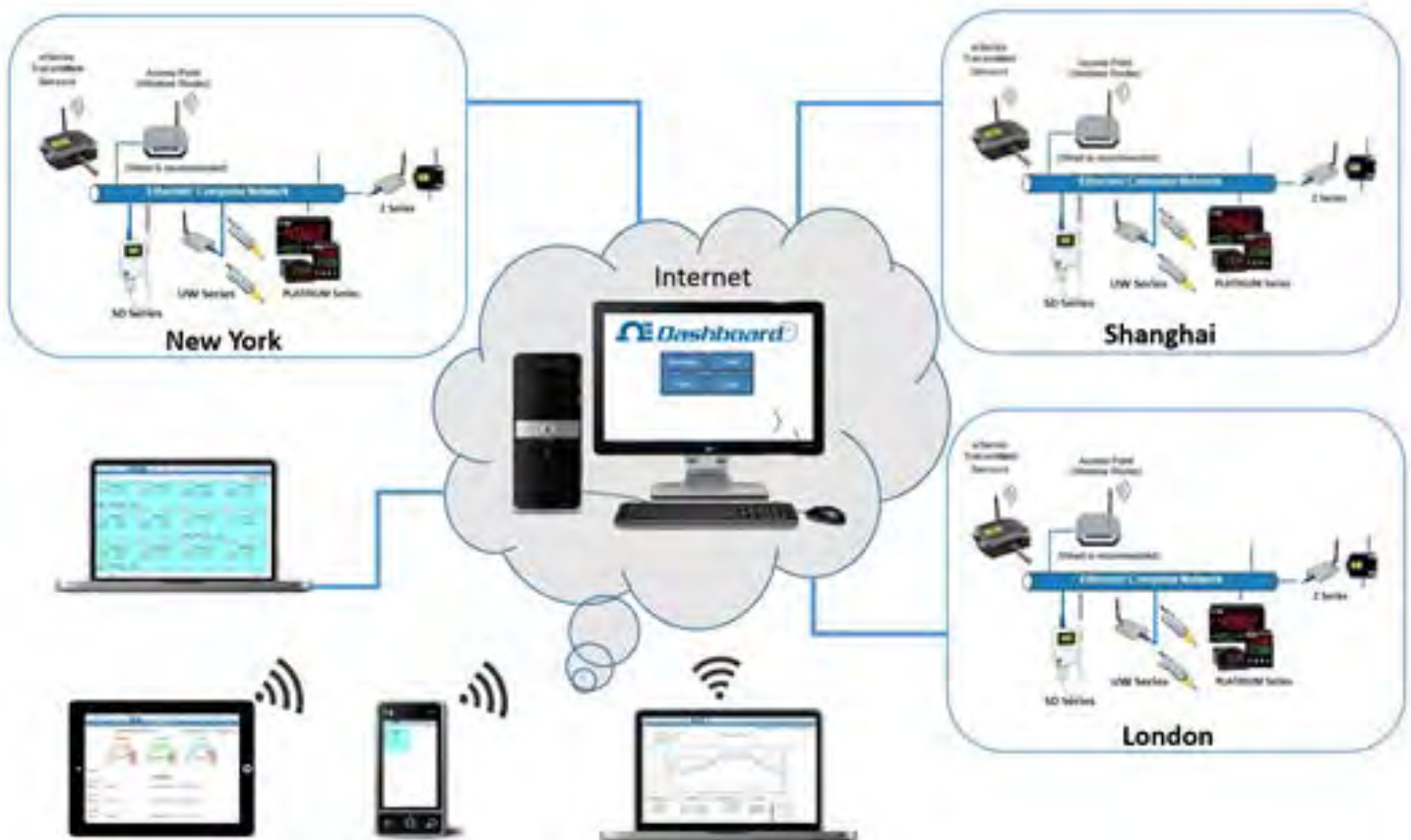


OMEGA DASHBOARD

Ω OMEGA® User's Guide

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

PART 1 INTRODUCTION

The Dashboard “DASHBOARD” Web Server

The “Dashboard” is a data logging software application running on a Windows or Linux computer somewhere on the network. The “DASHBOARD” logs/collects data from the wireless Transmitters.

The Dashboard includes a Java-based Web server that can display readings, charts, and record data sent by the transmitters. The readings, data, and charts can be viewed from a Web browser.

The browser accessing the Dashboard Web server, can be the same computer on which the Dashboard is installed-- or any other device with Web browsing capabilities on the local network or the Internet (a computer, tablet or smart phone).

For Windows PC's

The Dashboard runs as a “Service” in the background, rather than a “Program”. As long as the computer and its network connection is functioning correctly, the Dashboard will collect data from the transmitters and serve it to Web browsing clients as requested. The Dashboard can also provide data to popular Data Acquisition and Process Control programs running elsewhere on the network. Meanwhile, the computer running the Dashboard server can be used for other tasks.

Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month or one year. Temperature and humidity can be charted across the full span (-40 to 125°C, and 0 to 100% RH) or within any narrow range such as (20 to 30°C).

The OPC Server software makes it easy to integrate the wSeries wireless sensor system with many popular Data Acquisition and Automation programs offered by Omega, Wonderware, iConics, Intellution, Rockwell Automation, and National Instruments, among others.

The following example illustrates how you can hookup the Dashboard Software/Server to your network:

The whole system consists of a single **Dashboard** and one or more **Transmitters** or **iServer based Ethernet devices**. All these devices will send data periodically to the Dashboard software where it serves as a gateway between the users and the Transmitters. The users can access the data through the Dashboard's web server and data acquisition software.

A standard web browser can be used to monitor and chart analog current and voltage, temperature, humidity, and barometric pressure.



Figure 1.1 Dashboard System on the Ethernet Network

PART 2 CONFIGURATION

2.1 Configuring the computer running Dashboard Software

2.1.1 Disable Power Safe Options:

The computer running Dashboard software needs to be running continuously. To do that:

- a) Go to Control Panel>System and Security>Power Options.
Choose the Power Plan>Change Plan Settings>Change Advanced Settings.
Then choose the Hard Disk>Turn Off Hard Disk Option.
Reduce this number from 20 to **0** (Never). Save the settings.
- b) These settings may be different on Windows XP.
Choose the Option to Never Turn Off Hard Disks and Never Put the System to Standby.



Figure 2.1 Power Options

2.1.2 IP Address:

If this computer is used to run the Dashboard, please set a desired STATIC IP address. Refer to **Appendix K** to configure the STATIC IP address for Windows.



It is recommended to have the computer running Dashboard hard-wired to the access point/wireless router.

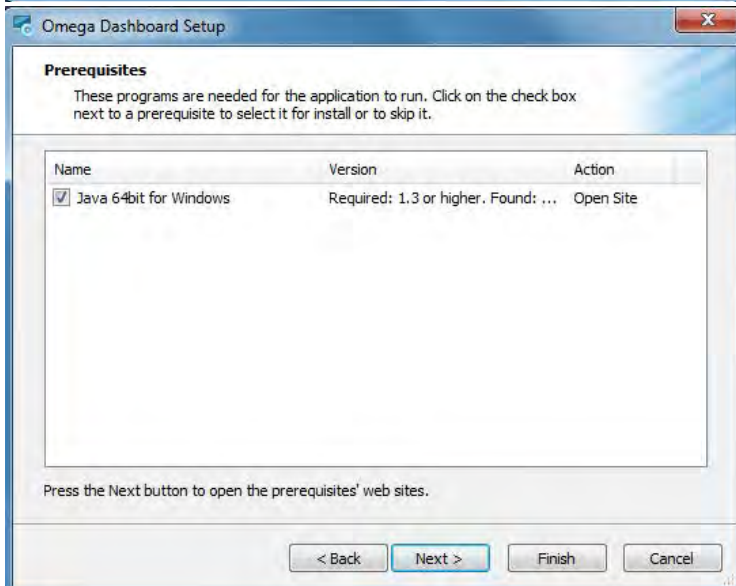
2.2 Installing Dashboard Software

Find the **Dashboardxxx.exe** in the accompanying CD or on the web. Double click that to install it.

The setup process is typical to any Windows program and asks you to choose the installation path and whether it is a new installation or an upgrade. You must have the **Administration Rights** to the PC when installing the Dashboard.

2.2.1 Prerequisite Wizard

There is a prerequisite wizard to assist you in getting and installing those prerequisites such as Java 32bit or 64bit. The wizard does not show when it does not detect any missing prerequisites, and you can jump to next section 3.2.2.



Once you click the “Next” button, your browser will open a website for you to download

the missing prerequisites.

Since Dashboard needs either 32bit or 64bit version of Java depending on your Windows system, please just download the version it mentioned in the list.

For example, here you need to download the 64bit Java from the link “Windows Offline (64-bit)” from this page. If it needs 32bit of Java or it does not mention the version, you can download the 32bit Java using the other two links on the same page.



The screenshot shows a web browser window displaying the Java Downloads for All Operating Systems page. The page has a red header with the Java logo and navigation links for "Download" and "Help". A search bar is located in the top right corner. The main content area is titled "Java Downloads for All Operating Systems" and features a "Recommended Version 8 Update 60" with a release date of August 18, 2015. Below this, there is a section for selecting the file according to the operating system, with links for "Remove Older Versions" and "What is Java?". A disclaimer states that by downloading Java, the user acknowledges the terms of the end user license agreement. A section titled "Windows" includes a sub-header "Which should I choose?" and lists three download options: "Windows Online" (571 KB), "Windows Offline" (47.4 MB), and "Windows Offline (64-bit)" (53.0 MB). Each option has a corresponding "Instructions" link. A note at the bottom explains that if using 32-bit and 64-bit browsers interchangeably, both versions of Java must be installed, with a link to an FAQ about 64-bit Java for Windows.

Available Operating Systems

- Windows
- Mac
- Linux
- Solaris

Help Resources

- Troubleshoot Java

Java 7

- Where can I get Java 7?

JDK

- Looking for the JDK?

Java Downloads for All Operating Systems

Recommended Version 8 Update 60
Release date August 18, 2015




Select the file according to your operating system from the list below to get the latest Java for your computer.

[Remove Older Versions](#) > [What is Java?](#)

By downloading Java you acknowledge that you have read and accepted the terms of the [end user license agreement](#)

Windows

Which should I choose?

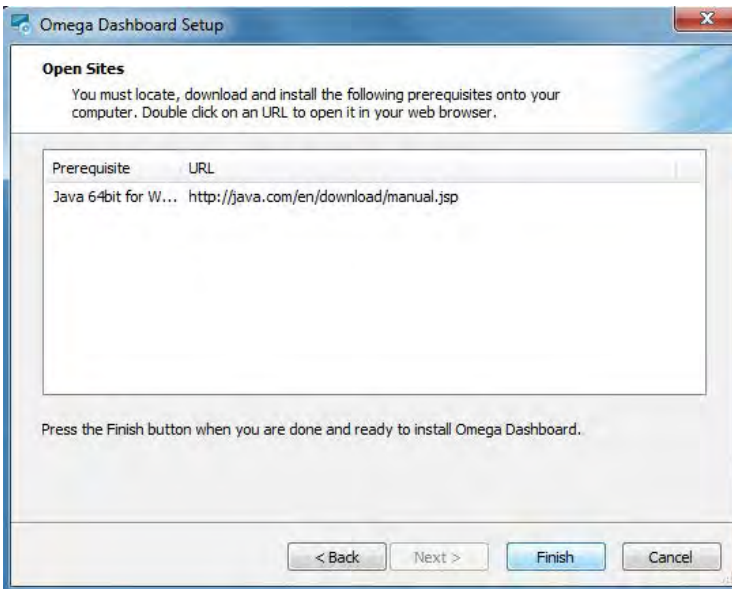
| | | |
|---|------------------------------|--|
|  Windows Online filesize: 571 KB | Instructions | After installing Java, you may need to restart your browser in order to enable Java in your browser. |
|  Windows Offline filesize: 47.4 MB | Instructions | |
|  Windows Offline (64-bit) filesize: 53.0 MB | Instructions | |

If you use 32-bit and 64-bit browsers interchangeably, you will need to install both 32-bit and 64-bit Java in order to have the Java plug-in for both browsers. > [FAQ about 64-bit Java for Windows](#)

You can install the prerequisite applications after you download them.

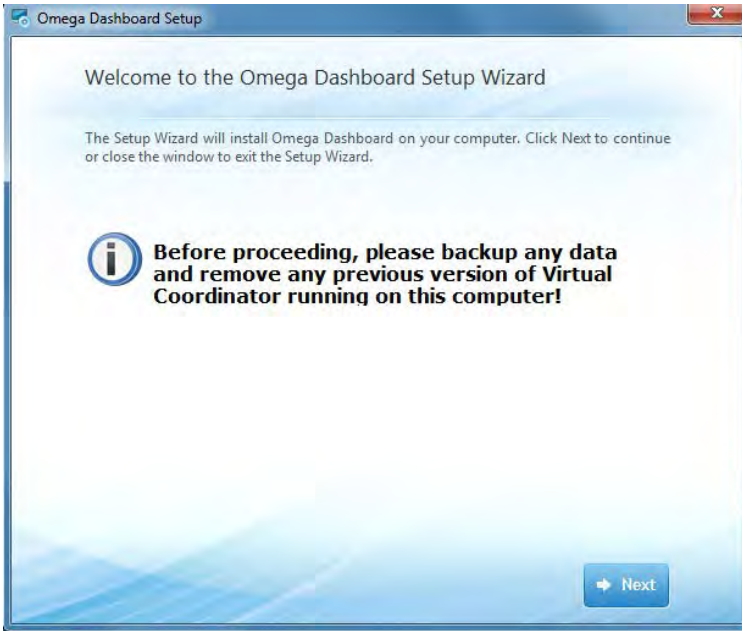


After you install all the applications on the list, you can click the “Finish” button on the Dashboard installation window and continue to install the Dashboard.



2.2.2 Install Dashboard and Ports Settings

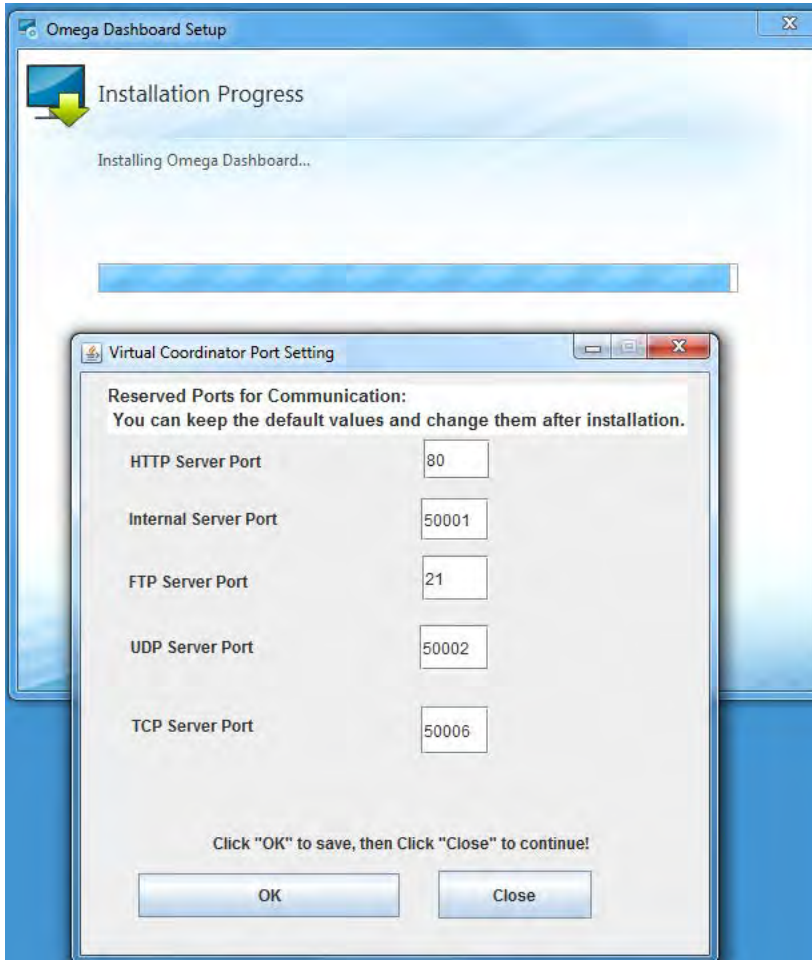
If this is the first time installing the Dashboard you can ignore the following installation screen and click “Next” directly. This notice is only intended for upgrading the software from the previous version, which is formally called Virtual Coordinator.



Step #1: Install the OMEGA Dashboard, following the installer instructions.

Step #2: This computer may have a firewall running which will block the readings sent from the sensor (transmitter) to the Dashboard Software.

Turn off the “Windows Firewall” in your Control Panel Security Settings; or **Open** the Communications Ports (80, 50001, 21, 50002, 50006) so the data can reach the OMEGA Dashboard. Refer to **Appendix I** and **J** to configure the firewall.



Step #3: Now you are ready to verify the web-server and add your Transmitters/Ethernet based devices.

2.2.3 Verify your Dashboard web server

Once the installation is completed, open up a web browser like Internet Explorer, type in your PC's IP Address and a Dashboard home web page should show up. This means that the Dashboard web-server is running.

You can go to any browser and type in the IP address of your computer with the Dashboard installed (the format is "**http://IP:port**", for example: 192.168.1.102: 81, where 192.168.1.102 is the IP of the computer, 81 is the http port. If you set 80 as the port number, you can just type the IP address without port number since 80 is the default http port) using the same computer or any other computer or phone or tablet within the same network.

See examples below when the port is 81:



Or, when 80 is the port, you only need to type in the IP address without the port number.



More info:

When you are on the same computer with the Dashboard installed (the server), there are three methods to access the Dashboard homepage in your browser.

- a. Use the network IP of your computer with the port number: e.g `http://192.168.1.102:81`, as seen previously. OR,
- b. Use the string "localhost" with port number: e.g `http://localhost:81`; OR,



- c. Use the lookback IP of localhost which is 127.0.0.1 with port number: `http://127.0.0.1:81`

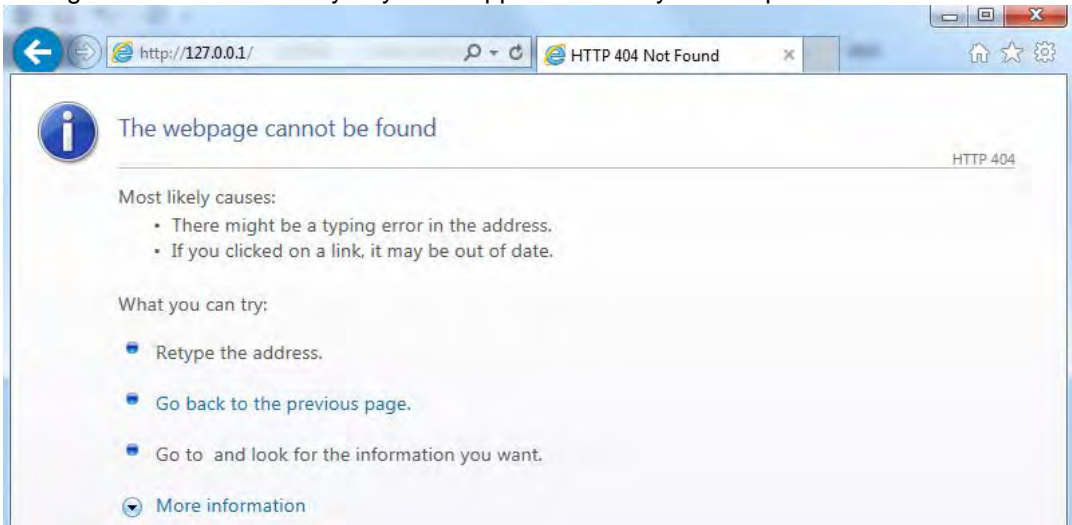


If you try to access the Dashboard from any other devices/computers (the clients) through network, you can only use the network IP (method a) with a port number to access the Dashboard on the server.

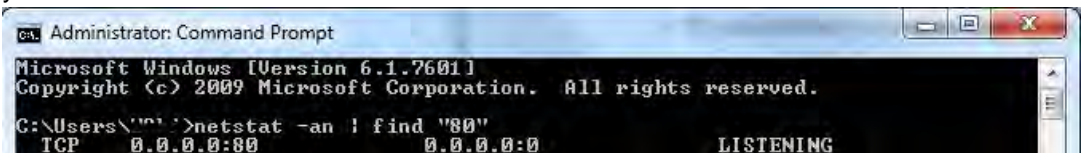
2.2.4 Troubleshooting

You can skip this section if you can see the home page of your Dashboard now. If you

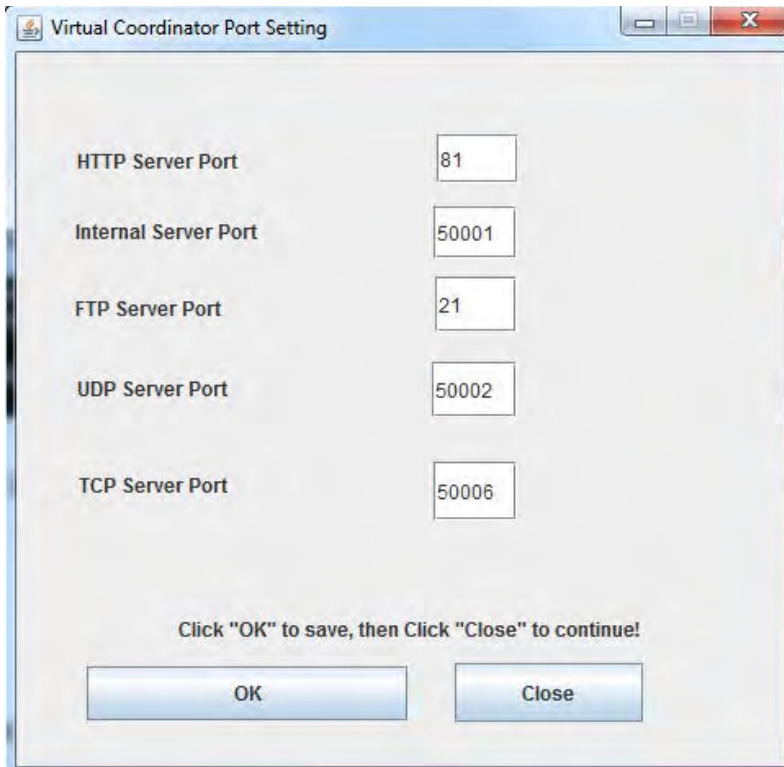
see the “HTTP 404 Not Found” error message when you visit the Dashboard homepage, in most cases, you need to check if the HTTP server port (it is 80 by default) you assigned has been used by any other applications on your computer.



The way to know the usage of a specific port is to run a “netstat –an | find “port#” ” command on the Command Prompt. For example, if you want to know if port “80” is taken, you can run command like this:



If the port 80 or any other port you assigned as the HTTP server port is taken, you can use **Port Settings** tool from the **Start>All Programs>OMEGA Engineering>Omega Dashboard** to change the HTTP Server Port to another port. After that, you are able to use the new port number to access the homepage and check if the new port takes effect.



The Dashboard web-server is running as Windows services in the background and it runs automatically after computer/server reboot. This helps to acquire the data seamlessly without manual operation. You can go to Start>All Programs>OMEGA Engineering>Omega Dashboard >Uninstall Services (or Install Services) to uninstall the Dashboard web-server or reinstall the Dashboard web-server.



PART 3

DASHBOARD OPERATIONS

3.1 Dashboard Home Page

Once the Dashboard and its Services are installed, you can access the Dashboard using an Internet Browser.

Simply, open your browser, type the IP address (with a port number when the HTTP server port is not assigned to the default 80) of the computer on which the Dashboard is installed and you will see the Home Page of the Dashboard as shown in below.

Note The IP address for the Dashboard is the same as the IP address of the computer on which the Dashboard is installed.

If the computer has more than one IP address, use the IP address that is on the same network as the Access Point.

Note The Dashboard can be accessed from the same computer on which it's installed or it can be accessed from a different computer on or outside the local network.



Figure 3.1 Dashboard Home Page

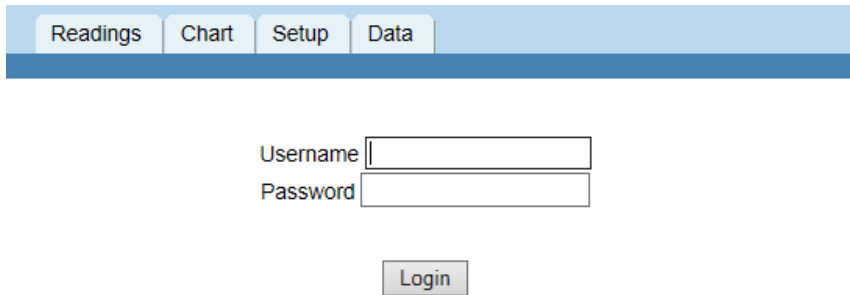
3.1 Password Protection

There are two kinds of accounts with different username and password for the Dashboard:

- Normal user account:** default name is **user**, default password is **12345678**, and it can access the **Readings**, **Chart** and **Data** tabs while cannot change the settings through **Setup** tab.
- Administrator account:** default name is **admin**, default password is **00000000**, and it can access all the four tabs on the home page.

Note

The username and password can be changed or disabled. See the Security menu for details.



The screenshot shows a web interface for a dashboard. At the top, there is a light blue navigation bar with four tabs: 'Readings', 'Chart', 'Setup', and 'Data'. Below this bar, the main content area is white. It contains a 'Username' label followed by a text input field, and a 'Password' label followed by a text input field. Below the password field is a grey 'Login' button.

Figure 3.2 Dashboard Login Page

3.2 Add Ethernet based Devices to Dashboard

Dashboard communicates with devices through Ethernet, and it gets data from the iServer on the devices board by sending command periodically. We have two types of Ethernet based devices:

1. Standalone devices with sensor or probe on them (such as iSD-TH, iSeries, Platinum series...), and the iServer is on the device;
2. “Coordinator-End Device” type system who typically has one coordinator with several end devices, and the iServer is on the coordinator side while end devices connect to sensors or probes. We actually add each end device at a time though the iServer in the coordinator while the coordinator itself is “invisible” on the Dashboard. That also indicates all the end devices under the same coordinator (iServer) share most of the attributes from the iServer, including MAC Address, IP Address, Admin Password, Protocol, and Port for communication of the iServer. The Device ID (#), Update Rate, Device Name and Device Type are attributes from the end device and they can be different from each other.

3.2.1 Before You Start

You need to prepare the **6 items** of your Ethernet Devices/End Devices to add the device to Dashboard. Please check the manual for the specific device to know more information of these items.

1. **IP address:** The IP address of your Ethernet device. **Note:** for zSeries and UW

series, it is the IP of the Coordinator (it is an iServer device). “192.168.1.200” is the factory default IP for all of our products. If you have multiple iServer devices to add, please change the IP of your devices and make them have different IP addresses when you do the initial configuration. Please make sure all your Ethernet devices are running by accessing the device webpages on your computer first. For example, to verify the device iSD-TH is running on the IP 192.168.1.18:



- Device Type:** such as (iTHX-SD, iSD-TH, iSD-TC, iBTX-SD, ZED-TH...). For zSeries and UW series or any other “Coordinator-End Device” type system, it is the type of your End Device you want to add. Please refer to the product to know the device type. You can only add one End Devices at a time.

Network

| | | | |
|----------------|----------------------|-------------|----------------------|
| IP Address | <input type="text"/> | Device Type | iTHX-SD/W/M/D |
| Admin Password | <input type="text"/> | Device # | iSD-TH |
| | | | iSD-TC |
| | | | iBTX-SD/W/M/D |
| | | | iBTHX-SD/W/M/D |
| | | | iTHX-W3/M |
| | | | iTCX-W/D |
| | | | ZED-T/TP |
| | | | ZED-TH/THP |
| | | | ZED-BT/BTP |
| | | | ZED-BTH/BTHP |
| | | | ZED-TC |
| | | | UWTC/UWRD |
| | | | UWRH |
| | | | ZED-VI |
| | | | ZED-S-665 |
| | | | RS232 Device |
| | | | RS485 Device |

Save Changes Reset

Note: Some of the products may share one Device Type option on the list:
iTHX-SD/W/M/D: for iTHX-SD, iTHX-W, iTHX-W*, iTHX-M, iTHX-D with the Temperature and Humidity probe
iBTX-SD/W/M/D: for iBTX-SD, iBTX-W, iBTX-M, iBTX-D with the Barometric pressure and Temperature probe
iBTHX-SD/W/M/D: for iBTHX-SD, iBTHX-W, iBTHX-M, iBTHX-D with the Barometric pressure, Temperature and Humidity sensor probe
iTHX-W3/M: for iTHX-W3, iTHX-M with the with the Temperature and Humidity

probe

iTCX-W/D: for iTCX-W, iTCX-D with one or two Thermocouples or RTDs

ZED-T/TP: for ZED-T, ZED-TP, or any zSeries End Device with only one Temperature reading

ZED-TH/THP: for ZED-TH, ZED-THP, or any zSeries End Device with Temperature and Humidity readings

ZED-BT/BTP: for ZED-BT, ZED-BTP, or any zSeries End Device with Barometric Pressure and Temperature readings

ZED-BTH/BTHP: for ZED-TH, ZED-THP, or any zSeries End Device with Barometric Pressure, Temperature and Humidity readings

UWTC/UWRD: for UW series with two Temperature readings

RS232 Devices: for iSeries and Platinum series with RS232 protocol enabled

RS485 Devices: for iSeries and Platinum series with RS485 protocol enabled

- 3. Device #:** For standalone devices, it is 0 by default; For zSeries and UW series, it is the Device ID you set for the End Device.
- 4. Admin Password:** The admin password of your device/coordinator on the webpage. It is 00000000 in factory default for all of our products.
- 5. Protocol:** TCP or UDP, defined on the Configuration page on your device webpage, TCP by default.
- 6. Port Number:** 2000 is the factory default value, you may check the port number for TCP or UDP communication on the configuration page of your device.

Please refer to your Ethernet Device setting to check the iServer configuration before you add the device:

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

1. The TCP/ UDP option should be identical to the protocol you used in the OMEGA Dashboard; if your device does not have this option, use TCP by default.
2. Server Type: choose "Command".
3. CR or Carriage Return: Choose "Enable".
4. Number of connections: Choose at least 2, we suggest you use the Max value of this option.
5. Port: the port number you put in the OMEGA Dashboard when you add the device need to be identical with the port number you set here, the value is 2000 by default. This is the port on the iSever board of our product for the Dashboard software to get readings from it.

Note: There is another default port number 2000 when you install the Dashboard or do the port setting from the Windows Start menu. And that port is on the

computer side which is for getting all the data or reading from Dashboard software by sending TCP commands to it.

Note: for the devices without some of these options, you can only check the options you have before you add the device.

Note: for EIP based zSeries (firmware version bigger than 3.0), please use the previous version 1.00.6. You also need to check the option called “Disconnect After Data Sent” (see the Figure below).

CONFIGURATION

Name

Temperature Pressure

TCP Connections Port

Disconnect After Data Sent

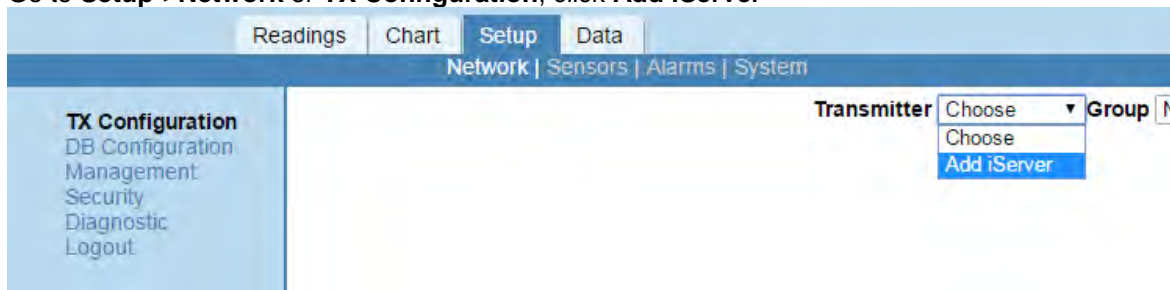
Please remember if any one of them above is wrong, you will fail to add the device and need to start over! If you have added the device with wrong setting and found that device in the Transmitter pull down list, you need to remove the device first and add it again. Please check the part for removing devices.

3.3.2 Open the Setup menu

This Setup menu has all the configuration options for the Dashboard and the Transmitters/Ethernet devices. The Setup menu is secured with a username and a password as shown in **Figure 3.2**. The default username is **admin** and the default password is **00000000**.

3.3.3 Add a Device

Go to **Setup->Network** or **TX Configuration**, click **Add iServer**



If you have added some devices before, the Add iServer option can be found on the bottom of the Transmitter list on this page.

Readings | Chart | **Setup** | Data

Network | Sensors | Alarms | System

TX Configuration
 VC Configuration
 Management
 Security
 Diagnostic
 Logout

Transmitter: TXC87D_5 | Group: None

Network

MAC Address: 00:03:34:00:C8:7D
 IP Address: 192.168.1.207
 Device #: 5
 Admin Password: 00000000
 Protocol: TCP
 Port: 2000
 Update: 10 Seconds

Transmitter

Name: TXC87D_5
 Device Type: ZED-BTH/BTHP

Note: Restarting the services after changing IP address or port number is recommended.

Save Changes | Reset

Input the **IP address** and choose one device type

Network | Sensors | Alarms | System

Network

IP Address: 192.168.1.18
 Admin Password:

Device Type: iTHX-SD/W/M/D
 Device #:

Save Changes | Reset

- iTHX-SD/W/M/D
- iSD-TH
- iSD-TC
- iBTX-SD/W/M/D
- iBTHX-SD/W/M/D
- iTHX-W3/M
- iTCX-W/D
- ZED-T/TP
- ZED-TH/THP
- ZED-BT/BTP
- ZED-BTH/BTHP
- ZED-TC
- UWTC/UWRD
- UWRH
- ZED-VI
- ZED-S-665
- RS232 Device
- RS485 Device

Input the Admin Password and Device #

Note: if your device does not have any password, keep it empty.

Network

| | | | |
|----------------|---|-------------|-------------------------------------|
| IP Address | <input type="text" value="192.168.1.18"/> | Device Type | <input type="text" value="iSD-TH"/> |
| Admin Password | <input type="text" value="00000000"/> | Device # | <input type="text" value="0"/> |

Click Save Changes and then click Confirm. Depends on the network status, it may take several seconds to jump to the next step.

Please Confirm New Settings

Network

| | | | |
|----------------|--------------|-------------|--------|
| IP Address | 192.168.1.18 | Device Type | iSD-TH |
| Admin Password | 00000000 | Device # | 0 |

When the webpage jumps to the Network configuration page (see below), you need to choose the protocol as TCP or UDP and input the Port and also input the recording interval in the Update input. You can also change the name of the device by checking the Name option. In most of cases, you only need to type in the port number here. After you edit this page, click Save Changes when click Confirm. You can access the setting later if you want to make any change to your settings.

- TX Configuration**
- DB Configuration
- Management
- Security
- Diagnostic
- Logout

Transmitter Group

Network

| | |
|----------------|--|
| MAC Address | 00:03:34:00:85:C1 |
| IP Address | <input type="text" value="192.168.1.200"/> |
| Device # | <input type="text" value="1"/> |
| Admin Password | <input type="text" value="00000000"/> |
| Protocol | <input type="text" value="TCP"/> |
| Port | <input type="text" value=""/> |
| Update | <input type="text" value="10"/> Seconds |

Transmitter

| | |
|-------------|--|
| Name | <input type="text" value="TX85C1_1"/> <input type="checkbox"/> |
| Device Type | ZED-BTH/BTHP |

Readings | Chart | **Setup** | Data

Network | Sensors | Alarms | System

TX Configuration
 DB Configuration
 Management
 Security
 Diagnostic
 Logout

Please Confirm New Settings Transmitter TX85D6_0 Group None

Network

| | |
|----------------|-------------------|
| MAC Address | 00:03:34:00:85:D6 |
| IP Address | 192.168.1.18 |
| Device # | 0 |
| Admin Password | 00000000 |
| Protocol | TCP |
| Port | 2000 |
| Update | 10 Seconds |

Transmitter

| | |
|-------------|--------|
| Device Type | ISD-TH |
|-------------|--------|

Confirm Cancel

Note: If you come back to this webpage later to change some settings inside of the “Network” field set (such as IP Address, Port Number, Protocol...) that you have already set in the initialization configuration, we recommend you restart the services after the change to prevent unexpected errors! For changing settings outside of the “Network” filed set, you do not need to restart the service. Since the combination of MAC address and device # makes the unique ID for each device/client, the MAC address and Device # are not editable. The device type is also not editable. If you want to change those fixed settings, you need to remove the device from the Dashboard first and add it back with new settings.

Readings | Chart | **Setup** | Data

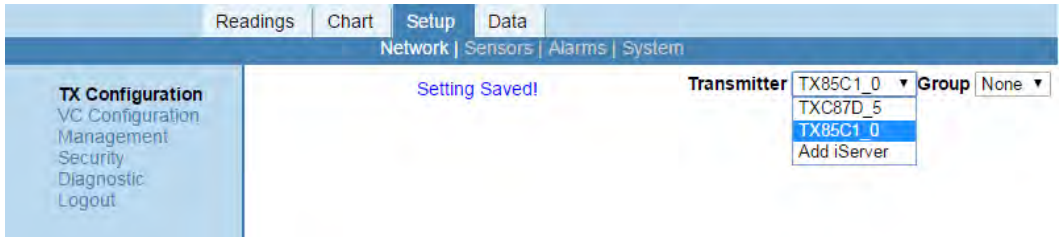
Network | Sensors | Alarms | System

TX Configuration
 DB Configuration
 Management
 Security
 Diagnostic
 Logout

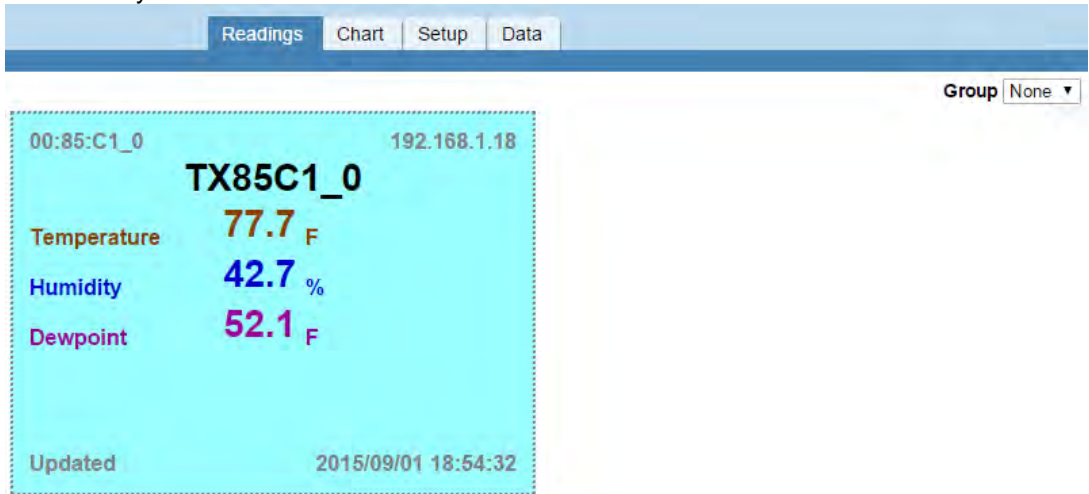
Setting Saved

Transmitter TX85D6_0 Group None

You can see the device is now in the Transmitter pull down list. The pull down list includes all the devices you have added to Dashboard. By choosing one item from the list, you can switch to the Setup page of that device or the page to add another device to Dashboard.

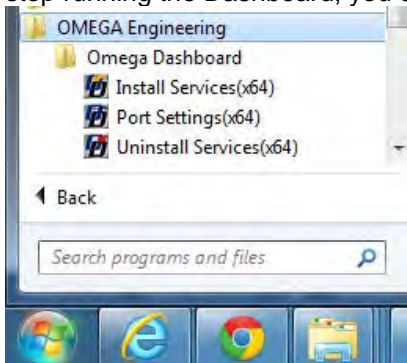


You will see the device on the reading page to verify the device has been added successfully:



Tips:

How do you restart the services? Go to Start->OMEGA Engineering->Omega Dashboard, click "Install Services". If you want to change the HTTP server port or other port settings of your Dashboard, you can use the "Port Settings" program. If you want to stop running the Dashboard, you can click "Uninstall Services".



3.3 Remove the Ethernet based Device from Dashboard

You can click the name of the device on the **Readings** page to jump to the **Setup** page or

go the **Setup** tab and choose one device from the pull down list. If you have assigned a Group to the device, choose the Group of the device first and pick the device from that chosen Group.

00:85:C1_0 192.168.1.18

TX85C1_0

Temperature **78.0** F

Humidity **42.0** %

Dewpoint **52.1** F

Updated 2015/09/01 18:57:53

Group None

Then click the **"Sensors"** tab on the submenu to jump to the **"Sensors"** page.

Readings Chart Setup Data

Network | Sensors | Alarms | System

TX Configuration
DB Configuration
Management
Security
Diagnostic
Logout

Last Updated: 2015/10/07 12:35:20 Transmitter TX85D6_0 Group None

General

Active

Group None

Temperature

Unit F Latest: 79.1 F

Humidity

Unit % Latest: 49.1 %

Dewpoint

Unit F Latest: 57.9 F

Save Changes Reset

You can uncheck the **Activate** checkbox if you want to remove the device.

Transmitter will be deactivated. Continue to deactivate?

OK Cancel

Click "OK" when it shows a popup window. Then click "Confirm".

The screenshot shows a web interface with a top navigation bar containing 'Readings', 'Chart', 'Setup', and 'Data'. Below this is a secondary bar with 'Network | Sensors | Alarms | System'. On the left is a sidebar menu with 'TX Configuration' selected, and sub-items: 'DB Configuration', 'Management', 'Security', 'Diagnostic', and 'Logout'. The main content area is titled 'Please Confirm New Settings' and includes a 'Transmitter' dropdown set to 'TX85D6_0' and a 'Group' dropdown set to 'None'. There are three sections: 'General' with an 'Active' checkbox and a 'Group' dropdown; 'Temperature' with a 'Unit' dropdown set to 'F' and a 'Latest:' label; 'Humidity' with a 'Unit %' label and a 'Latest:' label; and 'Dewpoint' with a 'Unit F' label and a 'Latest:' label. At the bottom are 'Confirm' and 'Cancel' buttons.

You will see this message when the device is removed without error. Sometimes when the messages says you need to wait another transmission cycle to finish this, you need to try it again later.

This screenshot shows the same web interface as above, but the main content area now displays the message 'Transmitter Inactivated.' in blue text. The navigation and sidebar elements remain the same.

Note: the update time we use in this Dashboard is the time the application accesses the Ethernet device (iServer) and gets the reading back, so it might have a minor difference from the records you saved in the SD card in the SD device.

Note: The Dashboard web-server is running as Windows services in the background and it runs automatically after computer/server reboot. If any unexpected error occurs, we suggest you restart the services by going to Start->OMEGA Engineering->Omega Dashboard and clicking "Install Services".

3.4 TX Configuration – Network

Once the username and password are entered a set of menu selections will appear starting with the TX (Transmitter) Configuration menu under the Network tab. This page has all the network settings for each Transmitter selected from the top right pull down menu. For Example, in **Figure below** the selected Transmitter is TX85D6_0.

Note The default name for an Ethernet based Transmitter is TX followed by the last 4 characters of the Transmitter's MAC address (i.e. 85D6) with an underscore and

then the device# (i.e. _0 or _1). For standalone devices, it is 0 by default; and for zSeries and UW series, it is the Device ID you set for the End Device. The default name of wSeries transmitters have no underscore with the device number, it only has TX followed by the last 4 characters of MAC address (i.e. "TX12f6").



Cookie feature must be enabled for the web browser.

Readings Chart Setup Data

Network | Sensors | Alarms | System

TX Configuration
DB Configuration
Management
Security
Diagnostic
Logout

Transmitter TX85D6_0 Group None

Network

MAC Address 00:03:34:00:85:D6

IP Address 192.168.1.18

Device # 0

Admin Password 00000000

Protocol TCP

Port 2000

Update 10 Seconds

Transmitter

Name TX85D6_0

Device Type ISD-TH

Save Changes Reset

Note: Restarting the services after changing IP address or port number is recommended.

TX Configuration Setup – Network Page

3.5.1 Transmitter

Pull down menu of available Transmitters.

3.5.2 Group

Pull down menu of available Groups of Transmitters.

Choose a Transmitter: choose a Group from the Group list first and pick the transmitter in the selected Group from the Transmitter list.

3.5.3 TX Configuration – Network field set

This field set includes all the important settings for communication with devices. You need to change the settings on this field accordingly after you finish any change on the device side to make the communication continue without error. Once you change any setting inside of this field of this page, a restart of services is necessary to reestablish the communication. Please go to Start->OMEGA Engineering->Omega Dashboard and click "Install Services".

3.5.3.1 MAC Address

This is a read-only field displaying the Transmitter's MAC address.

3.5.3.2 IP Address

This is the static IP address of the Ethernet based Transmitter. The IP address of the standalone Ethernet transmitter (such as iSD-TH) is unique within the same network. However, for the "Coordinator-End Device" type devices, all the end devices under the same coordinator share the same IP address, which is the IP address of the Coordinator since the iServer is on the coordinator side. The IP address of the coordinator is unique within the same network. If you have more than one iServer based devices in the same network, you need to assign different IP addresses for them.

3.5.3.3 Device Number (Device#)

For standalone devices, it is 0 by default; for zSeries and UW series or any "Coordinator-End Device" type devices, it is the Device ID you set for the End Device.

3.5.3.4 Admin Password

The admin password of your Ethernet device or coordinator for log in to the iServer webpages. It is **00000000** in factory default for all of our products.

3.5.3.5 Protocol

TCP or UDP; you need to make sure the protocol you set on the iServer side is the same as the setting here. This is the protocol the Dashboard uses to communicate with the iServer on the Ethernet devices.

3.5.3.6 Port Number

This is the TCP/UDP port on the iServer side for sending readings to Dashboard. **2000** is the factory default value, you may check the port number for TCP or UDP communication on the configuration page of your device (iServer).

3.5.3.7 Update

This is the Transmitter's data transmission frequency in seconds.



Depending on your update rate, your data files can become very large. For example: if you select 1s. One week can equal 604,800 readings or 1 year can equal 31,449,600 readings.

3.5.4 TX Configuration – Transmitter field set

3.5.4.1 Name

This is the name of the Transmitter that will appear on the Dashboard's web pages. You can change it by checking the option box on the right and typing the name you want to use for that device. The default name for a Transmitter is TX followed by the last 4 characters of the Transmitter's MAC address (i.e. 85D6) with an underscore and then the device# (i.e. _0 or _1). For standalone devices, it is 0 by default; and for zSeries and UW series, it is the Device ID you set for the End Device. The default name of wSeries transmitters have no underscore with the device number, it only has TX followed by the last 4 characters of MAC address (i.e. "TX12f6").

3.5.4.2 Device Type

This is the device type of the device you added, such as (iTHX-SD, iSD-TH, iSD-TC, iBTX-SD, ZED-TH...). For zSeries and UW series or any other “Coordinator-End Device” type system, it is the device type of the End Device you have added. Please refer to the product or manual to know more information.

Note To save changes done to the TX Configuration page you must click on the Save Changes button followed by the Confirm button.

3.6 TX Configuration – Sensors

This page contains the sensor parameters for each Transmitter. Simply, select the Transmitter from the list on the top right as shown in **Figure** and once the changes are applied click on the Save Changes button followed by the Confirm button. Fields are described below.

3.6.1 Last Updated

This is the date and the time which the Transmitter status was last updated.

Note The date and the time come from the computer on which the Dashboard is installed.

| Readings | Chart | Setup | Data |
|---|-------|---|------|
| Network Sensors Alarms System | | | |
| TX Configuration DB Configuration Management Security Diagnostic Logout | | Last Updated: 2015/10/07 11:04:09 Transmitter: TX85C1_1 Group: None | |
| General | | | |
| Active | | <input checked="" type="checkbox"/> | |
| Group | | None | |
| Temperature | | | |
| Unit: F | | Latest: 77.9 F | |
| Barometric Pressure | | | |
| Unit: hPa | | Latest: 1013.1 hPa | |
| Humidity | | | |
| Unit % | | Latest: 44.7 % | |
| Save Changes Reset | | | |

Figure Sensors Page for Temperature, Barometric Pressure, and Humidity

3.6.2 TX Configuration – General

3.6.2.1 Active

If checked the Transmitter’s readings will be displayed and charted on the Dashboard pages. Inactive/remove device will delete the device from Dashboard. Please refer to section **3.4 Remove the Ethernet based Device** from Dashboard for details of

removing a device.

3.6.2.2 Group

The Transmitters can be organized on different groups for viewing, readings, chart downloading, data, configuration and command line interface.



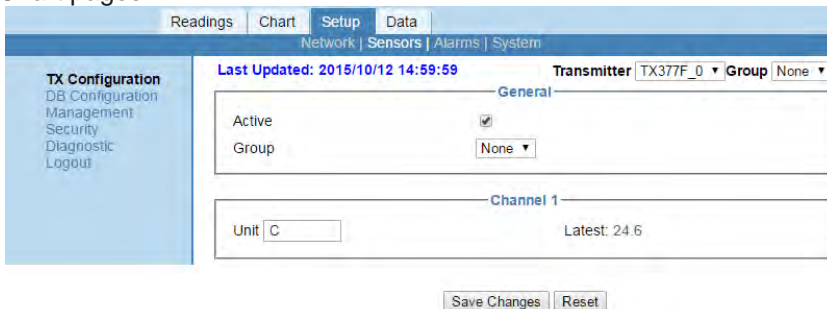
Once a Group is selected, use the drop down menu for the Group next to the Transmitter drop down menu to view/edit sensor settings.

3.6.3 TX Configuration – Sensor Input Type

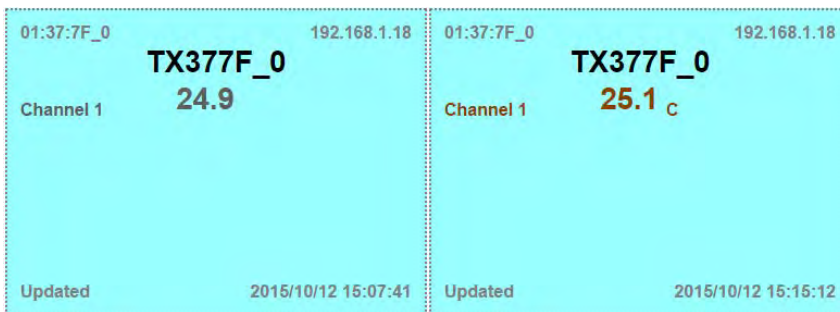
Depending on your sensor type the title may be Temperature, Barometric Pressure, Humidity, Channel 1 and 2, or Temperature 1 and 2.

3.6.3.1 Unit

This determines the units of measurement for that particular sensor. Examples are % for humidity, F or C for temperature, and hPa, inHg, or mmHg for barometric pressure. The unit of Channel type input is editable and will be shown on the Readings and Chart pages.



Before adding the customized unit to channel type device, the reading is displayed as gray color. After adding a unit “C” to it, the unit will be displayed as the global unit for the reading including the readings saved in the .csv files. And according to the unit, the display color will be changed as well.



Note

Once the unit of measurement is selected it will be a global change throughout the Dashboard, but the unit here is only for Dashboard system, and it does not have any effect on the unit displayed on the device LCD or the unit on the iServer page or the unit in the records inside of the SD card for SD series.

3.6.3.2 Latest Values

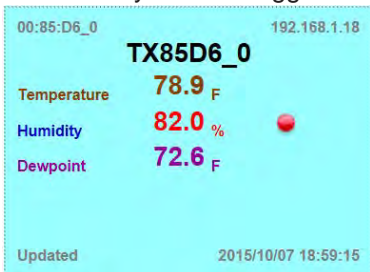
The latest readings are displayed to the right of the Sensors web page to make the adjustment easier if needed.

Note

To save changes done to the TX Configuration page you must click on the Save Changes button followed by the Confirm button.

3.7 TX Configuration – Alarms

The Dashboard can send an email if an alarm condition is met. For each Transmitter there are a set of alarm events shown in **Figure** and described below. The **Email** check box is for sending email alert when the alarm is triggered. The **Indicator** check box is for displaying the sensor reading as red color and adding a red dot alarm indicator besides the sensor reading on the Readings page when the alarm is triggered. The figure below shows the Humidity alarm is triggered when the Indicator check box is selected.



Note

A Transmitter can be selected from the top right drop-down menu.

Note

In order to send email alarms you must configure the SMTP settings on the Management page.

Readings | Chart | Setup | Data

Network | Sensors | Alarms | System

TX Configuration
 DB Configuration
 Management
 Security
 Diagnostic
 Logout

Tranmitter TX85C1_1 Group None

| Events | | Email Indicator | |
|---------------------|--------------------|--------------------------|--------------------------|
| Temperature | High 100.0 Low 0.0 | <input type="checkbox"/> | <input type="checkbox"/> |
| Message... | | | |
| Barometric Pressure | High 100.0 Low 0.0 | <input type="checkbox"/> | <input type="checkbox"/> |
| Message... | | | |
| Humidity | High 100.0 Low 0.0 | <input type="checkbox"/> | <input type="checkbox"/> |
| Message... | | | |
| Lost Signal | | <input type="checkbox"/> | |
| Message... | | | |
| Probe Disconnected | | <input type="checkbox"/> | |
| Message... | | | |
| Low Battery | Low 0.0 | <input type="checkbox"/> | |
| Message... | | | |

Save Changes Reset

TX Configuration Setup – Alarms Page

Note You must check the box for each event and click on Save Changes button.

3.7.1 Temperature Event

- High
- Low
- High/Low
- Band

The options are High, Low, High/Low and Band.

- If **High** is selected the High field must be given a value (higher than that value is an alarm condition).
- If **Low** is selected the Low field must be given a value (lower than that value is an alarm condition).
- If **High/Low** or **Band** is selected, both the High and Low fields must be given values (High/Low: outside the band is an alarm condition; Band: inside of the band is an alarm condition).

Note There is a Message box under each event. The text content typed inside the box will be included in the body of the received email.

3.7.2 Barometric Pressure Events

The same as Temperature defined above.

3.7.3 Humidity Events

The same as Temperature defined above.

3.7.4 Channel 1 and Channel 2 Events

The same as Temperature defined above.

3.7.5 Temperature 1 and Temperature 2 Events

The same as Temperature defined above.

3.7.6 Lost Signal Events

If the Dashboard does not receive signals from the Transmitter it will send an email alarm and “Lost” will be displayed on the Readings page for that Transmitter.

Note: for the “Coordinator-End Device” type of devices, in most cases, all the end devices with the same coordinator will be “Lost” at the same time since Dashboard loses the communication with the coordinator they share.

3.7.7 Probe Disconnected Events

If the probe attached to the Transmitter is disconnected that is considered as an alarm condition.

3.7.8 Low Battery Events

Once the batteries inside the Transmitter get lower than the defined **Low** value, an alarm will be emailed. Please make sure the Low value is a reasonable value, so that the Transmitter will still be operating for some time (depending on the transmission frequency) before the batteries are completely drained.

Note: All the standalone Ethernet devices do not have this **Low Battery Events** option since they are all AC/DC powered. It only support wSeries, zSeries, UW series and all the other “Coordinator-End Device” type devices.

3.8 TX Configuration – System

This webpage is only used for upgrading the firmware of wSeries through the internal FTP server, and it does not support to upgrade the firmware of Ethernet or iServer based products. Please refer to the manual of wSeries for the usage of upgrading the firmware of wSeries Transmitter.

3.9 Dashboard Configuration

This page has the configuration settings for the Dashboard shown in **Figure**. Fields are described below.

The screenshot shows the 'Dashboard Configuration' page with a navigation bar at the top containing 'Readings', 'Chart', 'Setup', and 'Data'. The 'Setup' tab is active. On the left is a sidebar menu with options: 'TX Configuration', 'DB Configuration', 'Management', 'Security', 'Diagnostic', and 'Logout'. The main content area is titled 'Dashboard Configuration' and contains the following settings:

| | |
|----------------------------------|-------------------------------------|
| UDP Server Port | <input type="text" value="50002"/> |
| TCP Server Port | <input type="text" value="50006"/> |
| Local Port | <input type="text" value="2000"/> |
| Close Connection After Data Sent | <input type="checkbox"/> |
| OPC Server | <input type="checkbox"/> |
| Time Stamp | <input checked="" type="checkbox"/> |
| Reading Unit | <input checked="" type="checkbox"/> |

Below the settings is an 'Overview' section:

| | |
|-----------|---------------------|
| Version | 1.00 |
| Date/Time | 2015/10/08 17:05:23 |
| Uptime | 0d 0h 22m 51s |

At the bottom of the configuration area are two buttons: 'Save Changes' and 'Reset'.

Figure Dashboard Configuration Page

3.9.1 UDP Server

Not used for the Ethernet/iServer based products. This is only for the wSeries Transmitter, please do not change the value if you are not using wSeries products. The default UDP port is 50002. Please see the manual of wSeries for more information.

3.9.2 TCP Server

Not used for the Ethernet/iServer based products. This is only for the wSeries Transmitter, please do not change the value if you are not using wSeries products. The default TCP port is 50006. Please see the manual of wSeries for more information.

3.9.3 Local Port

This is the TCP port number on the Dashboard (physically, on the computer side where it has Dashboard installed) to which different commands can be sent to get data of one or group of devices. The commands can be used by third party software to get the data from the Dashboard.

Note: Do not confuse this Local Port number on the computer side with the Port Number (default is 2000) on the Ethernet/iServer board of the device side when you add a device to Dashboard. And that Port Number is used for the Dashboard to send command to device and get readings from it. The Port Number for each device is also displayed on the Network configuration webpage (see **section 3.5**) and it should be identical to the port configuration of the device to get data from device.

3.9.4 Close Connection After Data Sent

If checked, once the Dashboard responds back with data, it will close the TCP

connection (on Local Port) that had been made from a network host. This feature should be used if data acquisition software expects data to be ended by closing TCP connection from the client.

3.9.5 OPC Server

This option should be checked only when the OPC server is used.

Note You will need to change the Transmitter's "label" to be 000, 001, 002.... Refer to the web for instructions on configuring the OPC server for wSeries Products.

3.9.6 Time Stamp

If checked the Dashboard will respond to the commands starting with date and time.

3.9.7 Reading Unit

If checked the Dashboard will respond to the commands with reading units.

3.9.8 Overview field set

This part contains the information of Dashboard system including Dashboard **Version**, the current **Date and Time**, and **Uptime** which indicates how long Dashboard has been running.

| Overview | |
|-----------|---------------------|
| Version | 1.00 |
| Date/Time | 2015/10/08 17:47:11 |
| Uptime | 0d 1h 0m 39s |

3.10 Management

The Dashboard can send an email if an alarm condition is met. This page provides the SMTP (Simple Mail Transfer Protocol) settings needed to generate emails (**Figure below**). For the actual alarm events for each Transmitter refer to **Section 3.7**. Fields are described below.

Readings
Chart
Setup
Data

TX Configuration

DB Configuration

Management

Security

Diagnostic

Logout

Simple Mail Transfer Protocol

Enabled

SMTP Server

SMTP Server Port

Security None ▾

Username

Password

Retype Password

From:

To:

E.g. abc1@example1.com, abc2@example2.com

Subject

Reminder Interval mins
0 disables reminder

Transmission Delay mins
0 disables delay


Figure Management Page

3.10.1 Enabled

If checked the SMTP is enabled on the Dashboard. If unchecked, the email alert function is disabled as well.

3.10.2 SMTP Server

This field specifies the IP Address or domain name of the SMTP server. For some public SMTP server, you can search online to get the server address. For example, Gmail SMTP server is "smtp.gmail.com" according to the Google webpage <https://support.google.com/a/answer/176600?hl=en>.

 You must have an email server (SMTP server) in order to receive emails generated by the Dashboard.

3.10.3 SMTP Server Port

This specifies the TCP port used by the SMTP Server. You need to change it according to instructions provided by your SMTP service provider.

For example, Gmail SMTP server port is 465 for SSL security, and 587 for TLS security, according to the Google webpage <https://support.google.com/a/answer/176600?hl=en>.

3.10.4 Security

This is the authentication type the email server may require. The options are SSL and TLS. The default is None. When security option is changed, the SMTP server port usually needs to be changed accordingly.

3.10.5 Username / Password

If authentication is required for your SMTP server, a username and a password must be entered.

 Username and password are case-sensitive.


3.10.6 From

This is a text field and could be a name, a location, or an email address.

3.10.7 To

This field specifies the email addresses or group email address of the recipients. It can take up to 412 alphanumeric characters. Email addresses should be separated by a comma and a space. For example: **aaa@bbb.com, ccc@ddd.com**

Note: To receive an alert text message, you can put the email address for your phone number provided by your phone service company here. For example, AT&T wireless device has the email address "xxxxxxxx@txt.att.net" for each phone number, which is the **10-digit wireless phone number**, followed by **@txt.att.net**. Please see **Appendix L** for more information about sending alert text messages.

 Check each email individually, if one email is wrong none of the other emails will go through.

3.10.8 Subject

This field specifies the subject of the email. Emails for all the alarms will have this common subject line. Example of a subject would be “Temperature Alarm”.

3.10.9 Reminder Interval

This will force an email to be resent if the alarm condition is still met. The minimum value is 1 minute and if it’s set to 0 the Dashboard will not send a reminder.

3.10.10 Transmission Delay

If there is an alarm condition the Dashboard will not send an email until this delay period is expired. If it’s set to 0 emails will be sent immediately once the alarm condition is met. Usually, the Transmission Delay should be longer than the update interval of the device reading.

Note: The Transmission Delay can be worked to avoid momentary alarm condition. For example, the Reminder Interval is set as 10 minutes, Transmission Delay is set as 3 minutes, and the update interval of device reading is 10 seconds. When the first time the alarm condition is triggered, the system will watch the alarm for 3 minutes. At the same time, the reading is updating each 10 seconds. If the alarm condition lasts for 3 minutes, the first email will be sent at the end of that 3 minutes or if the alarm is gone within the 3 minutes, the email will not be sent. After the first email alert is sent, the system will send one email alert each 10 minutes repeatedly (set by the Reminder Interval) if the alarm condition is still there.

3.11 Security

This page provides security and access settings for the Dashboard. Fields are described below.

| Passwords | | | |
|-----------------------|---|-------------------------------------|------------------------|
| admin (Administrator) | <input type="password" value="00000000"/> | <input checked="" type="checkbox"/> | Change |
| user | <input type="password" value="12345678"/> | <input checked="" type="checkbox"/> | Change |

Figure 3.11 Security Page

3.11.1 Admin

A username and a password can be set for someone who is authorized to access all the menus and pages within the Dashboard. The default username is **admin** and the default password is **00000000**.

To change the name and password of the admin account or disable the admin account, please click “Change” on the admin row to jump to the webpage below. Click “Save Changes” to save the new settings.

admin

| | |
|--|---------------------------------------|
| Enabled (Login will not be required if Administrator login is disabled.) | <input checked="" type="checkbox"/> |
| New Username | <input type="text" value="admin"/> |
| New Password | <input type="text" value="00000000"/> |
| Confirm Password | <input type="text" value="00000000"/> |



Caution: When you disable the admin password but have user password enabled, the user account becomes invalid, and all the webpages of the Dashboard can be accessed without any password.

3.11.2 User

A username and a password can be set for someone who is authorized to access Readings, Chart, and Data menus only; the Setup menu cannot be accessed. The default username is **user** and the default password is **12345678**.

To change the name and password of the admin account or disable the admin account, please click “Change” on the admin row to jump to the webpage below. Click “Save Changes” to save the new settings.

user

| | |
|------------------|---------------------------------------|
| Enabled | <input checked="" type="checkbox"/> |
| New Username | <input type="text" value="user"/> |
| New Password | <input type="text" value="12345678"/> |
| Confirm Password | <input type="text" value="12345678"/> |

3.12 Diagnostics

This page provides diagnostic information regarding power, signal, etc. for all the Transmitters. Fields are described below.

Note: The Power type, Battery, Signal Strength and Success Rate are only for the 802.11 based wSeries devices and 802.15.4 based “Coordinator-End Device” type devices (i.e. zSeries). For iServer/Ethernet based standalone devices, Dashboard shows N/A on those columns.

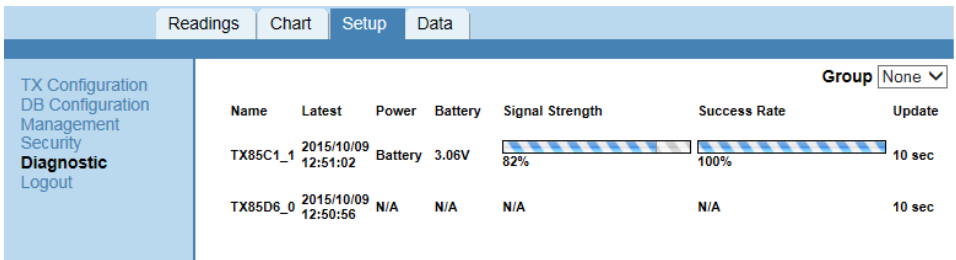


Figure 3.12 Diagnostic Page

3.12.1 Name

This is the Transmitter's name. You can jump to the **Setup** page of the device by click at the Transmitter's name. You can also change the Transmitter's name on the Setup page.

3.12.2 Latest

This is the last date/time the Dashboard received a packet of data from the Transmitter.

3.12.3 Power

This indicates whether the Transmitter or End Devices is powered by an AC adapter or battery. Some transmitters with AC adapter have battery back-up. It only supports the 802.11 based wSeries devices and 802.15.4 based "Coordinator-End Device" type devices (i.e. zSeries), and it shows "N/A" for iServer/ Ethernet standalone devices.

3.12.4 Battery

This indicates the voltage level in the battery. It only supports the 802.11 based wSeries devices and 802.15.4 based "Coordinator-End Device" type devices (i.e. zSeries), and it shows "N/A" for iServer/ Ethernet standalone devices. Some transmitters with AC adapter have battery back-up; therefore, their voltage level is also displayed. A new alkaline battery regardless of its type (AA or C-cell) has about 1.59 volts.



For wSeries Transmitters : The two C-cell batteries in battery-powered wSeries Transmitters are wired in parallel; therefore, the combined voltage level is the same as a single battery.

For zSeries End Devices: The full voltage level is above 3V. It is recommended to change the batteries when the voltage level gets equal to or below 2.7V.

3.12.5 Signal Strength

This is the strength of the radio signal. It only supports the 802.11 based wSeries devices and 802.15.4 based "Coordinator-End Device" type devices (i.e. zSeries), and shows "N/A" for iServer/ Ethernet standalone devices. For wSeries, it is the signal strength between the wSeries Transmitter and the Access Point. For 802.15.4 based "Coordinator-End Device" type devices, it is the signal strength between the End Device and Coordinator. The higher the signal strength is the better communication would be.

Note

For wSeries Transmitters: With a Signal Strength of over 20% you have a stable wireless communication. If the Signal Strength falls below 20% and stays for a long period of time you should check the Transmitter for distance and interference. If the Power Save mode is enabled the Signal Strength will only be updated if there is a packet loss.

For zSeries Devices: It must be noted that although the Signal Strength value being reported may be very low this does not mean that the device will not be able to receive frames reliably. It is simply indicating that the modem gain has been set to its highest level in order to receive the frame which also means highest power consumption.

3.12.6 Success Rate

A low success rate indicates a longer data delay, shorter battery lifetime and high network traffic. It only supports the 802.11 based wSeries devices and 802.15.4 based "Coordinator-End Device" type devices (i.e. zSeries), and shows "N/A" for iServer/Ethernet standalone devices.

Note

If the Success Rate is 100% that indicates that there is no packet loss. Having Success Rates of less than 100% is normal since the Transmitter will retransmit the lost packets.

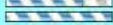


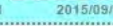

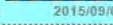
3.12.7 Update

This is the device's reading transmission frequency in seconds. For example, if it's set to 5 seconds then it means that the Dashboard will update device reading every 5 seconds. The default value is 10 seconds for all the devices. Shorter update interval means more network traffic and higher system usage.

3.13 Logout

Once the Logout option is clicked the user will be logged out from the Dashboard. The user will be logged out automatically by closing the browser or by no longer browsing (active data readings, chart, sensor setup and diagnostics will keep login session active).

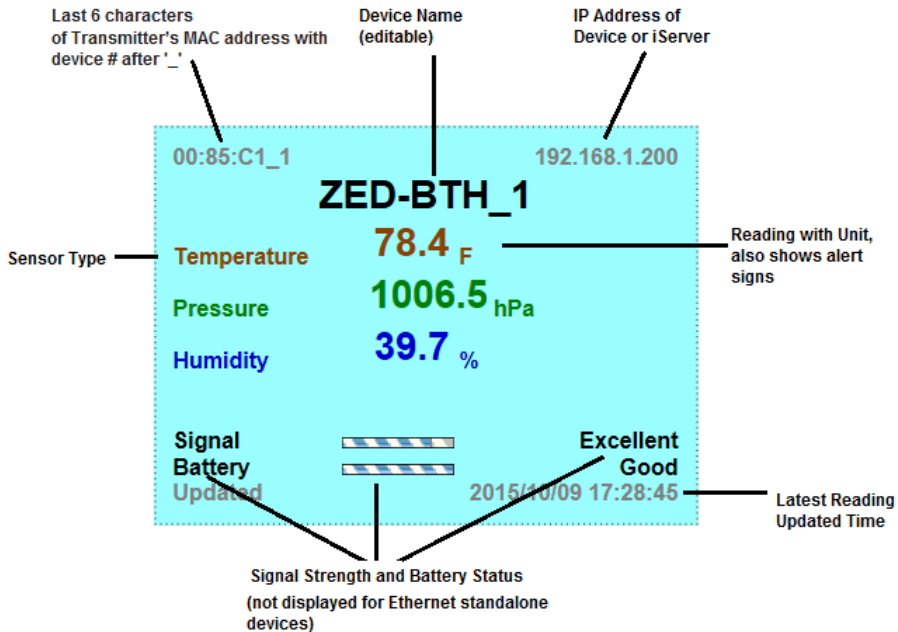
3.14 Readings

| Readings | | | | Chart | Setup | Data |
|--|---|---|---|-------|-------|----------------------|
| Group None | | | | | | |
| <p>00:C7:F1_2 192.168.1.114</p> <p style="text-align: center;">TXC7F1_2</p> <p>Temperature 1 73.9 F</p> <p>Temperature 2 70.7 F</p> <p>Signal  Good</p> <p>Battery  Updated 2015/09/01 14:01:43</p> | <p>01:22:1A_0 192.168.1.111</p> <p style="text-align: center;">TX221A_0</p> <p>Temperature 75.7 F</p> <p>Pressure 1009.7 hPa</p> <p>Updated 2015/09/01 14:01:46</p> | <p>01:28:AA_0 192.168.1.115</p> <p style="text-align: center;">TX28AA_0</p> <p>Temperature 74.4 F</p> <p>Humidity 45.2 %</p> <p>Dewpoint 51.8 F</p> <p>Updated 2015/09/01 14:01:40</p> | <p>01:45:A6_0 192.168.1.116</p> <p style="text-align: center;">TX45A6_0</p> <p>Temperature 75.2 F</p> <p>Humidity 43.1 %</p> <p>Dewpoint 51.0 F</p> <p>Updated 2015/09/01 14:01:40</p> | | | |
| <p>01:42:7C_0 192.168.1.117</p> <p style="text-align: center;">TX427C_0</p> <p>Temperature 76.4 F</p> <p>Humidity 42.5 %</p> <p>Dewpoint 51.9 F</p> <p>Updated 2015/09/01 14:01:40</p> | <p>01:40:18_0 192.168.1.118</p> <p style="text-align: center;">TX4018_0</p> <p>Temperature 74.8 F</p> <p>Humidity 45.6 %</p> <p>Dewpoint 52.3 F</p> <p>Updated 2015/09/01 14:01:40</p> | <p>00:C7:F1_4 192.168.1.114</p> <p style="text-align: center;">TXC7F1_4</p> <p>Temperature 1 73.9 F</p> <p>Temperature 2 73.4 F</p> <p>Signal  Fair</p> <p>Battery  Good Updated 2015/09/01 14:01:32</p> | <p>01:11:1F_0 192.168.1.119</p> <p style="text-align: center;">TX111F_0</p> <p>Temperature 76.8 F</p> <p>Pressure 1009.6 hPa</p> <p>Updated 2015/09/01 14:01:46</p> | | | |
| <p>00:C7:F1_3 192.168.1.114</p> <p style="text-align: center;">TXC7F1_3</p> <p>Humidity 39.0 %</p> <p>Temperature 1 79.2 F</p> <p>Dew point 52.0 F</p> <p>Signal  Excellent</p> <p>Battery  Good Updated 2015/09/01 14:01:43</p> | <p>01:51:0E_0 192.168.1.124</p> <p style="text-align: center;">TX510E_0</p> <p>Temperature 1 81.3 F</p> <p>Temperature 2 81.5 F</p> <p>Differential -0.2 F</p> <p>Updated 2015/09/01 14:01:40</p> | <p>01:51:11_0 192.168.1.125</p> <p style="text-align: center;">TX5111_0</p> <p>Temperature 1 76.4 F</p> <p>Temperature 2 78.4 F</p> <p>Differential -2.0 F</p> <p>Updated 2015/09/01 14:01:40</p> | <p>01:51:0D_0 192.168.1.126</p> <p style="text-align: center;">TX510D_0</p> <p>Temperature 1 79.3 F</p> <p>Temperature 2 83.3 F</p> <p>Differential -4.0 F</p> <p>Updated 2015/09/01 14:01:40</p> | | | |
| Prev | | | | | | Next |

This page displays the readings from all the added devices.

Up to 12 devices can be displayed on each page. To see more devices on the next pages, click on **Prev/Next** (not shown when less than 12 devices on Dashboard) at the bottom of the page. By choosing a group from the **Group** pull down list, you can switch to another group.

Figure below describes the fields of device reading block. By click on the Device Name, you can directly go to the **Setup** page of that device.



3.14.1 Error Messages

The Reading page also shows error messages such as “Open”, “Lost”, “LostED”.

“Open”: the probe or sensor is disconnected on the device.

“Lost”: Dashboard loses the communication with the device.

Note: If Dashboard loses the communication with the Coordinator of the “Coordinator-End Device” type system, all the End Devices under that Coordinator show “Lost”.

“LostED”: only for the End Device of the “Coordinator-End Device” type system, it means the Coordinator loses the communication with that End Device while the Dashboard can still communicate with the Coordinator.

Note: If an End Device has never established the communication with the Coordinator since the Coordinator powers up, it shows “Lost” instead of “LostED”.

3.15 Chart

This page charts the readings for each Transmitter in real-time as well as the recorded data. Select a Transmitter from the list on the top right as shown in **Figure 4.14** and the charting will start with a default one-minute period. If you have different groups of

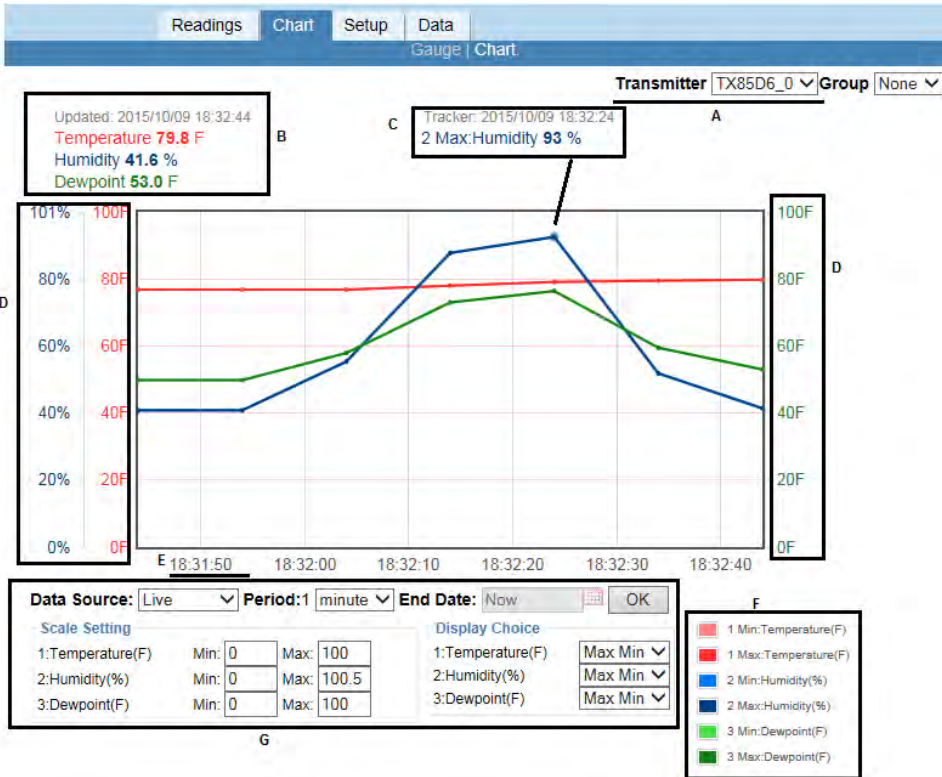
devices, choose **Group** first and then choose a device from the Transmitter list.



Along the chart line there are pointers that would display time-stamped sensor readings once they're pointed with the mouse.



Figure 3.15 Chart Readings Page



- A- Transmitter list to switch among different devices
- B- Current time and current reading
- C- Reading point tracker: move your mouse on one point to know the reading and the time stamp for it.
- D- Axes for all the sensors/measured channels
- E- Time Stamps for Chart
- F- Color Indicator for all Sensor Readings with Sensor Type and Unit
- G- Chart Display Control Field

3.15.1 Data Source

The options are Live and Recorded. If Live is selected the real-time data will be charted as a function of time period. If Recorded option is selected the past saved data will be charted per selected time period. A click on the OK button is needed to execute the change.

3.15.2 Period

This determines the time period in which the live or recorded data is charted. A click on the OK button is needed to execute the change.

Note: for any reason (such as computer reboot or losing communication for some time) when the reading update is interrupted, the Chart shows a blank gap on the reading trend line to indicate the interrupt.

3.15.3 End Date

This field is active only in Recorded mode. Once it's active a date can be selected to chart the recorded data up to that date, which would be the end of the chart. The End Date can be chosen from a calendar where the word "choose" is located. A click on the OK button is needed to execute the change. Selecting an End Date is mandatory to chart recorded data.

Note

It's always important to first select a desired chart Period before picking an End Date.

3.15.4 Scale Setting

This section allows changing the upper and lower values for the x axis on the graph. Simply, put the numbers in the min. and max. boxes and the axis limits will change accordingly.

3.15.5 Display Choice

In cases where there are less points used to create a chart than what the actual collected points are choices are given to chart the minimum and maximum (min max), only minimum (min), or only maximum (max) points for any given period. In the case of min max there could be two charts; one representing all the maximum readings and the other one representing all the minimum readings. This could happen if there are sudden and continuous changes with any of the sensor readings.

Note

Once you leave the chart page for a Transmitter all the settings will get saved.

3.15.6 Gauge

This page illustrates the readings in gauge format. Once the Show Setting box is checked you will be able to scale the gauge with the Start and End reading values as well as defining the Red Range as shown in **Figure 3.15**. Click on the Save Settings button to save new settings.

Note

For Analog Gauges you can eliminate the extra digits by changing the Settings:

Start: 0 End: 60

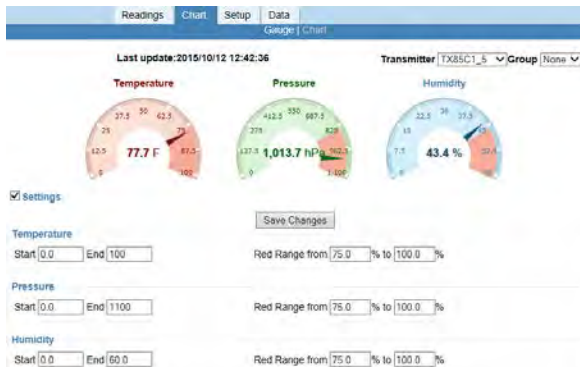


Figure 3.15 Gauge Readings Page

3.16 Data

Data from all the active Transmitters gets recorded in the same computer on which the Dashboard is installed. The Data page has options to retrieve currently recorded data as well as the data that was recorded in the past called Archived Recorded Data as shown in **Figure 3.16**. Every time the Transmitter is rebooted the current recorded data file

moves into the archived recorded data and a new log file will be generated under the current recorded data. Please choose from the Group list to switch to another group of devices.



The name of the data file in the Archived Recorded Data is based on the date and the time the data file was moved into the Archived Recorded Data which is the same as when the Transmitter was rebooted.

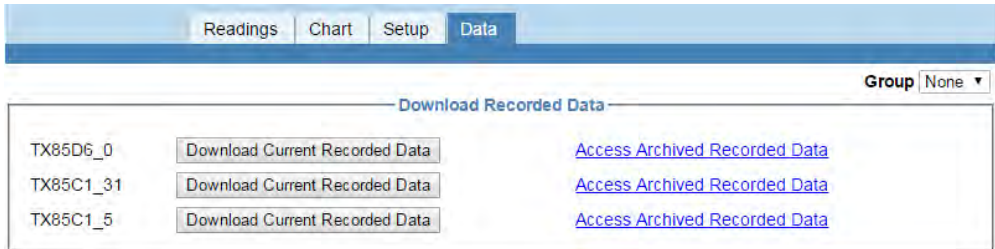


Figure 3.16 Data Page

All the recorded data files are in .csv (Comma Separated Value) format and can be easily imported into a spreadsheet program like Excel.

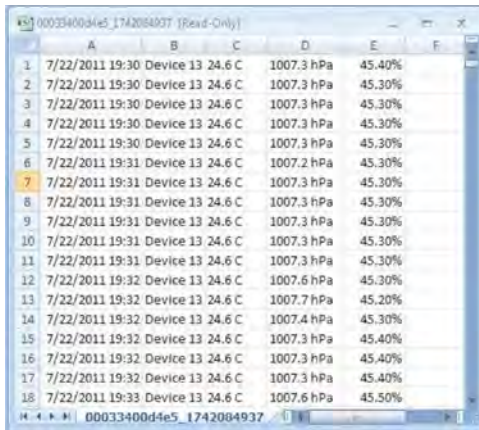


Figure 3.17 .csv Recorded Data Files

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 (IPv4) 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.

“Coordinator-End Device” type network has the star network typology which has several End Devices communicating to a Coordinator wirelessly. End Device has sensors or probes on it while Coordinator with an iServer collects data from End Devices and sends data to Dashboard through Ethernet (connected by RJ45 connector).

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

HTTPS (also called HTTP over TLS, HTTP over SSL, and HTTP Secure) is a protocol for secure communication over a computer network , it authenticates a server with a certificate and encrypts the data for communication.

IEEE 802.11b/g is the wireless Wi-Fi standard used by our wSeries.

IEEE 802.15.4 is the low data rate wireless standard used by our zSeries, UW series and ZW series.

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 hostportion.

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.

Standalone iServer based device has sensors/probes connected to it directly and uses the iServer inside to transmit data through Ethernet (connected RJ45 connector).

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.

SMTP Simple Mail Transfer Protocol is an Internet standard for electronic mail (email) transfer across the Internet. SMTP clients usually use SMTP to send email messages by specifying the SMTP server. The email server uses SMTP to both send and receive email messages.

SNMP Simple Network Management Protocol is a network monitoring protocol to monitor devices connected to an Ethernet Network.

SSL and TLS are both standard security technology for establishing an encrypted link between a server and a client—typically a web server (website) and a browser; or a mail server and a mail client. TLS (Transport Layer Security) is the successor to the Secure Sockets Layer (SSL).

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.

WEP (Wired Equivalent Privacy) a security algorithm for IEEE 802.11 wireless networks. Provides data confidentiality comparable to that of a traditional wired network. Recognizable by the key of 10 or 26 hexadecimal digits, is widely in use and is often the first security choice presented to users by router configuration tools.

WPA Wi-Fi Protected Access and WPA2 Wi-Fi Protected Access II WPA2 provides stronger data protection and network access control. WPA2-PSK (Pre-shared key) mode encrypts the network traffic using a 256 bit key. This key can be entered as a passphrase of 8 to 63 printable ASCII characters.

| | WPA | WPA2 |
|---|---|---|
| Enterprise Mode (Business, Government, Education) | <ul style="list-style-type: none"> • Authentication: IEEE 802.1X/EAP • Encryption: TKIP/MIC | <ul style="list-style-type: none"> • Authentication: IEEE 802.1X/EAP • Encryption: AES-CCMP |
| Personal Mode (SOHO, Home/Personal) | <ul style="list-style-type: none"> • Authentication: PSK • Encryption: TKIP/MIC | <ul style="list-style-type: none"> • Authentication: PSK • Encryption: AES-CCMP |

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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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

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.

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

Appendix D

ASCII Chart Continuation

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

ASCII Control Codes

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

Appendix E TCP/IP COMMAND-LINE-INTERFACE

The Dashboard responds to TCP connections made to its port 2000. From anywhere on the network, data acquisition programs that support TCP/IP protocol applications like Telnet can establish a TCP port connection to the Dashboard using its IP address and port 2000. The IP address of the Dashboard is the same as the IP address of the PC on which the Dashboard is installed. The default local port 2000 can be changed in the Dashboard if needed (see Dashboard Configuration **Section 3.9**). Once the TCP connection is established, the commands listed below can be used to query the Dashboard for real-time data from any or all the Transmitters. The commands sent to and the responses back from the Dashboard are all in ASCII format.

Commands

Descriptions

ERDALL

Collects readings from the Dashboard for all the Transmitters.

Example: This is the response to ERDALL command for 4 transmitters.

| | | | | | |
|---------------------|----------|------|---|--------|------------|
| 2011/07/22 12:06:57 | TXd461_0 | 22.3 | C | | |
| 2011/07/22 12:06:47 | TXd201_0 | 22.0 | C | 24.0 | C |
| 2011/07/22 12:06:43 | TX5a86_1 | 22.2 | C | 47.0 | % |
| 2011/07/22 12:06:57 | TXd4e4_2 | 21.8 | C | 1010.5 | hPa 48.6 % |

| | | | | | |
|-----------------|-----------------|------------------------|------------------------|-------------------------|---------------------|
| <u> Date </u> | <u> Time </u> | <u> Transmitter </u> | <u> Temperature </u> | <u> Barometric </u> | <u> Humidity </u> |
| | | <small>Name</small> | | <small>Pressure</small> | |

ERDBxxxxxx

Collects readings from the Dashboard for a single Transmitter. xxxxx would be the Transmitter's name.

Example: This is the response to ERDBTXd4e4 command.

2011/07/22 12:07:16 TXd4e4_2 21.8 C 1010.5 hPa 48.6 %

ERDRxxxxxx#

Collects readings from the Dashboard for a specific sensor of a single transmitter. xxxxxx would be the Transmitter's name and # would be the first (c), second (d), or third (e) sensor reading.

Example: This is the response from the Dashboard to the command ERDRTXd4e4c for the temperature reading of transmitter TXd4e4.

2011/07/22 13:59:17 TXd4e4_2 21.8 C

ERDGx

Collects readings from the Dashboard for a group of transmitters where x is the letter for that group (A, B, C, .). To put the Transmitters in a group, see **Section 4.4**

Example: This is the response from the Dashboard to the command ERDGA where A is a group with three devices.

| | | | | | |
|---------------------|----------|------|---|--------|------------|
| 2011/07/22 14:41:58 | TXd4e5_0 | 22.1 | C | 1007.6 | hPa 49.2 % |
| 2011/07/22 14:42:00 | TXd503_0 | 21.9 | C | 50.9 | % |
| 2011/07/22 14:41:55 | TXd4ae_1 | 21.7 | C | 21.7 | C |

Note

The commands are not case-sensitive and should be sent followed by a carriage return

Appendix F ASCII / TELNET COMMANDS TABLE

Table F.1 ASCII/Commands Table

| Command Device / Group ID | | Description (see notes below if *) | Example |
|---------------------------|--|---|--|
| ERD | ALL | Get all sensor readings | ERDALL |
| ERDB | Device Label | Get sensor readings of an Transmitter | Get reading for sensor txd430: ERDBtxd430 |
| ERDR | Device Label: Reading/parameter: a-s *1 | Get individual reading or parameter | Get the first temp. reading for sensor txd430: ERDRtxd430c |
| ERDG | Group Label: A-Z; ALL | Get sensor readings of a group / groups of sensors | Get readings for all group B: ERDGB |
| EQNF | Device Label | Get label, status and firmware version of an Transmitter | Get label for sensor txd430: EQNFtxd430 |
| EQNG | Group Label: A-Z, ALL | Get label, status and firmware, version of a group/all groups of sensors | Get label for all sensors: EQNGALL |
| EQPE | Device Label | Get sleep period, battery voltage, signal strength, success of an Transmitter | Get sleep period for sensor txd430: EQPETxd430 |
| EQPG | Group Label: A-Z | Get sleep period, battery voltage, signal strength, success, of a group / all groups of sensors | Get sleep period, of group B: EQPGB |

*1 Refer to **Table F.3**

Note: EQNF, EQNG, EQPE and EQPG commands only work for wSeries transmitters, and cannot work with any other devices.

An example of the status of a Transmitter Command: **EQNF003**

Response: **2011/08/02 17:51:08 003 00000000 1.00**

003 is the label for the Transmitter.

"00000000" is the bitmap representation of the internal state. The meaning for each bit is described below (bit 7 starts from the left).

1.00 is version of the firmware in the Transmitter

Table F.2 Status of the device

| | |
|---|---|
| Bit 7 shows if the sensor is plugged into the Transmitter. '1' means there is no sensing device detected. | Bit 4 not used. |
| Bit 6 shows if the communication to the Transmitter is lost. '1' means there has not been any data received from that particular Transmitter for 1 minute or 4 times the update rate, whichever is a longer time interval. | Bit 3 not used. Bit 2 not used. Bit 1 shows the source of power supply to the Transmitter. '1' means it's powered by an adapter and '0' means it's powered by batteries. |
| Bit 5 not used. | Bit 0 not used. |

F.3 Reading/parameter for ERDR commands

| Options (lower case) | Reading/parameter |
|----------------------|---|
| a | Sequence number (Always 1, as timestamp is used for sequence number) |
| b | Device type |
| c | reading / error message |
| d | reading / error message |
| e | reading / error message |
| f | not used |
| i | Update rate |
| j | Battery voltage (no decimal point) |
| k | Signal strength |
| l | Success rate |
| q | Name (Label) |
| r | Status (see previous table) |
| s | Firmware version |

| c | d | e |
|---------|----------|----|
| Temp | | |
| Temp | RH | |
| Temp | Pressure | |
| Temp | Pressure | RH |
| Temp TC | Temp TC | |
| Analog | Analog | |

* See option chart for sensor reading order

Note: b,j,k,l,r,s are perimeters only for wSeries and not working with any other devices.

Table F.4 Connector/Transmitter Types for wSeries

| Model | Description | Type# |
|-------|---|-------|
| wTP1 | Temperature sensor with stick probe | 16 |
| wTP2 | Temperature sensor with lug mount probe | 16 |
| wTHP | Temperature and humidity sensor | 15 |
| wTHP2 | Temperature and humidity sensor, short probe | 15 |
| wBTHP | Barometric pressure, temp and humidity sensor | 13 |
| wBTP | Barometric pressure and temperature sensor | 9 |
| wTC | Dual thermocouple inputs | 20 |
| wVI | Analog input, Channels Enabled | 24 |
| wVI | Analog input, Channel 1 Enabled | 25 |
| wVI | Analog input, Channel 2 Enabled | 26 |

This is a DOS-based TCP socket connection program used to query real-time data from the Dashboard. Simply, download this single httpget.exe file from our web site and place it somewhere in your computer's hard drive. At the DOS prompt where the httpget.exe is residing a command string can be sent to the Dashboard to receive real-time data. The figure below demonstrates the HTTPget command strings.

HTTPget Command Strings

```

C:\WINDOWS\system32\cmd.exe
C:\VHTTPGET>httpget -r -S ERDALL\r 192.168.5.220:2000 -C1 -q
2011/07/22 18:28:45 TXd201 23.3 C 23.4 C
2011/07/22 18:28:44 TXd49d Open C Open C
2011/07/22 18:28:47 TX5a86 23.1 C 47.7 %
2011/07/22 18:28:42 TXd203 22.9 C 22.8 C
2011/07/22 18:28:36 TXd459 23.5 C
2011/07/22 18:29:05 TXd4e4 22.8 C 1007.2 hPa 48.1 %
2011/07/22 18:29:08 TXd508 23.0 C 47.6 %
2011/07/22 18:29:05 TXd4e5 23.5 C 1007.0 hPa 46.3 %
2011/07/22 18:29:07 TXd503 23.2 C 48.1 %
2011/07/22 18:29:05 TXd4ae 23.9 C 23.7 C
2011/07/22 18:29:01 TXd4b1 23.2 C 23.4 C

C:\VHTTPGET>httpget -r -S ERDBTXd4e5\r 192.168.9.100:2000 -C1 -q
2011/07/22 18:29:41 TXd4e5 23.5 C 1007.0 hPa 46.4 %

C:\VHTTPGET>httpget -r -S ERDRTXd4e5C\r 192.168.9.100:2000 -C1 -q
2011/07/22 18:30:36 TXd4e5 46.5 %

C:\VHTTPGET>httpget -r -S ERDGA\r 192.168.9.100:2000 -C1 -q
2011/07/22 18:30:46 TXd4e5 23.5 C 1007.0 hPa 46.5 %
2011/07/22 18:30:43 TXd503 23.3 C 48.3 %
2011/07/22 18:30:44 TXd4ae 24.0 C 23.8 C

C:\VHTTPGET>

```

Once you apply the steps described in **Section 2 and 3** and if you still cannot see the Transmitter on your Dashboard check the following items:

Wired LAN

If your computer is on a wired LAN on which the correct access point is also connected, make sure that you can reach the access point from your computer. This can be accomplished by “pinging” the IP address of the access point.

Firewall

Make sure that the firewall is off or the exceptions are added properly. Refer to **Appendix I and J**.

FIREWALL FAQs:

Question 1: My firewall is ON and I unchecked the exception for those ports but still the readings are seen on the webpage?

Solution: Go to Control panel->Administrative tools->Services and restart the Windows Firewall /Internet Connection sharing service.

Question 2: My firewall is ON and I removed the exception for those ports but still the readings are seen on the webpage?

Solution: Same as Question 1.

Question 3: My firewall is ON and I removed the exception for those but still the readings are seen on the webpage and I tried solution 1?

Solution: In Internet explorer go to <http://update.microsoft.com> and do the express upgrade to make sure that all the needed patches and service packs are installed. Then try Solution 1.

IMPORTANT NOTES: *Refer to each section listed below for additional details.*

DASHBOARD OPERATIONS:

Network Connection for Dashboard:

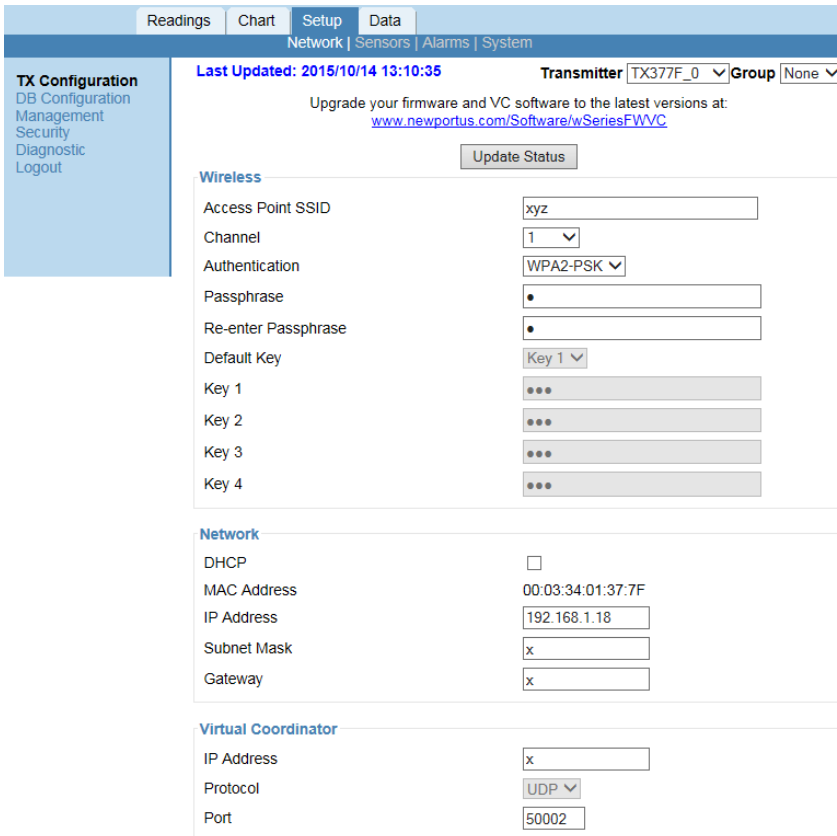
- It is recommended to have the computer running Dashboard hard-wired to the access point/wireless router with a static IP address.
- The IP address for the Dashboard is the same as the IP address of the computer on which the Dashboard is installed.
- If the computer has more than one IP address, use the IP address that is on the same network as the Access Point.
- The Dashboard can be accessed from the same computer on which it's installed or it can be access from a different computer on or outside the local network.

Setup Menu

- The username and password can be changed or disabled. See the Security menu for details.

TX Configuration – Network

- The default name for a Transmitter is TX followed by the last 4 characters of the Transmitter’s MAC address (i.e. 85D6) with an underscore and then the device# (i.e._0 or _1). For standalone devices, it is 0 by default; and for zSeries and UW series, it is the Device ID you set for the End Device. The default name of wSeries transmitters have no underscore with the device number, it only has TX followed by the last 4 characters of MAC address (i.e. “TX12f6”).
- Cookie feature must be enabled for the web browser
- If the **Network** page shows the wrong layout (such as the webpage below shows the layout for non-wSeries with a wSeries device type layout), please click the **Setup** tab on this page to load the correct layout.



The correct layout for this device should be:

The screenshot shows a web-based configuration interface. At the top, there are tabs for 'Readings', 'Chart', 'Setup', and 'Data'. Below these is a navigation bar with 'Network | Sensors | Alarms | System'. On the left, a sidebar menu includes 'TX Configuration', 'DB Configuration', 'Management', 'Security', 'Diagnostic', and 'Logout'. The main content area is titled 'TX Configuration' and shows settings for a 'Transmitter' (TX377F_0) in a 'Group' (None). The 'Network' section includes fields for MAC Address (00:03:34:01:37:7F), IP Address (192.168.1.18), Device # (0), Admin Password (0), Protocol (TCP), Port (2000), and Update (10 Seconds). The 'Transmitter' section includes a Name field (TX377F_0) with a checkbox and a Device Type field (RS232 Device). Below the settings is a note: 'Note: Restarting the services after changing IP address or port number is recommended.' At the bottom are 'Save Changes' and 'Reset' buttons.

Network – Network DHCP for Devices

- To conserve battery power it's strongly recommended to use a STATIC IP address (DHCP un-checked) for your Transmitter and Ethernet devices you before you add them to Dashboard.

Network – Dashboard IP Address

- You need to make sure that the IP address for the Dashboard will not change; otherwise, the Transmitter will not retain its connection with the Dashboard. For this reason using a STATIC IP address for the Dashboard is strongly suggested. If using DHCP for the Dashboard IP, reserve the assigned IP Address in the DHCP Server table to ensure the Dashboard always gets the same IP Address.

Port

- If the default port number (2000, 50002 or 50006) is not available, then use another number, and change the setting in the Dashboard Manager.

Network – Transmitter Update

- Depending on your update rate, your data files can become very large. For example: if you select Continuous which is about 3 readings per second. One week can equal 1,814,400 readings or 1 year can equal 94,348,800 readings. For example: if you select 1s. One week can equal 604,800 readings or 1 year can equal 31,449,600 readings.

TX Configuration – Sensors

Group

- Once a Group is selected, use the drop down menu for the Group next to the Transmitter drop down menu to view/edit sensor settings.

TX Configuration – Sensor Input Type

Unit

- Once the unit of measurement is selected it will be a global change throughout the Dashboard, but the unit here is only for Dashboard system, and it does not have any effect on the unit displayed on the device LCD or the unit on the iServer page or the unit in the records inside of the SD card for SD series. Note: for wSeries devices, the unit change also takes effect to the unit on the wSeries LCD.

TX Configuration – Alarms

- A Transmitter can be selected from the top right drop-down menu.
- In order to send email alarms you must configure the SMTP settings on the Management page.
- You must check the box for each event and click on Save Changes button.

Temperature Events

- There is a Message box under each event. The text content typed inside the box will be included in the body of the received email.

TX Configuration – System (for wSeries devices only)

- The new firmware should be placed in your Dashboard's directory at "Dashboard\ftpsrvr\res\home\public" before the firmware upgrade is initiated. Refer to the web for step by step instructions.
- It takes about two minutes for a complete firmware upgrade. You can start firmware upgrade on one Transmitter and then move to the next ones.

Username / Password

- You can always use a different FTP server by simply providing the above parameters for that FTP server.

Chart

- Along the chart line there are pointers that would display time-stamped sensor readings once they're pointed with the mouse.

End Date

- It's always important to first select a desired chart Period before picking an EndDate.

Display Choice

- Once you leave the chart page for a Transmitter all the settings will get saved.

Gauge

- For Analog Gauges you can eliminate the extra digits by changing the Settings:
Start: 0 End: 60

Data

- The name of the data file in the Archived Recorded Data is based on the date and the time the data file was moved into the Archived Recorded Data which is the same as when the Transmitter was rebooted.

Firewall protects a computer from external attacks. They typically restrict connections to all the ports on a computer that an external program can connect to. But there are times when you need to allow external programs to send data to your PC. To do that, you add exceptions to the firewall. This involves opening up only certain ports. Ports are of type UDP or TCP.

I.1 First go to Control Panel and click the icon of Windows Firewall. In case of Windows Vista, the icon is under System and Security.

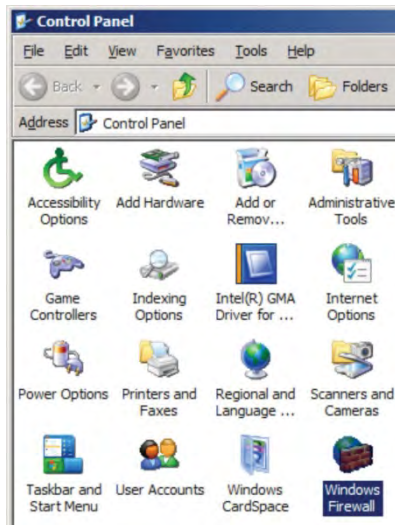


Figure I.1 Control Panel

I.2 In General tab, Make sure that the firewall is "ON" and the checkbox for "Don't allow exceptions" is unchecked.

Now, click the "Exceptions" tab.

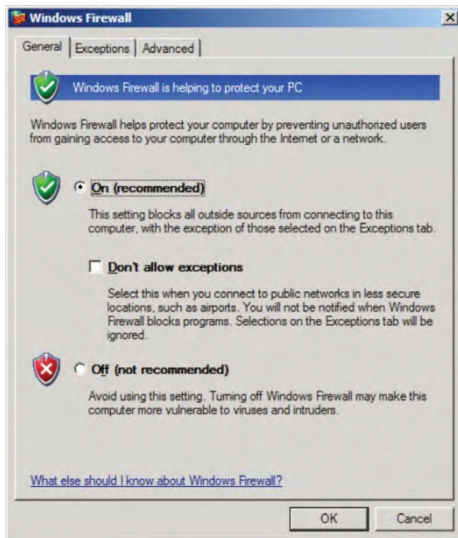


Figure I.2 General Tab

I.3 Click the button that says “Add Port” to add a UDP/TCP port.

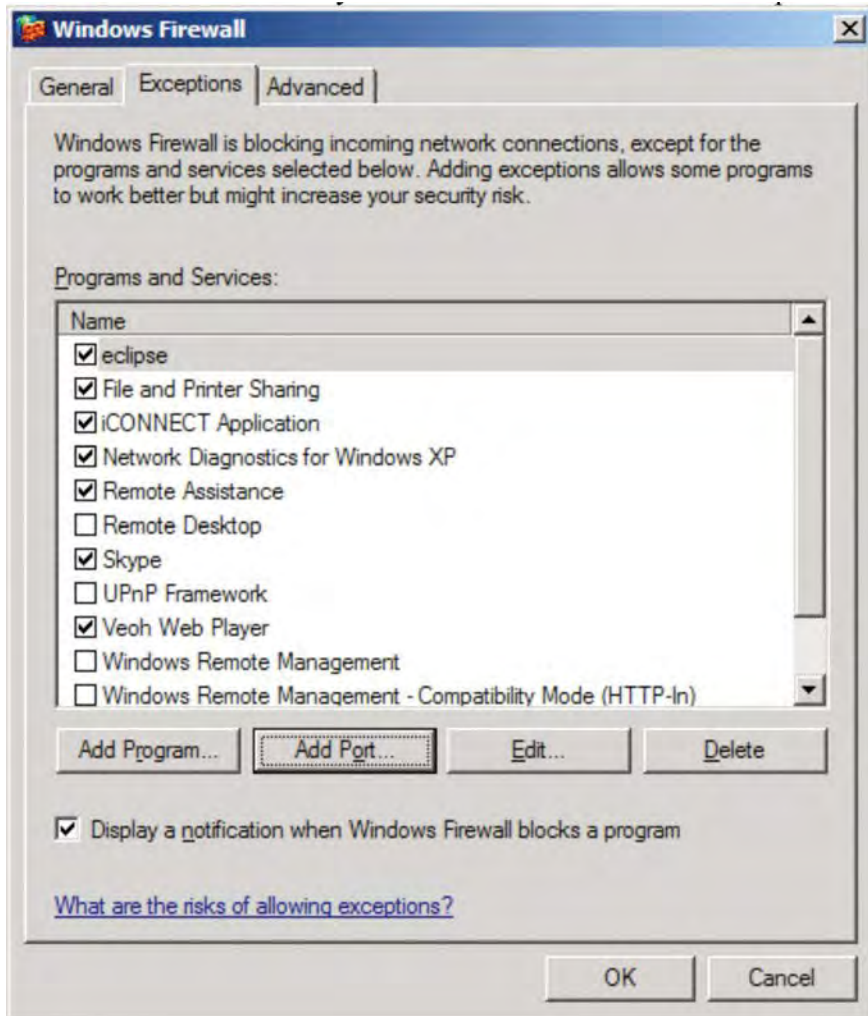


Figure I.3 Exceptions

I.4 Add the UDP port first that is used for Transmitter data to the Dashboard.

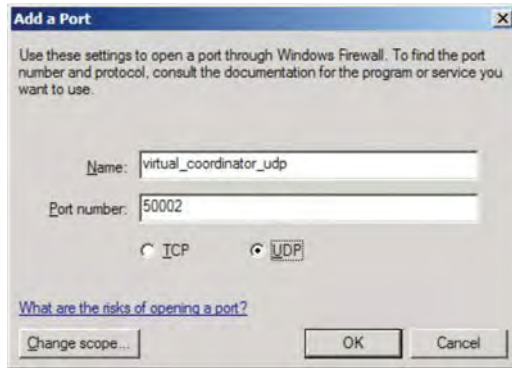


Figure I.4 Add a Port - TCP

Similarly add TCP ports for 50006 (TCP port for transmitter data), 2000 (command local server), 21 (ftp port for firmware upgrade), 80 (TCP type for HTTP web server).

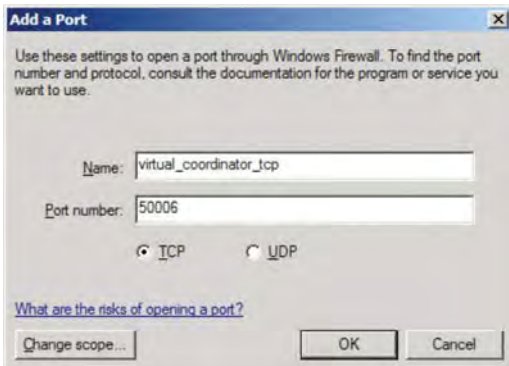


Figure I.5 Add a Port - TCP

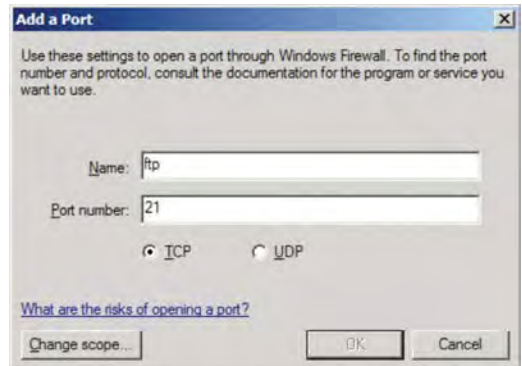


Figure I.6 Add a Port - TCP

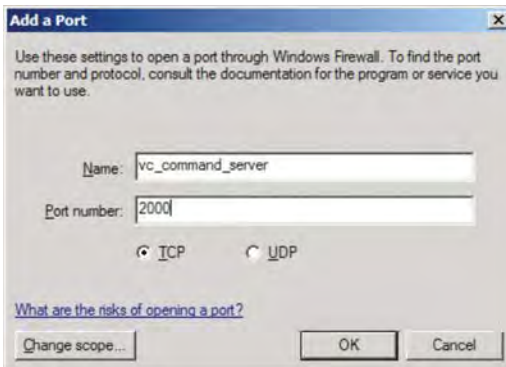


Figure I.7 Add a Port - TCP

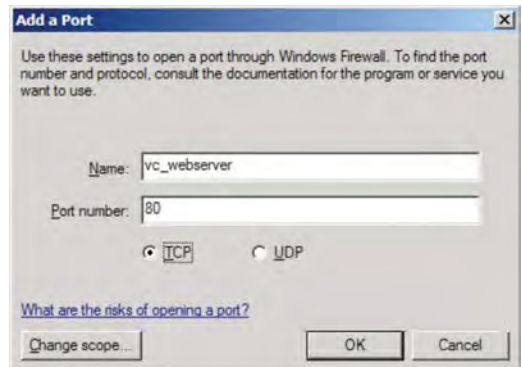


Figure I.8 Add a Port - TCP

Appendix I Firewall Settings for Windows XP and Vista (continued)

I.5 Restart the Windows Firewall service. Go to Control Panel->Administrative tools->Services. Locate the Windows Firewall/Internet Connection Sharing service and restart it. For Windows Vista the name of the service is Windows Firewall only.

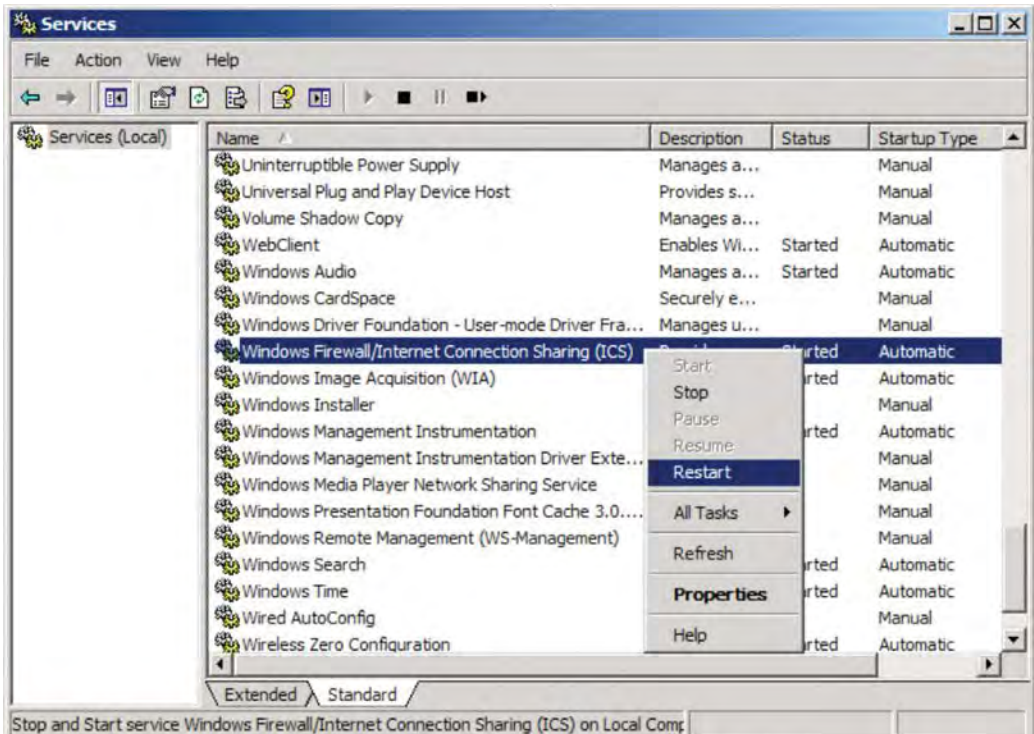


Figure I.9 Services

Firewall protects a computer from external attacks. They typically restrict connections to all the ports on a computer that an external program can connect to. But there are times when you need to allow external programs to send data to your PC. To do that, you add exceptions to the firewall. This involves opening up only certain ports. Ports are of type UDP or TCP.

J.1 First go to Control Panel and click the icon of System and Security.

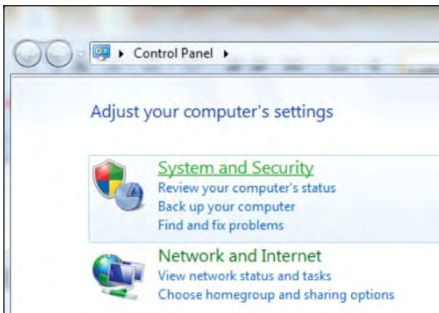


Figure J.1 System and Security

Choose the Windows Firewall.

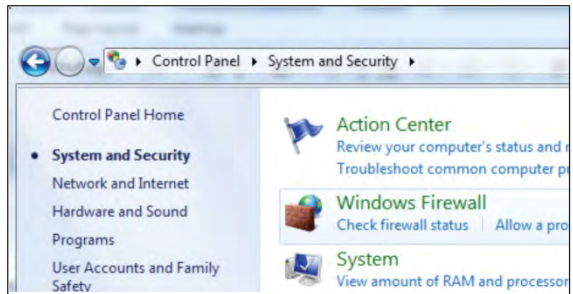


Figure J.2 Windows Firewall

Click the option to Turn Windows Firewall ON or OFF.



Figure J.3 Turn Windows Firewall ON or OFF

J.2 Turn ON the firewall and check the option to Notify when Firewall blocks a program.

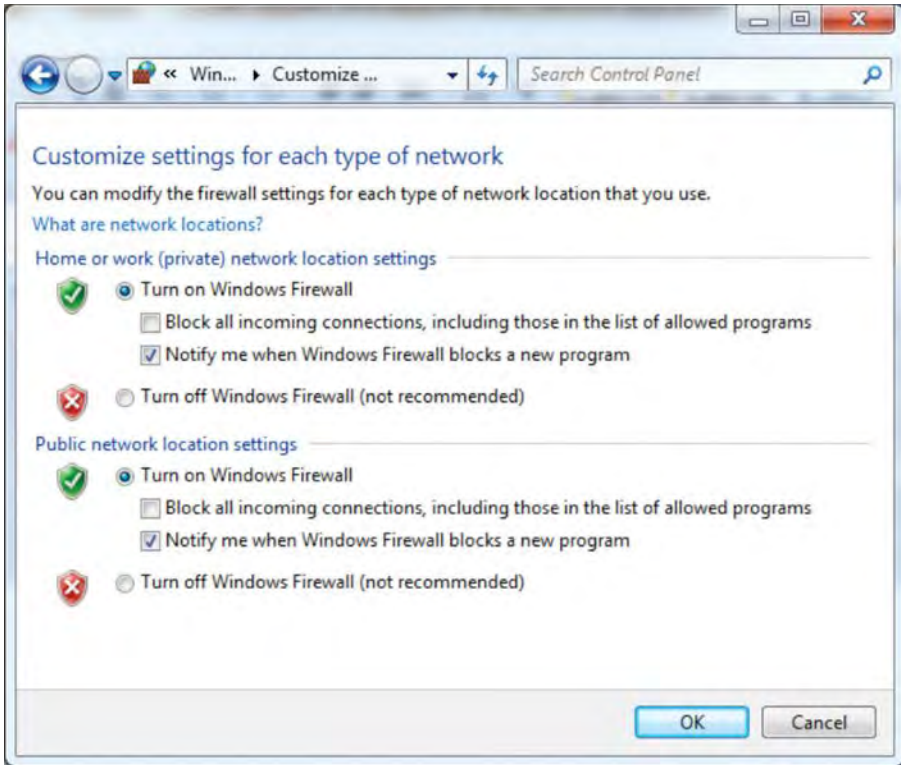


Figure J.4 Turn Windows Firewall ON

J.3 Go to Advanced settings to open the desired ports.



Figure J.5 Windows Firewall - Advanced Settings

Appendix J Firewall Settings for Windows 7 and Server 2008 (continued)
 Then choose the section of Inbound Rules. The exceptions apply to Inbound Rules (incoming connections to the PC). Choose the New Rule link on the right side under the tab Actions.

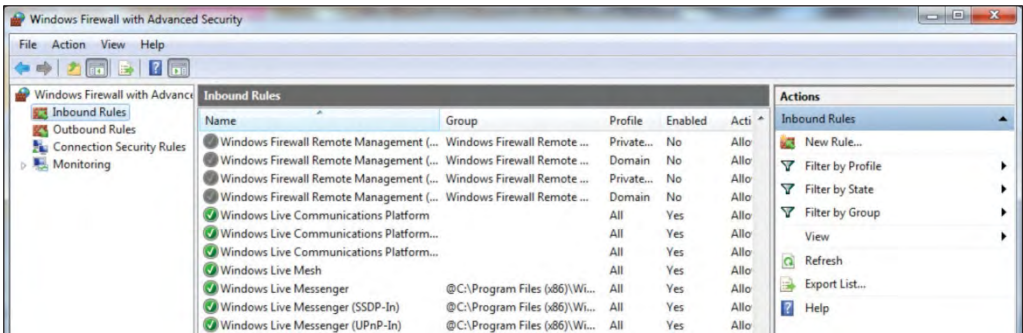


Figure J.6 Windows Firewall - Inbound Rules

Choose the option to create a rule for a particular port and click Next.

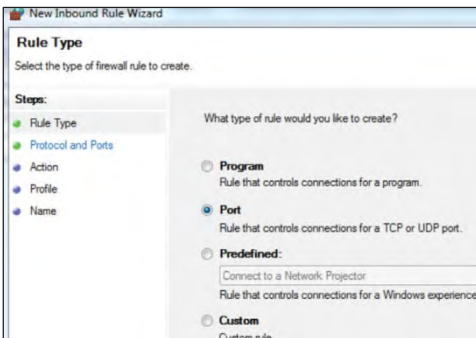


Figure J.7 Windows Firewall - Rule Type

Enter the port number 50006 (or whatever is the port for TCP data communication between transmitter and Dashboard) and choose type of TCP.

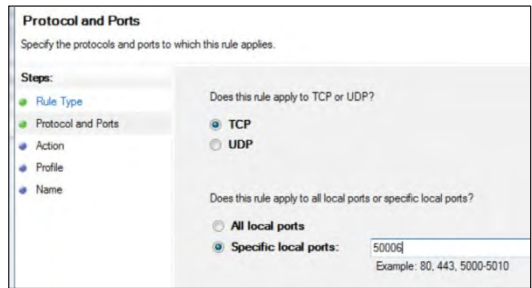


Figure J.8 Windows Firewall - Protocol and Ports

Choose Allow the connection. We are allowing data from this port.



Figure J.9 Windows Firewall - Action

Then choose the profile for Domain, Private and Public networks.

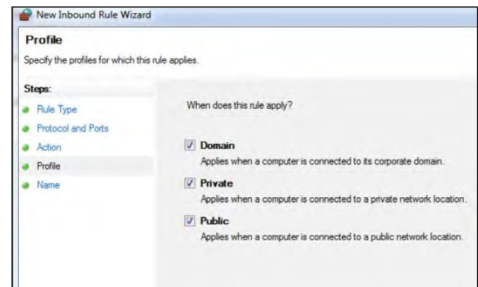


Figure J.10 Windows Firewall - Profile

Give a name for the rule. We give “virtual_coordinator_TCP” port.



Figure J.11
Windows Firewall -Name

J.4 Now do the same thing for UDP based port 50002.

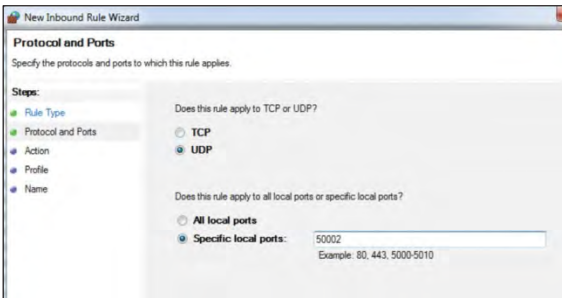


Figure J.12
Windows Firewall -Protocol and Ports

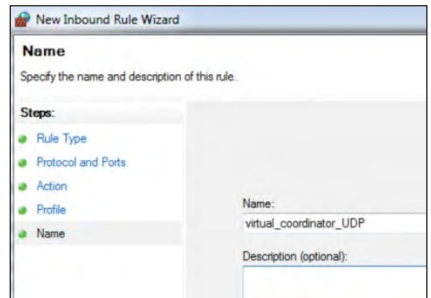


Figure J.13
Windows Firewall - Name

Then for FTP firmware upgrade port 21.

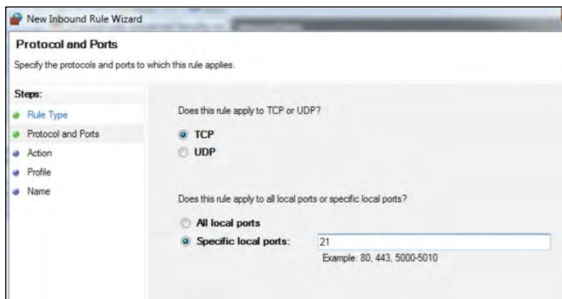


Figure J.14
Windows Firewall -Protocol and Ports

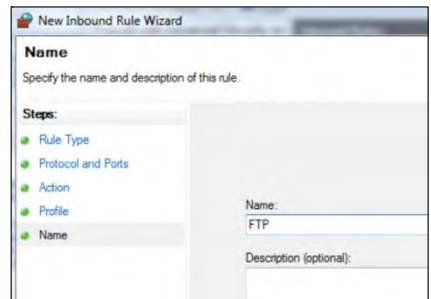


Figure J.15
Windows Firewall - Name

Appendix J Firewall Settings for Windows 7 and Server 2008 (continued)

Add the port 2000 for command server as well.

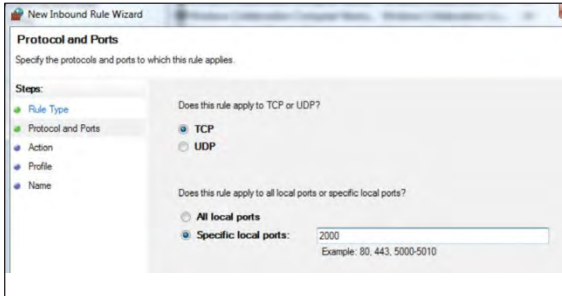


Figure J.16
Windows Firewall -Protocol and Ports

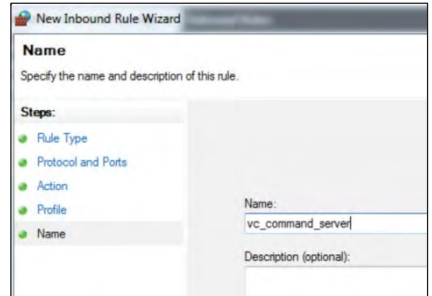


Figure J.17
Windows Firewall - Name

Finally add the HTTP(Web) server port



Figure J.18
Windows Firewall - Protocol and Ports

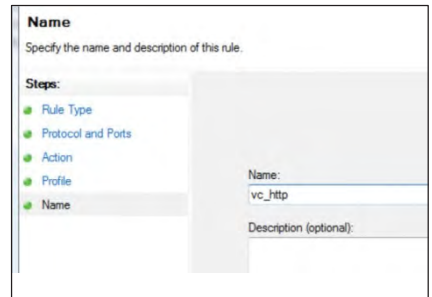


Figure J.19
Windows Firewall-Name

Appendix J Firewall Settings for Windows 7 and Server 2008 (continued)

J.5 Now all the rules have been added to the inbound rules. The Dashboard should be accessible from all other computers and get the readings.

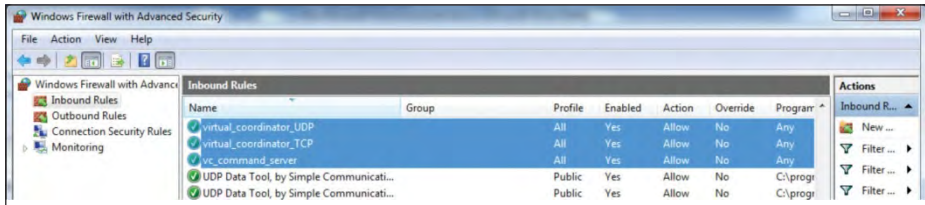


Figure J.20 Windows Firewall - Inbound Rules

J.6 You can enable, disable or change the properties of the rule by right click it.

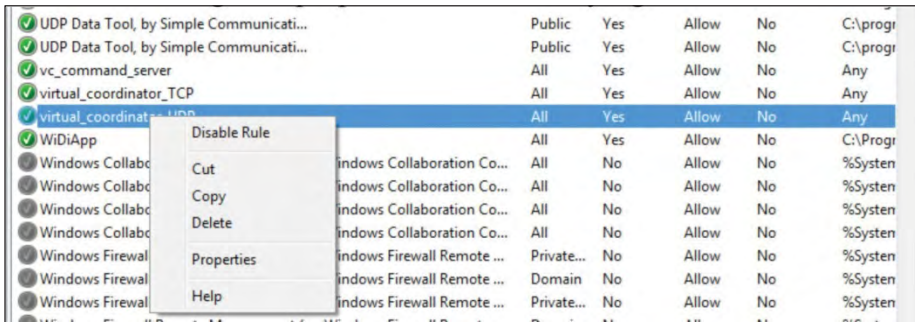


Figure J.21 Windows Firewall – Rules

Every active device connected to the TCP/IP network must have a unique IP address. This IP address is used to establish a connection to the Dashboard.

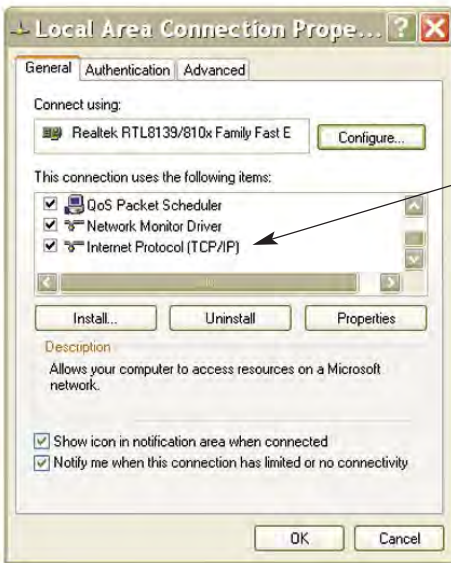
Every computer using TCP/IP should have a unique 32-bit address which is divided into two portions, the network ID and the host ID.

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**.

K.1 Changing TCP/IP Properties on Your Computer

Go to your computer's **Control Panel** then **Network Connections**.

Pick the network with the proper Ethernet card. Right click and choose **Properties**.



Look for **Internet Protocol**, click on it and press **Properties**

Figure K.1 Network Connections

It is recommended to setup a STATIC IP address here so that the Transmitter will be able to send its data to the VC correctly

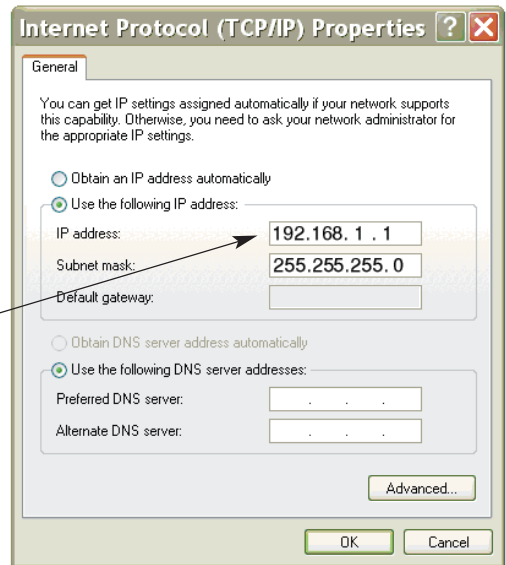


Figure K.2 Network Connections

Appendix L Sending Text Alert Messages to a Cell Phone

According to **Section 3.10**, once you configure the SMTP server to work with any of our networking products, you can use the following format to have Dashboard send a text message to your cell phone. Since most cell phones are capable of receiving text messages you just need to find the correct email format for your cell phone provider and use it within the **To** list (refer to **Section 3.10.7**) on the SMTP management page.

| | |
|---------------|--------------------------------------|
| T-Mobile | phone_number@tmomail.net |
| Virgin Mobile | phone_number@vmobl.com |
| AT&T | phone_number@txt.att.net |
| Sprint | phone_number@messaging.sprintpcs.com |
| Verizon | phone_number@vtext.com |
| Nextel | phone_number@messaging.nextel.com |

“phone_number” is your 10 digit cell phone number.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **61 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **five (5) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

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 in which wear is not warranted, include but are 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 the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED 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 the 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.

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