

NWS-Standard™
Network Weather Station™
NWS-Solar™
Network Weather Station™ with Solar Power

The Texas Weather Instruments Network Weather Station will send your current weather conditions directly to the internet without the need of a computer. Data from the roof top sensors is sent via a 2.4 gigahertz radio by Outdoor Controller on the roof to the TWI Indoor Weather Server which is plugged into your network. An internet weather network (wunderground.com) will then log and display your data via a web browser at no charge to you. You can view your weather conditions from your computer, tablet or smart phone from anywhere in the world. The weather application, WeatherView32 Home is available online at no charge. Weatherview32 can run locally or remotely to log and display data directly on to a Windows computer. Your WeatherView32 Home serial number is in the back of this manual along with instructions on how to download it from the Web. An internet connection is required with this weather station.

Included with the NWS-Standard and NWS-Solar system is a wind direction and speed sensor, a pagoda mounted temperature/humidity sensor, rain collector, pressure sensor, solar powered outdoor controller, and an indoor weather server. Optional sensors include solar radiation and lightning. Please note that the NWS-Solar is a solar powered weather station. The NWS Solar outdoor controller is designed to be in full sunlight. Placing the NWS Solar Outdoor controller in a shaded area will cause the system to be starved for power. If you have a NWS-Standard the outdoor controller can be in a shaded or non shaded area. Makes sure the location on the station is with distance of a power source.

The user must supply a network connection, router and a standard TV antenna mast. Normally the Weather Server is connected directly into a router. A Windows computer is necessary only during the initial setup of the weather station.

Setup

The standard NWS-Standard and NWS-Solar uses three outdoor sensors and an internal pressure sensor to gather weather data. The wind direction and speed sensor, the temperature/humidity pagoda and the rain collector (*see figure 1*) are designed to mount to a television type mast (*not provided*). The cables from the sensors go into mast mounted Outdoor Controller. All of the sensor cables are color-coded and plug directly into the Outdoor Controller.

C A U T I O N !! :BE EXTREMELY CAREFUL NOT TO TOUCH ANY HIGH POWER LINES DURING INSTALLATION OF THE VARIOUS SENSORS!!!

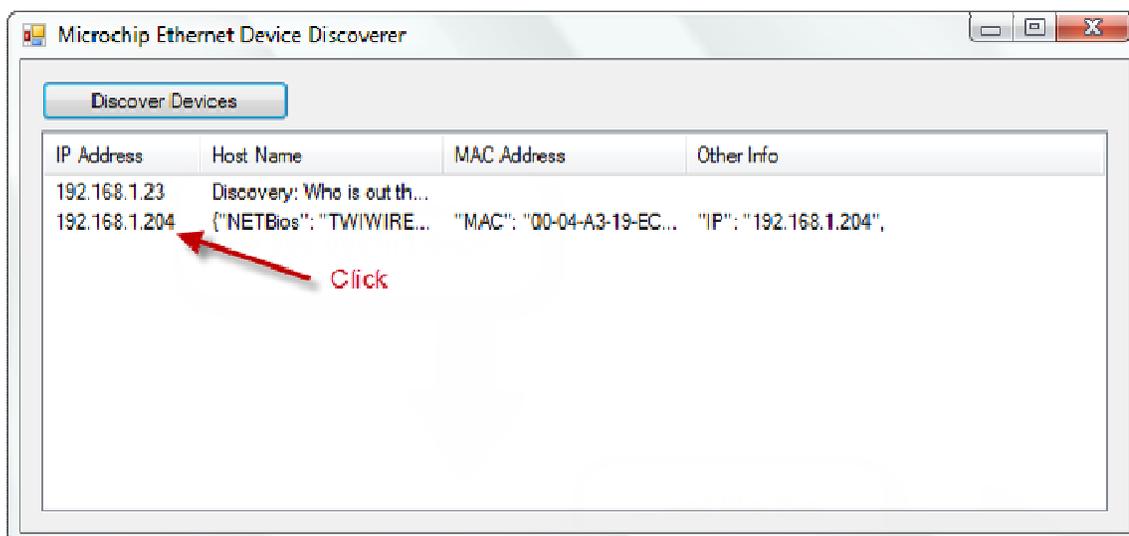
We strongly suggest that you become familiar with your weather station before you install it on the roof. Plug the Indoor Weather Server (small black device) into your router with the supplied green RJ-45 cable. Look for the green light on the Ethernet jack

on the Weather Server indicating that you are connected to the router. The yellow LED on the Ethernet jack will flash when the Weather Server is communicating with the network. To the left of the Ethernet jack is a Status LED that will flash green indicating the server is transmitting. When the status LED flashes yellow a data packet has been received from the Outdoor Controller.

Plug all the sensors into the Outdoor Controller (gray enclosure) following the color codes. Any blue cable can go into any blue receptacle, any red into red, etc. The NWS-Standard will come with a digital wind sensor. This sensor plugs into the yellow receptacle. The NWS-Solar comes with a TWI Analog wind sensor which has two RJ-45 attached. Put the yellow plug into the yellow receptacle and the single orange wire RJ-45 into the orange receptacle next to the yellow labeled TXWX. Power up the Outdoor Controller by plugging the green terminal connector into the center green connector on the board. When first powered up the red "alive" LED on the Outdoor Controller will flash indicating that the unit is operating. The red data LED will flash when the Outdoor Controller has successfully sent the Indoor Weather Server data. Both of these LED's will be disabled after five minutes to save power. To leave the LED's on at all times install jumper 4 on the Controller board. If the Outdoor controller is out of range of the Indoor server the outdoor controller will periodically flash rapidly as it searches for the indoor server. The Indoor Web-server when out of range will continue to blink the green status LED indicating that it is alive but will not show the amber data received LED.

Network Setup

The weather station is an IP based device. The Indoor Weather Server is shipped with DHCP mode on. DHCP, which stands for Dynamic Host Configuration Protocol will automatically set up your weather server with the correct settings for your network. It will also assign the IP address for the weather server. To find out what IP address is assigned to the weather server we must run the Windows program discoverer.exe. You can download discoverer.exe <http://txwx.com/downloads/discoverersetup.exe> .



The discoverer program will provide a link for the weather station in your browser. Please write down your IP address at this time. Click on the link and you will see the following image will appear:

Go to the WEB Setup tab and it will ask you for a User Name which is “admin” as a default. The default password is “txwx”. After login you will see the following

Device Name: Name your weather station ie: *South Point Weather*, it will show up on your setup page header.

User Name: default is “admin”, but you can make it whatever you want.

Password: default is “txwx”.

Link: this is a user defined web address.

Enable DHCP: After setup, deselect DHCP so that your IP address does not change.

After finishing the Web Setup, click on the Overview button.

On the Overview screen click on the Weather Station link. It is possible that your server could see multiple weather stations if they are installed. If no station name appears then the outdoor controller and indoor web server are not communicating.

Connection status: OK Click on link

| Name | Health* | Description | Value |
|--------------------------|---------|--|-------|
| TXWX2019 | 7 | Wireless Weather Station with high power transceiver | 11454 |

*Health ranges from 0 to 7, 0 is disconnected, 7 is healthy

When the weather station link is clicked the following weather display screen will come up.

South Point Weather

Ethernet to Wireless Interface - High Power Transceiver

[Link](#)

| |
|--------------------------------|
| Overview |
| Devices |
| WEB Setup |
| Wireless Setup |
| DDNS Setup |
| TxWx Setup |
| Time Setup |
| RTC Setup |
| Station Details |
| Station Setup |
| Station Calibration |
| Station Weather Network |
| Station FTP |

Current Readings

| | | |
|--------------------------|-----------------|------------|
| 68.9 °F 38.8 % | Temperature: | 68.9 °F |
| | Humidity: | 38.8 % |
| 2012-02-13 17:20:14 | Pressure: | 29.748 in |
| | Dew Point: | 42.8 °F |
| | Heat Index: | 68.9 °F |
| | Humidex: | 68.3 °F |
| | Solar: | 0 W/m2 |
| | Rainfall Rate: | 0.00 in/hr |
| | Daily Rain: | 0.03 in |
| | Monthly Rain: | 0.06 in |
| | Term Rain: | 0.06 in |
| | Wind Speed: | 0.0 mph |
| | Wind Direction: | 32.0° |
| | Lightning: | 0 cpm |
| | Units: | English |
| | Temperature #2: | - |
| Temperature #3: | - | |

Device Details

| | | | |
|-------------------|------------------|-----------------------|---------|
| Device: | TXWX2019 | Internal temperature: | 67.2 °F |
| Status: | OK | Power voltage: | 6.359 |
| Health: | 7 | Voltage input 1: | 0.000 |
| Version: | 0.04 | Voltage input 2: | 0.000 |
| Serial number: | 0004A3FFFE312C93 | Discrete input 1: | 1 |
| Up time: | 000.04:47:26 | Discrete input 2: | 1 |
| Reset count: | 48 | Device RSSI: | -34 |
| Connection count: | 3 | Controller RSSI: | -34 |

To view the twidata.txt file, [CLICK HERE](#).

To reset the term rain value, [CLICK HERE](#).

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Station Setup: The station is pre-configured from the factory and should not need to be configured unless you want your weather station to output data in metric mode.

Station Calibration: The station is pre-calibrated from the factory. The only item that needs to be calibrated is the barometric pressure. Obtain the current pressure reading for your area via the internet or from the nightly news and change the weather station pressure calibration to match.

Station Weather Network: Click to enable and setup your weather stations ability to upload your weather data directly to Wunderground.com. Go to <http://www.wunderground.com/wxstation/signup.html> to obtain a Station ID and Password.

Weather Network Setup for Station Number 0004A3FFFE312C93

----- **Weather Network Configuration** -----

Enable:

Host:

Path:

ID:

Password:

Send Period (sec):

Station number:

Enable: Check mark to enable the upload of weather data to Wunderground.com.

Host: rtupdate.wunderground.com

Path: /weatherstation/updateweatherstation.php

ID: Enter the Station ID that Wunderground.com assigned you.

Password: Enter your Wunderground.com password, which is the same as your member login password.

Send Period: Enter the quickest send period which is 3.

After setup it should take about a day for your data to show up on Wunderground.com. Put your zip code in the Wunderground search window, scroll to the bottom of the page and look for your station. If your data does not show up on Wunderground, go to troubleshooting in your manual.

Installation of Roof Sensors

Only proceed to the installation process if you have successfully tested your NWS-Standard or NWS-Solar inside. The wind direction and speed sensor is normally mounted on television type antenna masts (see *Figure 1*). For best results the wind sensor should be mounted 10 feet above the roof of the building. Higher installation yields more accurate readings. There is one cable that must be strung from the wind sensor to the Outdoor Controller. The wind direction sensor is calibrated at the factory and should be installed with the wind sensor arm pointed to the North. The wind sensor

can be mounted in any direction and re-calibrated via a web browser, but it is more convenient to use the pre-calibrated North reference. If calibration is necessary after the unit is already mounted, pick a calm day or immobilize the wind vane by hand and use calibration mode to make these changes. The outside temperature/humidity pagoda should be mounted about 1 foot under the wind sensor. Again, we suggest at minimum a 10' mast for commercial installations to overcome the artificially high readings generated by a hot roof.

The Outdoor Controller for the NWS-Standard can be pointed in any direction when mounted to the mast with the cable opening facing down on the mast. The Outdoor Controller for the NWS-Solar should be installed with the integral solar panel facing South and cable opening pointed down on the mast. Using the two supplied hose clamps mount the unit about 5 feet above the roof and just below the rain collector. Put the solar panel in the upright position to gain access to the front panel. Loosen the four screws of the Outdoor Controller and open the unit. Feed the sensor cables through the fitting on the bottom of the Outdoor Controller enclosure and plug them into the matching color-coded RJ45 receptacles. Use the black cable ties every two feet to secure the cables to the mast.

The rain collector is normally mounted on the mast. It should be mounted low at the same level but on the opposite side of the pole from the Outdoor Controller. Mounting the rain collector low reduces windage and limits the movement of the mast, which can cause false readings. The collector should be mounted in a manner that allows rain to enter the collector unencumbered by surrounding obstacles. Use a bubble level to make sure that the collector is perfectly level with the ground. Failure to level the collector will cause inaccurate rainfall readings. The rain collector has one blue cable, which must be connected to the Outdoor Controller.

The optional solar radiation sensor must be pointed to the South and must be free of shadows created by the other sensors (Near the top of the mast is normally the best). Take care that the solar radiation sensor is perfectly level. The solar radiation sensor has one red cable. Run the red solar sensor cable to the Outdoor Controller and plug it in to the red connector.

Insert the small foam rubber block into the bottom cable nipple to prevent bugs from entering the enclosure. Do not plug the cable nipple with any kind of sealant as it is important for the system to breathe.

Power up the Outdoor Controller by plugging the green terminal strip into the center green board mounted connector. The red keep alive LED and data lights should start flashing on the Controller board.

The NWS Standard Outdoor Controller is powered via 120VAC wall transformer and a 50 foot low voltage cable. If you have the NWS-Solar jump to the NWS-Solar Final Instructions. Find an appropriate 120VAC receptacle that is in a **DRY** and secure location. An attic is a good place to locate the wall transformer. Run the power cable from the wall plug to the Outdoor Controller making sure that you do not have the power cable reversed as one end is female and the other is male. Insert the small foam rubber

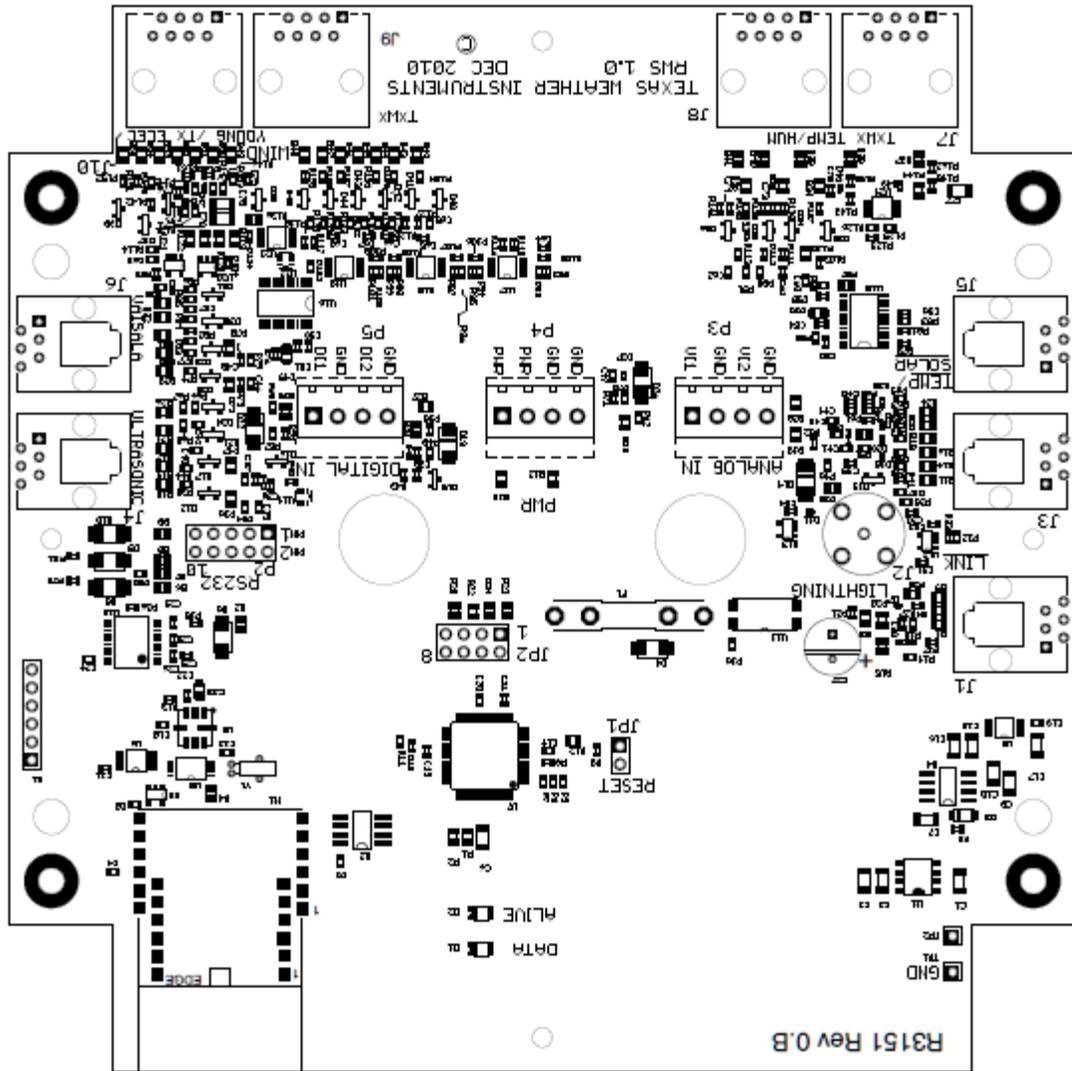
block into the bottom cable nipple to prevent bugs from entering the enclosure. Do not plug the cable nipple with any kind of sealant as it is import for the system to breath.

At this point go ahead and plug the wall transformer into a wall receptacle, plug the white molex connector a the black intermediate power cable into the white molex connector of the power supply and plug the other end of the power cable into the Outdoor Controller. The red keep alive LED and data lights should start flashing on the Controller board.

Replace the cover on the Outdoor Controller with the label on the cover pointing up. It is very important that you tighten all four screws snugly. Check that the gap is even around the enclosure. Failure to properly close the enclosure will allow water to enter and void the warranty. Close the cover on the Outdoor Controller tightening the four screws. Check that the gap is even around the enclosure. Failure to properly close the enclosure will allow water to enter and void the warranty.

NWS-Solar Final Instructions

Make sure that the NWS-Solar solar panel is pointed to the South and is in direct sunlight. Plug the green power connection into green receptacle. If you have three green receptacles plug into the center one. The red alive LED should come on. When the unit successfully sends a packet of data to the indoor controller the red data LED should flash Close the enclosure making sure that all four screws are tight. Install the bracket that raises the solar panel to the 45 degree position. This completes your installation.



Appendix

Jumpers

There are four jumpers (eight small pins) labeled JP2 near the fuse on the Outdoor Controller board that are preset at the factory. You should not normally change the jumpers. Jumper 1 is labeled 1 and when closed leaves the board 10V on at all times. This must be jumped for the TWI digital wind sensor and the lightning sensor. Jumper 2 selects the TE pulse style wind sensor over the generator style. Jumper 3 selects the TCPIP cell modem mode. Jumper 4 sets the outdoor controller to remain in search mode and the LEDs never to turn off.

FTP Settings

----- FTP Configuration -----

Common Items

Host:

User:

Password:

Basic Items

Enable:

Path:

Filename:

Send Period (min):

Archive Items

Enable:

Path:

File basename:

File extension:

Send Period (min):

Station number:

Go to the Station FTP tab to set up the ASCII FTP function. The NWS has the ability to send an ASCII data file as often as once per minute to your website. This feature is handy if you want a weather application like WeatherView32 to grab the data outside of your firewall.

Common Items: Enter the host name, the user name and password for the server.

Basic Items: Checkmark the enable box to send the data along with the path to the server. Leave the filename twidata.txt and the send period to once per minute if you are using WeatherView32. The old data will be overwritten with the new data.

Archive Items: Checkmark the enable box to ftp archive data. You will select a different path for the same web-server for the archive items. The Archive FTP files are identical ASCII files as the Basic FTP files except they have incremental file names. Each Archive file has a different name so that the old file is not overwritten but stays on your server. Please be very careful when you turn this feature on, as it will quickly clutter up your server. Old files must be erased manually.

Weatherview32 Setup

WeatherView32 Home addition is a Windows weather application that is supplied with the NWS. Refer to the Weather View 32 manual to install Weather View 32. After installation up go to the setup tab in WV32, then to Weather View Properties, then Connection. Enable the check box and enter the path to the weather data into the URL dialog box. If you do not know the IP address of your NWS use the discoverer.exe program to find it. If the NWS is on your network, you can get the path by typing in your NWS IP address ie 192.168.1.204. Click on the link to your NWS as shown below.

Connection status: OK Click on link

| Name | Health* | Description | Value |
|--------------------------|---------|--|-------|
| TXWX2019 | 7 | Wireless Weather Station with high power transceiver | 11454 |

*Health ranges from 0 to 7, 0 is disconnected, 7 is healthy

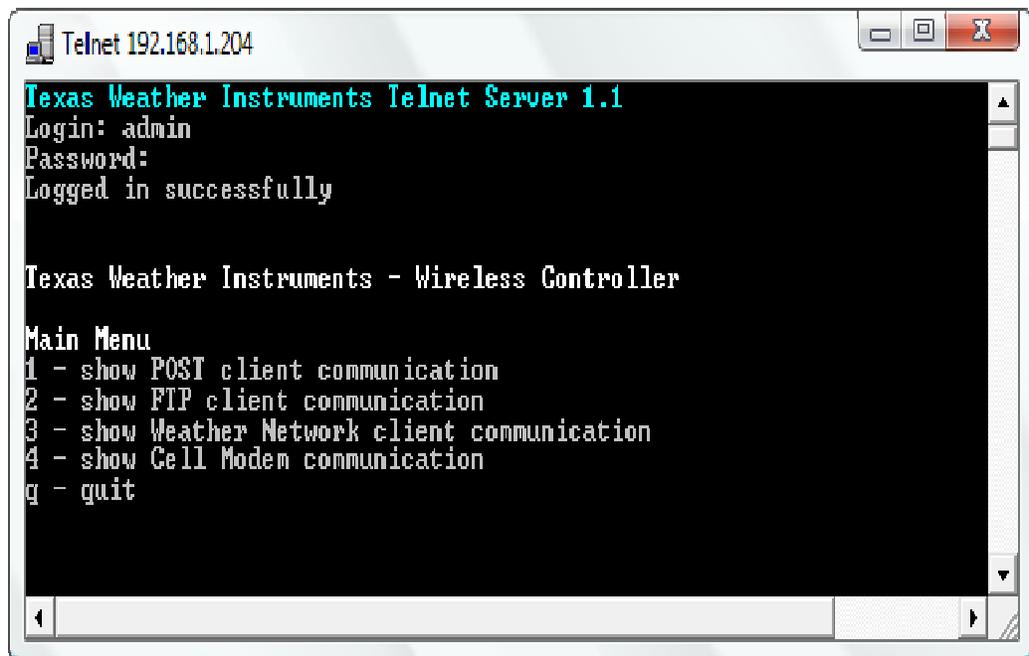
When the overview page loads go to the link near the bottom of the page and click on: To view the twidata.txt file, [CLICK HERE](#).

```
18:13 02/16/12 NW 00MPH 000K -427F -427F 000% 30.07F 0.00"D 0.00"M 0.00"T
-427DP 32TH 56WC
SS 02/16 00:00 0 02/16 00:00 0 K
TI 02/16 00:00 1000 02/16 00:00 -200 F
TO 02/16 00:00 1000 02/16 00:00 -200 F
RH 02/16 00:00 0 02/16 00:00 0 %
BP 02/16 00:00 29.95 02/16 10:31 30.19 "
RR 02/16 00:00 0.00 02/16 00:00 0.00 "
WS 02/16 00:00 0 02/16 10:22 2 MPH
WD E ENE
18:13
0 310 0 310 0 310 0 310 0 310 0 310 0 310 0 310
0 310 0 310 0 310 0 310 0 310 0 310 0 310 0 310
0 310 0 310 0 310 0 310 0 310 0 310 0 310 0 310
0 310 0 310 0 310 0 310 0 310 0 310 0 310 0 310
0 310 0 310 0 310 0 310 0 310 0 310 0 310 0 310
0 310 0 310 0 310 0 310 0 310 0 310 0 310 0 310
12/02/16 18:13:03 310 0.0MPH 0000K -427.0F -427.0F 000% 30.066" 0.00" lightning 0 temp3 -427.0F 28007
```

Copy and paste the IP address of this page into your WeatherView32. URL dialog box that is located on the connection page.

Telnet

You can telnet into the weather server for communication troubleshooting with a Windows computer. Open a DOS window by typing CMD in the start search window. If you have Vista or Windows 7 you will probably need to install the telnet program via the control panel, programs, programs and features, turn windows features on and off. From the DOS prompt type telnet space then the IP address of the weather station ie "telnet 192.168.1.204". Type in the weather station log in name and password. The telnet screen shown below should appear. Pick item 1 through 4 for help with communication issues.



```
Telnet 192.168.1.204
Texas Weather Instruments Telnet Server 1.1
Login: admin
Password:
Logged in successfully

Texas Weather Instruments - Wireless Controller

Main Menu
1 - show POST client communication
2 - show FTP client communication
3 - show Weather Network client communication
4 - show Cell Modem communication
q - quit
```

Connect Direct to Windows Computer (No Network)

The NWS has the ability to connect directly to your PC without network connection. Discoverer.exe which can be downloaded at <http://txwx.com/downloads/discoverersetup.exe> needs to be installed on your PC. Plug the power cable into your indoor controller or the indoor controller can run off your PC's power via a micro USB cable. Connect the indoor controller to your PC with an Ethernet cable. When the connection is made and both the indoor controller and PC are on the green and yellow lights on the Ethernet connection for the indoor controller should begin to blink rapidly. These indicators are signs that the PC and the indoor controller are communicating. If the green and yellow lights do not blink then there is a connection issue. Either the cable between the controller and PC is bad, the indoor controller or PC

does not have power, or an older Ethernet adapter is unable to communicate to the indoor controller without a Ethernet cross over cable. When the connection has been made Discoverer.exe needs to be opened. Click on the tab that says "Discover Devices." A list of names with IP addresses should appear in the window below. Click on the "TWIWIRES" link and a browser should appear with overview page of the NWS. On most PC's Windows will provide an IP address for the weather station, the IP address is 169.254.1.1. You can try this IP address in a browser from the beginning and most likely the weather station will appear. But, If discoverer is run you will be able to see multiple devices if they are present. (Note: direct connect is for calibration purposes only. Weather View 32 will not function without an internet connection)

ASCII Data Details

11:35 02/04/14 NE 03MPH 009K -427F 038F 100% 30.06F 0.26"D 1.11"M 1.11"T
Time date wind direction speed solar temp2 outdoor temp humidity pressure rain daily monthly term

38DP 38TH 36WC
Dew point heat index wind chill

SS 02/04 00:00 0 02/04 11:18 139 K
Solar radiation min date-time max date-time value

TI 02/04 00:00 1000 02/04 00:00 -200 F
Temp2 min date-time max date-time value
 TO 02/04 06:32 35 02/04 00:44 41 F
Temp outdoor min date-time max date-time value

RH 02/04 01:56 89 02/04 03:48 100 %
Humidity min date-time max date-time value

BP 02/04 11:24 30.06 02/04 00:00 30.17 "
Pressure min date-time max date-time value

RR 02/04 00:00 0.00 02/04 03:48 0.30 "
Rainfall rate indoor min date-time max date-time value

WS 02/04 00:00 0 02/03 23:58 1 MPH
Wind speed min date-time max date-time value

WD N N
Wind direction at min and max wind

11:35
Time of data

| | | | | | | | | | | | | | | | | | | | | | |
|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|
| 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | | |
| 3 | 211 | 3 | 211 | 2 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 4 | 211 |
| 4 | 211 | 5 | 211 | 3 | 211 | 4 | 211 | 4 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 |
| 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 |
| 3 | 211 | 3 | 211 | 3 | 211 | 2 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 |
| 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 |
| 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 | 3 | 211 |

Wind speed and direction for previous min.

14/02/04 11:35:50 38 3.2MPH 0085K -427.0F 37.9F 100% 30.062" 0.26"
Date time wind direction wind speed solar temp2 outdoor temp humidity pressure rainfall in HiRes

lightning 2 temp3 -427.0F 28007
lightning count temp3 data validity

7 lw 983 sm 072 uv 00 vc 12.38 ws 000.6 wd 041 wt 14/02/04 11:32:24 @UEZZZZ
28007

Leaf wetness soil moisture ultraviolet light voltage wind speed & direction at last report user
label data validity

FCC RADIO FREQUENCY INTERFERENCE STATEMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B, of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, this equipment may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna of the affected radio or television*
- *Increase the separation between the equipment and the affected receiver.*
- *Connect the equipment and the affected receiver to power outlets on separate circuits.*
- *Consult the dealer or an experienced radio/TV technician for help.*

MODIFICATIONS

Changes or modifications not expressly approved by *Texas Weather Instruments, Inc.* could void the user's authority to operate the equipment.

To satisfy FCC RF exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Index

| | |
|-----------------------------------|---------|
| alive..... | 2 |
| DHCP..... | 2 |
| discoverer.exe..... | 2 |
| FTP Settings..... | 8 |
| Indoor Web-server..... | 2 |
| Installation..... | 1 |
| Installation of Roof Sensors..... | 5 |
| jumper..... | 2 |
| junction box..... | 5 |
| Network Setup..... | 2 |
| Operation..... | 2, 8, 9 |
| pagoda..... | 1, 6 |
| password..... | 3 |
| red data LED..... | 2 |
| Reference..... | 10 |
| Setup..... | 1 |
| Station Weather Network..... | 4 |
| Status LED..... | 1 |
| Telnet..... | 10 |
| Weatherview32 Setup..... | 9 |
| WEB Setup..... | 3 |
| Wunderground.com..... | 4 |
| yellow LED..... | 1 |