Sphere Group

WeatherVox V2
User's Guide V2.4

6 July 2020

Table of contents

Introduction

There is no question timely and accurate weather information is now an essential part of our daily lives.

Instant, detailed and easily accessible, we depend on this weather information from simply planning a day out, to farmers, emergency and rural fires services securing information of timely value in planning operations.

At Sphere Group, we have been working on weather technology since 1996. Our first system, WeatherVox V1, was an industry leader in weather information dissemination - engaging voice-over, radio and telephone platforms.

WeatherVox V1 was globally popular and used across applications including agriculture - helping farmers determine the best time to spray crops, Water sport activities, hang gliding clubs and amateur radio operators to name a few.

WeatherVox V1 was adapted to numerous other weather station brands and even the voice over was translated to Italian.

WeatherVox V2

Recently, the Sphere Group launched WeatherVox V2, an advanced, compact and cost-effective automatic weather reporting system.

WeatherVox V2 is the culmination of 24 years of industry learning, experience and technology advancements. Its design, development and functionality aligns perfectly with the Sphere Group's extensive knowledge of both radio communications and weather monitoring.

The new technology enables users to call a remote weather station via 2-way radio and secure instant weather reports via a digitally recorded human voice.

A fully integrated system, it is a 'plug and play' solution for users with two-way radios or compatible weather stations including the Peet Bros Ultimeter range.

WeatherVox V2 gives users detailed and customisable voice reports and the internal DTMF (dual tone multi frequency) decoding allows users to send requests and commands direct to the WeatherVox V2 unit allowing for greater personalisation.

WeatherVox V2i adds uploading of current data to Weather Underground via the internet. This feature is an upgrade option to WeatherVox V2 or can be purchased already enabled.

Features

Key features of the WeatherVox V2 include accurate and updated outdoor temperature measurement, wind speed and direction, daily rainfall, barometric pressure, humidity and dew point verbalized over a radio.

Unit description

WeatherVox V2 is remarkably compact at 110mm x 80mm x 22mm. All componentry is well-protected in a high-impact black plastic housing making it field rugged, yet lightweight.

A data cable is supplied and all internal components are mounted on a multi-layer printed circuit board (PCB) that incorporates surface mount technologies that minimise electromagnetic interference (EMI).

Inputs / power / displays

1. Power is supplied to the weather station via the RS-232 cable.
2. The unit comes standard with Modular 6P6C, RJ45 sockets and status LEDs
3. There are two RS-232 data LEDs built into the RJ45 socket to help with diagnostics.
4. Two additional LEDs are for power (on / off) and PTT activity.
5. For ease of operations, there is an e-Paper display (30mm x 70mm) whereby users can change setting and display information.

Call sign

WeatherVox V2 has the ability to transmit an amateur radio station call sign using phonetic alphabet and numerals.

Enter details via the e-paper display or (even quicker) via the web browser. Using the two push buttons on the side of the unit, your call sign can be entered and saved. It is important to scroll down to "save and exit" to permanently save this feature. For example: *Welcome to VK2NTK weather station.*

Installation

Installation of WeatherVox V2 is straightforward.

A. Weather station

Connect the appropriate weather station serial data output terminal (located on the junction box) to the WeatherVox V2 serial RS232 data input terminal.

B. Two-way radio

Connect your radio cable to your desired radio. Review the 'pinouts' for your respective receive audio, transmit audio, PTT and earth. Please note, a cable is not provided.

Data transmission

When power is on, data flow can be verified by noting the Rx (receive data) Green LED flashes.

It is important to note that your weather station is required to be set to Complete Record Mode for WeatherVox to receive data.

If the power is lost, no transmitted report will be sent via the radio or to Weather Underground

Please ensure the time is set to your local time!

Home screen

Custom report

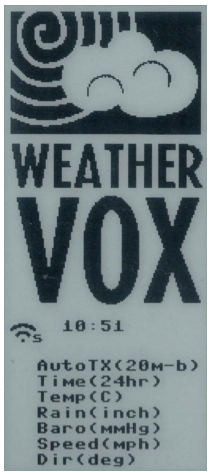
The choice of sensors can be enabled or disabled as needed. In the e-paper display, simply change by selecting + or - to suit your preferences.

Auto TX

WeatherVox V2 has the ability to generate a weather report every 20 mins. It can also be generated every one or two hours on the hour.

The user has the ability to select what detail of weather information they wish to receive.

There is an option for brief, detailed or custom speech reports. Custom reports are set by the user and have a set welcome message, time and wind speed / direction. The user can also add other weather readings by choosing the appropriate sensor data.



AutoTX set to 20mins brief screen

To initiate different reports, simply choose from one of the following options:

Brief report: *20m-b*, *1h-b* or *2h-b*
Detailed report: *20m-d*, *1h-d* or *2h-d*

While the Auto TX is set to one of the above reports the user is still able to use a DTMF code at any time to generate a weather report.

Wi-Fi

The onboard Wi-Fi can be enabled or disabled as needed. The built-in micro web server allows settings to be changed to the WeatherVox V2 using a web browser.

WiFi protocol: 802.11b/g/n 2.4 Ghz

Wifi Mode

Please choose off, station or access point from the drop down list. Access Point mode creates its own wifi network with the wifi ssid of "WeatherVox". Station mode allows WeatherVox V2i to send data to Weather Underground via the internet.

WU ID

Enter your Weather Underground ID here.

WU KEY

Enter your Weather Underground KEY here.

Wifi ssid

When wifi mode is set to station mode please use your router's ssid here. If using access mode please enter WeatherVox. Please note this is case sensitive.

Wifi Password

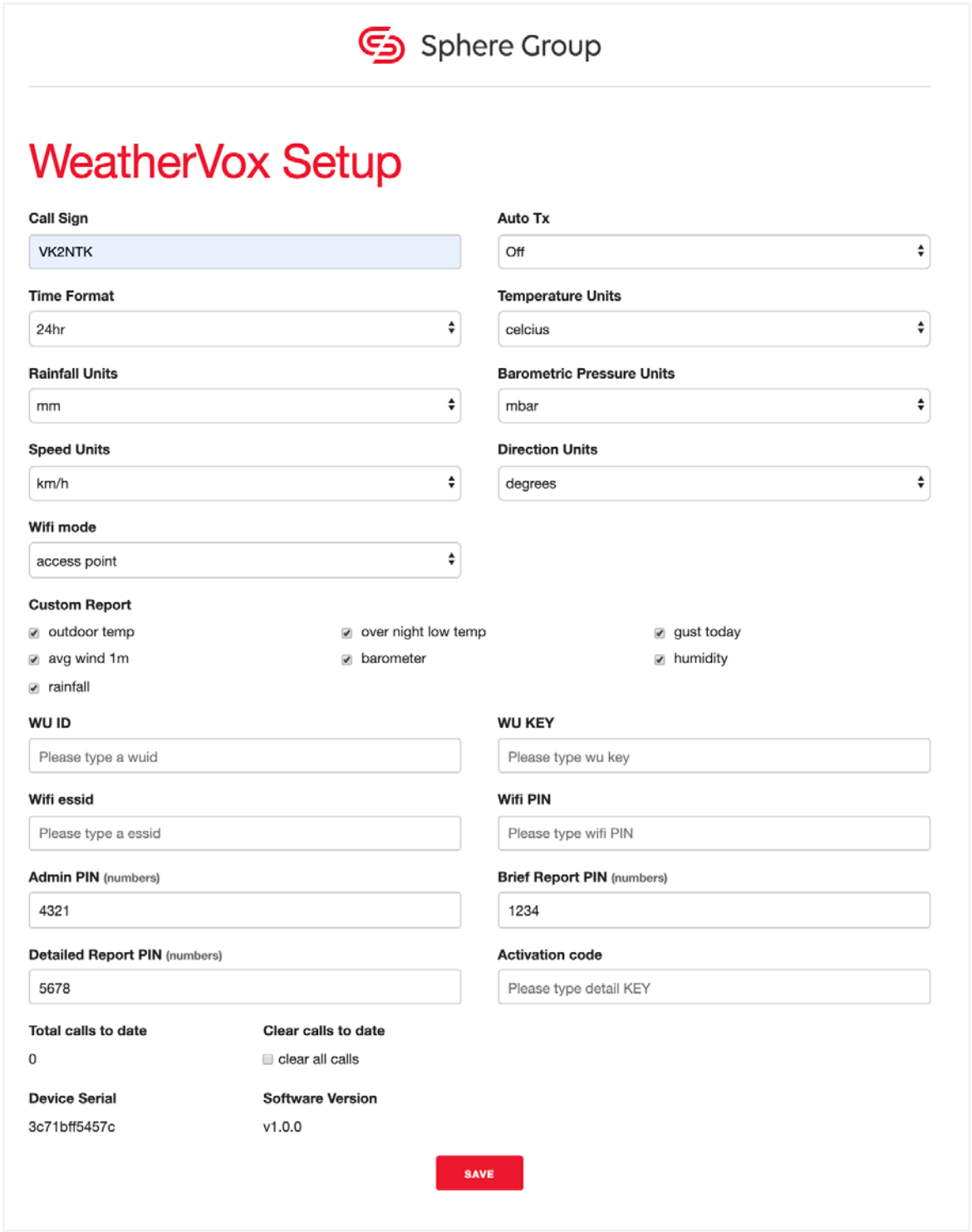
For Access Point mode PIN you should use 12345678 for the PIN. For Station mode please enter your wifi router's password. Please note this is case sensitive.

Using the Wi-Fi Web Server

As noted, WeatherVox V2 has a built-in micro web server.

- From the display menu, activate Wi-Fi to access point in order to communicate with the web server.
- Connect to the Wi-Fi hotspot WeatherVox and enter the default password 12345678
- Using a web browser, connect to the unit's web page. This will allow the user to change settings and pin codes. The web page can be viewed on a mobile phone, tablet or MAC/PC.

See example below:



Reports available

Brief Report (B)

This report includes:

- Time
- Current outdoor temperature
- Overnight low temperature
- Wind speed and direction
- Peak gust today and the time recorded
- Average wind speed over the previous minute.
- Barometric pressure
- Relative humidity
- Current (day) rainfall

Custom Report

The Custom Report will always announce the welcome message, time and wind speed / direction.

In the settings menu of the display or web page, you can select what information you would like reported by WeatherVox V2:

- Current outdoor temperature.
- Overnight low temperature and the time recorded
- Peak gust today and the time recorded
- Average wind speed over the previous minute.
- Barometric pressure
- Relative humidity
- Current (day) rainfall

If your weather station does not have the following sensors you will need to "deselect" these from the e-paper display menu

Rain Gauge , Barometric Pressure and Humidity sensors.

A plus (+) or minus (-) sign next to the sensor name will indicate if these readings will be announced by WeatherVox V2.

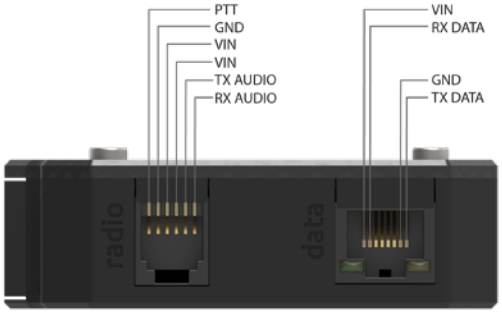
A Custom Report is only relevent to a Brief Report obtained via DTMF access on your radio. Pressing of the WeatherVox V2 side lower button will always activate a detailed audio report via radio or a speaker that is attached to the radio port.

Detailed report (D)

This report includes:

- Time
- Current outdoor temperature.
- Overnight low temperature
- Wind speed and direction
- Peak wind gust today and the time recorded
- Peak wind gust yesterday and the time recorded
- Average wind speed over the previous minute
- Barometric pressure
- Relative humidity
- Current (day) rainfall
- Wind chill
- Dew point

The WeatherVox V2 radio port can be connected to a VHF/UHF 'simplex' radio or a VHF/UHF repeater. Pinouts are shown in the diagram below.



Device pinouts

System information

This displays the software version number and serial number of the WeatherVox V2 unit.

Info screen

Set pins

There are three levels of DTMF pin codes available. To access them, simply move the cursor and enter your preferred pin code.

You will also find the password setting for the Wi-Fi AP in this menu.

- **Admin pin number default pin code** is 4321
- **Brief report default pin code** is 1234
- **Detailed report default pin code** is 5678

Set pin screen

Clear data options

Calls to date

This option will 'clear' all calls made. To access this feature, enter the admin DTMF pin code from a radio. The amount of calls to date will be announced and you can delete accordingly.

Reload MP3

This function allows you to upload the 'Name Table' into the WeatherVox memory. This function is really only required if the user changes any of the voice files. Please note that voice file names cannot be changed.

System Reset

This function resets the system to factory defaults

Clear data screen

Customised welcome message

The WeatherVox V2 allows you to set your own customised welcome message. If you would like to engage this functionality, please contact Sphere Group for details.

Connecting to Weather Underground

On the left side of the WeatherVox display is a wifi icon with the letter “a” or “s”. The letter “a” is for Access Point mode and the letter “s” is for Station mode.

When WeatherVox V2i is first powered, the letter “a” will be visible next to the wifi icon.

Connect to WeatherVox local wifi network. Enter the default Wifi PIN of 12345678.

Once you have your device connected to the wifi network use your web browser to access the WeatherVox web server setup page. Enter **http://weathervoxv2.com**

This will display the WeatherVox Setup page.

If you purchased WeatherVox V2 and have upgraded to V2i then you will be emailed an activation code to enter in the setting menu.

If you purchased WeatherVox V2i your activation code is already enabled and the activation code will be emailed for future reference.

You will also be required to set the mode to station , your router’s Wifi SSID, Wifi Pin, Weather Underground WU ID and WU key. Once saved, WeatherVox V2i will restart and you will notice that the wifi icon has the letter “s” now set.

After a few minutes you should see current data being uploaded every 60 seconds to Weather Underground.

Units

Temperature
: Temperature can be displayed either degrees F or degrees C. This can be selected from the menu settings.

Rainfall
: Rainfall can be set to mm or inches and is selected from the menu.

Barometer
: Barometric Pressure units (hPa, mBar, mmhg, inHg and QNH) can be selected from the menu.

Wind speed
: Wind speed units (km/h, mph, m/s, knots) can be selected from the menu.

Wind Direction
: Wind direction units (degrees or cardinal points) can be selected from the menu.

Time
: Time is received from the weather station via the serial data information. 24 or 12 hour time can be selected from the menu.

Current units screen

WeatherVox V2 specifications

Size
(L) 110mm x (W) 80mm x (H) 22mm

Weight
100 grams

Supply voltage
- Idle: 12V @ 80mA
- Online: 12V @ 100mA

Power supply
Via Serial Data Output Port
Output 12V DC @ 600mA

Temperature range
–40 °C ~ +85 °C

External connections
RJ45 socket to Serial Data Output Port
6P6C RJ11 Radio Port Modular socket

Status indicators
- Power Green LED
- Transmit Data Amber LED
- Receive Data Green LED
- PTT Red LED

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Notes