

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

CE

MADE IN USA

User's Guide

iServer MicroServer™



Shop on line at

omega.com®

OMEGA®

omega.com

e-mail: info@omega.com

For Latest Product Manuals

omegamanual.info

iTHX–M

Temperature + Humidity

omega.com®

OMEGA®

OMEGAnet® On-Line Service www.omega.com	Internet e-mail info@omega.com

Servicing North America:

USA:
ISO 9001 Certified
One Omega Drive, P.O. Box 4047
Stamford CT 06907-0047
TEL: (203) 359-1660 FAX: (203) 359-7700
e-mail: info@omega.com

Canada:
976 Bergar
Laval (Quebec) H7L 5A1
TEL: (514) 856-6928 FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

USA and Canada:
Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA®
Customer Service: 1-800-622-2378 / 1-800-622-BEST®
Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN®

Mexico and Latin American:
TEL: (001) 203-359-7803 FAX: (001) 203-359-7807
e-mail: espanol@omega.com

Servicing Europe:

Benelux:
TEL: +31 20 3472121 FAX: +31 20 6434643
Toll Free in Benelux: 0800 0993344
e-mail: sales@omegaeng.nl

Czech Republic:
Frystatska 184, 733 01 Karviná
TEL: +420 59 6311899 FAX: +420 59 6311114
e-mail: info@omegashop.cz

France:
TEL: +33 1 61 37 29 00 FAX: +33 1 30 57 54 27
Toll Free in France: 0800 466 342
e-mail: sales@omega.fr

Germany/Austria:
Daimlerstrasse 26, D-75392 Deckenpfronn, Germany
TEL: +49 7056 9398-0 FAX: +49 7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: info@omega.de

United Kingdom:
ISO 9001 Certified
One Omega Drive
River Bend Technology Centre
Northbank, Irlam Manchester M44 5BD United Kingdom
TEL: +44 161 777 6611 FAX: +44 161 777 6622
Toll Free in England: 0800 488 488
e-mail: sales@omega.co.uk

It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply.
OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

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

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

TABLE OF CONTENTS

Part 1: Introduction
- 1.1 Safety and EMC Considerations 2
- 1.2 Before You Begin 2
- 1.3 Description 2

Part 2: Hardware
- 2.1 Dimensioins 4
- 2.2 Wall Mounting 5
- 2.3 DIP Switches 5
- 2.4 Parts of iServer Unit 6
- 2.5 Disassembly Instruction 7
- 2.6 Network Communication Interfaces 8
  - 2.6.1 10Base-T RJ-45 Pinout 8
  - 2.6.2 10Base-T Crossover Wiring 8
- 2.7 Relay Wiring Connections 8
- 2.8 Running on Battery Power 8
- 2.9 Flash Memory Format 9

Part 3: Network Configuration
- 3.1 Network Protocols 10
- 3.2 Ethernet (MAC) Address 10
- 3.3 DHCP 11
- 3.4 DNS 11
- 3.5 IP Address 11
  - 3.5.1 Default IP Address 12
- 3.6 Port Number 12

Part 4: Operations
- 4.0 Testing the Connection 13
- 4.1 iConnect Software 14
- 4.2 Setting a new IP Address over the Network 16
- 4.3 Setup and Operation using the iServer Web Page 17
  - 4.3.1 Read Sensor 17
    - 4.3.1.1 Java Runtime Environment 1.4 Setup Instructions 18
    - 4.3.1.2 Java Runtime Environment 1.5 (5.0) Setup Instructions 19
    - 4.3.1.3 Browser Proxy Selection 19
  - 4.3.2 Adjustable Chart 20
  - 4.3.3 Retrieving Data from Flash 21
  - 4.3.4 Access Control 22
  - 4.3.5 Configuration 23
  - 4.3.6 Sensor Parameter 29
- 4.4 Telnet Setup 30
- 4.5 HTTPget Program 30
  - 4.5.1 HTTPget using Port 1000 31
  - 4.5.2 HTTPget and ARP to setup Device IP Address 32
- 4.6 ARP Protocol 33
- 4.7 iLog Software 34
- 4.8 Mail Notifier Software 35
  - 4.8.1 Installation 35
  - 4.8.2 Program Options Setup and Configuration 36
  - 4.8.3 Device Setting Setup and Configuration 37

Part 5: Specifications 38

Part 6: Factory Preset Values 39
Appendix A Glossary 40
Appendix B IP Address 41
Appendix C IP Netmask 42
Appendix D ASCII Chart 43
ASCII Chart Control Codes 44
Appendix E iLog Error Messages 45

Part 7: Approvals Information
7.1 Electromagnetic Compatibility (EMC) 46
7.2 FCC 46
7.3 Certificate of Conformance 47

LIST OF FIGURES:

Figure 1.1 iServer and iLD Big Display on the Ethernet Network 3
Figure 2.1 Dimensions 4
Figure 2.2 Wall Mounting 5
Figure 2.3 DIP Switches 5
Figure 2.4 Parts of iServer Unit 6
Figure 2.5 Opening the Unit 7
Figure 2.6 RJ45 Pinout 8
Figure 2.7 10Base-T Crossover Cable Wiring 8
Figure 2.8 Relay Connections 8
Figure 2.9 Chart of Simulated Data 9
Figure 3.1 Labeling 10
Figure 3.2 DIP Switch on Bottom Side of iServer 11
Figure 3.3 Telnet Login into the iServer 12
Figure 4.1 Pinging the iServer from MS-DOS Prompt 13
Figure 4.2 Assigning an IP Address using iConnect 14
Figure 4.3 Accessing the iServer's Home Page Menu 15
Figure 4.4 Access Control 16
Figure 4.5 iServer Home Page 17
Figure 4.6 Login and Administration Password 17
Figure 4.7 Read Sensor 18
Figure 4.8 Adjustable Chart 20
Figure 4.9 iFlash Download Utility 21
Figure 4.10 Access Control 22
Figure 4.11 Configuration 24
Figure 4.12 Sensor Parameter 29
Figure 4.13 Remote End Char 29
Figure 4.14 ARP Commands and Responses 33
Figure 4.15 iLog Software Logging Data 34
Figure 4.16 iServer Mail Notifier Main Window 35
Figure 4.17 iServer Mail Notifier Profile Setup 36
Figure 4.18 iServer Mail Notifier Device Setting 37

LIST OF TABLES:

Table 2.1 Parts of iServer Unit 5

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 iServer.



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**
- **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.

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), download utility (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

View Temperature + Humidity with a Web Browser. The iServer let's you monitor and record Temperature and Relative Humidity over an Ethernet network or the Internet with no special software -- just a Web browser. The iServer serves Active Web Pages to display real time readings and 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.

Adjustable Charts. The Java™ Applet chart scales are fully adjustable on the fly. For example, the chart can display one day, one week, one month or one year. Temperature and humidity can be charted across the full span (-40 to 124ºC, and 0 to 100% RH) or within any narrow range (such as 20 to 30ºC).

Flash Memory. The iServer 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 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.

Installation and operation of the iServer 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 iServer is simple to install and use. It features award winning technology that requires no special software except a Web browser. The iServer 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 iServer serves a Web Page with the current readings. The iServer comes complete with one temperature/humidity wand probe, full documentation and software.

Alarms and Email. The device can trigger an alarm if temperature 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.

A standard web browser can be used to monitor and chart temperature and humidity. The browser can also be used to configure the device's IP address, passwords for access and all configuration parameters. An iLD Big Display can display temperature and humidity received from an iServer over the Ethernet or the Internet.

The following example illustrates how you can hookup an iServer and iLD to your network:

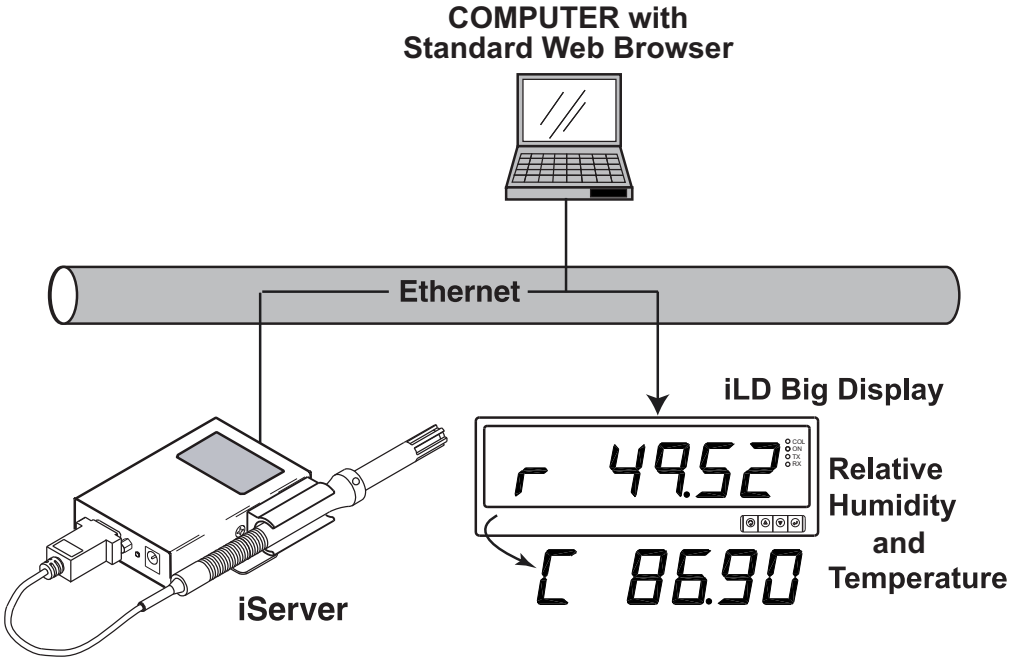
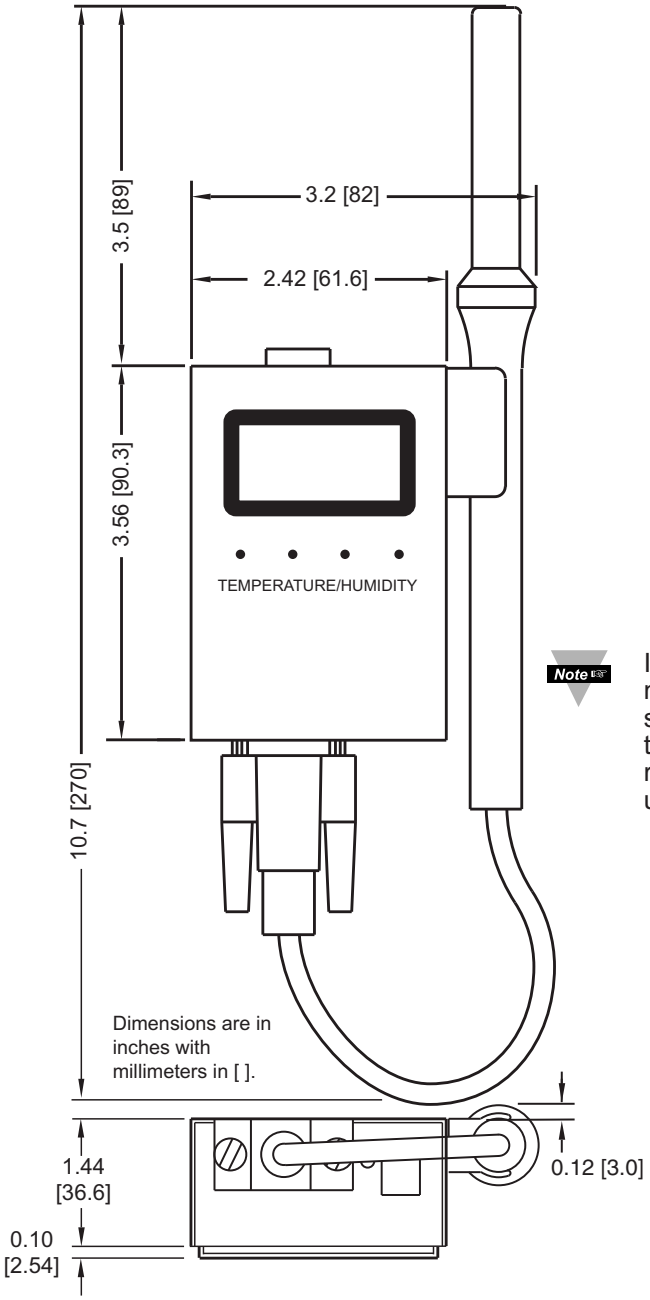


Figure 1.1 iServer and iLD Big Display on the Ethernet Network

PART 2 HARDWARE

2.1 Dimensions



Note

If unit is to be mounted on a flat surface, you may take the bottom rubber feet off the unit.

Figure 2.1 Dimensions

2.2 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.

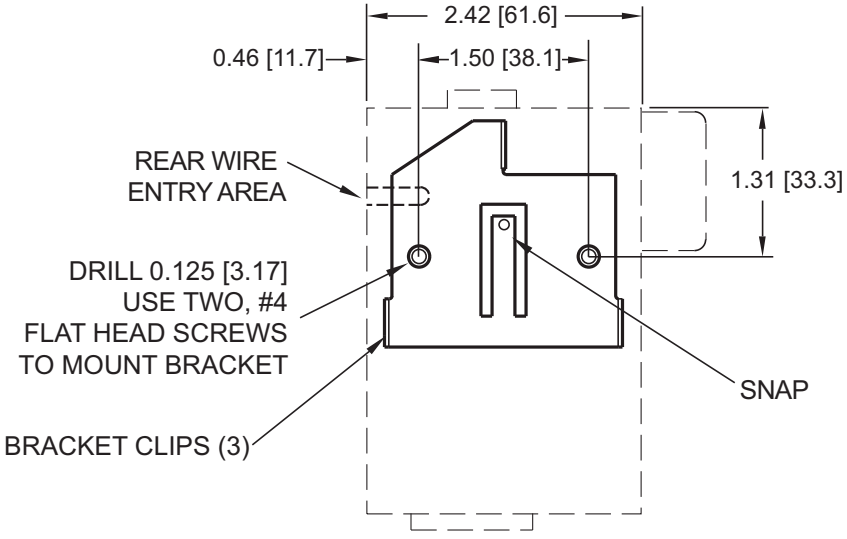


Figure 2.2 Wall Mounting

Note ☞ It is recommended that you ground your unit by connecting a wire to the Return/Ground position of the relay connector, see **Figure 2.8**.

2.3 DIP Switches

The iServer 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

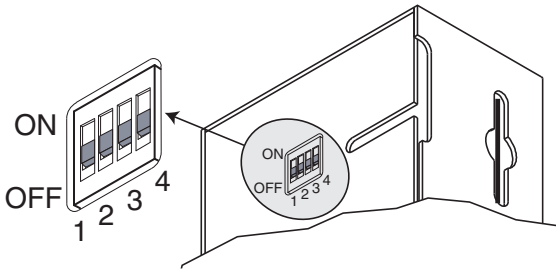


Figure 2.3 DIP Switches

Note ☞ To set the iServer to factory default settings, slide DIP switch #2 to ON position. Power the iServer on and wait about 10 seconds until the iServer fully boots up. Set the DIP switch #2 back to OFF position (it does not matter if the iServer 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.

Note ☞ To enable the DHCP, besides using DIP switch #3, set the iServer's IP address to 0.0.0.0. An iServer with IP address of 0.0.0.0 will request an IP address, gateway address, and subnet mask from the DHCP server over the Ethernet.

2.4 Parts of the iServer Unit

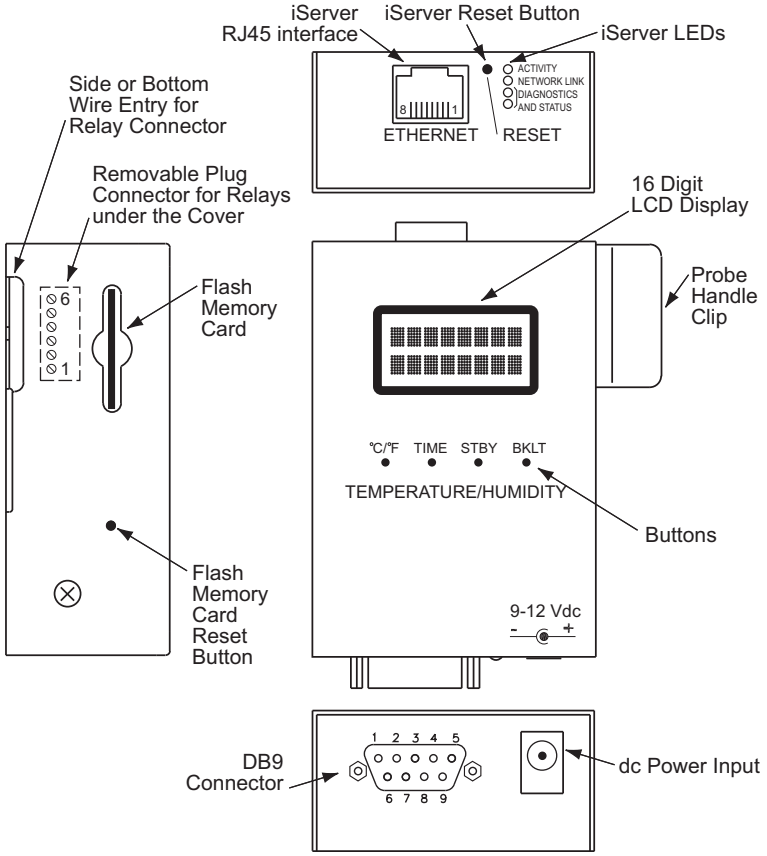


Figure 2.4 Parts of the iServer Unit

Table 2.1 Parts of iServer Unit

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

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

2.5 Disassembly Instruction

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

- To wire relay connector. (Refer to **Figure 2.8**)
- To connect or replace the battery.
- To change S5 jumper. In the absence of AC power, and if S5 is installed, the LCD Backlight and iServer Board will be on and running on the battery power. **Refer to Section 2.8**.

Disconnect the power supply before proceeding.

Remove Cover as shown.

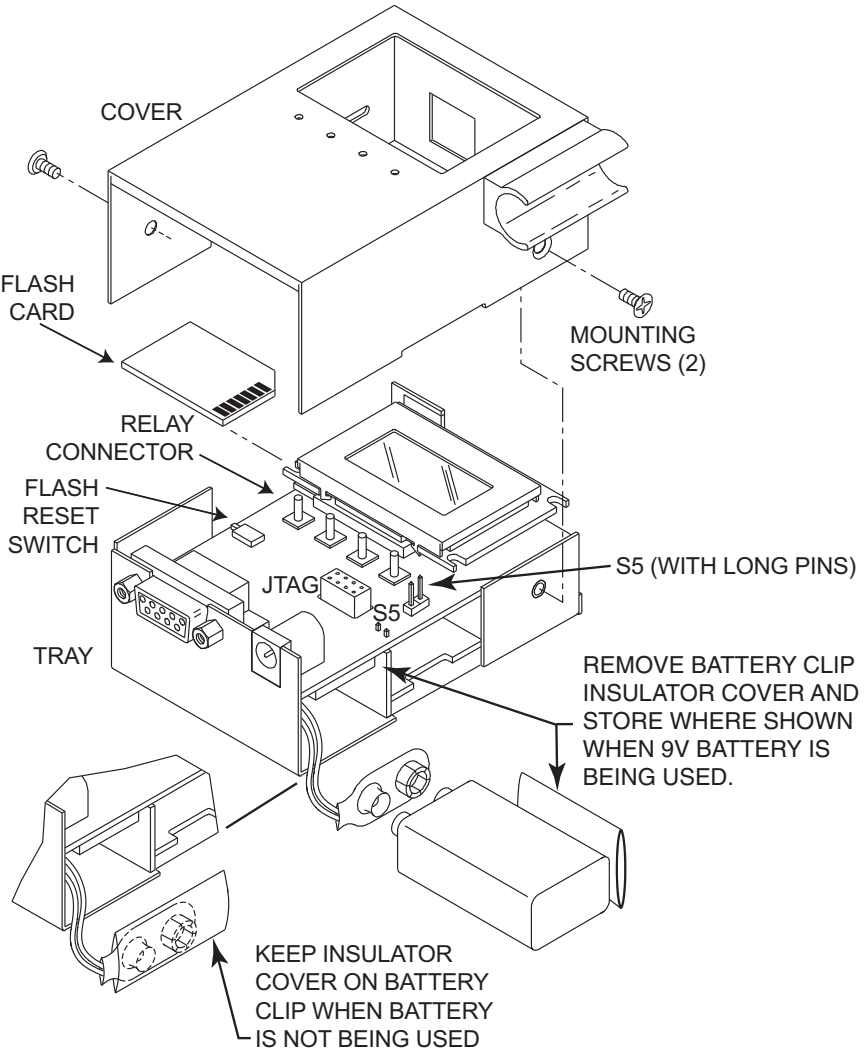
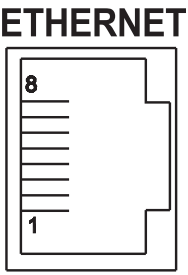


Figure 2.5 Opening the Unit

2.6 Network Communication Interfaces

2.6.1 10Base-T RJ-45 Pinout

The 10BASE-T Ethernet network (RJ45) system is used in the iServer 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.



Pin	Name	Description
1	+Tx	+ Transmit Data
2	-Tx	- Transmit Data
3	+RX	+ Receive Data
4	N/C	Not Connected
5	N/C	Not Connected
6	-Rx	- Receive Data
7	N/C	Not Connected
8	N/C	Not Connected

Figure 2.6 RJ45 Pinout

2.6.2 10Base-T Crossover Wiring

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

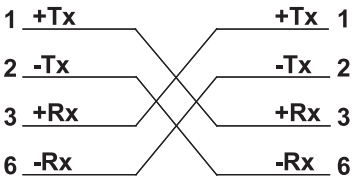


Figure 2.7 10Base-T Crossover Cable Wiring

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

2.7 Relay Wiring Connections

To access the Relay Connector 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 relay connector. Or by wrapping a wire around the mounting tab screw (on older units) and tightening a lock washer so that it embeds itself into the metal of the mounting tab.

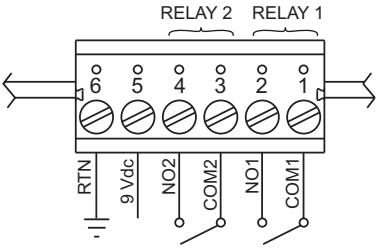


Figure 2.8 Relay Connections

2.8 Running on Battery Power

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

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

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

When you first connect the battery, without the AC power adaptor, 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 adaptor into unit and push the Flash Reset Button (refer to **Figure 2.4** or **Figure 2.5**). Unit is now ready to be configured for recording the data. Also, if the AC adaptor is unplugged

2.8 Running on Battery Power (continued)

while the unit is recording, the battery will take over and recording will continue.

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.

Note In case of power outage and the unit is running on a low battery, the message "Ack bitP Stand by" will appear on the LCD display.

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 2.9**).

1) Unplug the AC adaptor from the unit.
2) Hold down the ºC/ºF button and connect the AC adaptor back into the unit. Release the ºC/ºF button.º
3) You will see the following message appear on the LCD: ***ºWAITº* *FLASH*.**
4) Wait for about 60 seconds and a new message should appear: ***ºWAITº* *OKAY***.
5) Press the ºC/ºF button once and this message will appear: **DATA_REC ORD_TEST.**
6) Press the TIME button and this message will appear: **ORD_TEST DATA_REC**.
7) Press the STBY button, the firmware version of the unit will appear, followed by ***OKAY***.
8) Again, press the ºC/ºF button, the firmware version, followed by ***WAIT*** will apear and then will switch to firmware version, followed by ***OKAY***.
9) Unplug the AC adaptor 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.

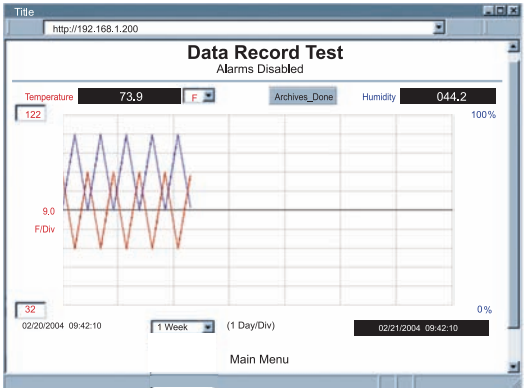


Figure 2.9 Chart of Simulated Data

PART 3
NETWORK CONFIGURATION

3.1 Network Protocols

The iServer 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**

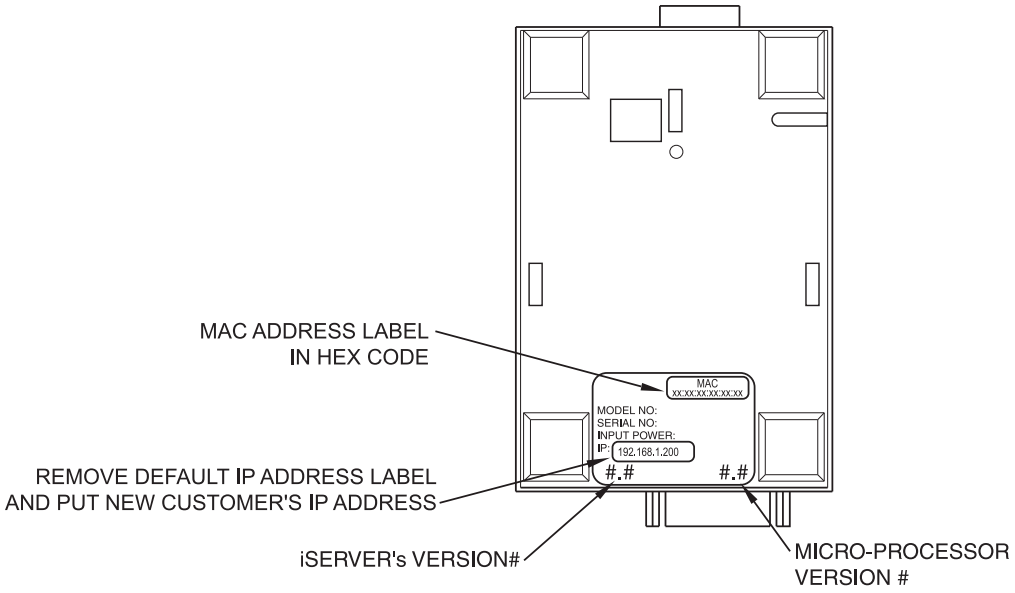


Figure 3.1 Labeling

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 iServer, as soon as the iServer is connected to the network, there is an exchange of information between DHCP server and the iServer. During this process the IP address, the Gateway address, and the Subnet Mask will be assigned to the iServer 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 iServer 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**).

Note ☞ DIP switch # 3 shown in **"ON"** position

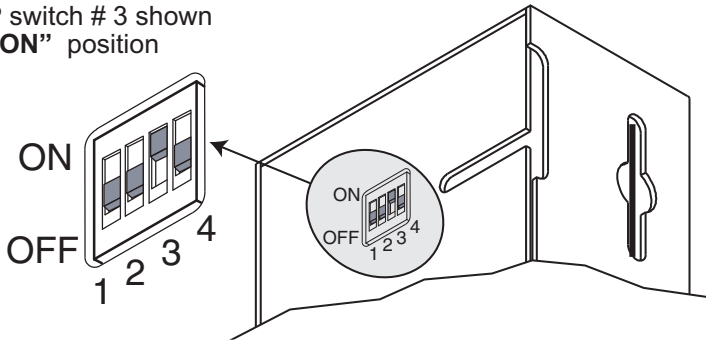


Figure 3.2 DIP Switch on the Bottom Side of iServer

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 iServer Home Page. The default DNS name for an iServer is **"eis"** followed by the last four digits of the MAC address of that particular iServer.

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 iServer.
2. The iServers are shipped with a default static IP address of **192.168.1.200** and Subnet Mask of **255.255.255.0**.
3. On Novell networks or Windows 2000 Server where the DCHP is an updated function of DNS, this feature may be beneficial since a particular name can be assigned eliminating the need for the IP address, as described in **Section 3.4**.

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 iServer. 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 iServer 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 iServer 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 iServer'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 iServer'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 iServer 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 iServer to change the IP address or any other settings within the iServer.

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 iServer:

1. Port (socket) number 1000 when using HTTPget program (see **Section 4.5**).
2. Port (socket) number 2000 when trying to access the sensor (probe) connected to the port of the iServer to receive data.
3. Port (socket) number 2002 when trying to access the iServer itself for Power Recycling the iServer remotely. This can be done using Windows standard Telnet application.

Power recycling the iServer can also be done through the iServer'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.

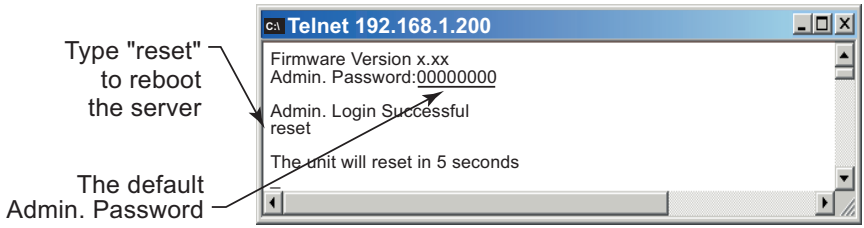


Figure 3.3 Telnet Login into the iServer

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 iServer 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 NEWPORT's 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 iServer (see **Section 2.2**) and use a straight network cable to connect the iServer 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 iServer's default IP address (**192.168.1.200**) and connect to the iServer using a cross-over network cable between your PC's network port and the iServer. After you're done with configuring the iServer, 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 iServer'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 iServer's 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

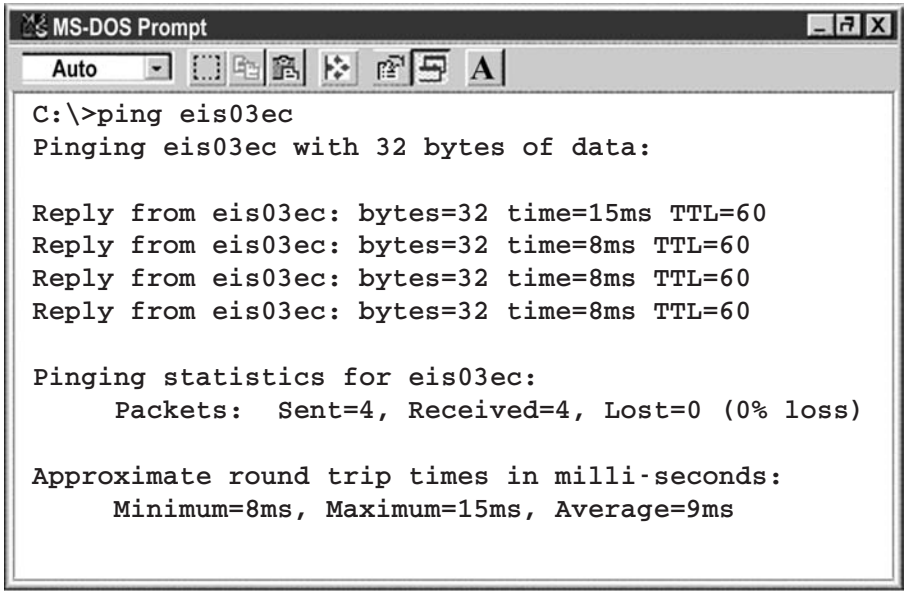


Figure 4.1 Pinging the iServer from MS-DOS Prompt

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 iServer 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 iServer and access its web pages for configuration. You can also use any standard web browser to access the iServer's web pages. Consult with your IT department for obtaining an IP address.

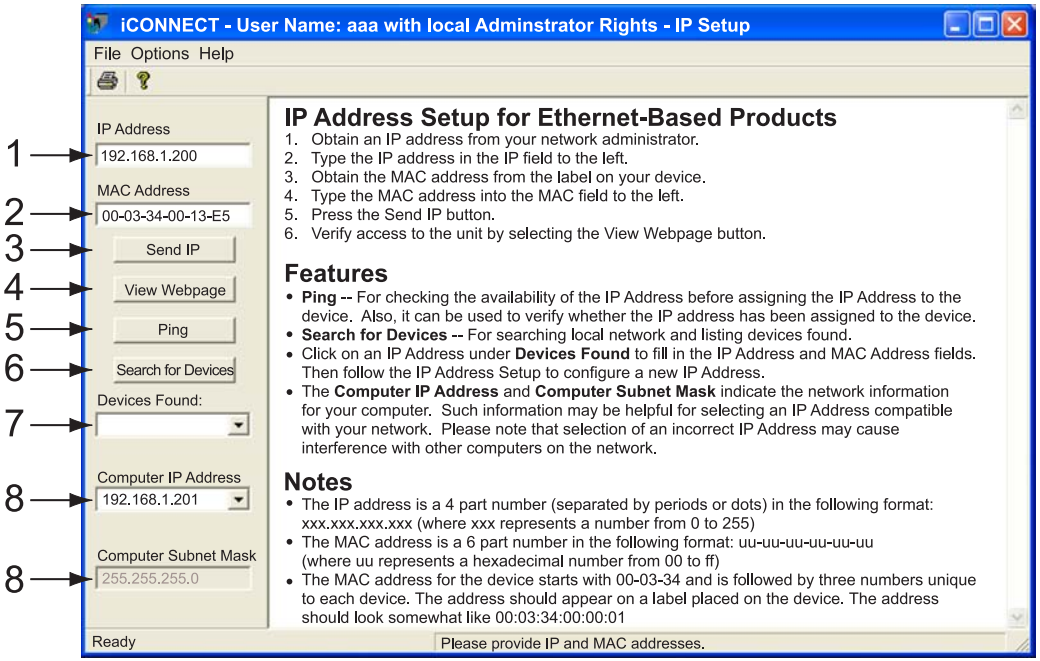


Figure 4.2 Assigning an IP Address using iConnect

1) Place the IP address in this box.

2) Take the MAC address from the label attached to the bottom of the iServer and place it in this box.

3) Click here to send the above IP address to the iServer.

4) After the IP address is assigned to the iServer, click here to access it's web pages.

5) Click here to Ping the iServer whose IP address is shown in the IP address box.

6) Click here to find all the iServer's on your network .

7) The IP addresses for the iServer'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 iServer for Configuration:

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

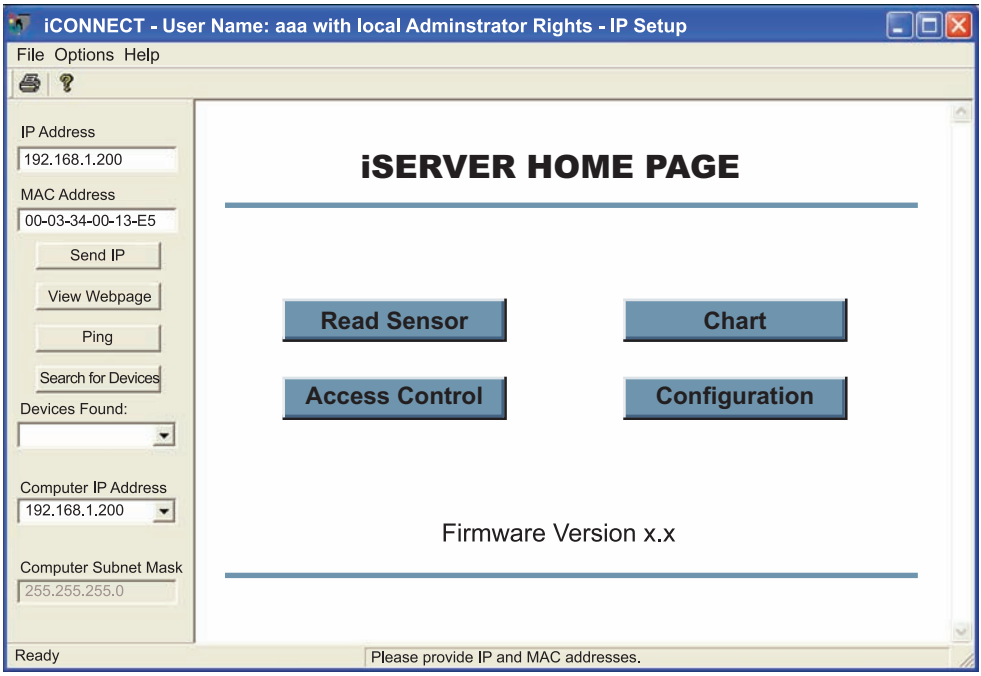


Figure 4.3 Accessing the iServer’s Home Page Menu

4.2 Setting a New IP Address over the Network

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

The iServer 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 iServer's IP address (**192.168.1.x**) and connect to the iServer using a crossover network cable between your PC and the iServer.

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 iServer'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 were you can simply type in the desired Static IP address, and click Save.



Figure 4.4 Access Control

For the IP address to take effect, the iServer needs to be turned OFF/ON. Clicking the "Power Recycle" button will turn the iServer OFF and ON. Pressing the physical button marked "RESET" on the iServer does the same thing.

You can now connect the iServer 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 iServer 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 iServer's IP address.
- The Home Page, shown in **Figure 4.5**, will be displayed.

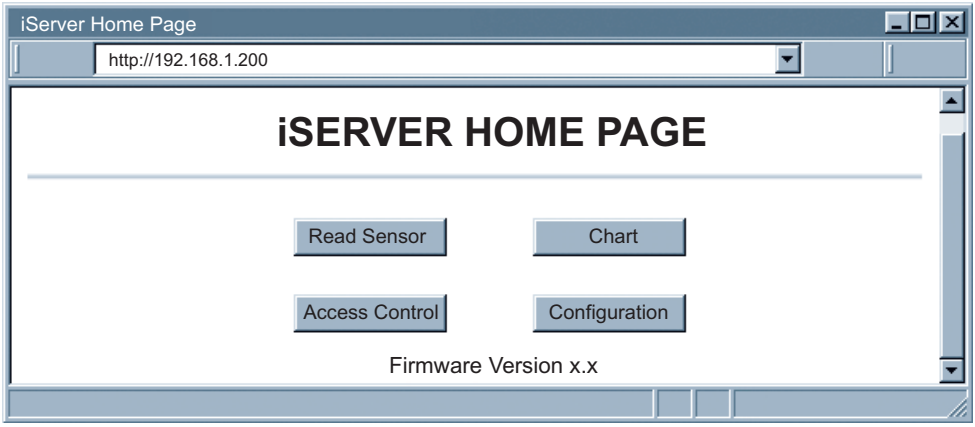


Figure 4.5 iServer Home Page

Note 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" iServer parameters 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 iServer'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.

Note

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.

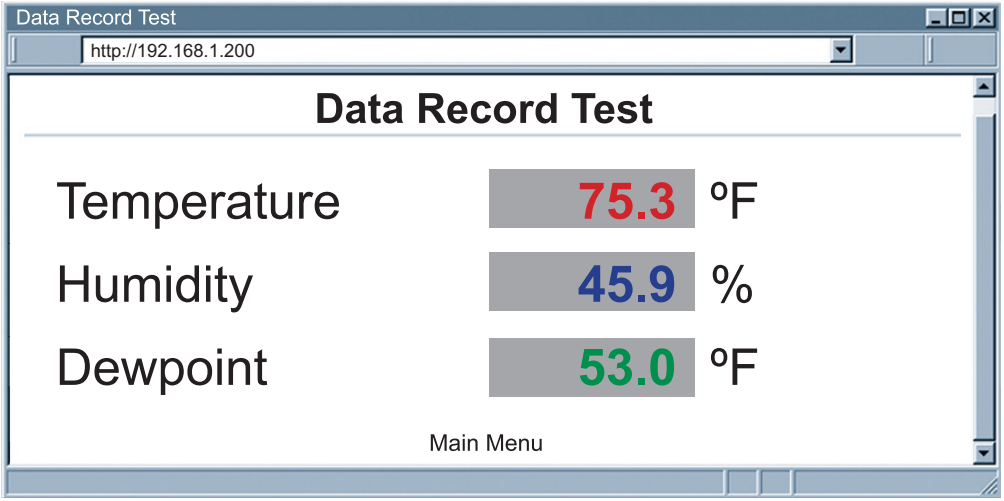


Figure 4.7 Read Sensor

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 iServers 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 iServer product. (Generally, select "Direct Connection" if accessing iServers 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 iServer units within your internal network

- Usually when the computer and iServer 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 iServer 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 iServer appears, then the HTTP Proxy is working fine.

If the data isn't updated on the iServer 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 iServer, 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 iServer 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 iServer) and then connecting the iServer 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 iServer charts after connecting the iServer 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 iServer 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.

Java and the Java Coffee Cup Logo are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries."

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 124ºC, and 0 to 100% RH) or within any narrow range (such as 20 to 30ºC). 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.

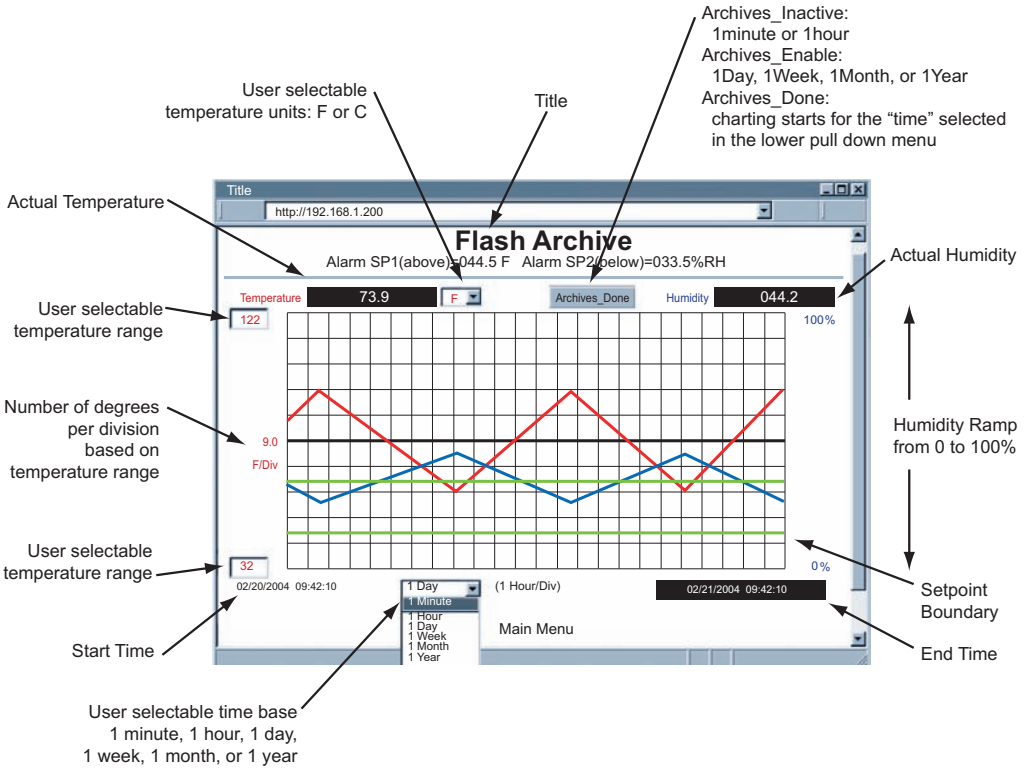


Figure 4.8 Adjustable Chart

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 iServer'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 iServer 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 iServer 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 iTHX-M 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.

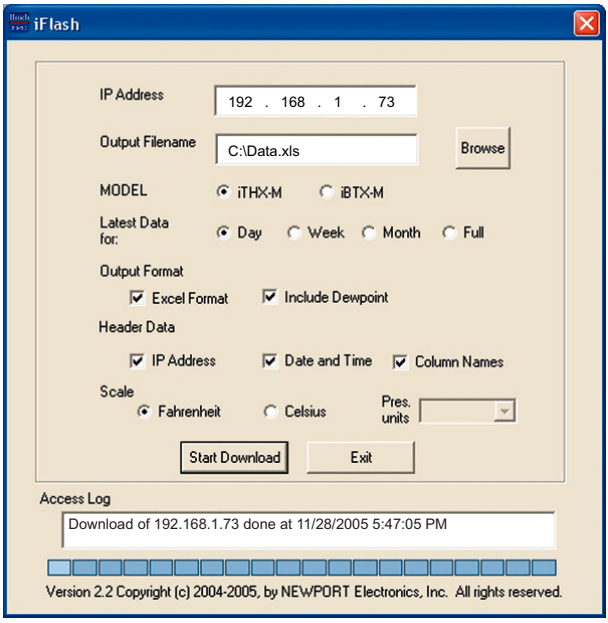


Figure 4.9 iFlash Download Utility

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

4.3.4 Access Control

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

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.



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

Note ☞ Changes made in the iServer's Access Control page can be saved permanently by pressing the Save button and power recycling the iServer.

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 iServer 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 iServer will not require a password to access and modify iServer 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 iServer will not require password to access and modify "Access Control" page.

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

MAC Address: This is also called Hardware address or Ethernet address, which is assigned to the iServer at production. The MAC (Media Access Control) address is the iServer'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 iServer's default IP address is **192.168.1.200**. The iServer's IP address should be changed to fit user's networking environment. Consult with your IT department for obtaining an IP address.

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 iServer is sending packets to another network node that is not on the same network on which the iServer is connected, a gateway address needs to be given to the iServer. The gateway address should be the IP address of the router connected to the same LAN to which the iServer is connected. The iServer'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 iServer's default subnet mask is **255.255.255.0**. Consult with your IT department for obtaining a subnet mask.

Power Recycle: Clicking this button will reset the power on the iServer.

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 (see **Figure 4.11**).

General Description of the Configuration page: There are two general sections “Flash Card Memory” and “Server”. Flash Card Memory consists of the following titles: Real Time Clock (RTC), Title, Alarm Setup, and Flash Recording. Server consists of Terminal Server and Remote Access.

Title and Flash Recording selections can be editted *once* by selecting “*Activation - Start Recording*” and after that, no modification will take place unless recording is stopped (the reason for this is to be compliant with the data logging rules). The remaining parameters can be changed during recording as explained below.

There are several scenarios depending on the state of the Flash Card and the Real Time Clock (RTC):

#1) RTC is not set and Flash Card is empty.

All the fields must be updated exactly according to the indicated format, “*Adjust RTC Only*” check box must be left unchecked, “*Activation*” selection must set to “*Start Recording*” and click the “*Update*” button. Having done this, it is recommended to select “*Configuration*” from “*Activation*” drop down window, click the “*Update*” button, set the “*Activation*” to “*Status/RTC/Alarm*” and click the “*Update*” button one more time to review/verify that the setup took place as it was intended.

#2) RTC is set, and recording is in progress.

The only possible setups are to update “*Date*” and “*Time*” of the Real Time Clock along with checking “*Adjust RTC Only*” box. Also, alarms can be updated provided that “*Activation*” is set to “*Status/RTC/Alarm*”. Otherwise, the recording has to be stopped by selecting “*Stop Recording*” of the “*Activation*” drop down window prior to modifying the Flash Card setup. An alternative way to stop recording is to push Standby Button (refer to **Figure 2.3**) of the unit.

#3) RTC is set, recording is stopped, and Flash Card is not empty.

This means that a pre-recorded Flash Card is installed, and by activating the chart the archived data can be viewed (Refer to **Figure 4.8**). The chart has the following selections:

1 Minute, 1 Day, 1 Week, 1 Month, 1 Year

In other words, they are the last specified selection e.g. 1 Day means the last day of the recorded data. Having done the selection, the “*Archives_Enable*” button must be clicked, which will then change to “*Archives_Done*” and the data will be retrieved accordingly. Also, the corresponding Start and End dates will reflect the respective time duration e.g. refer to **Figure 4.8** which is the last 1 Day, the dates are:

02/20/2004 09:42:10 to 02/21/2004 09:42:10.

#4) RTC is not set and the Flash Card is not empty.

This is similiar to item 3) above except that at the power-up the installed Flash Card was not empty. Or, the Flash Card Reset Button (refer to **Figure 2.3**) was pushed.

4.3.5 Configuration (continued)

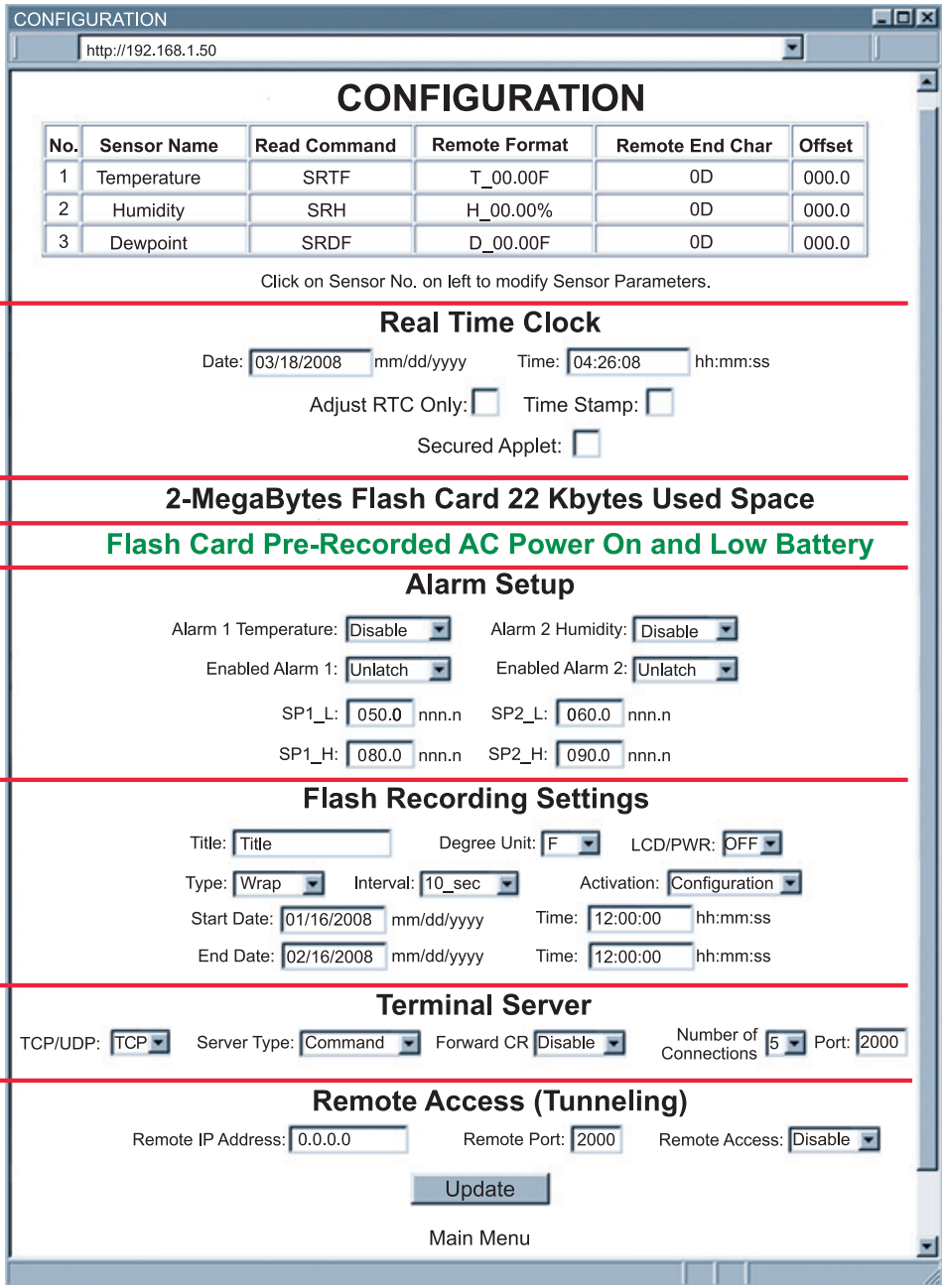


Figure 4.11 Configuration

Below are the definitions of terms used in the Configuration page.

A) Configuration/Device Setup

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

B) Real Time Clock

RTC Date and Time: The formats are *mm/dd/yyyy* and *hh:mm:ss*. The exact formats are required otherwise an error message will appear in the Title box. Note: time is military time/24 hour based.

Adjust RTC Only: If checked, the clock will be updated and nothing else, provided that "*Activation*" is set to "*Status/RTC/Alarm*". To verify the clock, set the "*Activation*" to "*Configuration*", click *Update* button, then set "*Activation*" to "*Status/RTC/Alarm*" and click *Update* button one more time.

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**).

Secured Applet: If checked, the LOGIN password is required to open "Read Sensor" and "Chart" pages.

C) Flash Card Size: Reports the Flash Card density and if it is already recorded, how many locations are filled.

0-Megabytes: Flash Card is not installed or a bad Flash Card
2-Megabytes, 4-Megabytes, 8-Megabytes: available sizes of Flash Cards.

D) Flash Card Message: Describes RTC setup, listed in the previous 4 scenarios.

Flash Card Module Malfunctional
Flash Card Standby
Flash Card Pre-Recorded
Flash Card Recording On
Flash Card Module Not Initialized
Flash Card Corrupt Initialization
Open Sensor
Flash Card Recording Stopped
Flash Card Recording Complete
Wait Reading Flash
Recording Initialized

If the battery is not connected or the voltage is low, the statement "*Low Battery*" will be added to the above statements. You may also see a statement "*Archive Busy*" if another client is busy receiving archive data. In this case, refrain from activating the applet, instead keep clicking the *Update* button and make sure "*Activation*" is set to "*Status/RTC/Alarm*" until the "*Archive Busy*" statement is no longer displayed.

E) Alarm Setup: There are two alarms which can be assigned to temperature and humidity (one alarm to each variable). Selections are Temperature (SP1_) or Humidity (SP2_) and Setpoint High (SP_H) or Setpoint Low (SP_L).

Alarm 1 Temperature and **Alarm 2 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 (080.0), Relay 1 will be energized, and if temperature goes below Low value (076.0) Relay 1 will be energized.

4.3.5 Configuration (continued)

Enabled Alarm 1 Temp: *Unlatch, Latch, Clear Latch, Chart SP*

Enabled Alarm 2 Humidity: *Unlatch, Latch, Clear Latch, Chart SP*

Unlatch: The relay in the iServer 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 iServer 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".

SP1_L, **SP1_H** and **SP2_L**, **SP2_H:** 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.

F) Flash Recording

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 1.5mA or 3mA 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 iServer into full operational mode when it's running on the battery (S5 jumper needs to be installed, see **Section 2.5** and **2.8**). This means that in case of power outage, sensing, recording, LCD display, and network communication capabilities of the iServer will all operate on the battery. Due to heavy power consumption the battery will not last more than an hour.

Type: The selections are: "*Limited*", "*Wrap*", or "*Nonwrap*".

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

Wrap: You only need to define the *Start Date* and *Time*. The iServer will record data until the Flash is full, then the iServer will continue to record and overwrite the existing data.

Nonwrap: You only need to define the *Start Date* and *Time*. The iServer will record data until the Flash is full, then the iServer will stop recording.

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*".



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.

4.3.5 Configuration (continued)

Activation: The selections are "*Status/RTC/Alarm*", "*Start Recording* ", "*Configuration*", and "*Stop Recording* ". Refer to previous scenarios #1 and #2 at the beginning of this **Section 4.3.5** for more details.

Status/RTC/Alarm: Select "*Configuration*" and "*Status/RTC/Alarm*", each followed by clicking the Update button to retrieve the latest recording settings. By selecting "*Status/RTC/Alarm*" only, followed by clicking the "Update" button the iTHX will report back all the settings, but the "Recording" settings.

Start Recording: Select to initiate a recording.

Configuration: Select to retrieve the latest recording settings, followed by "*Status/RTC/Alarm*" option.

Stop Recording: Select to stop an ongoing recording.

Reset: Selecting this option will reset the flash memory, LCD, and recording sections to a fresh start. It is suggested to select "*Reset* " followed by clicking the "Update" button if you experience recording problems.

Start Date, Time: Starting date and time for recording. The format is *mm/dd/yyyy* and *hh:mm:ss*, it must be followed exactly. Entry is required for all Types of Flash Recording.

End Date, Time: Ending date and time for recording. The format is *mm/dd/yyyy* and *hh:mm:ss*, it must be followed exactly. Entry is required for Limited Type of Flash Recording only.

NOTE 1: While the recording is in progress, the letter "R" of RH, located on the LCD screen blinks continuously.

NOTE 2: 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.

NOTE 3: The number of humidity/temperature values that can be recorded depends on the memory flash capacity (2 Mbytes, 4 Mbytes or 8 Mbytes) and the 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 iServer will refuse to initiate a call to provide archived data to the second applet until it has finished with the first one.

NOTE 4: 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.

NOTE 5: After you "*Start Recording*" the flash recording followed by clicking the "*Update*" button, if you then need to make any changes in the Flash Recording section you must either select "*Stop Recording*" followed by clicking the "*Update*" button or push the reset button on the side of the iServer and reconfigure the Flash Recording section.

NOTE 6: 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.

4.3.5 Configuration (continued)

G) Terminal Server

TCP/UDP*: The iServer 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 iServer 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 iServer needs to communicate with multiple nodes over the network. In the case of directed UDP, the iServer 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 iServer to send the reponse back to querying device.

Forward CR: Forward CR can be *enabled* and *disabled*. If *enabled* the iServer 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 iServer. If 1 is selected, only one network connection can be made to the iServer's. Any number more than 1 would allow that number of network hosts to read from the iServer simultaneously (default is 5).

Port: Port 2000 is the default TCP port for the iServer'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.

Note

Terminal Server usually describes a device that exchanges data between Ethernet/TCPIP networks and RS-232/RS-485 systems. With this iServer, 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 the Mail Notifier, OPC Server, iLog, iFlash or HTTPget can send TCP requests and obtain readings using the Terminal Server feature.

H) Remote Access

Remote IP Address: iServer 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 iServer can send its data to a remote node on the same network (the "Remote IP address" and "Remote Port" must be entered).

Note

*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.

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.

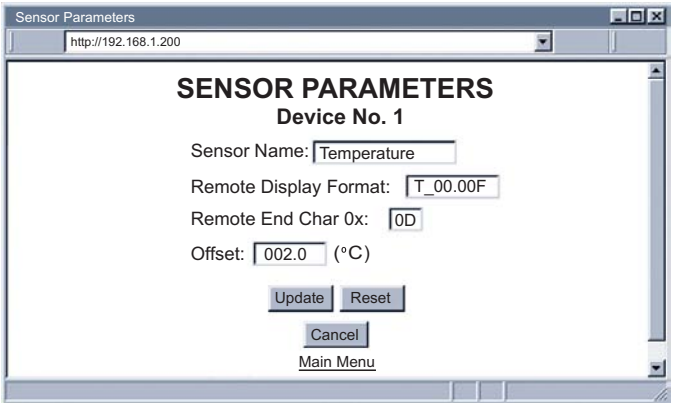


Figure 4.12 Sensor Parameters

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

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 continuous mode. **H_00.00%** in humidity setting, displays **H_** and **00.00%** is the humidity value displayed. Example: if the humidity is **30.00**, then **H_30.00%** will be seen in the remote display. If no format is specified (blank), there is no reading sent out. If temperature is **76.25** and **00.0F** is used in temperature setting, the remote site will show **76.2F**.

This format setup is originally based on iLD Remote Display, which has four or six LEDs. For six LEDs, **T_00.00F** format, and for four LEDs, **00.0F** formats are appropriate.

Remote End Char: The default value is 0D (Hex representation of <CR>). This means that the iServer sends <CR> after each temperature, humidity, and dewpoint value. This will be done either in Continuous or Command mode. This is how the data will appear on the host with 0D assigned:

T_75.70F
H_37.90%
D_44.90F

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

T_75.70F H_37.90% D_44.90F

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

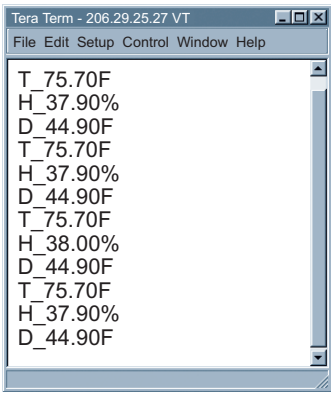


Figure 4.13
Remote End Char

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 iServer. In continuous mode, the telnet teminal will receive continuous messages from the iServer. In command mode, the command can be sent to query the iServer 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 iServer. 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 iServer product. In contrast, the telnet or Hyperterminal programs allow a continuous connection with multiple requests to be sent to the iServer product.

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

The iServer 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 iServer 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 iServer by using the HTTPget program. The following program can be used to read data from the iServer 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 iServer. This file will be automatically installed when you install the MailNotifier software available on our website and CD.

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 below

   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:

***SRT**	Read the temperature in C
***SRTF**	Read the temperature in F
***SRH**	Read humidity
***SRD**	Read the dewpoint in C
***SRDF**	Read the dewpoint in F
***SRA1**	Read temperature setpoints
***SRA2**	Read humidity setpoints
***SRB**	Read the temperature and humidity
***SRYS**	Indicate AC or DC power and battery status
***SRYRST**	Reset Power on iServer
***SR_XD1**	Exclude alarm 1 (disable alarm 1 function)
***SR_XD2**	Exclude alarm 2 (disable alarm 2 function)
***SR_XC1**	Reset relay 1 latch condition
***SR_XC2**	Reset relay 2 latch condition
***SR_XE1**	Include alarm 1 (enable alarm 1 function)

4.5.1 HTTPget using Port 1000 (continued)

***SR_XE2** Include alarm 2 (enable alarm 2 function)
***SR_XP1** Close relay 1 for < 200 mSec
***SR_XP2** Close relay 2 for < 200 mSec
***SR_XH1** Close relay 1
***SR_XH2** Close relay 2
***SR_XL1** Open relay 1
***SR_XHL** Open relay 2

\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. (Diagnostic/Status leds are on for 2 seconds).

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

"**00-03-34-00-06-b6**" is replaced with your iServer 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**

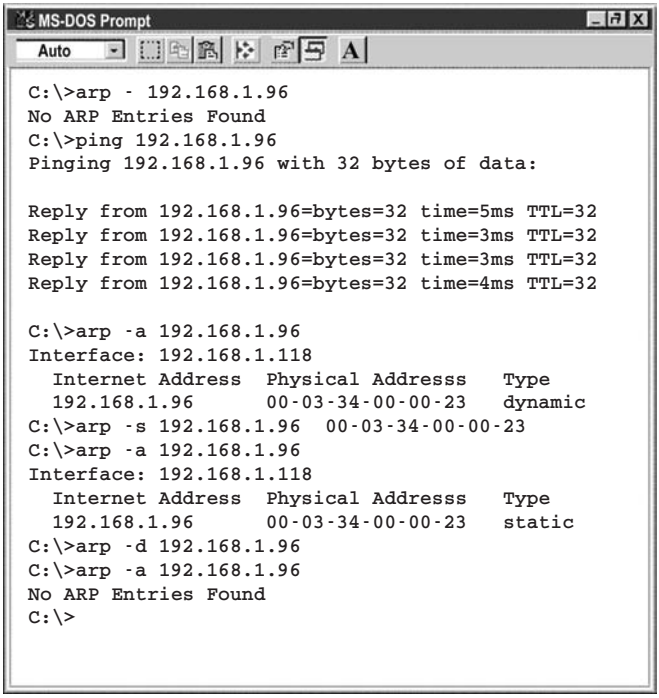


Figure 4.14 ARP Commands and Responses

4.7 iLog Software

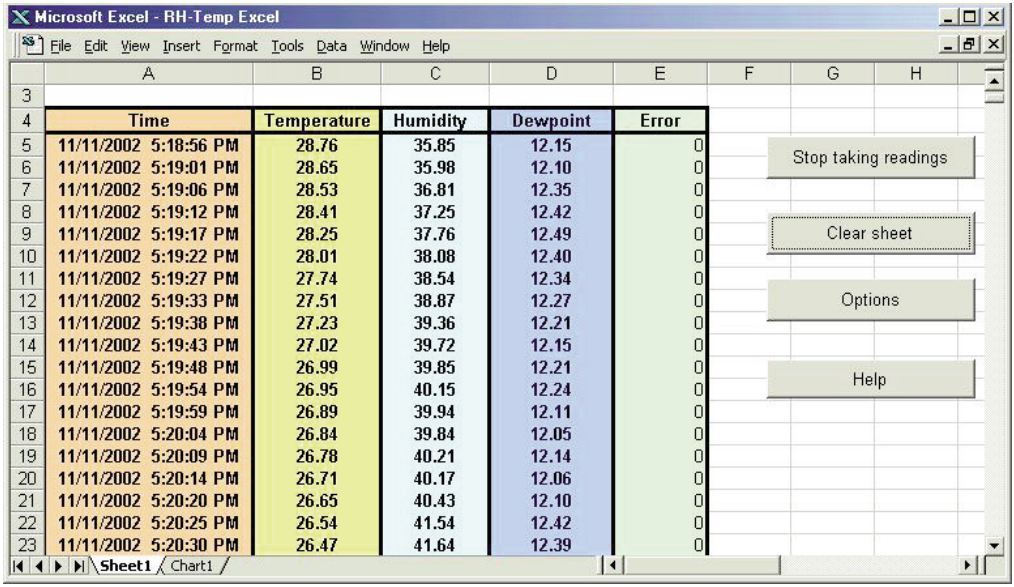
This is an Excel application software that can log temperature, humidity and dewpoint from the iServer over the local network (Ethernet) or the internet.

a) Download the iLog software from the website listed in this manual.

b) Install iLog software on a networked PC. This software is compatible with Windows 95, 98, NT, 2000, and XP.

c) For complete information of how to use the iLog software, click on the HELP button.

d) There is a list of Error Messages in **Appendix E**.



	A	B	C	D	E
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 4.15 iLog Software Logging Data

4.8 Mail Notifier Software

The Mail Notifier Software can be used only with NEWPORT Electronics instruments.

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 iServer. 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.

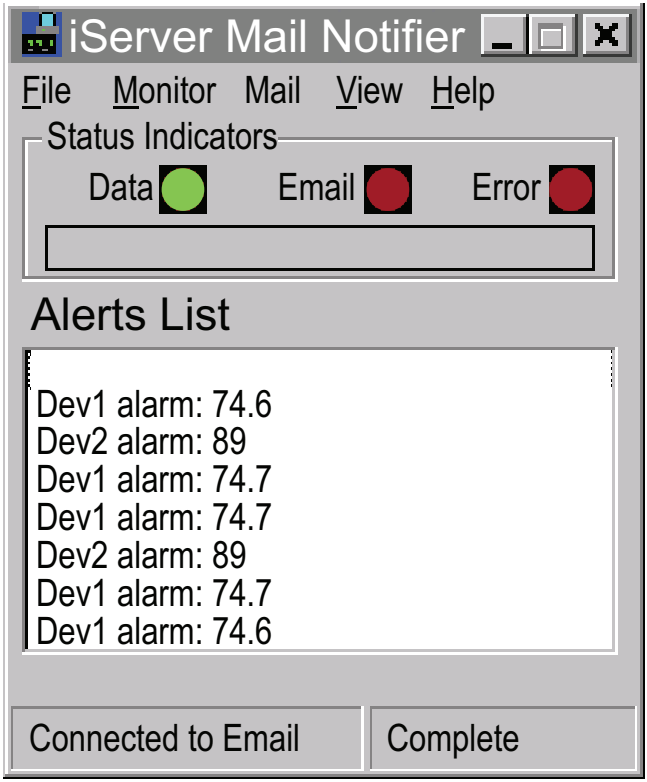


Figure 4.16 iServer Mail Notifier Main Window

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.

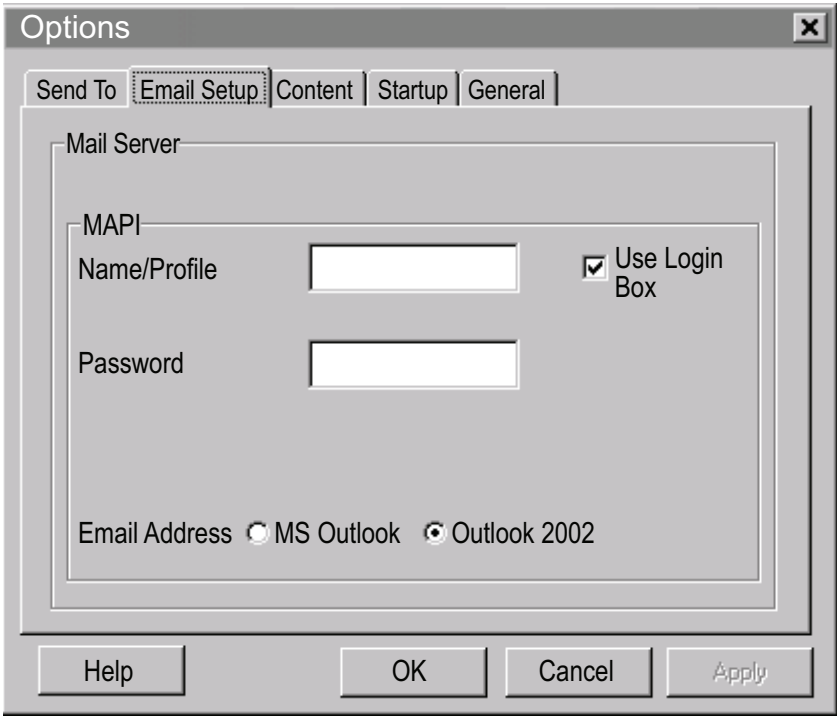


Figure 4.17 iServer Mail Notifier Profile Setup

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:

- Entering the IP address for iServer device (for example **192.168.1.200**).
- Specifying Socket number (1000 or 2000 depending on iServer settings).
- Defining RS485 Unit # interface address (1 to 199). Enter "0" for RS232 interface or for iServer.
- Entering Reading command. Normally set to SRT to obtain reading from the devices.If you want to change this setting, refer to HTTPget **Section 4.5**.
- Defining the Alarm setup (High/Low, High value, or Low value).
- Specifying Pause Interval. It determines how many seconds each subsequential alarm notification will be sent.
- Determining Monitor interval. It establishes the interval or time resolution in seconds for which readings will be obtained from the device.

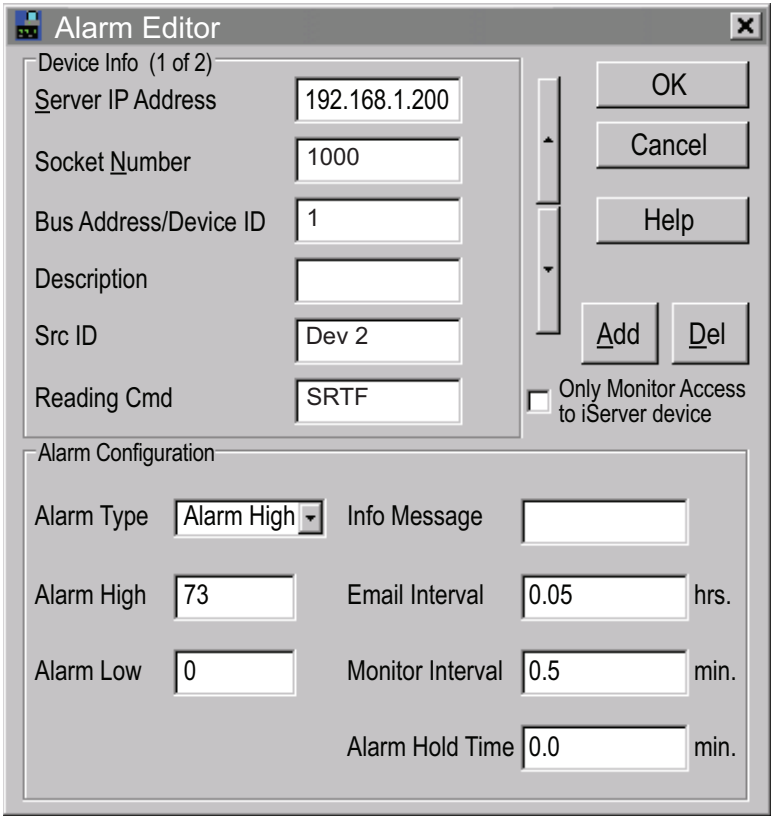


Figure 4.18 iServer Mail Notifier Device Setting

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). 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*:

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

Industrial Probe:
±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 iServer's operating temperature is 0 to 70°C

Response Time: 5 seconds
(63% slowly moving air)

Repeatability: ±0.1°C

Resolution: 0.01°C, 14 bit

PROBE SPECIFICATIONS

Wand Probe: 198 mm long x 19 mm diameter (7.8" x 0.75")

Cable with DB9 connector: 152 mm long (6")

Cable operating temperature:
0 to 80°C (32 to 176°F)

Industrial Probe: 137mm *or* 51mm long x 16mm diameter (5" *or* 2" x 0.63")

Cable with DB9 connector: 3m *or* 0.9m long (10' *or* 3')

Cable operating temperature:
-40 to 124°C (-40 to 257°F)

iSERVER SPECIFICATIONS

Interfaces

Ethernet: 10Base-T (RJ45)

Sensor: Digital 4-wire (DB-9)

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

LED Indicators: Network Activity, Network Link, Diagnostics/Status

LCD Display: 16 digits, 6mm (0.23")

Processor: Enhanced 8051, 22 MHz

Memory: 512 Kbytes Flash, 16 Kbytes SRAM

Memory Data Flash Card: 2 Mbytes or 2 months of data storage at 10 second logging intervals, or 1 year at 1 minute logging intervals. Atmel# AT45DCB002

Optional Flash Cards:
4 Mbyte (2 years at 1 minute intervals)
8 Mbyte (4 years at 1 minute intervals)

Relay Outputs: Two relays 1.5A @ 30Vdc

Management: Device configuration and monitoring through embedded WEB server

Embedded WEB Server: Serves WEB pages containing real-time data and live updated charts within definable time intervals.

POWER

Power Input: 9 to 12 Vdc

Consumption: 2.5 W max.

Safety Qualified ac Power Adapter
Nominal Output: 9 Vdc @ 0.5 A
Input: 100 to 240 Vac, 50/60Hz

Battery: 9 Vdc, alkaline
approximately 650mA hours

ENVIRONMENTAL

Operating Temperature:
0 to 70°C (32 to 158°F)

Storage Temperature:
-40 to 80°C (-40 to 176°F)

PACKAGING

Material: Metal case with wall mount bracket

iServer Housing Dimensions:
36.6H x 62W x 90D mm
(1.44 x 2.93 x 3.56 in)

Weight: 298 g (0.8 lbs.)

GENERAL

Agency Approvals: FCC-B, C/UL, CE

Software: packages available are-- iConnect, iLog, iFlash, and Mail Notifier; compatible with all Windows operating systems.

PART 6
FACTORY PRESET VALUES

PRESET PARAMETERS	FACTORY DEFAULTS
Network Interface:	
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
Flow Control	None
End Character	0D (Hex) (Carridge Return)
Terminal Server:	
Server Type	Command
Number of Connections	5
Port #	2000
Server Mode	Disable
Remote Access (Tunneling):	
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 then 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 = 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.

Note

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

Appendix E iLog Error Messages

Error #	Description	Note
-8003	User stopped logging readings.	
-10005	Failed to find the iServer.	Ethernet cable is disconnected, iServer 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 iServer 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

CE 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 adaptor must have Safety Qualified Agency Approvals for CE with Double Insulation rating.*

The ac/dc power adaptor is 9Vdc.

The minimum output current rating is 500mA.

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

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.

OMEGA ENGINEERING, INC.

3-Point Certificate of Conformance

Model Number: iTHX-M

OMEGA Engineering, Inc. certifies that the instrument referenced above has been fully inspected, tested and calibrated prior to shipment in accordance with the instruction manual supplied. OMEGA Engineering further certifies that this instrument meets or exceeds all of the published electrical, mechanical and operational performance characteristics.

All tests and calibrations were performed with instruments, equipment and standards which are traceable to the U.S. National Institute of Standards and Technology.

Specifically this instrument is accurate to within:

VALUE	SPECIFICATIONS
33% RH	± 2%
75% RH	± 2%
@ 25 °C	± 0.5°C

One Omega Drive, P.O. Box 4047 • Stamford CT 06907-0047 • U.S.A.
TEL: (203) 359-1660 • FAX: (203) 359-7700
www.omega.com • e-mail: info@omega.com

MADE IN USA

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, 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 OMEGA's standard warranty period, OMEGA Engineering will extend the warranty period for **one (1) additional year** if the warranty card enclosed with each instrument is returned to OMEGA.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA'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 having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'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 OMEGA:

1. Purchase Order 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 OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order 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.

OMEGA'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.

© Copyright 2008 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

TRADEMARK NOTICE: ®, ***omega.com***®, OMEGA®, and ® are Trademarks of OMEGA ENGINEERING, INC.

PATENT NOTICE: This product is covered by one or more of the following patents: U.S. Pat. No. Des. 336,895; 5,274,577/ CANADA 2052599; 2052600 / ITALY 1249456; 1250938 / FRANCE BREVET No. 91 12756 / SPAIN 2039150; 2048066 / UK PATENT No. GB2 249 837; GB2 248 954 / GERMANY DE 41 34398 C2. Other US and International Patents pending or applied for.

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!

Shop on line at omega.com

TEMPERATURE

- ☑ Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- ☑ Wire: Thermocouple, RTD & Thermistor
- ☑ Calibrators & Ice Point References
- ☑ Recorders, Controllers & Process Monitors
- ☑ Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- ☑ Transducers & Strain Gauges
- ☑ Load Cells & Pressure Gauges
- ☑ Displacement Transducers
- ☑ Instrumentation & Accessories

FLOW/LEVEL

- ☑ Rotameters, Gas Mass Flowmeters & Flow Computers
- ☑ Air Velocity Indicators
- ☑ Turbine/Paddlewheel Systems
- ☑ Totalizers & Batch Controllers

pH/CONDUCTIVITY

- ☑ pH Electrodes, Testers & Accessories
- ☑ Benchtop/Laboratory Meters
- ☑ Controllers, Calibrators, Simulators & Pumps
- ☑ Industrial pH & Conductivity Equipment

DATA ACQUISITION

- ☑ Data Acquisition & Engineering Software
- ☑ Communications-Based Acquisition Systems
- ☑ Plug-in Cards for Apple, IBM & Compatibles
- ☑ Datalogging Systems
- ☑ Recorders, Printers & Plotters

HEATERS

- ☑ Heating Cable
- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
- ☑ Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- ☑ Metering & Control Instrumentation
- ☑ Refractometers
- ☑ Pumps & Tubing
- ☑ Air, Soil & Water Monitors
- ☑ Industrial Water & Wastewater Treatment
- ☑ pH, Conductivity & Dissolved Oxygen Instruments

M4050/1008

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP