

# **SE-TH Temperature + Humidity** **Operator's Manual**

## **Environmental Surveillance over the Internet**



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
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**WARNING:** These products are not designed for use in, and should not be used for, patient connected applications.

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This device is marked with the international caution symbol. It is important to read the Setup Guide before installing or commissioning this device as it contains important information relating to safety and EMC.

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## NOTES, WARNINGS and CAUTIONS

Information that is especially important to note is identified by the following labels:

- **NOTE**
- **WARNING or CAUTION**
- **IMPORTANT**
- **TIP**



**NOTE:** Provides you with information that is important to successfully setup and use the iSE.



**CAUTION:** Tells you about the risk of electrical shock.



**CAUTION:** Risk of danger. Tells you of circumstances or practices that can effect the instrument's functionality and must refer to accompanying documents.



**TIP:** Provides you helpful hints.

---

## FEATURES

- **Temperature**
- **Relative Humidity**
- **Web Server**
- **Virtual Chart Recorder**
- **Two Relay Alarms**
- **Two Contact Closures**
- **Accurate Readings**
- **Password Protection**
- **Email Alarms**
- **Data Logging**
- **2, 4 or 8M bytes Flash Memory Card**
- **Real-Time Clock**
- **LCD Display**
- **UPS / Stand-alone 9Vdc Battery**

## PART 1

### INTRODUCTION

#### 1.1 Safety and EMC Considerations

Refer to the CE Approvals Section.



**Warning:** The standard right angle probe is ESD Sensitive

#### EMC Considerations

- Whenever EMC is an issue, always use shielded cables.
- Never run signal and power wires in the same conduit.
- Use twisted-pair wires for signal connections.
- Install Ferrite Bead(s) on signal wires close to the instrument if EMC problems persist.

**Failure to follow all instructions and warnings may result in injury!**

#### 1.2 Before You Begin

**Inspecting Your Shipment:** Remove the packing slip and verify that you have received everything listed. Inspect the container and equipment for signs of damage as soon as you receive the shipment. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent. The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing the contents, save the packing material and carton in the event reshipment is necessary.

**Customer Service:** If you need assistance, please contact the Customer Service Department nearest you.

**Manuals, Software:** The latest Operation Manual as well as free configuration software (**iConnect**), datalogging software (**iLog**), memory card retrieval software (**iFlash**) and **Mail Notifier** are available at **the website listed on the cover page of this manual** or on the CD-ROM enclosed with your shipment.

#### 1.3 Description

##### Web-based Remote Surveillance of Temperature + Humidity and Security

The iSE environmental monitor provides Web-based remote surveillance of environmental conditions in critical HVAC applications such as computer server rooms, clean rooms, laboratories, museums, warehouses, or any remote facility. View and record Temperature, Relative Humidity and Dew Point over an Ethernet network or the Internet with no special software—just a Web browser.

**EMAIL ALARMS** -- The device can trigger an alarm if temperature or humidity goes above or below a set point that you determine. Your alarm can be sent by email to a single user or to a group distribution list, including text messages to cell phones and PDA's.

**PHYSICAL THREATS** -- The iSE includes screw terminals for two contact closures that work with common alarm sensors. You can instruct the iSE monitor to send an alarm if a door is opened, a window is broken, or a fire sprinkler goes off.

**POWER FAILURE** -- The iSE monitor can trigger an alarm if the AC power fails. The iSE monitor will continue to collect data for ten days powered by a standard 9 Volt alkaline battery (included). The data is stored in nonvolatile flash memory and can later be downloaded over the Ethernet.

**LOCAL ALARMS** -- The iSE monitor includes two 1.5 Amp output relays that are controlled by the alarm conditions you select. The relays can trigger flashing lights and a siren for example to alert personnel near the scene.

With the easy Web-based setup page, the two relays can be programmed for any combination of temperature or humidity, and high or low set points, as well as alarm conditions triggered by contact closures. The relays can also be programmed to turn off when conditions return to normal, or programmed to remain latched and require a manual reset.

**VIEW CHARTS AND GRAPHS ON THE WEB** -- The iSE serves Active Web Pages to display real time readings, display charts of temperature and humidity, or log data in standard data formats for use in a spreadsheet or data acquisition program such as Excel or Visual Basic.

The virtual chart viewed on the web page is a JAVA™ Applet that records a chart over the LAN or Internet in real time. With the iSE, there is no need to invest time and money learning a proprietary software program to log or chart the data.

Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month or one year. Temperature and humidity can be charted across the full span (-40 to 124°C, and 0 to 100% RH) or within any narrow range such as (20 to 30°C).

**LINK TO WEB CAM OR IP CAMERA** -- The Web page includes a link to a "Web Cam" or "IP camera" (not included). If you get a message about an alarm condition, you can quickly click on the link to view the actual scene over the Internet.

**FLASH MEMORY** -- The iSE records data on a removable 2-MByte Flash Memory card (included) that can store one full year of readings taken at one-minute intervals (or two months of readings taken at ten second intervals).

Up to four years of temperature + humidity readings can be stored on the optional 8 MByte card. Even if the Ethernet network fails, data will continuously record on the built-in nonvolatile flash memory.

The iSE monitors come complete with a plug-in temperature and humidity probe that mounts on the instrument or separately with the six foot extension cable (included).

The temperature/ humidity sensors are interchangeable and do not require routine calibration. And if a replacement sensor is ever needed, the instrument does not require calibration.

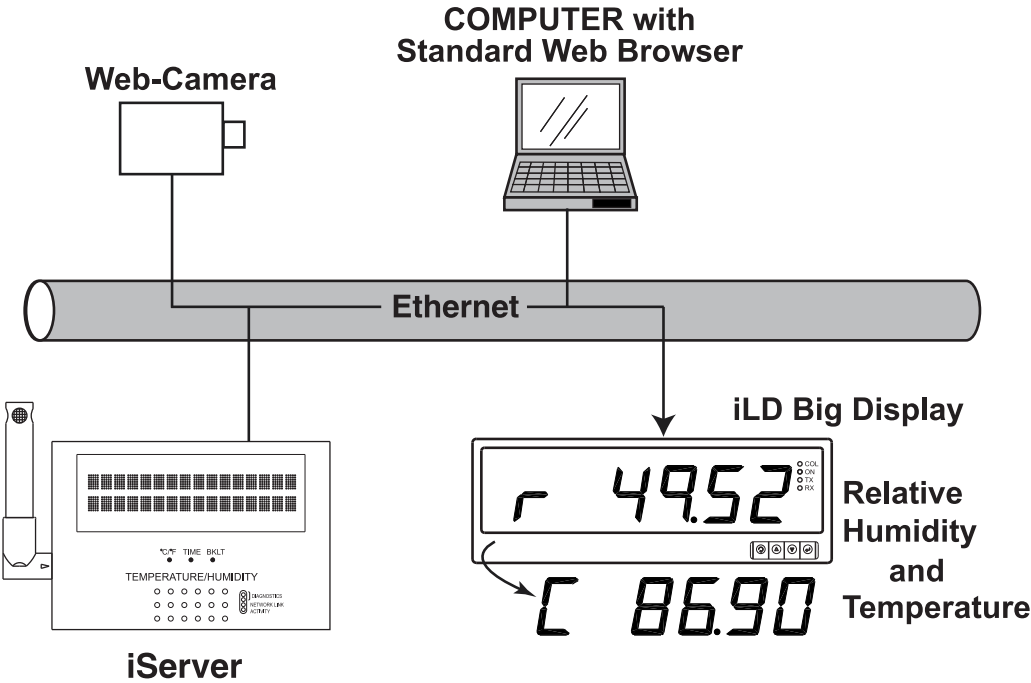
Installation and operation of the iSE monitor requires no special training, tools, or software. The device connects to any Ethernet network with standard cable and is powered by a universal AC adapter which is supplied with the product.

**AWARD-WINNING TECHNOLOGY** -- The iSE is simple to install and use, and features award-winning iServer technology that requires no special software except a Web Browser.

The iSE connects to an Ethernet Network with a standard RJ45 connector and sends data in standard TCP/IP packets. It is easily configured with a simple menu using a Web Browser and can be password protected. From within an Ethernet LAN or over the Internet, the user simply types its IP address or an easy to remember name such as "Cleanroom 5" or "Server Room" in any Web Browser, and the iSE serves a Web Page with the current readings.

**TYPICAL APPLICATIONS** -- The iSE is great for monitoring and recording temperature + humidity in applications such as: clean rooms, computer rooms, HVAC systems, pharmaceutical and food processing and storage, hospitals, laboratories, semiconductor fabs, electronic assembly, warehousing, museums, manufacturing, greenhouses, farm animal shelters, and many more.

The following example illustrates how you can hookup an iSE, a network display (iLD), and a network camera to your network:



**Figure 1.1 iSE and iLD Big Display on the Ethernet Network**



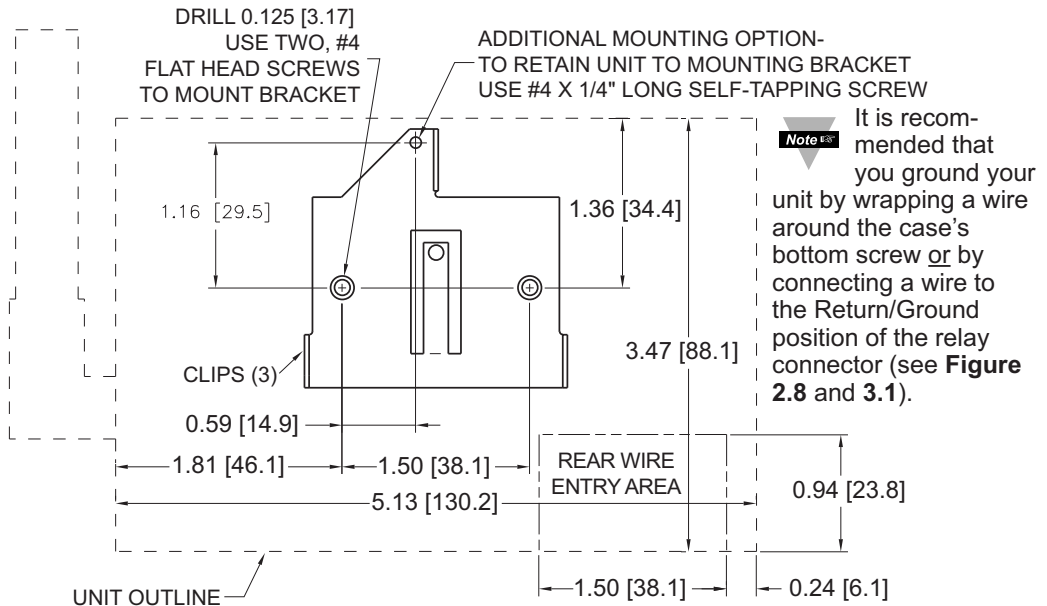
## PART 2 HARDWARE

### 2.1 Wall Mounting

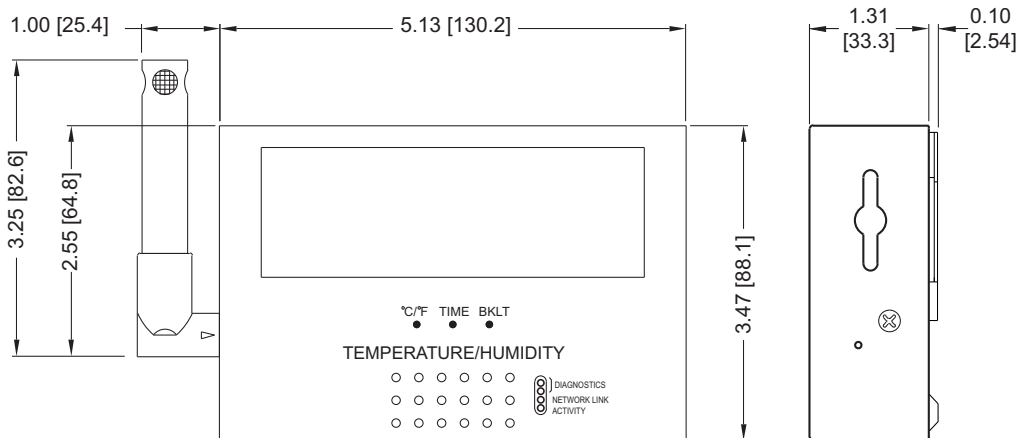
Position unit where required. Mark and drill the two #4 screw holes.

After bracket is mounted on the wall, align back of unit over the three bracket clips, once engaged, slide downward, the unit will snap in place.

For extra security, you may screw the unit onto the bracket. Remove cover (see **Section 2.4**) and screw a #4 x 1/4" long self-tapping screw through the case and bracket.



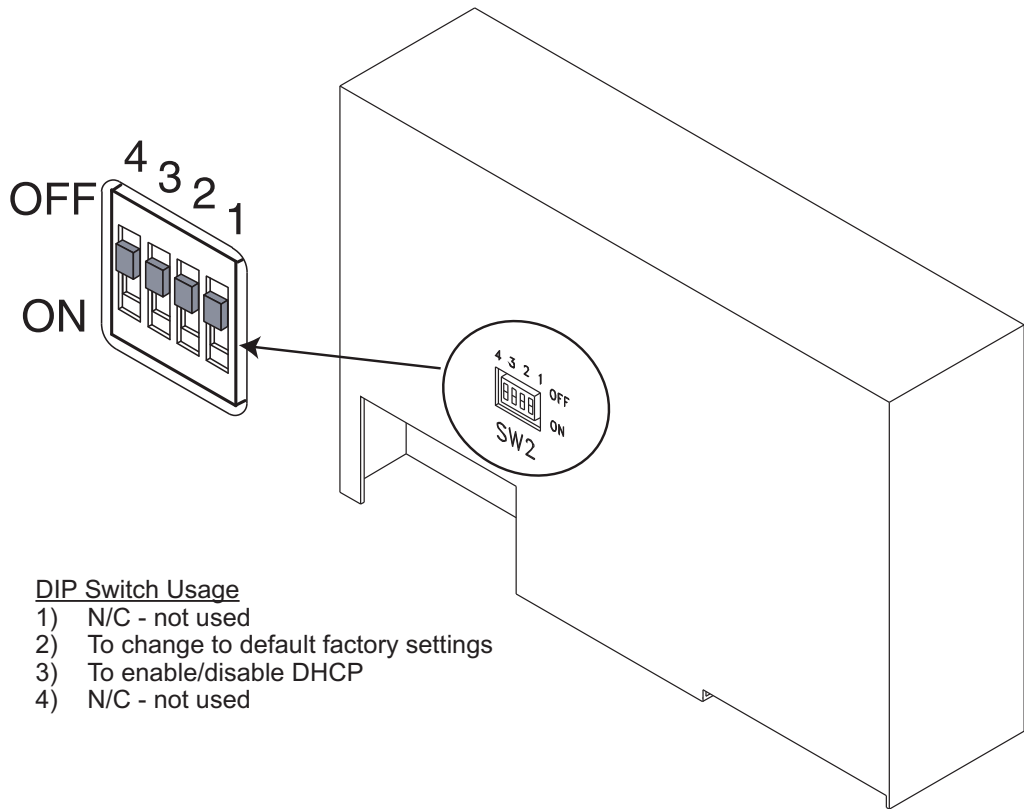
**Figure 2.1 Mounting**



**Figure 2.2 Dimensions**

## 2.2 DIP Switches

The iSE is shipped with all DIP switches in **"OFF"** position.



### DIP Switch Usage

- 1) N/C - not used
- 2) To change to default factory settings
- 3) To enable/disable DHCP
- 4) N/C - not used

**Figure 2.3 DIP Switch Location**

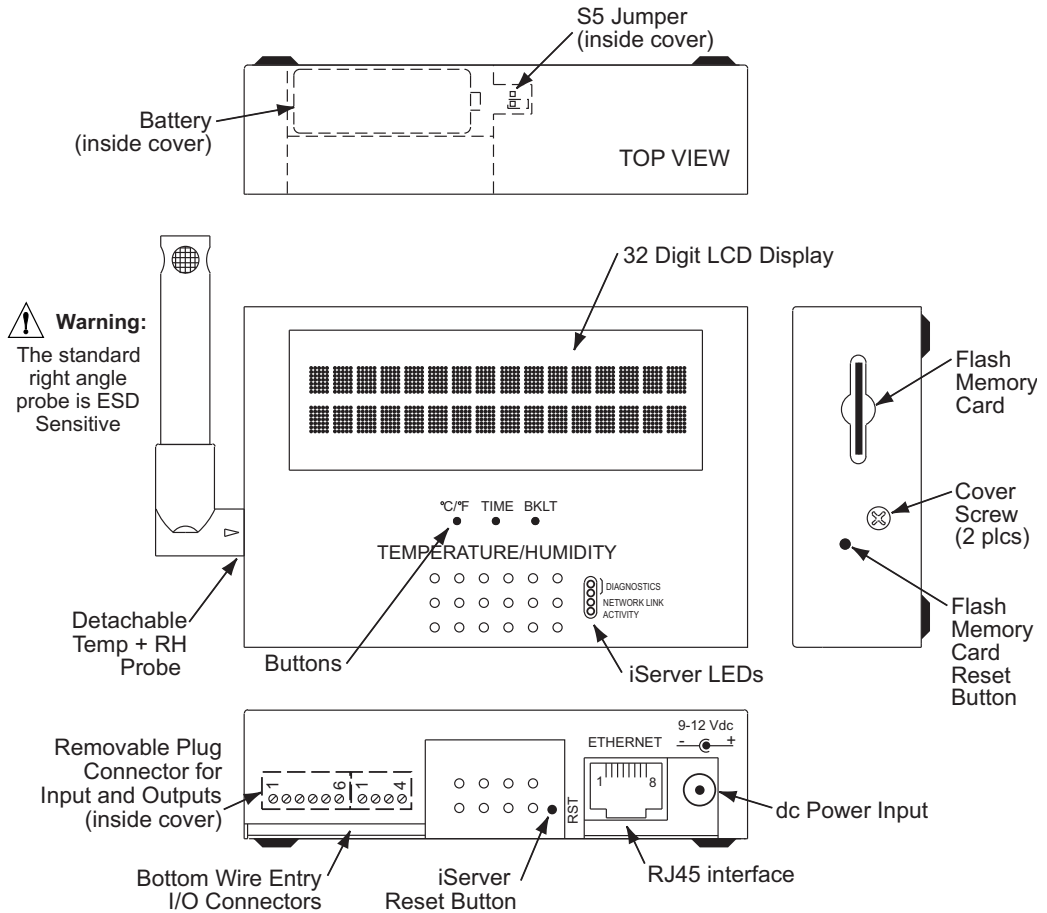
To set the iSE to factory default settings, slide DIP switch **#2** to **ON** position.

**Note**

Power the iSE on and wait about 10 seconds until the iSE fully boots up.

Set the DIP switch **#2** back to OFF position (it does not matter if the iSE is powered ON or OFF, just make sure that the DIP switch is set to OFF, otherwise, every time the unit is power-cycled the factory settings will take over).

## 2.3 Parts of the iSE Unit



**Figure 2.4 Parts of the iSE Unit**

**Table 2.1 Parts of iSE Unit**

|                    |  |
|--------------------|--|
| <b>ETHERNET</b>    | RJ45 interface for 10BASE-T connection.  |
| <b>RESET</b>       | Button: Used for power resetting the iSE.  |
| <b>ACTIVITY</b>    | LED (Red) Blinking: Indicates network activities (receiving or sending packets).   |
| <b>NET LINK</b>    | LED (Green) Solid: Indicates good network link.  |
| <b>DIAGNOSTICS</b> | LED (Yellow) Blinking: Indicates transmitting data from iSE to flash memory card. When DHCP enabled, it remains solid until DHCP IP address is received.<br>LED (Green) Blinking: Indicates receiving data by the iSE from flash memory. |
| <b>°C/°F</b>       | Button: Change display units of measurement from °C to °F  |
| <b>TIME</b>        | Button: Change display from DATE and TIME to RH and TEMP   |
| <b>BKLT</b>        | Button: Display Back Light   |

When using the small push buttons, hold the button until “WAIT” is displayed on the LCD and then release.

## 2.4 Disassembly Instruction

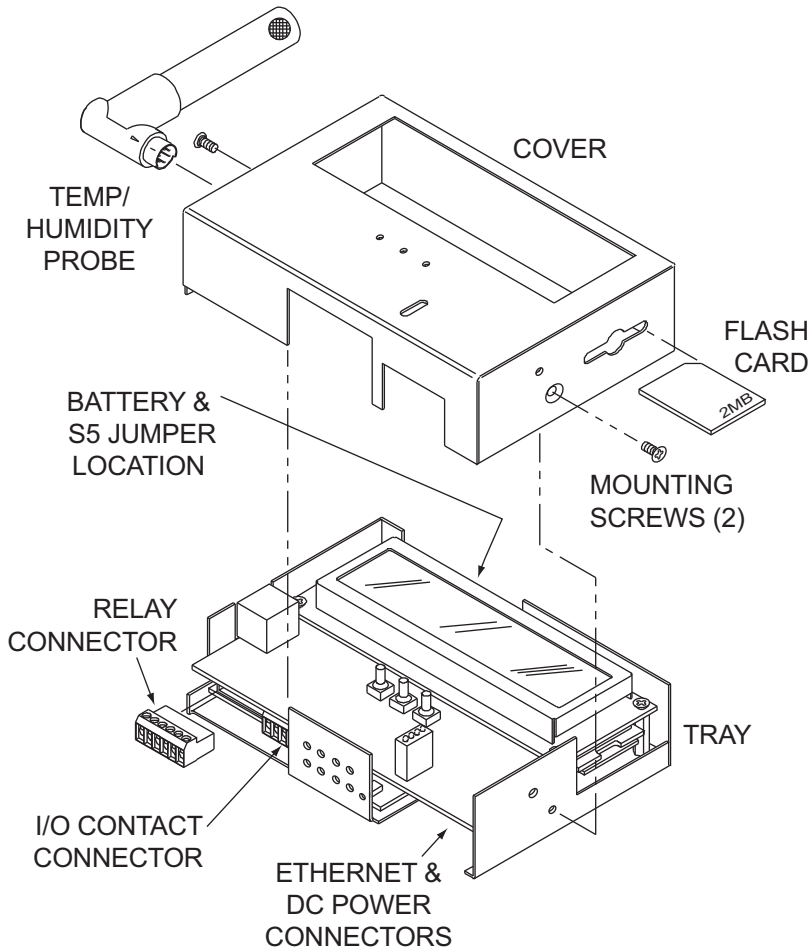
You will need to open the unit for one of the following reasons:

- To wire relay and I/O contact connectors. (Refer to **Section 2.6**).
- To connect or replace the battery. (Refer to **Section 2.7**).
- To change S5 jumper. In the absence of AC power, and if S5 is installed, the LCD Backlight and iSE Board will be on and running on the battery power. (Refer to **Section 2.7**).



Disconnect the power supply before proceeding.

- Make sure the Flash memory Card is fully installed, before removing the cover,
- Remove Probe, then remove cover, by removing 2 screws on each side.

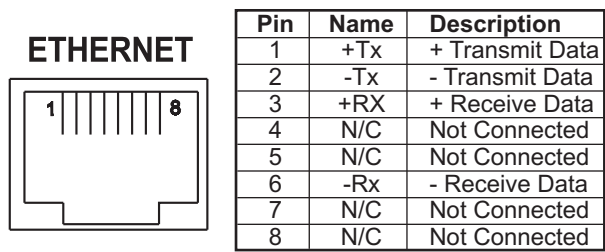


**Figure 2.5 Opening the Unit**

## 2.5 Network Communication Interfaces

### 2.5.1 10Base-T RJ-45 Pinout

The 10BASE-T Ethernet network (RJ45) system is used in the iSE for network connectivity. The 10 Mbps twisted-pair Ethernet system operates over two pairs of wires. One pair is used for receiving data signals and the other pair is used for transmitting data signals. This means that four pins of the eight-pin connector are used.

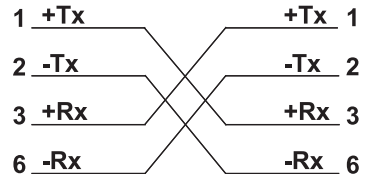


**Figure 2.6 RJ45 Pinout**

### 2.5.2 10Base-T Crossover Wiring

When connecting the iSE directly to the computer's network port, the transmit data pins of the computer should be wired to the receive data pins of the iSE, and vice versa. The 10Base-T crossover cable with pin connection assignments are shown below.

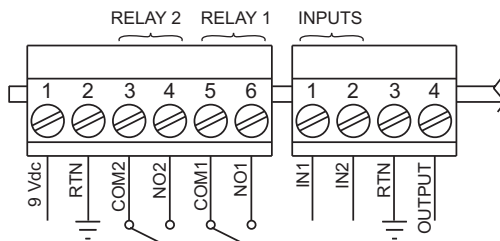
**Note** Use straight through cable for connecting the iSE to an Ethernet hub. The ports on the hub are already crossed.



**Figure 2.7 10Base-T Crossover Cable Wiring**

## 2.6 Relay and I/O Contact Wiring Connections

To access the Relay and I/O Contact Connectors you must remove the cover, refer to **Section 2.4**.



**Note** It is recommended that you ground your unit by connecting a wire to the Ground/Return position of the connector or by wrapping a wire around the case's bottom screw. Refer to **Figure 3.1** for location.

**Figure 2.8 Relay and I/O Contact Connections**

## 2.7 DC Power Input Wiring Connections

A universal ac power adapter with 9 Vdc output is included with your unit. It can be plugged in at the bottom of unit (See **Figure 2.3**).

The unit can also be powered on the Relay Connector Pin 1 and Pin 2 (See **Figure 2.8**). When using these pins to power the iSE, make sure the power adapter is not used.

## 2.8 Running on Battery Power

To access the Battery and S5 jumper you must remove the cover, refer to **Section 2.4**.

When you first connect the battery, without the AC power adapter, the unit will be in “Sleep Mode”, in order to save power, and the LCD will display “Flash Standby” (provided that S5 jumper is not installed). When battery is installed, plug the AC adapter into unit and push the Flash Reset Button (refer to **Figure 2.4**). Unit is now ready to be configured for recording the data. Also, if the AC adapter is unplugged while the unit is recording, the battery will take over and recording will continue.

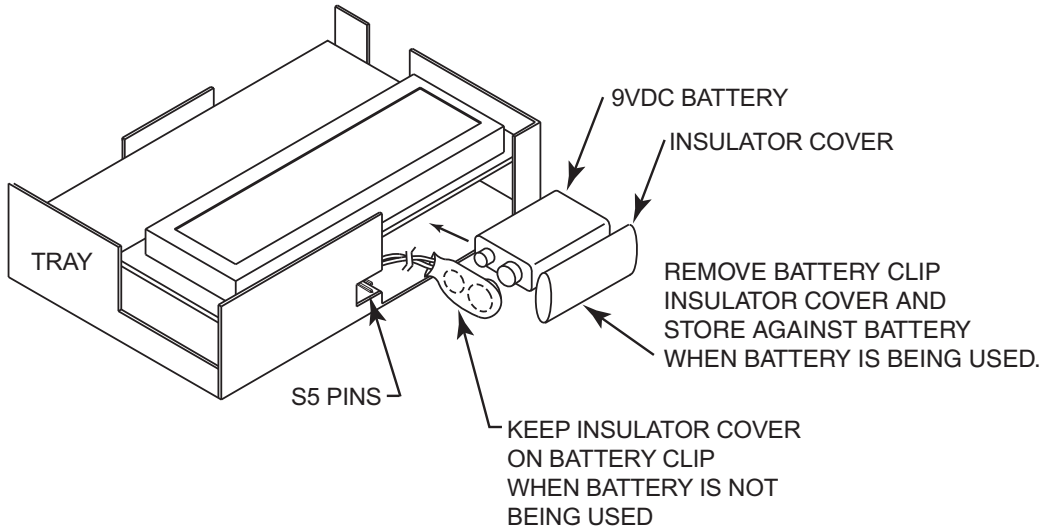
**Battery and S5 jumper installed:** if there is a power outage the iSE board will be fully functional including Ethernet and the LCD backlight “ON”, for approximately 1 hour.

You need to make sure that the LCD/PWR field on the Configuration page of the iSE is set to UPS (see **Section 4.3.5.A**)

**Battery installed and S5 jumper in storage position (Factory Default of S5):** if there is a power outage the LCD Backlight and iSE Ethernet will not run, but the unit will be collecting and storing data for approximately 10 days.

### Note

If you want to move the unit to a different location, remove the AC adapter; the installed battery will keep the recording alive until the AC adapter is plugged back in.



**Figure 2.9 Battery and S5 Jumper Location**

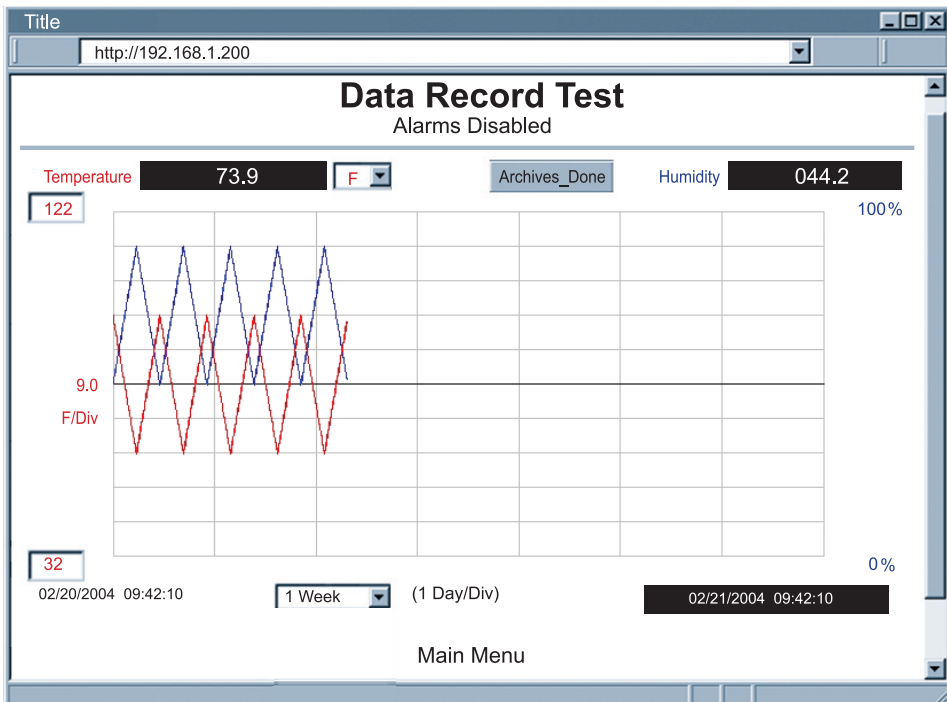
## 2.9 Flash Memory Format

A 2 Meg flash memory card is included with your product. This memory card is already formatted; however, the following procedure describes how to format your memory card.

**Note**

Once the memory card is formatted, all the data that had previously been recorded will be replaced by simulated test data (see **Figure 2.10**).

- 1) Unplug the AC adapter from the unit.
- 2) Hold down the °C/°F button and connect the AC adapter back into the unit. Release the °C/°F button.
- 3) You will see the following message appear on the LCD: **\*°WAIT° \*FLASH\***.
- 4) Wait for about 60 seconds and a new message should appear: **\*OKAY\* \*FLASH\***.
- 5) Press the °C/°F button once and this message will appear: **DATA-RECORD-TEST**.
- 6) Press the TIME button and this message will appear: **DATA RECORD TEST - DATA RECORD TEST**.
- 8) Again, press the °C/°F button, the firmware version will appear, followed by **\*OKAY\***.
- 9) Unplug the AC adapter and plug it back in. The flash memory card is now formatted. To verify whether the formatting was completed correctly, you should be able to see the following graph on the WEB server's "Chart" page.



**Figure 2.10 Chart of Simulated Data**

## PART 3

### NETWORK CONFIGURATION

#### 3.1 Network Protocols

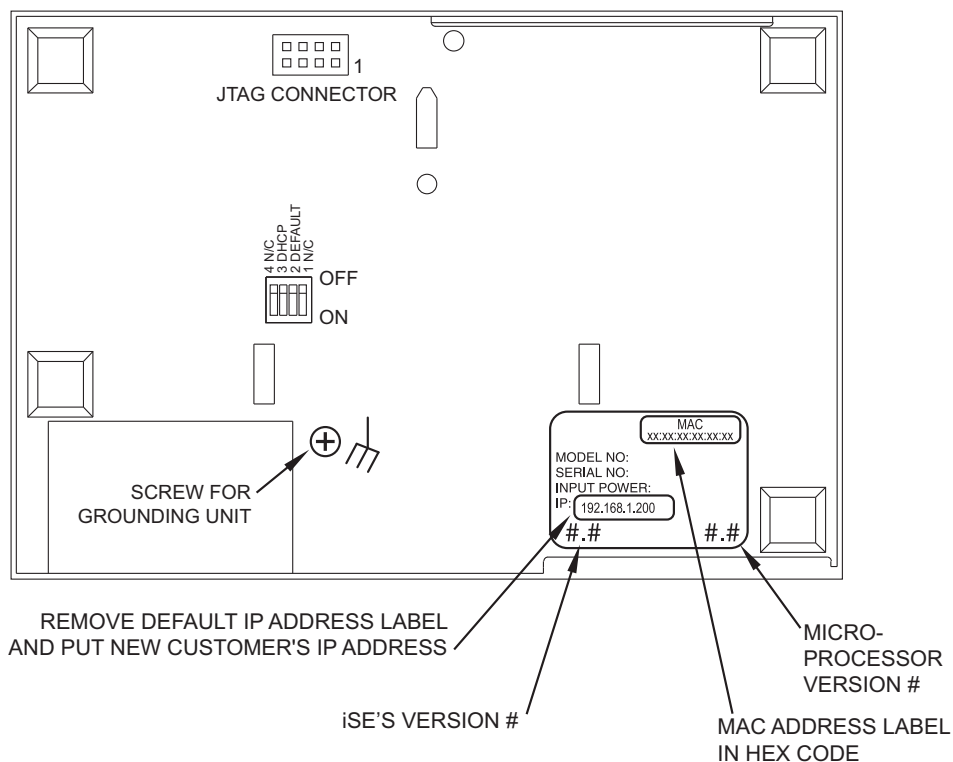
The iSE can be connected to the network using standard TCP/IP protocols. It also supports ARP, HTTP (WEB server), DHCP, DNS and Telnet protocols.

#### 3.2 Ethernet (MAC) Address

MAC (Media Access Control) address is your computer's unique hardware number. When you're connected to the LAN from your computer, a correspondence table relates your IP address to your computer's physical (MAC) address. The MAC address can be found on a label attached to your device and contains 6 bytes (12 characters) of hexadecimal numbers XX:XX:XX:XX:XX:XX hex

For example: 0A:0C:3D:0B:0A:0B

**Note** Remove the small label with the default IP address and there will be room to put your IP address. See **Figure 3.1**



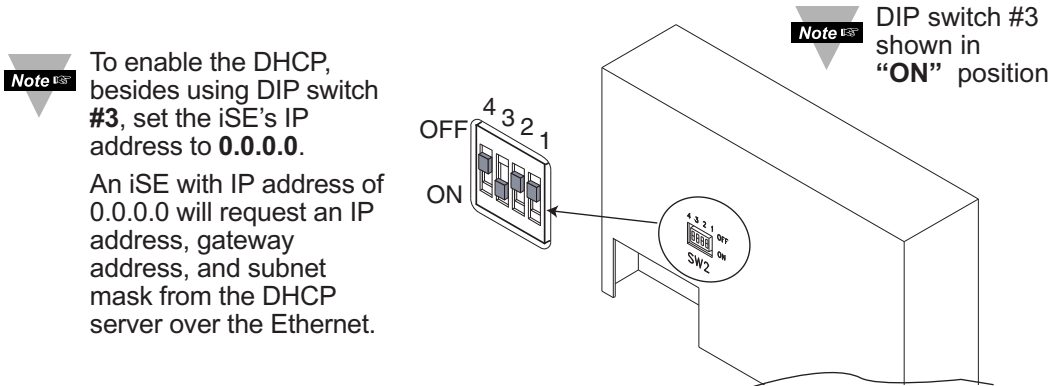
**Figure 3.1 Labeling**



### 3.3 DHCP

DHCP, Dynamic Host Configuration Protocol enables individual computers or devices to extract their IP configurations from a server (DHCP server). If the DHCP is enabled on your iSE, as soon as the iSE is connected to the network, there is an exchange of information between DHCP server and the iSE. During this process the IP address, the Gateway address, and the Subnet Mask will be assigned to the iSE by the DHCP server. Note that the DHCP server must be configured correctly to do such assignment.

If fixed or static IP address is desired, the DHCP must be disabled. The iSE is shipped with DHCP disabled (factory default). The DHCP can be enabled by setting the DIP switch #3 to the “ON” position (refer to **Figure 3.2**).



**Figure 3.2 DIP Switch on the Bottom Side of iSE**

### 3.4 DNS

DNS, Domain Name System enables individual computers and devices to be recognized over a network based on a specific name instead of an IP address. For example, instead of having to use **http://192.168.1.200** (IP address), you would use only **http://eis03ec** or any eight character name stored as Host Name under the Access Control page in the iSE Home Page. The default DNS name for an iSE is “**eis**” followed by the last four digits of the MAC address of that particular iSE.

- Note**
1. It is very important to communicate with the network administrator in order to understand the DHCP and its existing configurations on the host server, before enabling the DHCP on the iSE.
  2. The iSE's are shipped with a default static IP address of **192.168.1.200** and Subnet Mask of **255.255.255.0**.
  3. On Windows servers where DHCP and DNS are separate functions it is very important to configure the DHCP server to communicate with the DNS in order for the iSE's Host Name to correctly respond. If you cannot access the iSE using its Host Name, please contact your network administrator to make sure the DHCP and DNS servers are linked together.

### 3.5 IP Address

Every active device connected to the TCP/IP network must have a unique IP address. This IP address is used to build a connection to the iSE. Every computer using TCP/IP should have a unique 32-bit address. It is divided into two portions, the network ID and the host ID. For instance, every computer on the same network uses the same network ID. At the same time, all of them have a different host ID. For more details about the IP address see **Appendix B**.

### 3.5.1 Default IP Address

The iSE is shipped with a default IP address set to **192.168.1.200** and Subnet Mask of **255.255.255.0**. If you are going to use a Web browser or Telnet program to access the iSE using its default IP address, make sure that the PC from which you're establishing the connection has an IP address that is in the same range as the iSE's IP address (**192.168.1.x**, where **x** can be any number from 1 to 254).

**Note** Your PC's IP address cannot be the same as the iSE's IP address).

You also need to make sure that your PC's Subnet Mask is **255.255.255.0**. This is a good way to access the iSE over the network and make any configuration changes needed. If **192.168.1.200** is already in use on your network, use an Ethernet crossover cable between your computer and the iSE to change the IP address or any other settings within the iSE.

### 3.6 Port Number

All TCP connections are defined by the IP address and a port number. A port number is an internal address that provides an interface between an application running on your computer and the network through the TCP/IP protocol.

There are three default TCP socket port numbers assigned to the iSE:

1. Port (socket) number 1000 when using HTTPget program.
2. Port (socket) number 2000 when trying to access the sensor (probe) connected to the port of the iSE to receive data.
3. Port (socket) number 2002 when trying to access the iSE itself for Power Recycling the iSE remotely. This can be done using Windows standard Telnet application.

Power recycling the iSE can also be done through the iSE's Web Server (see **Section 4.2**).

Telnet stands for Telecommunications Network, is a protocol that provides a way for users (or clients) to connect to computers (or servers) on a network, whether in the next building or across the world.

**Example: C:\>Telnet 192.168.1.200 2002**

You will then get the following screen.



**Figure 3.3 Telnet Login into the iSE**

You can open a Telnet session using other terminal emulation programs like Tera Term Pro (downloadable from the internet), which is a free software for MS-Windows. It supports VT100 emulation, Telnet connection and serial com port connections.

## PART 4 OPERATIONS

This iSE can be used and configured in several ways, depending on user's preference and network setup. It can be configured using a Web browser, like Netscape or Internet Explorer. It can also be configured using the iConnect Configuration Software.

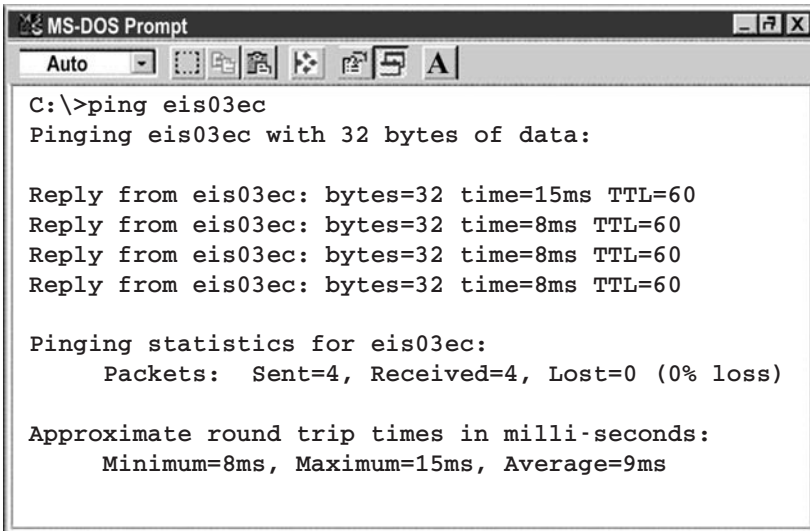
If DHCP and DNS servers are used, the connection is very simple, no need to find the right IP address or watch for network conflicts, these are all done for you by your network DHCP and DNS server. All that is left for you to do, is to enable DHCP on the iSE (see **Section 2.2**) and use a straight network cable to connect the iSE to a hub and power it up.

If DHCP is not the preferred method, you can configure your PC's network connection with an IP address of **192.168.1.x** that is in the same range as the iSE's default IP address (**192.168.1.200**) and connect to the iSE using a cross-over network cable between your PC's network port and the iSE. After you're done with configuring the iSE, you can always set your PC back to its original settings.

On your computer, from the MS-DOS Prompt window type "**ping 192.168.1.200**" and press Enter. If DHCP and DNS servers are used type "**ping eisxxxx**", where **xxxx** are the last four digits of the iSE's MAC address, located on the back of the device. You should get a reply as shown in **Figure 4.1**.

**Note** You can use the iSE host name (eisxxxx) instead of its IP address only if your DHCP server is configured to communicate with your DNS. Please consult with your IT department for details.

### 4.0 Testing the Connection



```
MS-DOS Prompt
Auto
C:\>ping eis03ec
Pinging eis03ec with 32 bytes of data:

Reply from eis03ec: bytes=32 time=15ms TTL=60
Reply from eis03ec: bytes=32 time=8ms TTL=60
Reply from eis03ec: bytes=32 time=8ms TTL=60
Reply from eis03ec: bytes=32 time=8ms TTL=60

Ping statistics for eis03ec:
    Packets:  Sent=4, Received=4, Lost=0 (0% loss)

Approximate round trip times in milli-seconds:
    Minimum=8ms, Maximum=15ms, Average=9ms
```

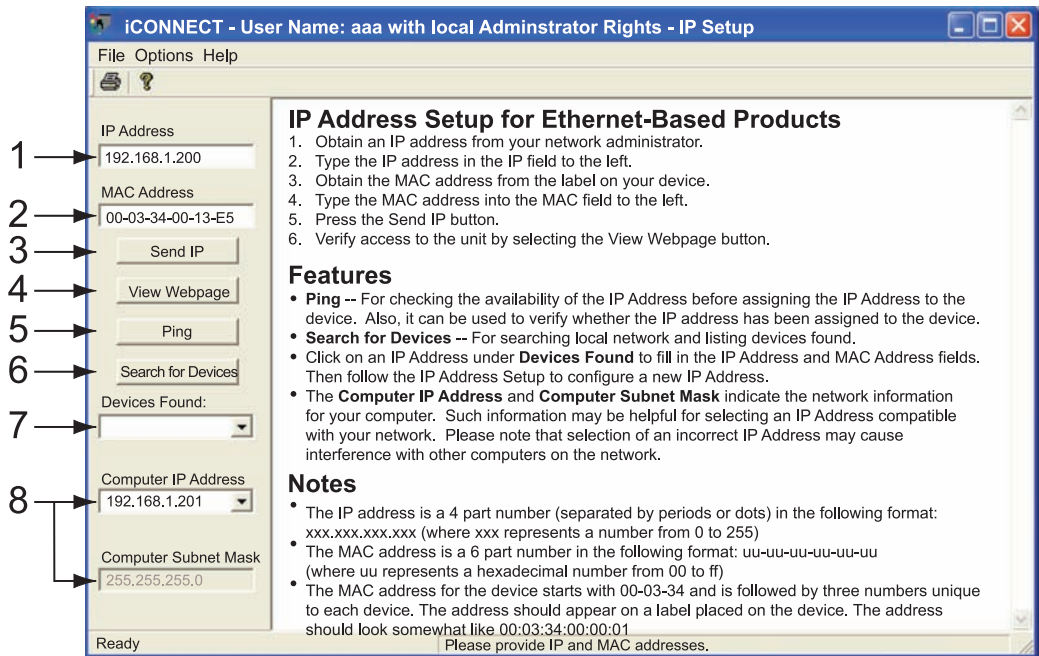
**Figure 4.1 Pinging the iSE from MS-DOS Prompt**

This proves that the connection is proper and you can get into configuration or run mode using the Telnet or Web browser.

## 4.1 iConnect Software

The iSE may also be assigned an IP Address by using the iConnect software.

- a) Download the iConnect software from the website listed in this manual.
- b) Install iConnect software on a networked PC. This software is compatible with Windows 95, 98, NT, 2000, and XP.
- c) Use iConnect to assign an IP address to the iSE and access its web pages for configuration. You can also use any standard web browser to access the iSE's web pages. Consult with your IT department for obtaining an IP address.



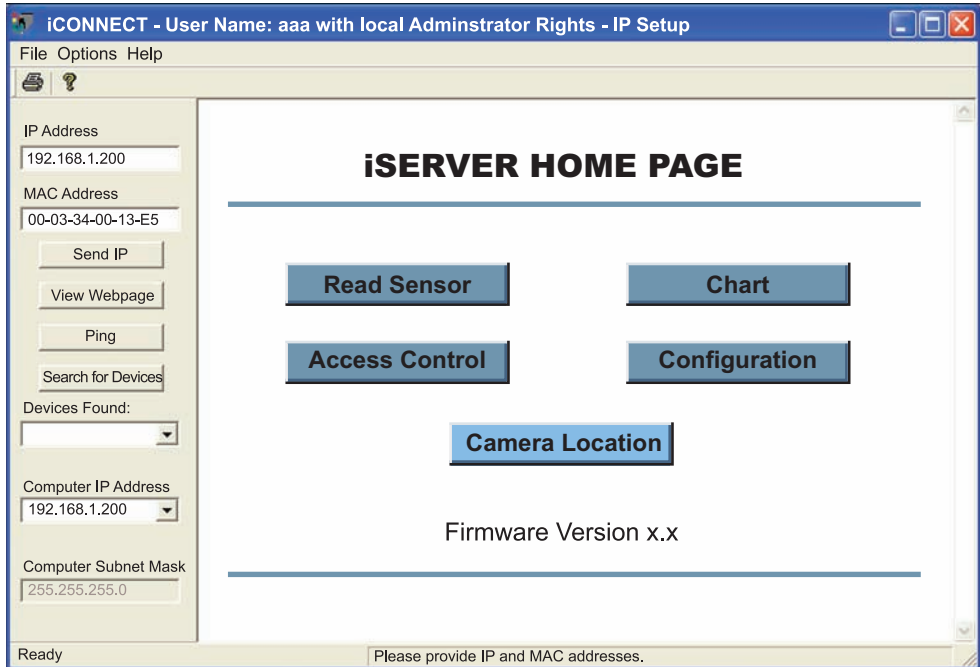
**Figure 4.2 Assigning an IP Address using iConnect**

- 1) Place the IP address in this box.
- 2) Take the MAC address from the label attached to the bottom of the iSE and place it in this box.
- 3) Click here to send the above IP address to the iSE.
- 4) After the IP address is assigned to the iSE, click here to access it's web pages.
- 5) Click here to Ping the iSE whose IP address is shown in the IP address box.
- 6) Click here to find all the iSE's on your network .
- 7) The IP addresses for the iSE's found by the iConnect will be listed here.
- 8) These fields indicate the IP address and the subnet mask of the PC on which the iConnect is running.

## 4.1 iConnect Software (continued)

d) To access the iSE for Configuration:

Click on the “View Webpage” button, you will access the iSE’s home page, refer to **Section 4.3** for details.



**Figure 4.3 Accessing the iSE’s Home Page Menu**


## 4.2 Setting a New IP Address over the Network

Besides using the iConnect software, you may use the iSE's default IP address to access it and assign a new IP address to it.

The iSE is shipped with a default IP address of **192.168.1.200** and Subnet Mask of **255.255.255.0**. You can configure your PC's Network connection with an IP address that is in the same range as the iSE's IP address (**192.168.1.x**) and connect to the iSE using a crossover network cable between your PC and the iSE.

With this completed, you can go to the DOS-Prompt and ping **192.168.1.200**. If you receive responses back (**Figure 4.1**), you can go to a Web browser and type in **http://192.168.1.200** and it will take you to the iSE's main web page.

Select **Access Control**, button, you'll be asked for the password. The default LOGIN password is "**12345678**" and the ADMINISTRATOR password is "**00000000**", then you should be on the Access Control page where you can simply type in the desired Static IP address, and click Save.



ACCESS CONTROL

Address

# ACCESS CONTROL

Login Password:

Admin Password:

Secure Reading & Chart:

Host Name:

MAC Address:

IP Address:

Gateway Address:

Subnet Mask:

Camera IP:

Camera Label:

[Main Menu](#)

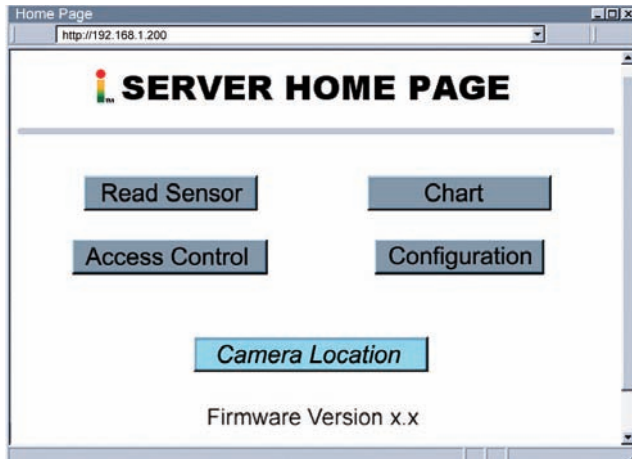
**Figure 4.4 Access Control**

For the IP address to take effect, the iSE needs to be turned OFF/ON. Clicking on the "Save" button will save the changes and turn the iSE (only the Ethernet board of the unit) OFF and ON. Pressing the physical button marked "RESET" on the iSE (right next to the RJ45 Ethernet Port) will also power reset the Ethernet board.

You can now connect the iSE to an Ethernet hub using a straight through cable, power it up, and follow the ping routine mentioned in the previous section.

### 4.3 Setup and Operation Using the iSE Web Page

- Start your web browser.
- From the browser you type <http://eisxxxx> using the last four-digits from the MAC address label located on the device if DHCP and DNS are used. If a static IP address is used, then simply type <http://x.x.x.x>, where **x.x.x.x** is the iSE's IP address.
- The Home Page, shown in **Figure 4.5**, will be displayed.



**Figure 4.5 iSE Home Page**



In order to access certain menu items of the Home Page, users may be prompted for a password, as shown in **Figure 4.6**.



**Figure 4.6 LOGIN and ADMINISTRATOR Passwords**

There are 2 different access levels:

1. ADMINISTRATOR Password (administrator) allows certain groups and individual users to access and modify "entire" iSE pages items without any restrictions.

The default password is **00000000**. This password can be up to 16 alphanumeric case-sensitive characters.

2. LOGIN Password (operator) allows users to access and modify all of the iSE's parameters, except "Access Control" which requires an Administrator password. The "Read Sensor" does not require a password.

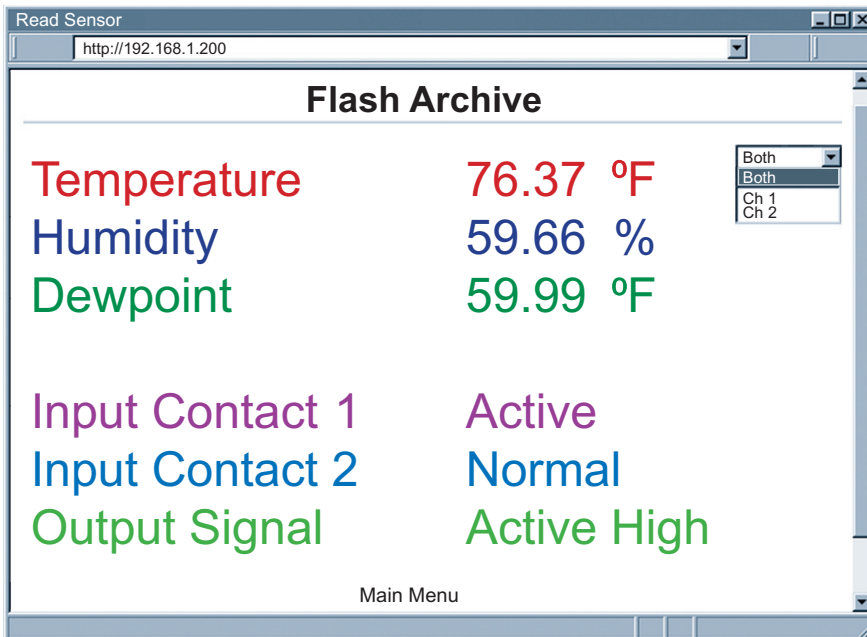
The default password is **12345678**. This password can be up to 16 alphanumeric case-sensitive characters.

### 4.3.1 Read Sensor

- Click on **Read Sensor**. In a few seconds the following page (**Figure 4.7**) will appear with all default values of 100.00. Then the actual readings of Temperature, Humidity and Dewpoint will display.
- This page automatically updates the Temperature, Humidity, and Dew Point values.
- Click on Main Menu to return to Home Page.



While accessing the Read Sensor page, If a blank screen appears without any “java application running” or image of a “Java logo”, please verify you have the latest Java Runtime Environment installed and configured according to the following instructions. If you do not have Java Runtime Environment, you may download it from our website or contact the Customer Service Department nearest you.



**Figure 4.7 Read Sensor**

#### 4.3.1.1 Java Runtime Environment 1.4 Setup instructions

1. Go to your computer's Control Panel. Open the Java Plug-in
2. Select the "Cache" Tab  
Un-check the "Enable Caching" box
3. Select the "Proxy" Tab. Follow these **Browser Proxy Selection** instructions below. (Generally, un-check the box if accessing an iSE on your local network and check the box for access from your internal network to the internet.)
4. Refresh or restart the webpage.



#### 4.3.1.2 Java Runtime Environment 1.5 (5.0) Setup instructions

1. Go to your computer's Control Panel. Open the Java Plug-in
2. Click on "Settings" & "View Applets" in the "General" tab.
3. Select the "Settings" button on the General Tab  
Un-check the "Enable Caching" box. Then close dialog box to show the General Tab again
4. Select the "Network Settings" button on the General Tab.  
Proceed to the Browser tab. Follow the **Browser Proxy Selection** instructions below. You should either select the "Use Browser Settings" option or the "Direct Connection" option depending on the network connections between your computer and the iSE product. (Generally, select "Direct Connection" if accessing an iSE on your local network and select "Use Browser Settings" option for access from your internal network to the internet.)
5. Refresh or restart the webpage.

#### 4.3.1.3 Browser Proxy Selection

##### Accessing iSE units within your internal network

- Usually when the computer and iSE are on an internal network, you will not use Proxy server access.
- You should un-check the "Use Browser Settings" option on the "Proxy" tab.

##### Accessing iSE units using the internet

- Often the web browser will use Proxy server access to the internet. In such cases, the default Java runtime settings on the "Proxy" tab should suffice. The default setting is the "Use Browser Settings" option.
- If the default proxy setting doesn't work, then you may have a situation where the proxy settings of the web browser are incorrect.

##### Diagnostics:

If the web page of the iSE appears, then the HTTP Proxy is working fine.

If the data isn't updated on the iSE upon selecting the Read Sensor web page, there may be a problem with access through a winsock proxy server. In such cases your network administrator will need to provide the winsock proxy server and port #s. (If the administrator requires knowledge of the port # required on the iSE, the value is 2003).

These values should be entered into the Socks line on the "Proxy" tab (of the Java Plugin control panel) or into the "connections" tab on the View, Internet Options dialog and make sure that the Proxy tab shows that the "Use Browser Settings" option is not selected (i.e. when you specify proxy connections in the Java Plugin control panel).

##### Accessing iSE units over Peer-to-Peer network

A simple peer-to-peer network is setup by disconnecting from the main network (as users will often do when trying to do initial setup of the iSE) and then connecting the iSE to another computer using a ethernet hub, an ethernet switch, or a Cross-over cable connection.

Often when using a peer-to-peer network, the Java plugin and the web browser (such as Internet Explorer) have internet connections configured to connect through proxy servers. In such case, you will need to simply assign the final IP address on this peer to peer network and then view the iSE charts after connecting the iSE into the regular network. Otherwise you can disable the Java plug-in's "Use Browser Settings" temporarily and then reconfigure the Java plug-in settings for regular network access after testing the iSE chart access on your peer-to-peer network.

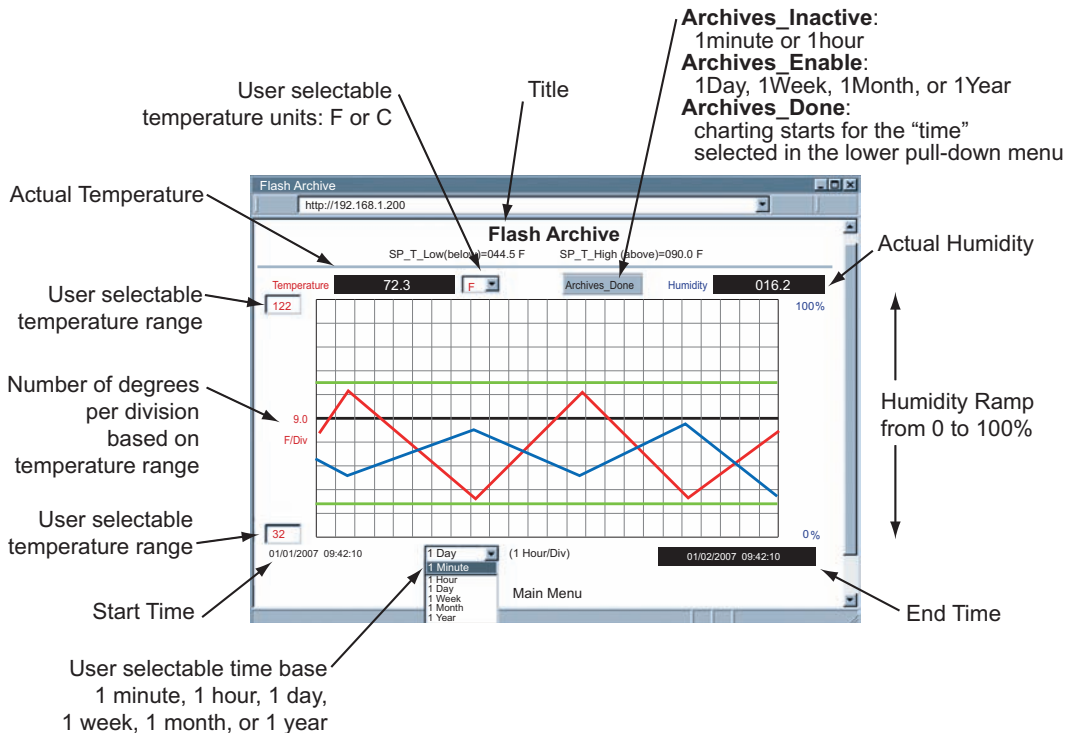
The "Use Browser Settings" should not be selected. And the HTTP and Socks proxy entries should be blank. Also, setup the internet browser so that proxy servers are disabled.

### 4.3.2 Adjustable Chart

- Click on **Chart**, the following page (**Figure 4.8**) should appear. The Java™ Applet graph displays Temperature and Humidity values which can be charted across the full span (-40 to 124°C, and 0 to 100% RH) or within any narrow range (such as 20 to 30°C). The time-base can display one minute, one hour, one day, one week, one month or one year.

**Note**

If a blank screen appears without any “java application running” or image of a “Java logo”, please verify you have the latest Java Runtime Environment installed and configured according to the instructions (refer to **Section 4.3.1.1**). If you do not have Java Runtime Environment, you may download it from our website or contact the Customer Service Department nearest you.



**Figure 4.8 Adjustable Chart**

**Note**

To avoid any miscommunications when downloading the stored data from the “Chart” page, it is strongly recommended to let the recording run for a minimum of 3 minutes if the time interval is 10 seconds (from “Configuration” page), and 15 minutes if the time interval is 1 minute.

### 4.3.3 Retrieving Data from Flash

To retrieve and graph the data that is stored in the Flash Memory, you have two options:

#### OPTION 1:

You can use the iSE's WEB interface to chart the data stored in the flash memory.

1. Click on the "Chart" button located on the Server Home Page, see **Figure 4.5**.
2. Select a time interval of Day, Week, Month or Year (Minute and Hour are not selectable for data retrieval).
3. As soon as the time interval is selected the "Archives\_Inactive" button will change to "Archives\_Enable".
4. Click on "Archives\_Enable" button to graph the stored data.

#### OPTION 2:

Download the iSE Download Utility **iFlash** software from the website listed in this manual and install it on your networked PC. This software is compatible with Windows 95, 98, NT, 2000, and XP operating systems. After the installation is completed, you can run the program to obtain the screen shown in **Figure 4.9**.

#### Note

To avoid any miscommunications when downloading the stored data using the iFlash program, it is strongly recommended to let the recording run for a minimum of 3 minutes if the time interval is 10 seconds (from "Configuration" page), and 15 minutes if the time interval is 1 minute.

**IP Address:** Place the IP address of the iSE from which you want to download data, in this window.

**Output Filename:** Assign the path and the file name in which the downloaded data will be placed, in this window.

**Model:** Select the iSE-TH option.

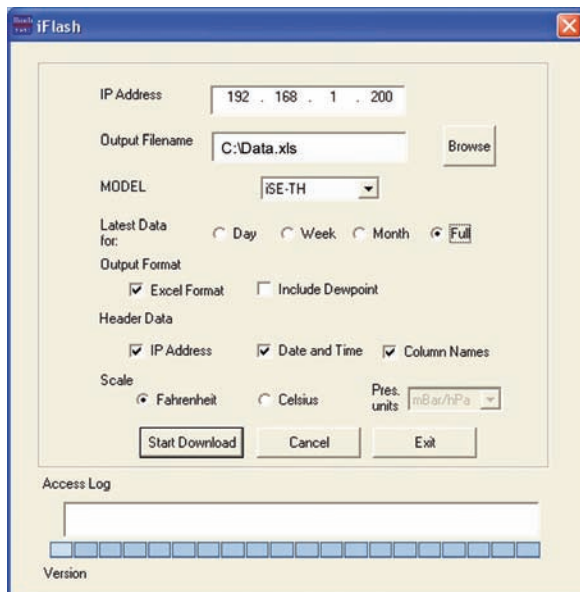
**Latest Data for:** This option allows you to download data for the last day, week, or month. By selecting "Full" you can download the whole data.

**Output Format:** This option gives the data in either Excel format (check the box) or Text format (uncheck the box). By checking the box for "Include Dewpoint" you retrieve the stored Dewpoint values. By default, the Temperature and Humidity values are always provided.

**Header Data:** You can choose what to appear for the header of the data file either in Excel or Text format.

**Scale:** This will give you the temperature in either Fahrenheit or Celsius.

**Access Log:** The completion of data download will be reported in this window. You can start downloading by clicking on the "Start Download" button.



**Figure 4.9 iFlash Download Utility**

### 4.3.4 Access Control

This section describes the "Access Control" page of the iSE's Web interface. This page allows the users to set up the network and security parameters of the iSE.

At the initial entrance to the "Access Control" page you will be prompted for the LOGIN Password (see **Figure 4.6**) prior to an ADMINISTRATOR Password.

**ACCESS CONTROL**

Address <http://192.168.1.200>

**ACCESS CONTROL**

Login Password:

Admin Password:

Secure Reading & Chart:

Host Name:

MAC Address:

IP Address:

Gateway Address:

Subnet Mask:

Camera IP:

Camera Label:

**Power is Recycling. Reconnect to the iServer.**

[Main Menu](#)

**Note** The DHCP can be enabled by setting the dip switch # 3 to **ON** position.

**Note** Changes made in the iSE's Access Control page can be saved permanently by pressing the Save button.

If you change a field and press Save, this message will appear

**Figure 4.10 Access Control**

**Login Password:** This allows users to access and modify all of the iSE Home Page menu items, except "Access Control", which requires an Administrator password. The default Login password is **12345678**. This password can be up to 16 alpha-numeric case-sensitive characters. If there is no Login Password assigned (blank box) the iSE will not require a password to access and modify iSE Home page menu items.

**Admin (administrator) Password:** This allows users to access and modify the "Access Control" page. The default password is **00000000**. This password can be up to 16 alpha-numeric case-sensitive characters. If there is no Administrator Password assigned (blank box) the iSE will not require password to access and modify "Access Control" page.

**Secured Reading & Chart:** If checked, the LOGIN password is required to open "Read Sensor" and "Chart" Java applets.

**Host Name:** Refer to **Section 3.4**, DNS.

**MAC Address:** This is also called Hardware address or Ethernet address, which is assigned to the iSE at production. The MAC (Media Access Control) address is the iSE's unique hardware number and is not changeable.

**IP Address:** The IP (Internet Protocol) address is a 32-bit number that identifies each sender or receiver of information that is sent in packets across the Ethernet or the Internet. The iSE's default IP address is **192.168.1.200**. The iSE's IP address should be changed to fit user's networking environment. Consult with your IT department for obtaining an IP address.

#### 4.3.4 Access Control (continued)

**Gateway Address:** A gateway is a network point that acts as an entrance to another network. A gateway is often associated with a router, which knows where to direct a given packet of data that arrives at the gateway. If the iSE is sending packets to another network node that is not on the same network on which the iSE is connected, a gateway address needs to be given to the iSE. The gateway address should be the IP address of the router connected to the same LAN to which the iSE is connected. The iSE's default gateway address is **0.0.0.0**. Consult with your IT department for obtaining a gateway address.

**Subnet Mask:** It is a 32-bit number that is used to determine which part of the IP address is the network portion and which part is the host portion. The iSE's default subnet mask is **255.255.255.0**. Consult with your IT department for obtaining a subnet mask.

**Camera IP:** If there is a networked camera on the LAN, it can be accessed from the iSE's Home Page by adding the Camera's IP address in this field.

**Camera Label:** This is the text field to name the camera button on the iSE Home Page, the default is "Camera Location".

#### 4.3.5 Configuration

Setting up the Flash Memory Card can be done in the Configuration page.

From the Home Page Menu click on Configuration to get to the page.

Below are the definitions of terms used in the Configuration page, refer to **Figure 4.11** for each described Section (A through K).

##### A) Configuration/Device Setup

Clicking on the No. **1**, **2**, **3**, **4** or **5** allows you to modify the Sensor Parameters (see **Section 4.3.6** for more details).

**Title:** Editable field with up to 16 characters long. The given name will display as a title on the "Chart" and "Read Sensor" pages either for the real-time data or the stored data.

**Degree Unit:** The unit of temperature either in degree *Fahrenheit* or degree *Centigrade*.

**LCD/PWR:** The selections are "ON", "OFF", and "UPS".

Selecting "OFF" will cause the LCD to turn off during a power outage, provided the battery is connected. The current consumption is about 1.5 mA or 3 mA depending on "OFF" or "ON" selection respectively.

If recording is "ON", depending on the recording interval, the LCD will be updated every 10 seconds or 1 minute. Therefore, when the LCD is set to "ON", it could take some time before the LCD is turned on. If recording is not "ON", the LCD will be updated every 10 seconds.

Selecting "UPS" puts the iSE into full operational mode when it's running on the battery (S5 jumper needs to be installed, see **Section 2.4** and **2.7**).

This means that in case of power outage, sensing, recording, LCD display, and network communication capabilities of the iSE will all operate on the battery.

Due to heavy power consumption the battery will not last more than an hour.

##### B) Real Time Clock

**Clock Date and Time:** The formats are *mm/dd/yyyy* and *hh:mm:ss*. Time is military time / 24 hour based. The exact formats are required otherwise an *Entries Error* message will appear in **Section C**.

CONFIGURATION

Address: http://192.168.1.50

## CONFIGURATION

| No. | Sensor Name     | Reading Command | Remote End Char | Display Units | Remote Format | Offset |
|-----|-----------------|-----------------|-----------------|---------------|---------------|--------|
| 1   | Temperature     | SRTF            | 0D              | °F            | T000.0        | 000.0  |
| 2   | Humidity        | SRH             | 0D              | %             | H000.0        | 000.0  |
| 3   | Dewpoint        | SRDF            | 0D              | °F            | D000.0        | 000.0  |
| 4   | Input Contact 1 | SRT2            | 0D              |               |               |        |
| 5   | Input Contact 2 | SRH2            | 0D              |               |               |        |

Click on Device No. on left to modify Sensor Parameters.

Title:  Degree Unit:  LCD/PWR:

---

### Real Time Clock

Clock Date:  mm/dd/yyyy Time:  hh:mm:ss

---

### 2-MegaBytes Flash Card 79 Kbytes Used Space

---

### AC Power On. Check Battery

---

### Alarm Setup

Temperature:  Humidity:

Temp. Status:  Humidity Status:

SP\_T\_Low:  nnn.n SP\_H\_Low:  nnn.n

SP\_T\_High:  nnn.n SP\_H\_High:  nnn.n

---

### Input Contact Closure

Contact 1:  Contact 2:  Active Contact Output:

Output Type:

---

### Terminal Server

TCP/UDP:  Server Type:  Forward CR:  Number of Connections:  Port:

Time Stamp: ☐

---

### Remote Access (Tunneling)

Remote IP Address:  Remote Port:  Remote Access:

[Main Menu](#)

**Figure 4.11 Configuration (Recording not Active)**

### 4.3.5 Configuration (continued)

#### C) Flash Card Size

Reports the Flash Card size and if it is already recorded, how many locations are filled.

*0-Megabytes:* Flash Card is not installed or is a bad Flash Card

*2-Megabytes, 4-Megabytes, 8-Megabytes:* available sizes of Flash Cards.

#### D) Flash Card/Power Messages

Describes the status of the Flash Card and power.

*Flash Card Module Malfunctional*

*Flash Card Recording Stopped*

*Flash Card Recording Complete*

*Flash Card Module Not Initialized*

*Recording Initialized*

*Low Battery*

*Flash Card Standby*

*Flash Card Pre-Recorded*

*Flash Recording On*

*Flash Card Corrupt Initialization*

*Entries Error*

*Archive Busy*

If the battery is not connected or the voltage is low, the statement “*Check Battery*” will display. You may also see a message “*Archive Busy*” if another client is busy retrieving archive data. Clicking the “Update” button will clear “*Archive Busy*”.

#### E) Alarm Setup

There are two alarms which can be assigned to temperature and humidity (one alarm to each variable). Selection of Temperature (T) or Humidity (H) and Above Setpoint (High) or Below Setpoint (Low).

**Temperature** and **Humidity:** *Disable, Low, High, High/Low*

**Disable:** Alarm is disabled (no alarm function)

**Low:** Alarm is enabled only with Low setpoint

**High:** Alarm is enabled only with High setpoint

**High/Low:** Alarm is enabled only with High and Low setpoints

**Example:** If High/Low is selected, the temperature will be monitored against these two High and Low values. If temperature goes above High value (082.5), Relay 1 will be energized, and if temperature goes below Low value (032.5) Relay 1 will be energized.

**Temp Status:** *Unlatch, Latch, Clear Latch, Chart SP*

**Humidity Status:** *Unlatch, Latch, Clear Latch, Chart SP*

**Unlatch:** The relay in the iSE will be turned on (closed) when the temperature and/or humidity values fall outside of Setpoint range. When the temperature and/or humidity values are back within the range, the relay will be turned off (opened).

**Latch:** The relay in the iSE will be turned on (closed) when the temperature and/or humidity values fall outside of Setpoint range and will remain on until the user turns it off.

**Clear Latch:** This option will clear the latch, meaning the activated alarm will be disabled.

**Chart SP:** Selecting this option will add the setpoints to the “Chart”.

**SP\_T\_Low, SP\_T\_High** and **SP\_H\_Low, SP\_H\_High:** Editable box for Setpoint values. The format is *nnn.n*, it must be followed exactly otherwise the modification will not take place for any modified item in the Alarm Setup.



All the Alarm Settings will be lost if the unit is power cycled.

In order to keep the Alarm Settings permanently you will need to Start the Recording. You can then Stop the Recording, if data recording is not needed. This will ensure the Alarm Settings will be saved on the Flash Memory Card.



### 4.3.5 Configuration (continued)

#### F) Input Contact Closure

**Contact 1:** *Disable, Normally Open, Normally Close*

**Contact 2:** *Disable, Normally Open, Normally Close*

**Disabled:** Contact is dysfunctional.

**Normally Open:** Contact is open. If the contact is closed, there will be an Output High or Low, depending on which output is selected. Read Sensor page will display: *Normal*.

**Normally Close:** Contact is closed. If the contact is open, there will be an Output High or Low, depending on which output is selected. Read Sensor page will display: *Active*.

**Active Contact Output:** *Active High, Active Low*. The Output can be High or Low when the status on the input contact is changed.

**Output Type:** *Unlatch, Latch, Clear Latch*.

#### G) Terminal Server

**TCP/UDP\*:** The iSE supports *TCP* and *UDP* protocols (default is *TCP*).

If *UDP* is selected, it can be configured either for Broadcast *UDP* or Directed *UDP*.

In case of Broadcast *UDP*, the iSE will transmit the data to every node on the network. This can be accomplished if the Remote IP Address is set to 255.255.255.255. The Broadcast *UDP* is a practical solution when one iSE needs to communicate with multiple nodes over the network.

In the case of directed *UDP*, the iSE will transmit the data to a specific node on the network. This can be accomplished if the Remote IP Address is set to the IP address of that specific node.

**Server Type:** *Continuous* mode sends the temperature and humidity to the Ethernet, every two seconds. It is mainly used to send readings to a remote display.

*Command* mode (default) needs a command to query the iSE to send the response back to querying device.

**Forward CR:** Forward CR can be *enabled* and *disabled*.

If *enabled* the iSE will forward a <CR> along with the data to a network host.

**Number of Connections:** The range is from 0 to 5. If 0 is selected, the Terminal Server feature is disabled. This means that no network connection can be made to the sensor connected to the iSE.

If 1 is selected, only one network connection can be made to the iSE's.

Any number more than 1 would allow that number of network hosts to read from the iSE simultaneously (default is 5).

**Port:** Port 2000 is the default TCP port for the iSE's port to which the sensors are connected.

Ports 1000 (used for HTTPget, refer to **Section 4.5**), 2002, 2003, and 2004 are reserved for internal use.



Terminal Server usually describes a device that exchanges data between Ethernet/TCP/IP networks and RS-232/RS-485 systems.

With this iSE, the data is obtained digitally from the sensor (irrelevant to RS-232 or RS-485 interface) and can be accessed from anywhere on the network.

A computer program, such as Mail Notifier, OPC Server, iLog, iFlash or HTTPget can send TCP requests and obtain readings using the Terminal Server feature.



### 4.3.5 Configuration (continued)

#### G) Terminal Server (continued)

**Time Stamp:** If checked, the Humidity/Temperature/Dewpoint values will be stamped with time and date using Port 1000 (HTTPget program must be used, see **Section 4.5.1**).

#### H) Remote Access

**Remote IP Address:** iSE can establish a connection to a remote device (e.g. an iLD Remote Display with an Ethernet iServer embedded board) with this IP.

**Remote Port:** (default 2000) the remote port number for the connection. Ports 1000 (used for HTTPget, refer to **Section 4.5**), 2002, 2003, and 2004 are reserved for internal use.

**Remote Access:**\*\* Remote Access can be enabled and disabled. If enabled, the iSE can send its data to a remote node on the same network (the “Remote IP address” and “Remote Port” must be entered).



\*TCP/UDP: when UDP mode is selected, Remote Access should be disabled and Remote IP and Port are the UDP remote listening IP and Port. If the Remote IP is set to 255.255.255.255, the UDP packet becomes a broadcasting packet which will allow any device listening to the Remote port to receive the packet.

\*\*If Remote Access is enabled, Terminal Server is automatically disabled.

#### I) Update

This button will save and update all changes made on the Configuration page. Clicking on the “Update” button will also refresh the Configuration page and will give you the latest Clock Time.

#### J) Flash Recording

Click on the Flash Recording button, shown in **Figure 4.11** to configure the Flash Recording Settings.

Once the button is clicked the Configuration page will look slightly different, it will have new fields and a Warning message will appear, see **Figure 4.12** .



Once a new Recording Starts, any existing data on the Flash Memory Card will be entirely erased.

You may want to download the existing data using iFlash software (see **Section 4.3.3**) before starting the recording.

### 4.3.5 Configuration (continued)

I

Update

### Flash Recording Settings

Type:  Interval:

Clock Date:  mm/dd/yyyy Time:  hh:mm:ss

Start Date:  mm/dd/yyyy Time:  hh:mm:ss

End Date:  mm/dd/yyyy Time:  hh:mm:ss

WARNING! New Recording Will Erase Existing Data. Download Data or Replace Flash.  
To Continue, Complete Recording Settings and Click OK. To Cancel, Click Update.

OK

Read Settings Hard Reset

Main Menu

J

K

**Figure 4.12 Configuration - Flash Recording Settings**

**Type:** The selections are: “No Recording”, “Limited”, and “Full Flash”.

**No Recording:** Not used.

**Limited:** You must define the *Start Date* and *Time*, and *End Date* and *Time* in which you need the recording to be done.

**Full Flash:** You only need to define the *Start Date* and *Time*.

The iSE will record data until the Flash is full, then the iSE will stop recording.

**Note** The *End Date* and *Time* will be automatically updated, it is calculated according to the recording interval and Flash Card size.

**Interval:** The recording interval at which the temperature or humidity is being stored into the Flash Card. The selections are “10 seconds” and “1 minute”.

**Note** To avoid any miscommunications when downloading the stored data using the iFlash program or from the “Chart” page, it is strongly recommended to let the recording run for a minimum of 3 minutes if the time interval is 10 seconds (from the “Configuration” page), and 15 minutes if the time interval is 1 minute.

**Clock Date and Time:** Real Time Clock, carried over from Configuration Page, you may update it here as needed.

**Start Date, Time:** Starting date and time for recording. Entry is required for *Limited* and *Full Flash* types of Recording.

**End Date, Time:** Ending date and time for recording. Entry is required for *Limited* type of Recording only.

**Note** The *Date* and *Time* formats are *mm/dd/yyyy* and *hh:mm:ss*. Time is military time / 24 hour based. The exact formats are required otherwise an *Entries Error* message will appear in **Section D (Figure 4.13)**.

### 4.3.5 Configuration (continued)

**K) Read Settings:** Click this button, followed by clicking the “Update” button **Section I** (Figure 4.12), to retrieve the latest Recording Settings and Status.

**Hard Reset:** Clicking on this button will reset the Ethernet Port, Flash Card Memory, LCD, and Recording sections to a fresh start. It is suggested to click “Hard Reset” if you experience problems with the “Start Recording” button.

If the unit is recording, the “Hard Reset” button will not function.

#### 4.3.5.1 Configuration - Recording Initializing

After starting a recording, the Configuration page will look slightly different, see **Figure 4.13**.

CONFIGURATION  
Address: http://192.168.1.50

**2-MegaBytes Flash Card 0 Kbytes Used Space**

**D** **Recording Initialized. AC Power On. Check Battery**

**Alarm Setup**  
Temperature: High/Low Humidity: High/Low  
Temp. Status: Unlatch Humidity Status: Unlatch  
SP\_T\_Low: 032.5 nnn.n SP\_H\_Low: 025.5 nnn.n  
SP\_T\_High: 082.5 nnn.n SP\_H\_High: 065.5 nnn.n

**Input Contact Closure**  
Contact 1: Normally Open Contact 2: Normally Close Active Contact Output: Active High  
Output Type: Unlatch

**Terminal Server**  
TCP/UDP: TCP Server Type: Command Forward CR: Disable Number of Connections: 5 Port: 2000  
Time Stamp: ☐

**Remote Access (Tunneling)**  
Remote IP Address: 0.0.0.0 Remote Port: 2000 Remote Access: Disable

**Update**

**J** **Flash Recording Settings**  
Type: Full Flash Interval: 10 sec  
Clock Date: 06/09/2009 mm/dd/yyyy Time: 11:56:25 hh:mm:ss  
Start Date: 06/09/2009 mm/dd/yyyy Time: 12:00:00 hh:mm:ss  
End Date: 09/12/2009 mm/dd/yyyy Time: 15:15:13 hh:mm:ss  
**Stop Recording**

**Read Settings** **Hard Reset**  
**Main Menu**

**Figure 4.13 Configuration (Recording Initializing)**

**Section D** will have a new message *Recording Initialized*, and **Section J** will show the Recording Settings, along with a “Stop Recording” button. Note that the *Clock Time* has not yet reached the *Start Time*.

**Stop Recording Button:** Click on this button to stop an ongoing recording.

#### 4.3.5.2 Configuration - Recording Active

Once the *Clock Time* has reached or exceeded the *Start Time*, click on the “Read Settings” button, followed by the “Update” button, to refresh the Configuration page, see **Figure 4.14**.

**Section D** will have a new message *Flash Recording On*, and **Section J** will still show the current Recording Settings.

**Stop Recording Button:** Click on this button to stop an ongoing recording.

The screenshot shows a web browser window titled "CONFIGURATION" with the address "http://192.168.1.50". The page content is divided into several sections by red horizontal lines, with labels D, I, J, and K in the left margin.

- Section D:** Displays "2-MegaBytes Flash Card 0 Kbytes Used Space" and a green message "Flash Recording On. AC Power On. Check Battery".
- Alarm Setup:** Includes dropdowns for Temperature (High/Low), Humidity (High/Low), Temp. Status (Unlatch), and Humidity Status (Unlatch). It also shows sensor ranges: SP\_T\_Low (032.5), SP\_T\_High (082.5), SP\_H\_Low (025.5), and SP\_H\_High (065.5).
- Input Contact Closure:** Includes dropdowns for Contact 1 (Normally Open), Contact 2 (Normally Close), Active Contact Output (Active High), and Output Type (Unlatch).
- Terminal Server:** Includes dropdowns for TCP/UDP (TCP), Server Type (Command), Forward CR (Disable), and a text field for Port (2000). There is also a checkbox for Time Stamp.
- Remote Access (Tunneling):** Includes text fields for Remote IP Address (0.0.0.0), Remote Port (2000), and a dropdown for Remote Access (Disable).
- Section I:** Contains an "Update" button.
- Section J:** Contains the "Flash Recording Settings" section, including dropdowns for Type (Full Flash) and Interval (10 sec), and date/time fields for Clock Date (06/09/2009), Start Date (06/09/2009), and End Date (09/12/2009).
- Section K:** Contains buttons for "Stop Recording", "Read Settings", "Hard Reset", and a "Main Menu" link.

**Figure 4.14 Configuration (Recording Active)**

#### 4.3.5.3 Important Recording Notes

- While the recording is in progress, the letter “R” of RH, located on the LCD screen blinks continuously.
- Downloading data and recording can not be done at the same time.

While downloading data, the writing process to the flash memory will be internally disabled while the data is being read from the memory flash.

For small amounts of data to be retrieved (1 Day or 1 Week), this is not a significant interruption in the recording data. However, for large amounts of data (1 Month or 1 Year) it may take 4 to 8 minutes to download the data.

In “*Archives\_Enabled*” mode, charting remains static, while data download is taking place.

- The number of humidity/temperature values that can be recorded depends on the memory flash capacity (2 Mbytes, 4 Mbytes or 8 Mbytes) and recording interval time, e.g. 1 minute interval for 4 Mbytes is 1,081,212 minutes or 750 days.

If the flash is busy sending data to the applet to chart the archive, the iSE will refuse to initiate a call to provide archived data to the second applet until it has finished with the first one.

- In case of a power outage and NO battery backup, if the unit is recording, the recording will stop but the data that was stored will be saved.

Please note, the last recorded data (30 minutes to an hour, depending on time interval) could be lost, due to the fact that the data is initially stored to the buffer before it is transferred to the Flash Memory and loss of power will erase the data in the buffer.

- After you start recording, if you need to make any changes in the Recording Settings you must either click on “Stop Recording” button or push the RESET button on the side of the iSE and reconfigure the Recording Settings. If you push the RESET button while the Recording is ON, you could lose a small amount of data that was left in the buffer.
- If you stop the recording prematurely, when you download the data, you will lose the last 256 bytes of the data that was left in the buffer and was not transferred into the flash card. Therefore, we strongly suggest downloading the data while the recording is still ON and then stop the recording if desired.

### 4.3.6 Sensor Parameters

- In the first column of Configuration page (**Figure 4.11**), click on No. **1** to view and modify the Sensor Parameters page for Temperature.

**Note** You may type any ASCII characters in the first two boxes, but you must delete the leading spaces.

The screenshot shows a web browser window titled "Sensor Parameters" with the address bar displaying "http://192.168.1.200". The main content area is titled "SENSOR PARAMETERS" and "Device No. 1". It contains the following fields and controls:

- Sensor Name:
- Remote End Char 0x:
- Remote Display Format:  Cnnn.n
- Offset:  °C
- Buttons: Update, Reset, Cancel, and a link for Main Menu.

**Figure 4.15 Sensor Parameters - Temperature**

- In the first column of Configuration page (**Figure 4.11**), click on No. **4** to view and modify the Sensor Parameters page for Input Contact 1.

The screenshot shows a web browser window titled "Sensor Parameters" with the address bar displaying "http://192.168.1.200". The main content area is titled "SENSOR PARAMETERS" and "Device No. 4". It contains the following fields and controls:

- Sensor Name:
- Remote End Char 0x:
- Buttons: Update, Reset, Cancel, and a link for Main Menu.

**Figure 4.16 Sensor Parameters - Input Contact**

### 4.3.6 Sensor Parameters (continued)

Below are some definitions of terms used in the Sensor Parameters page.

**Sensor Name:** shows on the Configuration and the Read Sensor page.

**Remote Display Format:** Remote display format is for Terminal Server in *continuous* mode.

**H37.9%** in humidity setting, displays **H** and **37.9%** is the humidity value displayed.

Example: if the humidity is **37.9**, then **H37.9%** will be seen in the remote display. If no format is specified (blank), there is no reading sent out.

**Remote End Char:** The default value is 0D (Hex representation of <CR>). This means that the iSE sends <CR> after each temperature, humidity, dewpoint and contact value. This will be done either in *Continuous* or *Command* mode.

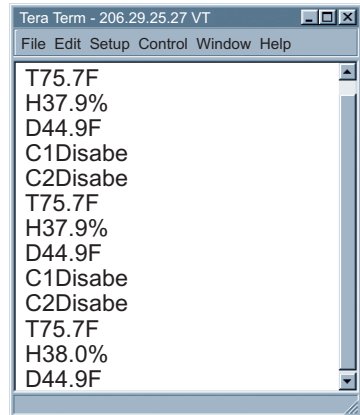
This is how the data will appear on the host with 0D assigned:

**T75.7F**  
**H37.9%**  
**D44.9F**  
**C1Disabe**  
**C2Disabe**

If the end character for instance is 20 (Hex representation of space), the data will then appear as:

**T75.7F H37.9% D44.9F C1Disabe C2Disabe**

If nothing is set for the "Remote End Char" field, the iSE will then forward the data to the LAN with no characters followed.



**Figure 4.17**  
**Remote End Char**

**Offset:** Since the sensing probe is solid state electronics, there is no need for calibration. If it's determined that the readings are slightly off, the user can manually assign numerical values to adjust the readings for temperature, humidity and dewpoint. For temperature offset, the unit must be in degree C. The Offset can be changed while recording is on.

### 4.4 Telnet Setup

Set the *Number of Connections* to 1-5 other than 0, using telnet simulation program connect to iSE. In continuous mode, the telnet terminal will receive continuous messages from the iSE. In command mode, the command can be sent to query the iSE and get a response back. Refer to **Figure 3.3**

Send remote reset: Telnet port 2002 will bring a terminal for admin password. After typing the password and following with the end character, the message Admin. Login Successful will be showed on the terminal. Now type "reset" following with return character to reset the iSE. If no character is received within 20 seconds, the terminal will be closed automatically.



Initiating the archive chart while Telnet is active will halt Telnet until the archive chart is done.

## 4.5 HTTPget Program

The HTTPget software is used to send a single HTTP or TCP request to an iSE product. In contrast, the telnet or Hyperterminal programs allow a continuous connection with multiple requests to be sent to the iSE product.

Generally HTTPget is used for simply programming an IP address to the iSE or for quickly obtaining a reading of from a device.

The iSE product must be configured from the configuration web page so that the "Server Type" value is set to "Command" (This is positioned under the heading of Terminal Server). Also the *Number of Connections* may need to be set to "0" to enable Port 1000 (Port 1000 is for access in a non-standard terminal mode).

To use Port 2000 access (where "2000" is the value stored in "Port"), the *Number of Connections* should be set to "2" for general usage. The value of 2 can later be changed to a value from 1 to 5 depending on needs for secure access or fault tolerance.

Whenever Terminal Server service (using Port 2000 by default) is required, the *Number of Connections* must be set to a value from 1 to 5. The Terminal Server mode is the recommended mode for the most reliable connection when operating with NEWPORT software or with other programs supporting TCPIP communications.

The Port 1000 access can be used with NEWPORT software and may be needed with some iSE products when you need to view readings from the web page while simultaneously collecting data through TCPIP communications.

### 4.5.1 HTTPget using Port 1000

You can setup and read the information from the iSE by using the HTTPget program. The following program can be used to read data from the iSE by using TCP port **1000**. The command string is sent to this TCP port, then the response can be read back from the same socket.

The HTTPget.exe file is used to setup and read information from the iSE. This file will be automatically installed when you install the **MailNotifier** software or can be downloaded from our website.

Notes on using **HTTPget** :

The HTTPget.exe program is installed to the windows directory (usually c:\winnt or c:\windows) when installing the Mail Notifier software.

1. Open up a command window (or have a DOS window)
  - a) Click on start menu
  - b) Click on "Run"
  - c) In the dialog box that appears, type "cmd" or "command" and click on "OK" button.
  - d) A command window should now appear.
2. If you now type "HTTPget" and press the "enter" key, the program options should be displayed.
3. Next run HTTPget with the options displayed as shown in the following text



#### 4.5.1 HTTPget using Port 1000 (continued)

**httpget -r -S “\*SRT\r” 192.168.1.200:1000**

**where:**

**-r -S** are parameters needed for the command string

**\*SRT** is the command as the following:

|                |   |
|----------------|---|
| <b>*SRTC</b>   | Read the temperature in C   |
| <b>*SRTF</b>   | Read the temperature in F   |
| <b>*SRH</b>    | Read humidity   |
| <b>*SRD</b>    | Read the dewpoint in C  |
| <b>*SRDF</b>   | Read the dewpoint in F  |
| <b>*SRA1</b>   | Read temperature setpoints  |
| <b>*SRA2</b>   | Read humidity setpoints   |
| <b>*SRB</b>    | Read the temperature and humidity   |
| <b>*SRYS</b>   | Indicate AC or DC power and battery status                                  |
| <b>*SRYRST</b> | Reset Power on iSE  |
| <b>*SR_XD1</b> | Exclude alarm 1 (disable alarm 1 function)                                  |
| <b>*SR_XD2</b> | Exclude alarm 2 (disable alarm 2 function)                                  |
| <b>*SR_XC1</b> | Reset relay 1 latch condition   |
| <b>*SR_XC2</b> | Reset relay 2 latch condition   |
| <b>*SR_XE1</b> | Include alarm 1 (enable alarm 1 function)                                   |
| <b>*SR_XE2</b> | Include alarm 2 (enable alarm 2 function)                                   |
| <b>*SR_XP1</b> | Close relay 1 for < 200 mSec  |
| <b>*SR_XP2</b> | Close relay 2 for < 200 mSec  |
| <b>*SR_XH1</b> | Close relay 1   |
| <b>*SR_XH2</b> | Close relay 2   |
| <b>*SR_XL1</b> | Open relay 1  |
| <b>*SR_XL2</b> | Open relay 2  |
| <b>*SRT2</b>   | Status of Contact 1 (Disable, Normal, Active)                               |
| <b>*SRH2</b>   | Status of Contact 2 (Disable, Normal, Active)                               |
| <b>*SRD2</b>   | Status of the Output associated with the Contacts (Active High, Active Low) |

**\r** is the carriage return termination character

**192.168.1.200** is an IP address

**1000** is a socket port number

**Response:**

076.6 (in Deg.F format)

## 4.5.2 HTTPget and ARP to setup Device IP Address



Use the iConnect software, which may be downloaded from our website, to do these IP changes whenever possible.

Use ARP first to assign the mac address to a static IP address in computer arp table by this command:

```
arp -s 192.168.1.200 00-03-34-00-06-b6
```

Then use the following command to assign new IP to the device:

```
httpget -r -S "00000000" 192.168.1.200:1
```

**where:**

**"00000000"** is admin. password. If the password is wrong, the unit will ignore the new IP. If the new IP is taken, you will get the message " New IP is Assigned" after the HTTPget command. The device will reset automatically. (TX and RX led is on for 2 seconds).

**"192.168.1.200"** is an example of an IP address. It is replaced with an IP address suitable for your network

**"00-03-34-00-06-b6"** is replaced with your iSE product MAC address.

## 4.6 ARP Protocol

ARP is the Internet layer protocol responsible for matching or obtaining the MAC (hardware) address that corresponds to a particular IP address. The ARP command allows the user to view the current contents of the ARP cache of the local computer (residing on the same network). Microsoft includes the ARP.EXE utility for viewing and modifying the ARP cache with its Windows products. The following ARP commands can be used to view cache entries:

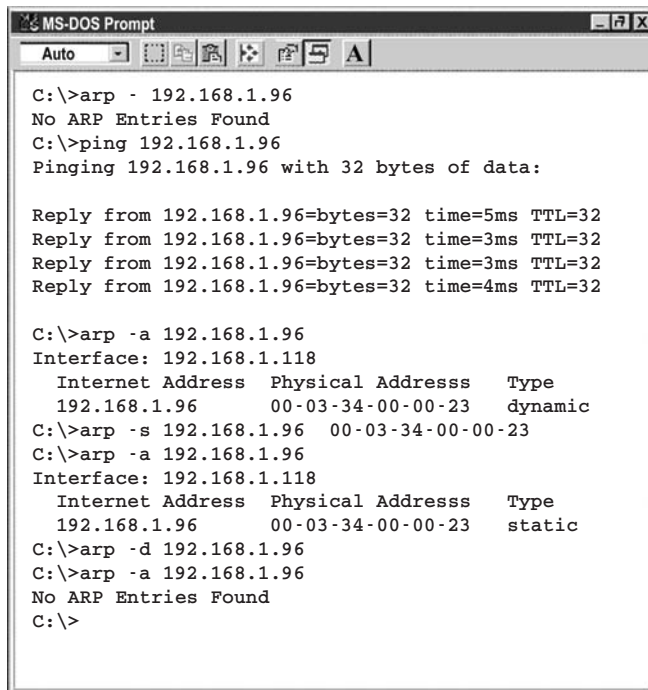
- **arp -a** Use this command to view all ARP cache entries.
- **arp -a** plus **IP address** Use this command to view ARP cache entries associated with one particular interface on a network with multiple adapters.
- **arp -g** Same as arp -a.
- **arp -N** Use this command to display ARP entries for specific network interface.
- **arp -s** plus **IP address** plus **Physical address** Use this command to manually add a permanent static entry to the ARP cache.
- **arp -d** Use this command to manually delete a static entry.

**Note**

Ping the destination computer using IP address first before using the arp -a command.

The following window shows examples of arp commands and responses.

- Your computer has an IP address of **192.168.1.118**
- The destination computer has an IP address of **192.168.1.96**



```
MS-DOS Prompt
Auto
C:\>arp - 192.168.1.96
No ARP Entries Found
C:\>ping 192.168.1.96
Pinging 192.168.1.96 with 32 bytes of data:

Reply from 192.168.1.96=bytes=32 time=5ms TTL=32
Reply from 192.168.1.96=bytes=32 time=3ms TTL=32
Reply from 192.168.1.96=bytes=32 time=3ms TTL=32
Reply from 192.168.1.96=bytes=32 time=4ms TTL=32

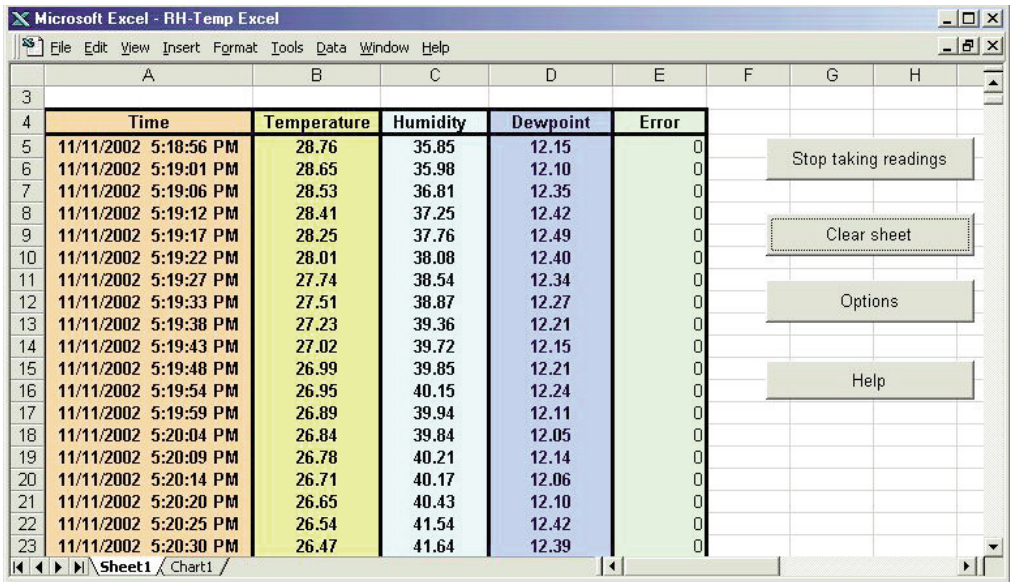
C:\>arp -a 192.168.1.96
Interface: 192.168.1.118
    Internet Address    Physical Addresss    Type
    192.168.1.96        00-03-34-00-00-23    dynamic
C:\>arp -s 192.168.1.96 00-03-34-00-00-23
C:\>arp -a 192.168.1.96
Interface: 192.168.1.118
    Internet Address    Physical Addresss    Type
    192.168.1.96        00-03-34-00-00-23    static
C:\>arp -d 192.168.1.96
C:\>arp -a 192.168.1.96
No ARP Entries Found
C:\>
```

**Figure 4.18 ARP Commands and Responses**

## 4.7 iLog Software

This is an Excel application software that can log temperature, humidity and dewpoint form an iSE over the Ethernet or the internet.

- Download the iLog software from the website listed in this manual.
- Install iLog software on a networked PC. This software is compatible with Windows 95, 98, NT, 2000, and XP.
- For complete information of how to use the iLog software, click on the HELP button.
- There is a list of Error Messages in **Appendix E**.



|    | A                     | B           | C        | D        | E     | F | G | H |
|----|-----------------------|-------------|----------|----------|-------|---|---|---|
| 3  |                       |             |          |          |       |   |   |   |
| 4  | Time                  | Temperature | Humidity | Dewpoint | Error |   |   |   |
| 5  | 11/11/2002 5:18:56 PM | 28.76       | 35.85    | 12.15    | 0     |   |   |   |
| 6  | 11/11/2002 5:19:01 PM | 28.65       | 35.98    | 12.10    | 0     |   |   |   |
| 7  | 11/11/2002 5:19:06 PM | 28.53       | 36.81    | 12.35    | 0     |   |   |   |
| 8  | 11/11/2002 5:19:12 PM | 28.41       | 37.25    | 12.42    | 0     |   |   |   |
| 9  | 11/11/2002 5:19:17 PM | 28.25       | 37.76    | 12.49    | 0     |   |   |   |
| 10 | 11/11/2002 5:19:22 PM | 28.01       | 38.08    | 12.40    | 0     |   |   |   |
| 11 | 11/11/2002 5:19:27 PM | 27.74       | 38.54    | 12.34    | 0     |   |   |   |
| 12 | 11/11/2002 5:19:33 PM | 27.51       | 38.87    | 12.27    | 0     |   |   |   |
| 13 | 11/11/2002 5:19:38 PM | 27.23       | 39.36    | 12.21    | 0     |   |   |   |
| 14 | 11/11/2002 5:19:43 PM | 27.02       | 39.72    | 12.15    | 0     |   |   |   |
| 15 | 11/11/2002 5:19:48 PM | 26.99       | 39.85    | 12.21    | 0     |   |   |   |
| 16 | 11/11/2002 5:19:54 PM | 26.95       | 40.15    | 12.24    | 0     |   |   |   |
| 17 | 11/11/2002 5:19:59 PM | 26.89       | 39.94    | 12.11    | 0     |   |   |   |
| 18 | 11/11/2002 5:20:04 PM | 26.84       | 39.84    | 12.05    | 0     |   |   |   |
| 19 | 11/11/2002 5:20:09 PM | 26.78       | 40.21    | 12.14    | 0     |   |   |   |
| 20 | 11/11/2002 5:20:14 PM | 26.71       | 40.17    | 12.06    | 0     |   |   |   |
| 21 | 11/11/2002 5:20:20 PM | 26.65       | 40.43    | 12.10    | 0     |   |   |   |
| 22 | 11/11/2002 5:20:25 PM | 26.54       | 41.54    | 12.42    | 0     |   |   |   |
| 23 | 11/11/2002 5:20:30 PM | 26.47       | 41.64    | 12.39    | 0     |   |   |   |

Figure 4.19 iLog Software Logging Data

## iLog Software (continued)

**Table 4.1 iLOG Excel Applications**

The iLOG application actually consists of several Excel files, though most supported devices can be accessed by the main iLOG program. The main program is listed as "iLOG", plus a version number, under the Start Menu program links (those links available by clicking the Start button on the Windows taskbar).

In the following table, the iLOG File column shows how many sensors are logged by the main iLOG file. If more than 3 sensors are available, then the Alternate column shows how many sensors the device can support. Devices with more than 3 sensors will have their own Excel file. For these files, click on the model device found in the Start Menu.

| <b>Networked Product</b> | <b>iLOG File</b>     | <b>Alternate</b> |
|--------------------------|----------------------|------------------|
| iTHX-W                   | 3 column             |                  |
| iTHX-M                   | 3 column             |                  |
| iTHX-W Dual Probe        | 1st probe / 3 column | 6 column         |
| iSE-TC                   | 3 column             | 5 column         |
| iSE-TH                   | 3 column             | 5 column         |
| iBTHX-W                  | 3 column             | 4 column         |
| iBTX                     | 2 column             |                  |
| iPTX-W                   | 2 column             |                  |
| iTCX                     | 3 column             |                  |
| iTH Controller           | 3 column             |                  |
| iVI                      | 3 column             | 4 column         |
| iSeries                  | 1 column             |                  |
| iDRX/iDRN                | 1 column             |                  |
| INF-B                    | 1 column             |                  |

### **Wireless Devices**

The "Auto" column shows number of columns per remote device that are possibly displayed.

The Full column shows number of columns allocated per device for the "Full" spreadsheet, which will be able to display all data for all active devices.

| <b>Networked Product</b>     | <b>Auto</b>            | <b>Full</b>          |
|------------------------------|------------------------|----------------------|
| zSeries Receiver and Remotes | 1 to 4 column / device | 4 column / 32 device |
| wiSeries with zED Remotes    | 1 to 2 column / device | 2 column / 32 device |
| UWTC REC-3 and Remotes       | 1 or 2 column / device | 2 column / 32 device |
| wiSeries with UWTC Remotes   | 1 to 2 column / device | 2 column / 32 device |

The active wireless devices, when shown in the Excel application, will be shown with the device number and the units returned.

## 4.8 Mail Notifier Software

For complete information of how to use the Mail Notifier software, click on the Help menu of the main window.

The Mail Notifier software generates email notifications for alarm conditions. Users can be notified automatically of alarm conditions monitored via internet connections throughout the world. By use of the email forwarding of alarm conditions, alarm conditions can be monitored on a network isolated from the internet and forwarded to connections on the Internet.

The Mail Notifier utility operates under Windows 98, NT 4.0, 2000, and XP in conjunction with existing email that supports the MAPI messaging interface. If MS Outlook has been loaded, the MAPI support should be available.

### 4.8.1 Installation

The Mail Notifier must be loaded on a computer running Microsoft Windows (versions specified earlier) using an email program that provides MAPI access. Network access must be available between this computer and the iSE. Network access must also be available from this computer to the appropriate email server and from the email server to the recipient's email server.

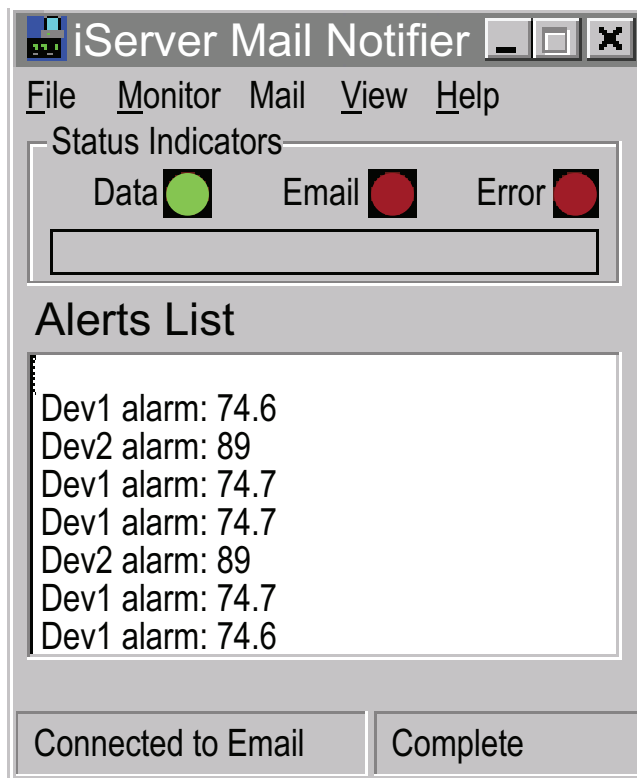
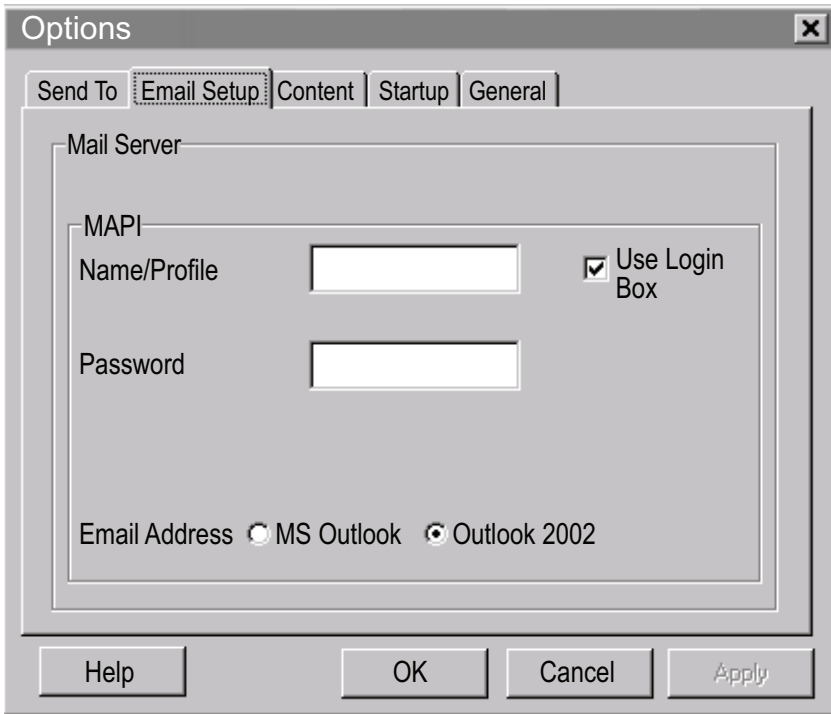


Figure 4.20 iSE Mail Notifier Main Window

## 4.8.2 Program Options Setup and Configuration

Complete program setup requires:

- Entering a recipient for the email
- Specifying connection details to MAPI services.
- Defining alarms for devices, and selecting how and when the email will be active.



**Figure 4.21 iSE Mail Notifier Profile Setup**

### Email Address Setup

The email addresses must be entered using individual addresses or alias. Select “Options” from the “View” menu and enter the email addresses on the “Send To” screen. This will be the list of email addresses to which alarm notifications will be sent.

### Email Setup

The Mail Notifier is compatible with original MS Outlook™ and Outlook™ 2002 to 2005.

The Mail Notifier will attempt to automatically identify whether the Outlook is a newer version. A red bar appears under the Mail Notifier splash window to confirm that the detection of the 2002 or newer version is acceptable. With the newer versions, no additional steps should be taken to enable the connection between the Mail Notifier and the Email server.

#### Note

MS Outlook tends to require that the users respond to a “login box” in order for email access to be activated for Mail Notifier. Some other email clients may allow for Mail Notifier to gain access without user login, as may be desired for a system recovering from a power outage. See the Help files for more information.

### 4.8.3 Device Setting and Configuration

Device setup requires:

- Server IP Address: for iSE device (for example **192.168.1.200**).
- Socket Number: (1000 or 2000 depending on iSE settings).
- Bus Address/Device ID: interface address (1 to 199). Enter "0" for RS232 interface or for iSE.
- Reading Cmd: normally set to SRFT to obtain reading from the devices. If you want to change this setting, refer to list of commands in **Section 4.5**.
- Alarm Type: (High/Low, High value, or Low value).
- Info Message: text can be entered to describe the alarm condition.
- Email Interval: the time interval in which the email is sent.
- Monitor Interval: the interval or time resolution in which readings will be obtained from the device.
- Alarm Hold Time: the time delay of each subsequential alarm notification to be sent.

The screenshot shows the 'Alarm Editor' dialog box with two main sections: 'Device Info (1 of 2)' and 'Alarm Configuration'.

**Device Info (1 of 2)**

|                       |               |
|-----------------------|---------------|
| Server IP Address     | 192.168.1.200 |
| Socket Number         | 1000          |
| Bus Address/Device ID | 1             |
| Description           |               |
| Src ID                | Dev 2         |
| Reading Cmd           | SRFT          |

Buttons: OK, Cancel, Help, Add, Del

☐ Only Monitor Access to iServer device

**Alarm Configuration**

|            |            |                  |           |
|------------|------------|------------------|-----------|
| Alarm Type | Alarm High | Info Message     |           |
| Alarm High | 73         | Email Interval   | 0.05 hrs. |
| Alarm Low  | 0          | Monitor Interval | 0.5 min.  |
|            |            | Alarm Hold Time  | 0.0 min.  |

Figure 4.22 iSE Mail Notifier Device Setting



## PART 5 SPECIFICATIONS

### SENSOR SPECIFICATIONS

#### Relative Humidity (RH)

|                 |  |
|-----------------|--|
| Accuracy/Range: | ±2% for 10 to 90%; ±3% for 0 to 10% and 90 to 100% |
| Hysteresis:     | ±1% RH   |
| Non-linearity:  | ±3%  |
| Response Time:  | 4 seconds (63% slowly moving air)                  |
| Repeatability:  | ±0.1%  |
| Resolution:     | 0.03%, 12bit                                       |

**NOTE:** Reconditioning of the probe may be necessary if the probe is stored for a period of time in a harsh environment (temperatures below 0°C or above 70°C or exposure to chemical vapors, condensation, etc).

To recondition the probe: heat probe for 24 hours @ 80 to 90°C @ <5% RH, followed by rehydration for 48 hours @ 20 to 30°C @ > 74% RH.

#### Temperature (T)

##### Accuracy/Range\*:

##### Standard Probe:

##### Industrial Probe:

±0.5°C (±1°F) 0°C to 70°C (32°F to 158°F)

±0.5°C (±1°F) for 0 to 80°C (32 to 176°F).

±1°C (±2°F) for -40 to 0°C and 80 to 124°C (-40 to 32°F and 176 to 255°F)

\*Note: extended temperature range is for Industrial Probe only, the iSE's operating temperature is 0 to 60°C

##### Response Time:

##### Repeatability:

##### Resolution:

5 seconds (63% slowly moving air)

±0.1°C

0.01°C, 14 bit

### PROBE SPECIFICATIONS

##### Housing Material:

##### Standard Probe Dimensions:

##### Industrial Probe Dimensions:

SS 316

Ø13mm x 83.8mm lg (Ø 0.5" x 3.3"lg)

Ø16mm x 137mm lg (Ø 0.63" x 5"lg);

Cable: 3m (10') long x Ø 5.33mm (0.210"),

Cable Operating Temp: -40 to 125°C (-40 to 257°F)

### iSERVER SPECIFICATIONS

#### Interfaces

##### Ethernet:

##### Sensor:

##### Supported Protocols:

10Base-T (RJ45)

Digital 4-wire (Mini-DIN 6)

TCP/IP, UDP/IP, ARP, ICMP, DHCP, DNS, HTTP, and Telnet

##### LED Indicators:

##### LCD Display:

##### Processor:

##### Memory:

##### Memory Data Flash Card:

Network Activity, Network Link, and Diagnostics

32 digits, 4.8 x 9.7mm (0.19 x 0.38")

Enhanced 8051, 22 MHz

512 Kbytes Flash, 16 Kbytes SRAM

2 Mbytes or 2 months of data storage at 10 second logging intervals, or 1 year at 1 minute logging intervals.

Atmel# AT45DCB002

|   |  |
|---|--|
| <b>Optional Flash Cards:</b>                            | 4 Mbyte (2 years at 1 minute intervals);<br>8 Mbyte (4 years at 1 minute intervals)  |
| <b>Relay Outputs:</b>                                   | Two relays 1.5A @ 30Vdc  |
| <b>Alarm I/O's:</b>                                     | 2 Contact Inputs,<br>1 Open Collector Output 150mA @ 30 Vdc  |
| <b>Management:</b>                                      | Device configuration and monitoring through embedded<br>WEB server   |
| <b>Embedded WEB Server:</b>                             | Serves WEB pages containing real-time data and live<br>updated charts within definable time intervals.   |
| <b>POWER</b>  |  |
| <b>Power Input:</b>                                     | 9 to 12 Vdc  |
| <b>Consumption:</b>                                     | 2.5 W max.   |
| <b>Safety Qualified ac Power<br/>Adapter (included)</b> | <b>Nominal Output:</b> 9 Vdc @ 0.5 A<br><b>Input:</b> 100 to 240 Vac, 50/60Hz<br><b>Adapter Operating Temp:</b> 0 to 40°C (32 to 104°F)<br>9 Vdc, alkaline approximately 650 mA hours  |
| <b>Battery:</b>   |  |
| <b>ENVIRONMENTAL</b>                                    |  |
| <b>Operating Temperature:</b>                           | 0 to 60°C (32 to 140°F)  |
| <b>Material:</b>  | SS 304 case with wall mount bracket  |
| <b>Dimensions:</b>                                      | 119.1H x 155.7W x 33.3D mm<br>(4.69 x 6.13 x 1.31 in) includes probe   |
| <b>Weight:</b>  | 444.5g (0.98 lbs.)   |
| <b>GENERAL</b>  |  |
| <b>Agency Approvals:</b>                                | FCC-B, CE  |
| <b>Software:</b>  | The software packages available are <b>iConnect</b><br>(configuration software for the Ethernet interface), <b>iLog</b><br>(Excel-based software for automatic data logging), <b>iFlash</b><br>(memory card retrieval software) and <b>Mail Notifier</b> (email<br>alarm notification software). |

## PART 6

### FACTORY PRESET VALUES

| PRESET PARAMETERS                 | FACTORY DEFAULTS                           |
|-----------------------------------|--|
| <b>Network Interface:</b>         |  |
| IP Address                        | 192.168.1.200                              |
| Gateway Address                   | 0.0.0.0                                    |
| Subnet Mask                       | 255.255.255.0                              |
| Device Host Name                  | eis and Last 4 digits from the MAC address |
| Login Password                    | 12345678                                   |
| Admin Password                    | 00000000                                   |
| DHCP                              | Disabled                                   |
| <b>Terminal Server:</b>           |  |
| Server Type                       | Command                                    |
| Number of Connections             | 5  |
| Port #                            | 2000                                       |
| Forward CR                        | Enable                                     |
| <b>Remote Access (Tunneling):</b> |  |
| Remote Access                     | Disable                                    |
| Remote Port                       | 2000                                       |
| Remote IP Address                 | 0.0.0.0                                    |
|                                   |  |
| LCD Backlight                     | On   |

## APPENDIX A      GLOSSARY

User of this manual should be familiar with following definitions:

**ARP (Address Resolution Protocol)** is a protocol for mapping an Internet Protocol address (IP address) to a physical machine address that is recognized in the local network. For example, the IP address in use today is an address that is 32-bits long. In an Ethernet local area network, however, addresses for attached devices are 48-bits long. (The physical machine address is also known as a Media Access Control or MAC address.) A table, usually called the ARP cache, is used to maintain a correlation between each MAC address and its corresponding IP address. ARP provides the protocol rules for making this correlation and providing address conversion in both directions.

**Ethernet** is a network protocol defined by the IEEE 802.3 standard. Ethernet-based networks use MAC Address rather than IP Address to exchange data between computers. By using ARP and adding TCP/IP support, Ethernet devices may be connected as part of the Internet. An Ethernet LAN typically uses coaxial cable or special grades of twisted pair wires. The most commonly installed Ethernet systems are called 10BASE-T and provide transmission speeds up to 10 Mbps. Devices are connected to the cable and compete for access using a Carrier Sense Multiple Access with Collision Detection (CSMA/CD) protocol.

**IP (Internet Protocol)** is the method or protocol by which data is sent from one computer to another on the Internet.

**IP address (Internet Protocol address)** is a 32-bit number that identifies each sender or receiver of information that is sent in packets across the Internet.

**IP Netmask** is a 32-bit pattern of bits used to determine which part of the IP address is the network portion and which part is the host portion.

**MAC (Media Access Control) Address** is your computer's unique hardware number. When you're connected to the Internet from your computer, a correspondence table relates your IP address to your computer's physical (MAC) address on the LAN.

**Ping** is a utility that tests the network connectivity. It is used to determine if the host is capable of exchanging information with another host.

**Port number/Socket number** is a way to identify a specific process to which an Internet or other network message is to be forwarded when it arrives at a server. It is a predefined address that serves as a route from the application to the Transport layer or from the Transport layer to the application of the TCP/IP system.

**Sockets** are a method for communication between a client program and a server program in a network and defined as "the endpoint in a connection." Information transferred across the Internet primarily occurs between sockets.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** is the basic communication language or protocol of the Internet. When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP. TCP/IP often is used as a general term to indicate generic access to the Internet.

**UDP/IP (User Datagram Protocol/Internet Protocol)** is the TCP/IP standard protocol that allows an application program on one machine to send a datagram to an application program on another. The UDP can be either in Broadcast or Directed form. The Broadcast UDP transmits data to every node on the same network. The Directed UDP transmits data to one node only.

## Appendix B

## IP Address

An IP address is a unique 32-bit address assigned to a computer and includes:

- A network ID number identifying a network.
- A host ID number identifying a computer on the network.

All IP addresses have been divided into three smaller groups (classes) A, B and C

- **Class A** addresses have 8-bits of network ID and 24-bits of host ID. They can support a large number of hosts, approximately  $2^{24} = 16,777,216$  computers per network.

The IP addresses range in binary from 00000001.xxxxxxxx.xxxxxxxx.xxxxxxxx  
to 01111111.xxxxxxxx.xxxxxxxx.xxxxxxxx

The IP addresses range in decimal from 1.x.x.x to 127.x.x.x

Class A network ID's support a very large number of hosts.

- **Class B** addresses have 16-bits of network ID and 16-bits of host ID. They can support approximately  $2^{16} = 65,536$  computers per network.

The IP addresses range in binary from 10000000 00000000.xxxxxxxx.xxxxxxxx  
to 10111111 11111111.xxxxxxxx.xxxxxxxx

The IP addresses range in decimal from 128.0.x.x TO 191.255.xxx.xxx

Class B network ID's support a medium number of hosts.

- **Class C** addresses have 24-bits of network ID and 8-bits of host ID. They can support approximately  $2^8 = 256$  computers per network.

The IP addresses range in binary from 11000000.00000000.00000000.xxxxxxxx  
to 11011111.11111111.11111111.xxxxxxxx

The IP addresses range in decimal from 192.0.0.xxx to 223.255.255.xxx

Class C network ID's support a small number of hosts.



The rest of the addresses are divided into two classes, D and E.

**Class D networks** are not assigned to the host. They are used for multicasting.  
The address range from 224.x.x.x to 239.x.x.x

**Class E** networks are experimental or reserved addresses.

The address range from 240.x.x.x to 247.x.x.x

## Appendix C

## IP Netmask

IP Netmask or Subnet Mask is a 32-bit pattern of ones and zeros used to determine network portion of an IP address from the host portion of the IP address. Subnet mask is a network ID that is created by borrowing bits from host portion of IP address and using them as part of a network ID. The table below shows a default subnet mask for address Classes A, B, and C. Each bit that is set to "1" in the subnet mask corresponds to the bit in the IP address that is to be used as the network ID. Each bit that is set to "0" in the subnet mask corresponds to a bit in the IP address that is to be used as the host ID.

| Address Class | Mask Binary Value                   | Mask Decimal Value or Dotted Notation |
|---------------|-------------------------------------|---------------------------------------|
| Class A       | 11111111 00000000 00000000 00000000 | 255.0.0.0                             |
| Class B       | 11111111 11111111 00000000 00000000 | 255.255.0.0                           |
| Class C       | 11111111 11111111 11111111 00000000 | 255.255.255.0                         |

If your network requires more network ID's, you can extend the default subnet mask to include additional bits from the host ID. This allows for additional network ID's within the network. The table below shows some examples of subnet masks and bits moved from the hosts ID to create a new subnet.

| Mask Dotted Notation    | Mask Binary                         | Mask Bits |
|-------------------------|-------------------------------------|-----------|
| <b>Class A</b>          |                                     |           |
| 255.0.0.0 (Default)     | 11111111 00000000 00000000 00000000 | 0         |
| 255.192.0.0             | 11111111 11000000 00000000 00000000 | 2         |
| 255.224.0.0             | 11111111 11100000 00000000 00000000 | 3         |
| 255.240.0.0             | 11111111 11110000 00000000 00000000 | 4         |
| 255.248.0.0             | 11111111 11111000 00000000 00000000 | 5         |
| 255.252.0.0             | 11111111 11111100 00000000 00000000 | 6         |
| 255.254.0.0             | 11111111 11111110 00000000 00000000 | 7         |
| 255.255.0.0             | 11111111 11111111 00000000 00000000 | 8         |
| 255.255.128.0           | 11111111 11111111 10000000 00000000 | 9         |
| 255.255.192.0.0         | 11111111 11111111 11000000 00000000 | 10        |
| .....                   | .....                               | .....     |
| 255.255.255.252         | 11111111 11111111 11111111 11111100 | 22        |
| <b>Class B</b>          |                                     |           |
| 255.255.0.0 (Default)   | 11111111 11111111 00000000 00000000 | 0         |
| 255.255.192.0           | 11111111 11111111 11000000 00000000 | 2         |
| .....                   | .....                               | .....     |
| 255.255.255.252         | 11111111 11111111 11111111 11111100 | 14        |
| <b>Class C</b>          |                                     |           |
| 255.255.255.0 (Default) | 11111111 11111111 11111111 00000000 | 0         |
| 255.255.255.192         | 11111111 11111111 11111111 11000000 | 2         |
| .....                   | .....                               | .....     |
| 255.255.255.254         | 11111111 11111111 11111111 11111100 | 6         |

To determine the number of valid hosts ID's remaining after subnetting, use the following equation:  $2^n - 2$ , where n is the number of octet digits left after the subnet mask.

**Appendix D****ASCII Chart**

| ASCII Char | Dec | Hex | Binary No Parity | ASCII Char | Dec | Hex | Binary No parity |
|------------|-----|-----|------------------|------------|-----|-----|------------------|
| NUL        | 00  | 00  | 00000000         | @          | 64  | 40  | 01000000         |
| SOH        | 01  | 01  | 00000001         | A          | 65  | 41  | 01000000         |
| STX        | 02  | 02  | 00000010         | B          | 66  | 42  | 01000010         |
| ETX        | 03  | 03  | 00000011         | C          | 67  | 43  | 01000011         |
| EOT        | 04  | 04  | 00000100         | D          | 68  | 44  | 01000100         |
| ENQ        | 05  | 05  | 00000101         | E          | 69  | 45  | 01000101         |
| ACK        | 06  | 06  | 00000110         | F          | 70  | 46  | 01000110         |
| BEL        | 07  | 07  | 00000111         | G          | 71  | 47  | 01000111         |
| BS         | 08  | 08  | 00001000         | H          | 72  | 48  | 01001000         |
| HT         | 09  | 09  | 00001001         | I          | 73  | 49  | 01001001         |
| LF         | 10  | 0A  | 00001010         | J          | 74  | 4A  | 01001010         |
| VT         | 11  | 0B  | 00001011         | K          | 75  | 4B  | 01001011         |
| FF         | 12  | 0C  | 00001100         | L          | 76  | 4C  | 01001100         |
| CR         | 13  | 0D  | 00001101         | M          | 77  | 4D  | 01001101         |
| SO         | 14  | 0E  | 00001110         | N          | 78  | 4E  | 01001110         |
| SI         | 15  | 0F  | 00001111         | O          | 79  | 4F  | 01001111         |
| DLE        | 16  | 10  | 00010000         | P          | 80  | 50  | 01010000         |
| DC1        | 17  | 11  | 00010001         | Q          | 81  | 51  | 01010001         |
| DC2        | 18  | 12  | 00010010         | R          | 82  | 52  | 01010010         |
| DC3        | 19  | 13  | 00010011         | S          | 83  | 53  | 01010011         |
| DC4        | 20  | 14  | 00010100         | T          | 84  | 54  | 01010100         |
| NAK        | 21  | 15  | 00010101         | U          | 85  | 55  | 01010101         |
| SYN        | 22  | 16  | 00010110         | V          | 86  | 56  | 01010110         |
| ETB        | 23  | 17  | 00010111         | W          | 87  | 57  | 01010111         |
| CAN        | 24  | 18  | 00011000         | X          | 88  | 58  | 01011000         |
| EM         | 25  | 19  | 00011001         | Y          | 89  | 59  | 01011001         |
| SUB        | 26  | 1A  | 00011010         | Z          | 90  | 5A  | 01011010         |
| ESC        | 27  | 1B  | 00011011         | [          | 91  | 5B  | 01011011         |
| FS         | 28  | 1C  | 00011100         | \          | 92  | 5C  | 01011100         |
| GS         | 29  | 1D  | 00011101         | ]          | 93  | 5D  | 01011101         |
| RS         | 30  | 1E  | 00011110         | ^          | 94  | 5E  | 01011110         |
| US         | 31  | 1F  | 00011111         | _          | 95  | 5F  | 01011111         |
| SP         | 32  | 20  | 00100000         | `          | 96  | 60  | 01100000         |
| !          | 33  | 21  | 00100001         | a          | 97  | 61  | 01100001         |
| "          | 34  | 22  | 00100010         | b          | 98  | 62  | 01100010         |
| #          | 35  | 23  | 00100011         | c          | 99  | 63  | 01100011         |
| \$         | 36  | 24  | 00100100         | d          | 100 | 64  | 01100100         |
| %          | 37  | 25  | 00100101         | e          | 101 | 65  | 01100101         |
| &          | 38  | 26  | 00100110         | f          | 102 | 66  | 01100110         |
| '          | 39  | 27  | 00100111         | g          | 103 | 67  | 01100111         |
| (          | 40  | 28  | 00101000         | h          | 104 | 68  | 01101000         |
| )          | 41  | 29  | 00101001         | i          | 105 | 69  | 01101001         |
| *          | 42  | 2A  | 00101010         | j          | 106 | 6A  | 01101010         |
| +          | 43  | 2B  | 00101011         | k          | 107 | 6B  | 01101011         |
| ,          | 44  | 2C  | 00101100         | l          | 108 | 6C  | 01101100         |
| -          | 45  | 2D  | 00101101         | m          | 109 | 6D  | 01101101         |
| .          | 46  | 2E  | 00101110         | n          | 110 | 6E  | 01101110         |

**Appendix D****ASCII Chart Continuation**

|   |    |    |          |     |     |    |          |
|---|----|----|----------|-----|-----|----|----------|
| / | 47 | 2F | 00101111 | o   | 111 | 6F | 01101111 |
| 0 | 48 | 30 | 00110000 | p   | 112 | 70 | 01110000 |
| 1 | 49 | 31 | 00110001 | q   | 113 | 71 | 01110001 |
| 2 | 50 | 32 | 00110010 | r   | 114 | 72 | 01110010 |
| 3 | 51 | 33 | 00110011 | s   | 115 | 73 | 01110011 |
| 4 | 52 | 34 | 00110100 | t   | 116 | 74 | 01110100 |
| 5 | 53 | 35 | 00110101 | u   | 117 | 75 | 01110101 |
| 6 | 54 | 36 | 00110110 | v   | 118 | 76 | 01110110 |
| 7 | 55 | 37 | 00110111 | w   | 119 | 77 | 01110111 |
| 8 | 56 | 38 | 00111000 | x   | 120 | 78 | 01111000 |
| 9 | 57 | 39 | 00111001 | y   | 121 | 79 | 01111001 |
| : | 58 | 3A | 00111010 | z   | 122 | 7A | 01111010 |
| ; | 59 | 3B | 00111011 | {   | 123 | 7B | 01111011 |
| < | 60 | 3C | 00111100 |     | 124 | 7C | 01111100 |
| = | 61 | 3D | 00111101 | }   | 125 | 7D | 01111101 |
| > | 62 | 3E | 00111110 | ~   | 126 | 7E | 01111110 |
| ? | 63 | 3F | 00111111 | DEL | 127 | 7F | 01111111 |

**ASCII Control Codes**

| ASCII Char | Dec | Hex | Ctrl Key Equiv. | Definition            | ASCII Char | Dec | Hex | Ctrl Key Equiv. | Definition            |
|------------|-----|-----|-----------------|-----------------------|------------|-----|-----|-----------------|-----------------------|
| NUL        | 00  | 00  | Ctrl @          | Null Character        | DC1        | 17  | 11  | Ctrl Q          | Data Control 1 - XON  |
| SOH        | 01  | 01  | Ctrl A          | Start of Header       | DC2        | 18  | 12  | Ctrl R          | Data Control 2        |
| STX        | 02  | 02  | Ctrl B          | Start of Text         | DC3        | 19  | 13  | Ctrl S          | Data Control 3 - XOFF |
| ETX        | 03  | 03  | Ctrl C          | End of Text           | DC4        | 20  | 14  | Ctrl T          | Data Control 4        |
| EOT        | 04  | 04  | Ctrl D          | End of Transmission   | NAK        | 21  | 15  | Ctrl U          | Negative Acknowledge  |
| ENQ        | 05  | 05  | Ctrl E          | Inquiry               | SYN        | 22  | 16  | Ctrl V          | Synchronous Idle      |
| ACK        | 06  | 06  | Ctrl F          | Acknowledge           | ETB        | 23  | 17  | Ctrl W          | End of Trans Block    |
| BEL        | 07  | 07  | Ctrl G          | Bell                  | CAN        | 24  | 18  | Ctrl X          | Cancel                |
| BS         | 08  | 08  | Ctrl H          | Back Space            | EM         | 25  | 19  | Ctrl Y          | End of Medium         |
| HT         | 09  | 09  | Ctrl I          | Horizontal Tabulation | SUB        | 26  | 1A  | Ctrl Z          | Substitute            |
| LF         | 10  | 0A  | Ctrl J          | Line Feed             | ESC        | 27  | 1B  | Ctrl [          | Escape                |
| VT         | 11  | 0B  | Ctrl K          | Vertical Tabulation   | FS         | 28  | 1C  | Ctrl \          | File Separator        |
| FF         | 12  | 0C  | Ctrl L          | Form Feed             | GS         | 29  | 1D  | Ctrl ]          | Group Separator       |
| CR         | 13  | 0D  | Ctrl M          | Carriage Return       | RS         | 30  | 1E  | Ctrl            | Record Separator      |
| SO         | 14  | 0E  | Ctrl N          | Shift Out             | US         | 31  | 1F  | Ctrl _          | Unit Separator        |
| SI         | 15  | 0F  | Ctrl O          | Shift In              | SP         | 32  | 20  |                 | Space                 |
| DLE        | 16  | 10  | Ctrl P          | Data Link Escape      |            |     |     |                 |                       |



## Appendix E

## iLog Error Messages

| Error # | Description                                     | Note  |
|---------|---|---|
| -8003   | User stopped logging readings.                  |   |
| -10005  | Failed to find the iSE.                         | Ethernet cable is disconnected, iSE is powered off, connections across the firewall require longer "connection to socket time out" setting. |
| -10006  | Windows socket was closed.                      |   |
| -10007  | Windows socket error.                           | Wrong IP or wrong Port number was used.   |
| -10008  | The iSE failed to respond to a request.         | Wrong IP or wrong Port number was used.   |
| -10011  | Response came empty.                            | No data was sent.   |
| -10012  | Device responded with "Serial Time Out" string. | Possibly the iLog is configured for wrong product model.  |
| -10014  | Terminal Server Mode when the Port is 1000.     | Try Port 2000 in iLog configuration.  |
| -15100  | Error on obtaining the temperature reading.     | Possibly the iLog is configured for wrong product model.  |
| -15105  | Error on obtaining the humidity reading.        | Possibly the iLog is configured for wrong product model.  |
| -15110  | Error on obtaining the dew point reading.       | Possibly the iLog is configured for wrong product model.  |

## PART 7

### APPROVALS INFORMATION

#### 7.1 CE APPROVAL



This product conforms to the EMC directive 89/336/EEC amended by 93/68/EEC, and with the European Low Voltage Directive 72/23/EEC.

##### Electrical Safety EN61010-1:2001

Safety requirements for electrical equipment for measurement, control and laboratory.

##### Basic Insulation

##### Pollution Degree 2

##### Dielectric withstand Test per 1 min

- Input Power to Sensor Metal Body: none
- Input Power to Ethernet Output: 1500Vac
- Input Power to Relays: 1500Vac
- Ethernet Output to Relays: 1500Vac

##### Measurement Category I

*Category I are measurements performed on circuits not directly connected to the Mains Supply (power). Unit measures Air Temperature and Humidity.*

##### Transients Overvoltage Surge (1.2/50uS Pulse)

- Input Power: 500V Transients Overvoltage
- Ethernet: 1500V Transients Overvoltage

**Note:** *The ac/dc power adapter must have Safety Qualified Agency Approvals for CE with Double Insulation rating.*

*The ac/dc power adapter is 9Vdc.*

*The minimum output current rating is 500mA.*

##### EMC EN61000-6-1:2001 (Immunity) and EN61000-6-3:2001 (Emissions)

Immunity requirements for residential, commercial and light-industrial environments

- EMC Emissions Table 1, Class B
- EMC Immunity Table 1: Enclosure  
Table 2: Signal Lines Ports  
Table 3: Dc input/Dc output Ports

##### EMC EN61326:1997 + and A1:1998 + A2:2001

Immunity and Emissions requirements for electrical equipment for measurement, control and laboratory.

- EMC Emissions Table 4, Class B of EN61326
- EMC Immunity Table 1 of EN61326

**Note:** *I/O lines / sensor cables require shielded cables and these cables must be located on conductive cable trays or in conduits.*



Refer to the EMC and Safety installation considerations (Guidelines) of this manual for additional information.

#### 7.2

##### FCC

This device complies with Part 15, Subpart B, Class B of the FCC rules.

## Warranty/Disclaimer

NEWPORT Electronics, Inc. warrants this unit to be free of defects in materials and workmanship for a period of **one (1) year** from the date of purchase. In addition to NEWPORT's standard warranty period, NEWPORT Electronics will extend the warranty period for **one (1) additional year** if the warranty card enclosed with each instrument is returned to NEWPORT.

If the unit should malfunction, it must be returned to the factory for evaluation. NEWPORT's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by NEWPORT, if the unit is found to be defective it will be repaired or replaced at no charge. NEWPORT's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of NEWPORT's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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## Return Requests/Inquiries

Direct all warranty and repair requests/inquiries to the NEWPORT Customer Service Department. **BEFORE RETURNING ANY PRODUCT(S) TO NEWPORT, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM NEWPORT'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS).** The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available **BEFORE** contacting NEWPORT:

1. P.O. number under which the product was **PURCHASED**,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult NEWPORT for current repair charges. Have the following information available **BEFORE** contacting NEWPORT:

1. P.O. number to cover the **COST** of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

NEWPORT's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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