

GE  
Sensing



**Protimeter HygroTrac**  
***Remote Wireless Monitoring System***

**Instruction Manual**





## Protimeter HygroTrac *Remote Wireless Monitoring System*



### Instruction Manual

INS9000B

July 2007

HygroTrac is a Protimeter product. Protimeter has joined other GE high-technology businesses under a new name—GE Industrial, Sensing.





# Table of Contents

Introduction .....	1
System Components .....	1
HygroTrac Applications .....	3
Permanent Installations .....	3
Temporary Installations .....	3
Installation .....	3
Wireless Sensors .....	4
Data Acquisition Gateway .....	6
Gateway Activation and Site Creation .....	6
Gateway Installation Guidelines .....	7
Location Preparation .....	7
Power .....	7
Antenna .....	7
Location and Mounting .....	7
Rear Panel LEDs .....	8
Accessing Gateway Configuration Menu .....	9
Using Ethernet Port to Access Configuration Menu .....	9
Using RS-232 Port to Access Configuration Menu .....	12
Connecting the Gateway to the Internet .....	16
Connecting Gateway to an Ethernet LAN .....	16
Connecting Gateway Using Proxy Servers .....	17
Connecting Gateway Using a Modem .....	18
Secure Digital (SD) Card .....	20
Operation .....	22
Web Data Service .....	22
Viewing the Data .....	23
Troubleshooting .....	24

## Table of Contents (cont.)

Technical Specifications .....	26
Wireless Sensor .....	26
%RH/Temperature Sensor .....	26
Moisture Sensor .....	26
Data Acquisition Gateway .....	27
Certification .....	27

### **Warranty**

GE warrants its products against defects in material and workmanship for 12 months from the date of shipment. Products not subjected to misuse will be repaired or replaced. GE reserves the right to make changes without further notice to any products herein. GE Sensing makes no warranty, representation or guarantee regarding the suitability of its products for any particular application nor does GE assume any liability arising out of the application or use of any product or circuit and specifically disclaims all liability without limitation for consequential or incidental damages. The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. No implied statutory warranty of merchantability or fitness for particular purpose shall apply.

# Introduction

The *Protimeter HygroTrac* is a simple and cost effective system for remotely monitoring moisture and temperature levels in buildings. The Protimeter HygroTrac system measures and logs parameters such as the following:

- GPP or g/kg
- dew point temperature
- relative humidity
- air temperature
- % moisture in wood

To set up the system, small HygroTrac *wireless sensors* are placed in the building. Sensor readings are transmitted to a *Data Acquisition Gateway*, which is connected to a dedicated and secure web server via either an Ethernet or telephone line connection. The measurements can then be viewed at [www.gehygrotrac.com](http://www.gehygrotrac.com), using a secure password to access the data.

## System Components

The *Protimeter HygroTrac* kit comprises a carry case containing the components detailed in Table 1 below. *Figure 1* on the next page shows a typical **BLD9000** kit.

**Table 1: Protimeter HygroTrac Kit (BLD9000)**

Description
Hard Carry Case with Custom Foam Insert
Data Acquisition Gateway*
Detachable Antenna w/RP-SMA connector
10 Wireless Sensors w/Lithium Batteries*
20 Conductive Mounting Screws
3.3v Power Supply
Ethernet Cable (RJ 45)
Telephone Cable (RJ 11)
Instruction Manual
*Additional sensors (BLD9050) and gateways (BLD9010) are available. For European use, append “-EU” to the part numbers.

# System Components (cont.)



Figure 1: BLD9000 Kit

# HygroTrac Applications

## *Permanent Installations*

The Protimeter HygroTrac system provides warnings of potential moisture-related problems that can lead to property damage or health risks. This makes it ideal for locations such as:

- heritage and historic buildings
- museums
- food storage
- apartment buildings

## *Temporary Installations*

The Protimeter HygroTrac system can be used in restoration projects to reduce costly regular visits to take moisture and humidity measurements when drying a building after water damage. HygroTrac may be used to:

- automatically produce detailed professional reports
- get output readings from dehumidifiers
- provide early warnings of targets reached and potential problems through e-mail alerts and cellular text messages

## Installation

A complete installation of your Protimeter HygroTrac system includes the wireless sensors, the data acquisition gateway and website access.

**IMPORTANT:** *The external power supply included in your HygroTrac BLD9000 kit is fitted with an AC plug suitable for the country of destination. If you require a different plug, please contact GE Sensing for assistance.*

**IMPORTANT:** *See the Declaration of Conformity at the end of this manual for HygroTrac certification information.*

## Wireless Sensors

A photograph of a HygroTrac wireless sensor appears at the right. To install your wireless sensors, complete the following steps:

1. To help determine the best locations for the sensors, use a standard moisture meter such as the *Protimeter SurveyMaster* to establish the existing moisture conditions within the building.
2. Select up to 600 sensor locations that are within 150 ft (46 m) of the planned location of the data acquisition gateway.



**Note:** *The maximum sensor transmission distance varies with the building construction materials. Also, if more than 600 sensors are required, additional gateways will be needed. You may also need additional gateways if your sensors are out of the sensor RF transmission range due to distance or building construction materials.*

---

### Caution!

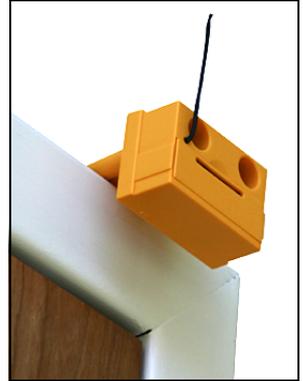
If it becomes necessary to replace a sensor battery, use only a LISUN #ER14505 lithium battery and be sure to install it with the correct polarity. Use of any other battery or installation of the battery with the incorrect polarity will void your sensor warranty.

---

3. When mounting the sensors, observe the following precautions:
  - a. If you use a powered screwdriver, be careful not to overtighten the screws. The screws should be just tight enough to ensure good contact between the material and the sensor.
  - b. Avoid placing sensors in locations where they could be stepped on or in locations where they might interfere with working machinery.
  - c. Do not mount sensors in areas where water could enter the electronic components.

## Wireless Sensors (cont.)

4. Fix each HygroTrac wireless sensor at its chosen location using two of the supplied *conductive mounting screws*. As the mounting screws are also the terminals for the moisture sensor, the HygroTrac moisture reading is taken at the depth of the screw in the material. For measurements deeper in the material, you can substitute longer screws obtained from a local supplier. However, the screws must be made from stainless steel. The photograph at the right shows a sensor mounted to the wall above a doorway.



**IMPORTANT:** *You must be sure to use a spring washer with each mounting screw to maintain the integrity of the connection, as the material expands and contracts with moisture changes.*

5. Record the *ID number* and *location* of all installed sensors. The sensors have bar-coded ID numbers for use with bar-code readers when installing large numbers of sensors (see photograph on previous page).

## Data Acquisition Gateway

To install your Data Acquisition Gateway, refer to *Figure 2* below and proceed to the instructions on the next page.

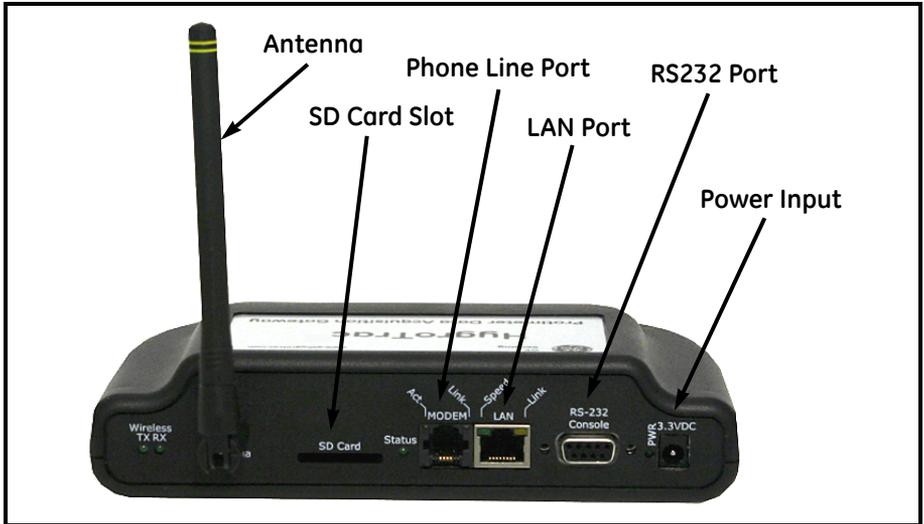


Figure 2: Data Acquisition Gateway - Rear Panel

## Gateway Activation and Site Creation

A gateway sends all the data it collects to the HygroTrac Database Server (HDS). Users can then access this data at [www.gehygrotrac.com](http://www.gehygrotrac.com) (The site itself supplies detailed instructions in the *GE HygroTrac Web Site User's Guide*.) To store and access data, users must first activate the gateway and assign it to a user-created “site” at [www.gehygrotrac.com](http://www.gehygrotrac.com). Users must first register as subscribers at [www.gehygrotrac.com](http://www.gehygrotrac.com). Subscribers can then create sites by logging into their account at [www.gehygrotrac.com](http://www.gehygrotrac.com) and using information that describes the site to be monitored (customer name, address, email etc.) after which the user assigns one or more gateways to that site. When sensors send data through a gateway assigned to a site, those sensors are automatically assigned to that site as well.

Record the gateway ID which is on the ID label located on the bottom of the gateway. You will need this ID in order to activate your gateway at [www.gehygrotrac.com](http://www.gehygrotrac.com)

# **Gateway Installation Guidelines**

## **Location Preparation**

When planning your installation, remember that the gateway requires an AC power source and either a LAN or modem Internet connection. Also, position the gateway as centrally as possible to the planned sensor locations.

## **Power**

The gateway requires 3.3 VDC, provided by the supplied AC adapter. Connect the adapter to an AC power source and plug the jack into the “3.3VDC” receptacle on the gateway rear panel. When power is active, the *PWR LED* will be on.

## **Antenna**

The antenna supplied with your gateway connects to the “Antenna” connector on the gateway rear panel. It should be screwed on “finger tight.” The antenna is designed to swivel in all directions and must be pointed “skyward,” or vertically oriented, for best wireless performance.

## **Location and Mounting**

The gateway can either be wall mounted using the built in teardrop shaped mounting holes on the bottom of the case (screws not supplied) or it can be placed on any horizontal surface. In either case, be sure the antenna is pointed skyward. For best system wireless coverage, locate the gateway central to where the sensors are to be installed. Do not locate the gateway close to large metal obstructions such as filing cabinets or refrigerators.

## Rear Panel LEDs

The gateway rear panel, shown in Figure 3 below, contains several LEDs which provide useful information on the status of the gateway.



Figure 3: Data Acquisition Gateway - Rear Panel LED Detail

The LEDs indicate the following information:

### Wireless

- *TX LED* – consistent rapid flashing indicates normal transmitter operation.
- *RX LED* – flashes briefly while the gateway is receiving data over the wireless link. The activity of this LED depends on the number of sensors in your system and the sensor reporting interval.
- *Status LED* – lit when gateway is communicating normally with the OmniSense Database Server or ODS.

### Modem

- *Link LED* – flashes to indicate modem is attempting to dial out; steady light indicates modem is connected to far side modem
- *Act LED* – when lit, indicates gateway has successfully logged in to your ISP; flashes to indicate sending and receiving of packets

### LAN

- *Speed LED* – always off, indicating 10 Mb/s link speed
- *Link LED* – Ethernet link is active; flashes to indicate transmission or receipt of packets
- *PWR* – when lit, indicates power is on

## Accessing Gateway Configuration Menu

**Note:** *For LAN connections, no configuration changes are usually necessary. For modem connections, ISP login, password, and phone number are necessary.*

To change the gateway configuration, users must enter the configuration menu. You can access this menu via either the Ethernet port connection or the RS-232 port connection, using a standard RS232 serial port cable with DB-9 connectors (not supplied). Either connection provides access to the same menu settings.

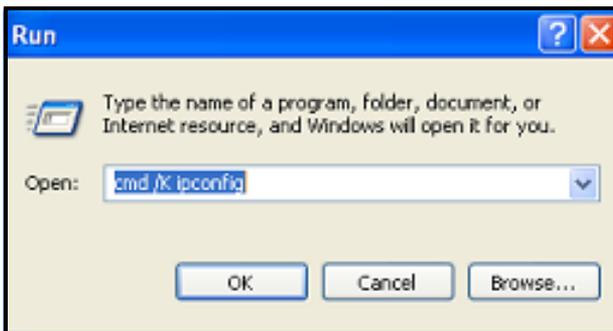
## Using Ethernet Port to Access Configuration Menu

Use the following steps to access the configuration menu via the LAN connection:

1. Disable and disconnect ALL network connections on your laptop/PC *except* for the LAN connection, and then reboot your PC so that the LAN connection will use an Auto Assigned IP Address.
2. Connect the gateway to your laptop or PC using supplied Ethernet cable.
3. Apply power to the gateway, and verify that the LAN Link LED is lit and/or flashes.

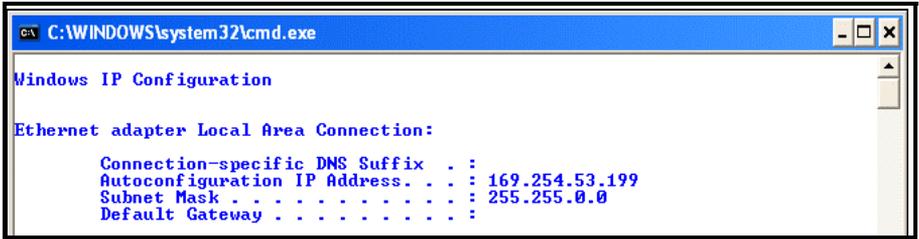
**Note:***If the LAN Link LED does not go on and/or flash, you will need to use an Ethernet crossover adapter or an Ethernet Hub.*

4. Wait for ~30 seconds while the PC assigns itself an Auto IP address.
5. On your PC, verify that it has assigned itself the correct Auto IP address using "Start>Run" to execute the command "cmd /K ipconfig" as shown below. Click OK.

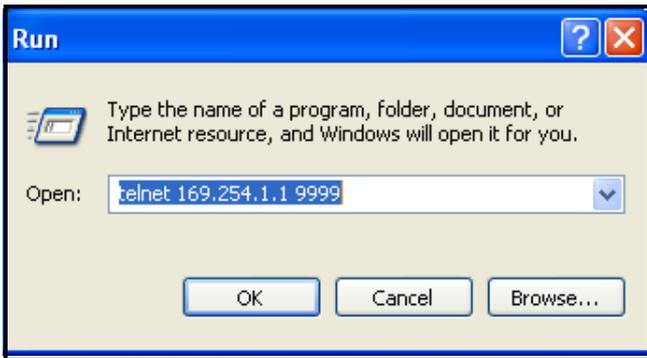


## Data Acquisition Gateway (cont.)

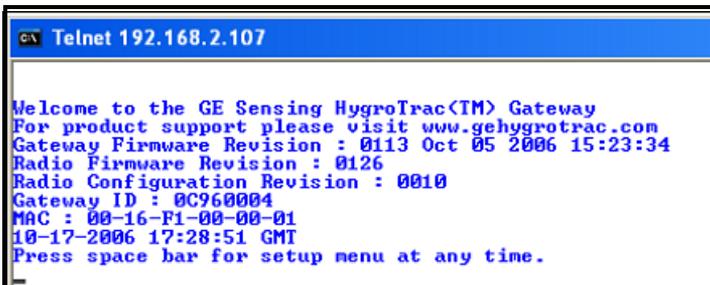
- The windows IP configuration window will open. Note that any 169.254.xxx.xxx address is acceptable and your address need not exactly match the address shown below.



- On your PC, connect to the gateway configuration menu using Start>Run to execute the command telnet 169.254.1.1 9999 and click OK, as shown below.



You should see a new window similar to the one shown below.



## Data Acquisition Gateway (cont.)

**Note:** *If this command fails, then it is likely your PC is not using an auto assigned IP address. Make sure you that have followed the instructions in step 1.*

8. Press the space bar to access the configuration menu as well as to view the current gateway settings. You should see the menu shown below.

```
C:\ Telnet 192.168.2.107
Radio Firmware Revision : 0126
Radio Configuration Revision : 0010
Gateway ID : 0C960004
MAC : 00-16-F1-00-00-01
10-17-2006 17:28:51 GMT
Press space bar for setup menu at any time.

Setup Menu
(a) Set LAN static IP(000.000.000.000)
(b) Set LAN default gateway IP(000.000.000.000)
(c) Set LAN subnet mask(000.000.000.000)
(d) Set Remote Server IP(012.043.214.176)
(e) Set Wireless Network Address(12345678)
(f) Set dialup number(2002122)
(g) Set dialup username(choogenboom@earthlink.net)
(h) Set dialup password(chatham)
(i) Set MODEM custom AT command string()
(j) Set dialup time interval in minutes(720)
(k) Set dialup retries(2)
(l) Use LAN connection(N)
(m) Use MODEM connection(N)
(n) Use Auto Detect Connection(Y)
(q) exit and discard changes
(s) save changes to FLASH and reboot
enter selection>_
```

9. You can then modify individual settings by selecting the desired menu item.

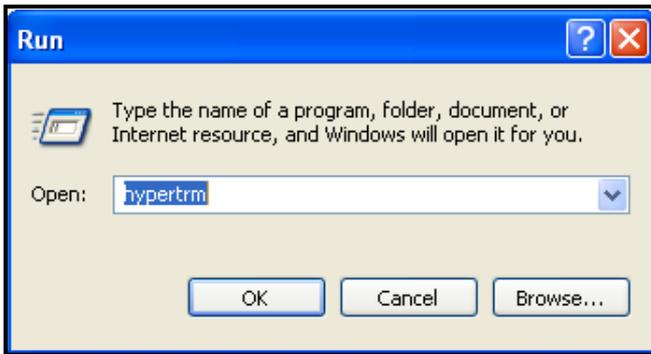
**Note:** *Be sure to save your changes; saving changes forces a reboot which will disconnect your telnet session from the gateway.*

## Using RS-232 Port to Access Configuration Menu

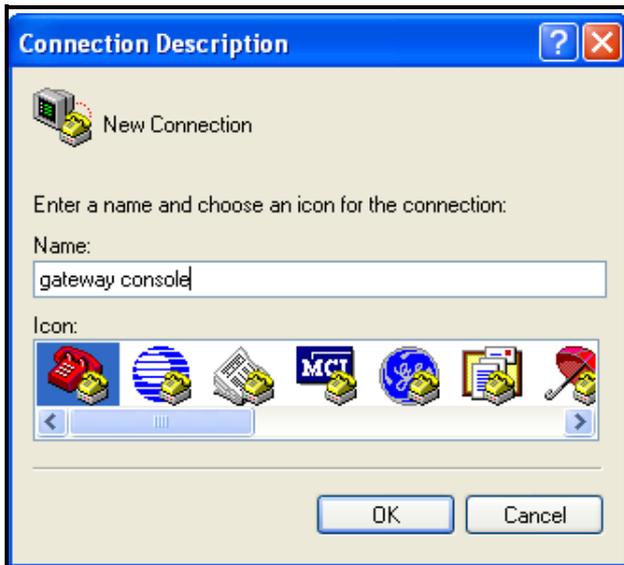
Complete the following steps to access the configuration menu via the RS-232 port connection.

**IMPORTANT:** *Be sure the gateway is unplugged from the power source.*

1. Connect the gateway RS-232 port to your PC's serial COM port (usually, but not always, designated "COM1") using a serial cable (not supplied).
2. On your PC start a HyperTerminal window (shown below) using Start>Run to execute the command hypertrm. Click OK.



3. At the prompt, enter a name (see below) for the new connection and click OK.

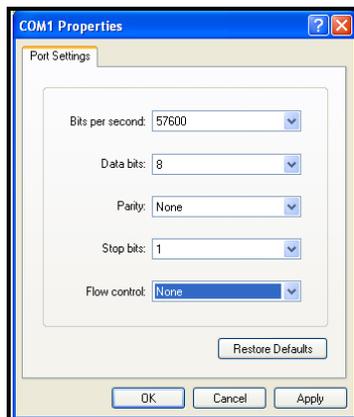


## Using RS-232 Port to Access Configuration Menu (cont.)

4. You will then be prompted to select the gateway connection (see below); usually the connection is through the COM1 port, but it will vary from PC to PC, and in some cases may be through a serial adapter on a USB port. Select the appropriate COM port name and click OK.

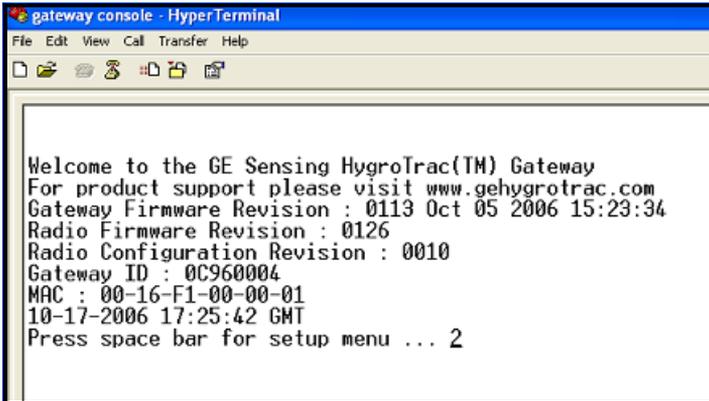


5. Follow prompts to enter the COM port settings. Configure the COM port with the following settings and click OK.
  - Bits per second: 57600
  - Data Bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: None



## Using RS-232 Port to Access Configuration Menu (cont.)

6. You are now ready to power on the gateway. Power on the gateway and your HyperTerminal window should resemble the screen shown below. If you have problems, be sure that the HyperTerminal window is the currently selected window on your desktop and that you do not currently have any text selected in the HyperTerminal window.



```
gateway console - HyperTerminal
File Edit View Call Transfer Help
Welcome to the GE Sensing HygroTrac(TM) Gateway
For product support please visit www.gehygrotrac.com
Gateway Firmware Revision : 0113 Oct 05 2006 15:23:34
Radio Firmware Revision : 0126
Radio Configuration Revision : 0010
Gateway ID : 0C960004
MAC : 00-16-F1-00-00-01
10-17-2006 17:25:42 GMT
Press space bar for setup menu ... 2
```

7. Press the space bar within 5 seconds of power-up to access the gateway configuration menu.

## Data Acquisition Gateway (cont.)

```
gateway console - HyperTerminal
File Edit View Call Transfer Help
[Icons]
Radio Firmware Revision : 0126
Radio Configuration Revision : 0010
Gateway ID : 0C960004
MAC : 00-16-F1-00-00-01
10-17-2006 17:26:52 GMT
Press space bar for setup menu ... 5
Setup Menu
(a) Set LAN static IP(000.000.000.000)
(b) Set LAN default gateway IP(000.000.000.000)
(c) Set LAN subnet mask(000.000.000.000)
(d) Set Remote Server IP(012.043.214.176)
(e) Set Wireless Network Address(12345678)
(f) Set dialup number(2002122)
(g) Set dialup username(choogenboom@earthlink.net)
(h) Set dialup password(chatham)
(i) Set MODEM custom AT command string()
(j) Set dialup time interval in minutes(720)
(k) Set dialup retries(2)
(l) Use LAN connection(N)
(m) Use MODEM connection(N)
(n) Use Auto Detect Connection(Y)
(q) exit and discard changes
(s) save changes to FLASH and reboot
enter selection>_
```

8. You can now modify individual settings by selecting the desired menu item. Remember to save your changes.

## Connecting the Gateway to the Internet

If a LAN connection is present, the gateway will automatically use it. If the LAN connection is inactive, the gateway will attempt to dial out until it reaches the maximum number of dial retries. Note that if you have an active LAN connection, but you want the gateway to use the MODEM connection, you must change the gateway settings from “Auto Detect Connection” to “Use MODEM Connection”.

### Connecting Gateway to an Ethernet LAN

Using the supplied Ethernet cable, connect the gateway’s “LAN” port to an available and active data port on your LAN network. Power on the gateway, and the *Link LED* should go on within 1-2 seconds. If it does not, see the troubleshooting chart on page 24.



#### 1. Configuring the LAN Connection

The gateway is shipped from the factory to plug and play with most common LAN environments but from time to time you may need to change the settings to be compatible with “non-standard” LAN environments. Some possible LAN configurations include:

- Setting a non-zero “LAN static IP”, “LAN default gateway IP” and “LAN subnet mask”

**Note:** *You should use a static IP address only if instructed to do so by your network administrator.*

- Setting the “LAN Static IP” to 000.000.000.000 (this is the factory default), which forces the gateway to use DHCP to acquire an IP address from your network’s DHCP server.

## **Connecting Gateway to an Ethernet LAN (cont.)**

**Note:** *If no DHCP server is found, the gateway will default to an auto-assigned IP address of 169.254.1.1 and will continue to try to get a DHCP assigned address as well.*

### **2. Testing the LAN connection**

If the *Status LED* lights up, the LAN connection is working. If the *Status LED* does not light up, the LAN connection is not working (see *Troubleshooting* on page 24).

## **Connecting Gateway Using Proxy Servers**

Some networks, especially large corporate networks, block users from direct access to the Internet. Instead, users must access the Internet through a proxy server. The gateway can operate with proxy servers; you must set the gateway's "Remote Server IP" to the IP address of the network's proxy server. If you do not know the proxy server IP address contact your network administrator. To set your gateway back for use in a standard (i.e., no proxy server) network environment, set the "Remote Server IP" to 12.156.76.36.

## Connecting Gateway Using a Modem

You must have a working dialup account in order to use the modem.

### 1. Connecting Gateway to Phone Jack

Connect the gateway to an active analog telephone jack using the supplied RJ-11 phone cable or a similar phone cable as shown below. Residential phone lines are typically analog, while office lines are digital. In an office you should use a phone line that can support a fax/modem.



**Note:** *The modem interface is surge protected by a non-replaceable non-resetting slow-blow fuse. If you use a phone line that experiences frequent surges or lightning strikes, you should put a surge protector in line with the phone line to protect the modem from damage.*

### 2. Configuring Dialup Information

The gateway requires your Internet Service Provider (ISP) phone number, user name, and password. You must set these parameters using the New Customer Registration menu. In most cases, one ISP account can support many gateways and, in the event your ISP only allows a single login at a time, the gateway will continue to attempt to login until it reaches the maximum number of retries.

### 3. Other Dialup Settings

In most office environments, you will need to dial 9 for an outside line, in which case you should change the dialup number on the configuration menu to include a dialing prefix of “9,”. For example:

“Set dialup number(9,18666633679)”

*Be sure to include the comma*, as it instructs the modem to pause before dialing the next number, and the pause is required to wait for a dial tone from the outside line.

## **Connecting Gateway Using a Modem (cont.)**

You can also configure the time between server connection attempts and the maximum number of dialup retries used during a connection attempt. By limiting the number of dialup retries, you can prevent the modem from monopolizing the phone line in the event your ISP is not responding.

The gateway configuration menu also has a configuration option to allow you to specify a “Modem Custom AT command string”. Rarely used, this string permits operating the modem outside of North America.

### **4. Testing Your Modem Connection**

First, power up the gateway. If the LAN cable is disconnected or if you have manually configured the gateway to the “Use MODEM Connection” option, the gateway will always attempt to dial up the configured ISP such that you can get immediate confirmation at the time of installation that the modem connection is working. If the Status LED lights up, and you must watch it carefully as in most cases it will only stay on for a few seconds, the modem connection is working. See the section *Troubleshooting* (page 24) if you do not see the Status LED go on.

## Secure Digital (SD) Card

The preferred mode of Protimeter HygroTrac operation is through one of the direct Internet connections. Direct connection permits immediate access to any automated warnings that may be generated by the system. However, anytime an Internet connection is not active, the gateway will store data to either the internal flash memory or the optional *Secure Digital (SD) Card* if it is present. (You can then upload this data to the HygroTrac web site by bringing the gateway to a location that can provide access to your Internet account.)

To set up your HygroTrac system with an SD card:

1. Purchase an SD card from a local supplier.

**Note:** *A 128 MB SD card will support 10 sensors, reporting every five minutes for 728 days.*

2. Use a computer with an SD card reader to format the new SD card with an MS Windows *FAT file system*.
3. Insert the SD card into the slot on the back of the data acquisition gateway (see below).



---

### Caution!

Use only the GE Sensing power supply provided with your HygroTrac kit. The use of non-factory power supplies may damage the equipment and will void your warranty.

---

4. Connect one end of the *power supply* to your data acquisition gateway (see the photograph on the previous page), and plug the other end into a suitable AC outlet. As the gateway does not have an ON/OFF switch, connection and plugging in will immediately power up the gateway.

## **Secure Digital (SD) Card (cont.)**

5. To upload your SD card data to the HygroTrac web site, bring the gateway to a location where a connection to your Ethernet/dial-up Internet account can be made. Upload time depends on the amount of data, but typically takes a few minutes.

**Note:** *The gateway includes onboard flash data storage that is sufficient for one year of data, with ten sensors each reporting every hour. To upload data from the internal flash storage, use Step 5 above. GE Sensing recommends the use of an SD Card only if your data storage needs exceed the capacity of the onboard flash storage.*

## Operation

As soon as the Protimeter HygroTrac system is installed and powered up, as described in the previous section, it begins collecting data. In order to access this data, follow the instructions in this section.

### Web Data Service

**Note:** *Please refer to the GE HygroTrac Web Site User's Manual for detailed information on setting up the web site.*

The HygroTrac data is stored on a dedicated and secure web server. To access your data, complete the following steps:

**Note:** *There is a monthly fee for the HygroTrac service account.*

1. Using your existing internet connection, go to the following URL:

[www.gehygrotrac.com](http://www.gehygrotrac.com)



2. Choose one of the following options:

- a. If you already have an account, *simply log in.*
- b. If you do not already have an account, create a *new user account* and accept the *terms and conditions.*
- c. View the online "*Web Site User Guide*" for any required help.

3. Follow the online instructions to view your data.

## ***Viewing the Data***

After you access your HygroTrac account, the following data is available for each data point from each sensor, by sensor ID and description:

- Time and date
- Temperature
- Relative Humidity
- Wood Moisture Equivalent (% WME)
- Grains per Pound (GPP) or g/kg
- Dewpoint temperature (°C or °F)

From your HygroTrac account, you can perform the following functions:

- Name the individual sensors to indicate their locations
- View and graph near-live data
- View dewpoint, GPP, temperature, % RH, and % WME data
- Set alarms and thresholds that automatically send e-mails or mobile phone text messages.
- Produce automatically generated reports
- Set up multiple users with different access levels
- Download data in a text file format for importing into spreadsheet and other applications
- Set multiple users with different access levels

## Troubleshooting

Table 2 covers possible problems and their solutions.

**Table 2: Troubleshooting the LAN/Ethernet Connection**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
LAN Link LED is on, but Status LED never goes on	The LAN connection that the Gateway is using does not have Internet access because Internet connection is down or does not exist.	Verify the LAN port you are using can access the Internet.
	The LAN connection that the Gateway is using does not have direct Internet access because network uses a proxy server.	See page 17 on operating with a proxy server.
LAN Link LED does not go on	The LAN Ethernet port you are using is not active.	Make sure the Ethernet jack you are using is active; check with another computer or laptop.
	The Ethernet cable is not plugged in.	Check the Ethernet cable connections and make sure they “click” when the plugs are pushed in.
	The LAN Ethernet port you are using is configured as a client.	Use an Ethernet crossover adapter.
	The Ethernet cable is bad.	Replace the Ethernet cable.
Status LED is ON, but when I log on to the website, I do not see my data	Gateway out of range of sensors.	Replace gateway closer to sensors.

**Table 2: Troubleshooting the LAN/Ethernet Connection (cont.)**

Not all of my sensors are Active on the website	Gateway out of range of sensors.	Relocate gateway close to sensors or add additional gateway(s) to expand wireless coverage.
MODEM Link LED goes solidly on, but Act LED never flashes	Bad username and/or password	Verify username and password are correct.
MODEM Link LED goes solid	No dial tone	Verify phone line has dial tone
	Bad dialup phone number	Verify dialup phone number is correct
	Missing DSL filter	Assuming your phone line is used for DSL service, add DSL filter to the line.

# Technical Specifications

## Wireless Sensor

*Transmission Distance\**: 150 ft (46 m) nominal

*Transmission Frequency*: 902.2 - 907.8 MHz;  
868.2, 868.4, 869 MHz (EU)

*Size (l x w x h)*: 2.25 x 1.5 x 2.25 in. (60 x 30 x 60 mm)

*Weight*: 2.42 oz (68 g)

\*Transmission distance varies with many factors, including the presence of obstacles such as concrete walls and interference from other electronic equipment.

## %RH/Temperature Sensor

*Range*: 0 to 100% (non-condensing)

*Accuracy*: 10 to 90%  $\pm 2.5\%$

*Temperature Range*: -40 to 185°F (-40 to 85°C)

*Temperature Accuracy*:  $\pm 1^\circ\text{F}$  ( $\pm 0.5^\circ\text{C}$ ) at 77°F (25°C)

*Battery Life*: 15 years nominal, when reporting hourly

## Moisture Sensor

*Resistance*: pin type

*Range*: 0 to 40%

*Accuracy*:  $\pm 1\%$  in wood, 10 to 25% subject to adjustments for species and temperature

*Calibration Temperature*: 68°F (20°C)

## **Data Acquisition Gateway**

*Maximum Inputs:* 600 sensors

*Data Transmission:* to secure Internet via  
10 Mb/s Ethernet output or  
dial on-demand telephone modem

*Onboard Data Storage:* approximately 1 year of data  
with 10 sensors each reporting hourly

*Additional Data Storage:* up to 2 GB on SD card (not supplied)

*Size (l x w x h):* 7.5 x 4.9 x 1.6 in. (190 x 125 x 40 mm)

*Weight:* 10.8 oz (305 g)

*Power Input:* 3.3 VDC external power supply (included)

## **Certification**

See the *Declaration of Conformity* at the end of this manual.

The information contained in this manual is given in good faith. As the method of use of the instrument (and its accessories) and the interpretation of the readings are beyond the control of the manufacturers, they cannot accept responsibility for any loss, consequential or otherwise, resulting from its use.

Protimeter HygroTrac<sup>®</sup> and Surveymaster<sup>®</sup> are registered trademarks of GE.



We,

GE Sensing  
1100 Technology Park Drive  
Billerica, MA 01821

declare under our sole responsibility that the

**Protimeter HygroTrac Monitoring System**

to which this declaration relates, is in conformity with the following standards:

[For US and Canada Models Only](#)

• **FCC Part 15**

This Product Contains Transmitter Module FCC ID: RY20002.

This equipment complies with Parts 15 of the Federal Communications Commission (FCC) rules for the United States. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The equipment has been tested and found to comply with part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet or on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Part 15 Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**



- **Industry Canada (IC)**

This Product Contains Transmitter Module IC ID:6474A-0002.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference causing equipment standard entitled Digital Apparatus, ICES-003 of Industry Canada. This device complies with Canadian RSS-210 regulations.

**NOTICE:** The Industry Canada (IC) label identifies certified equipment. The Department does not guarantee the equipment will operate to the user's satisfaction.

[For EU Models Only](#)

- **Data Acquisition Gateway**

The *Data Acquisition Gateway* is in conformity with the following standards:

- EN55022: 1998 + A1: 2000 + A2: 2003
- EN55024: 1998 + A1: 2001 + A2: 2003
- EN60950-1: 2001

following the provisions of the 89/336/EEC Electromagnetic Compatibility (as amended) and 73/23/EEC Low Voltage Directive (as amended).

- **Sensor Module**

The *Sensor Module* is in conformity with the following standards:

- EN300 220-3 V1.1.1 (2000-09)
- EN301 489-3 V1.4.1 (2002-08)

following the provisions of the Radio Equipment and Telecommunications Terminal Equipment. (R&TTE) directive: Directive 1999/5/EC.

---

Billerica - June 9, 2006



---

Mr. Gary Kozinski  
Certification & Standards Lead Engineer



## **USA**

1100 Technology Park Drive  
Billerica, MA 01821-4111  
Web: [www.gesensing.com/protimeterproducts](http://www.gesensing.com/protimeterproducts)

## **Ireland**

Sensing House  
Shannon Free Zone East,  
Shannon, County Clare  
Web: [www.gesensing.com/protimeterproducts](http://www.gesensing.com/protimeterproducts)

