (page 38)
Cannot login	cannot remember root password	Either restore default settings (page 67) or contact NTI for assistance

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WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network Technologies Inc at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** or visit our website at <http://www.networktechinc.com> for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.