Standalone Indoor Weather Station User Guide

Overview

The Standalone Indoor Weather Station (SIWS) contains three environmental sensors; temperature, air pressure and humidity. Each of these sensors is updated once per minute and can be displayed on the inbuilt LCD display.

The SIWS also contains a light sensor. The LCD display will automatically dim in dull light but will still be readable.

The Display

The SIWS features a two row LCD display shown below.

Figure 1: Temperature Display

Temperature readings are displayed by default when the device is powered on.

The top row shows:
1. the most recent temperature reading, in this example it is 26.4 degrees Celsius. All temperature values are show in Celsius; and
2. the time when the most recent temperature reading was observed. In this example it was at 11:40. Note that the time is presented in 24hr format.

The bottom row shows:
1. the lowest temperature observed today (24.4); and
2. the highest temperature observed today (26.4).

The daily low and high observations are reset everyday at midnight.

The time will be displayed as XX:XX if the Wi-Fi has not been configured (see below). The SIWS will still operate and record sensor observations without the time having been initialised, but the low and high values will never be reset.

Quickly pushing and releasing the push button on the right hand side will cycle between each of the sensors alternating between temperature, air pressure and humidity.

The layout of the display is the same for each sensor type. The layout for the air pressure and humidity displays are shown below.

Figure 2: Air Pressure Display

Air pressure is displayed in hectopascals.

Figure 3: Humidity Display

Humidity is displayed as a percentage.

Wi-Fi Setup

The SIWS indicates when the Wi-Fi and hence the time has not been set by displaying XX:XX in place of the time in the top right corner of the display.

The current time can be obtained from the Internet via Wi-Fi. The entered Wi-Fi credentials are retained so they only need to be setup once or when the SIWS is moved to a new location that uses different Wi-Fi credentials.

The SIWS will briefly connect to the internet via Wi-Fi every time it is switched on. Once the current time has been obtained, the SIWS disconnects from the Wi-Fi completely.

To setup the Wi-Fi you will need:
1. a Wi-Fi network with internet access, typically a home Wi-Fi router;
2. a mobile phone or tablet device on which to enter the Wi-Fi credentials.

Step 1 – Place the SIWS into Wi-Fi setup mode

To place the device into Wi-Fi setup mode, hold the push button down for at least two seconds and then release it.

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The display will show it is in Wi-Fi setup mode. The device will be in this mode for five minutes, but don't worry, you can always place it into this mode again if you run out of time.
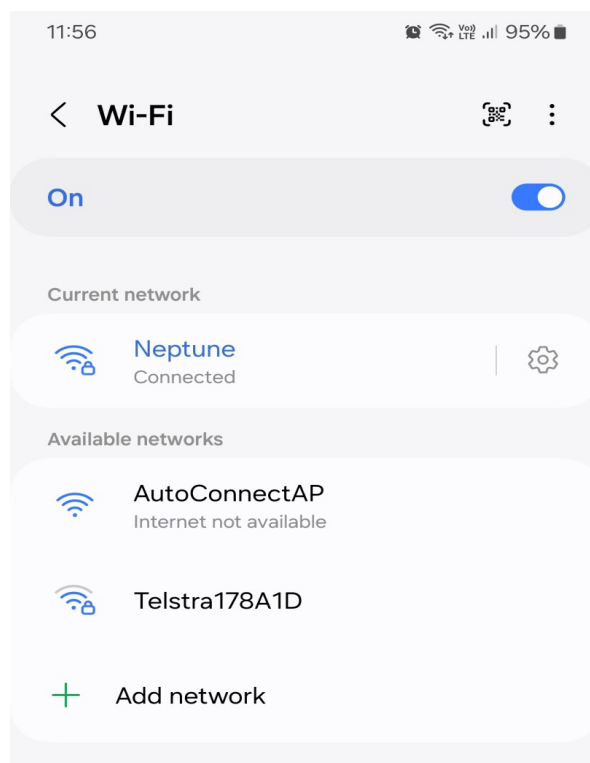

Figure 4: Wi-Fi Setup Mode

Placing the device into Wi-Fi setup mode will erase any previously stored Wi-Fi credentials.

Step 2 – Select the Wi-Fi Network from your Phone or Tablet

Using your mobile phone or tablet open the Settings app and go to the Wi-Fi settings. On my Android phone, it looks like this:

Configure your phone/tablet to connect to the Wi-Fi network called 'AutoConnectAP'. Doing this will connect the phone/tablet to the Wi-Fi network being provided by the SIWS. This is just used to enter your Wi-Fi credentials and does need internet access. No password is required.
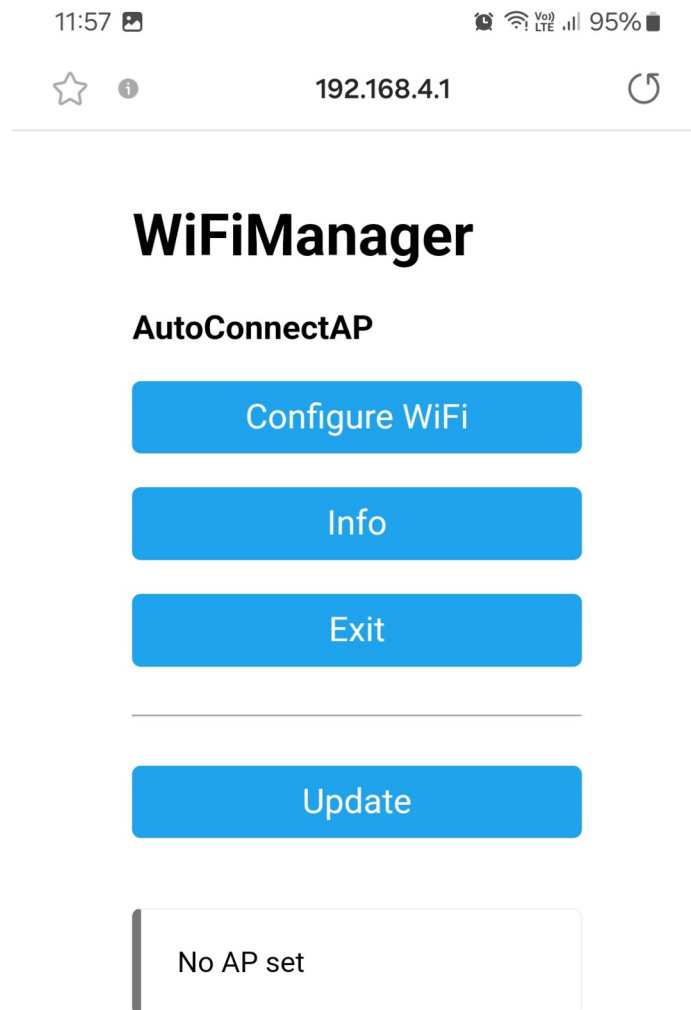
Think of it like you are using your phone/tablet as a keyboard and monitor for the SIWS.

Note: I have found that it is best to wait for the phone/tablet to ask you to confirm that you really want to use this network even though it doesn't provide any internet access. Just say yes, use it this one time.

Step 3 – Enter the Wi-Fi Credentials

Open a browser on your phone/tablet and enter IP address "192.168.4.1" into the address/search field as shown below. You should see the following screen.

Tap on the "Configure WiFi" button. A screen will be presented allowing you to enter the Wi-Fi credentials that the SIWS will use to access the time via the internet.

Tap on the name of the Wi-Fi network to use from the list at the top. In this case my home Wi-Fi network is called Neptune. Enter the Wi-Fi password and tap the "Save" button. The app will close.

Note that the Refresh button refreshes the list of detected Wi-Fi networks.

Step 4 – Magic Happens

So now, the SIWS will connect to the Internet using the entered Wi-Fi credentials and obtain the time. It will now display the time in place of XX:XX.

Your phone/tablet will revert to the Wi-Fi settings it had before.

Deleting the Time

If you don't care about the time and you would rather just see the time as XX:XX you can delete the Wi-Fi credentials and hence the time.

To do this, hold down the push button for at least two seconds to place the SIWS in Wi-Fi setup mode.

Now, turn the SIWS off and back on again.

Known Limitations

Due to some limitations in the software, the time zone is hard-coded to South Australia. If you take the SIWS to somewhere else in the world, it will still work, but will show the time in SA time. An initial version of the software allowed the user to enter the time zone alongside the Wi-Fi credentials, but the ability to obtain the current time from the internet didn't work reliably. It seemed confused whether daylight saving was in effect or not.

It is currently unclear what happens when daylight savings starts or ends. The software knows about daylight savings but you might need to turn the SIWS off and on to reset the clock inline with daylight saving changes in SA. I don't know, I can't really test that.