

TracBox 8: Quick Start Guide

Prepared for:
FTP Technologies' Customers



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Document name **TracBox Quick Start Guide**
Version **V8**
Version date **23/10/2022 10:52:00 PM**
Modified by **Acea Quigg**

Version History

<u>Date</u>	<u>Version</u>	<u>Author</u>	<u>Description of Change</u>
2022	V8 RC2	Acea Quigg	See changelog
2022	V8	Acea Quigg	See changelog

Changelog

V8 – 19/9/22

This is the first production release to customers of the 8th generation TracBox.

Changes:

Removed Wireless Station Mode as an option for connectivity.

Additions:

None.

Deprecations:

Wireless station mode has been deprecated. You can still use the wireless AP setup mode to configure the device, but, you cannot connect the TracBox 8 to a wireless network for production use. You must use Ethernet.

V8 RC2 – 27/4/22

This is the first pre-production release to customers of the 8th generation TracBox. There are breaking changes to the API which means that if you are running a mixed TracBox environment you will need to accommodate polling of two different APIs, the V8 API and all previous versions.

This version is a completely new design from the ground up. All previous versions have been based on a Raspberry Pi SBC. Going forward an ESP32 will provide the onboard processing power. This is good for a few reasons, namely availability and simplicity.

Over the air updates are now possible which has always been difficult with a Linux based computer. We are expecting that the embedded nature of the new hardware will bring with it superior reliability and robustness.

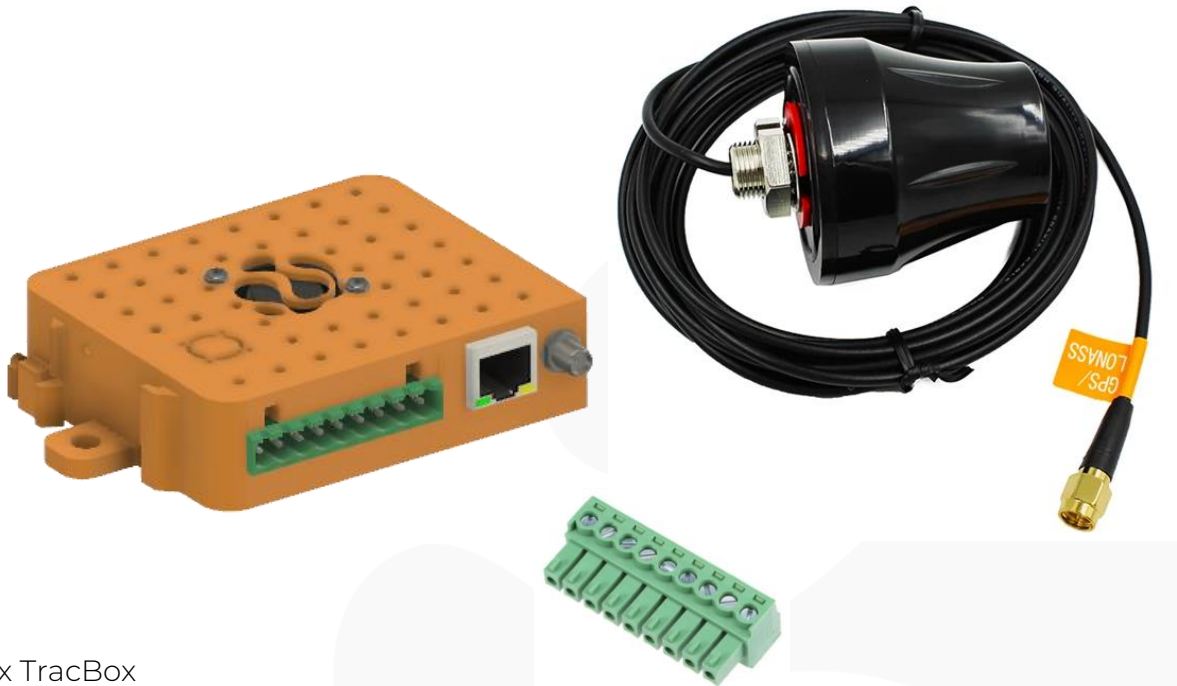
There is now an internal GPS antenna which means it may be possible to deploy the unit without the external antenna attached in cases where there isn't too much attenuation from the mounting location surrounds.

The new enclosure includes a fan that is electronically controlled to help with high temperature deployments. There is also support for WiFi Station and AP modes. WiFi is disabled by default with the default IP interface being Ethernet

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1 Package Contents



1 x TracBox

1 x GPS Antenna

1 x 9 Pin screw terminal connector

2 TracBox Overview

TracBox is designed to be used with the Integrated Management System to provide cost effective means of monitoring communications infrastructure, namely, the GPS location and the battery voltage of a trailer, skid or any other device that requires tracking or voltage monitoring.

TracBox has an inbuilt web server that serves up location and voltage information. To access this information, browse to the device's IP, 192.168.137.137/24 after connecting the device to the network via the Ethernet port.

You will be presented with the TracBox interface:

FTP Home IO API Settings

TracBox 8 - Trailer44

Current warnings: None!
System uptime: 0d:0h:59m:41s

Show device's location in Google Maps

ADC Voltages
CH0: 4.24V - TracBox Vin (<100V DC)
CH1: 0.08V - 12V rail (<100V DC)
CH2: 0.08V - 24V rail (<100V DC)
CH3: 0.08V - 48V rail (100V DC)

GPS Information
GPS age: 0 seconds
LAT: -32.936460, LON: 151.757612
ALT: 0.10m, SATs: 9, HDOP: 0.86
Time(UTC): 23:54:17, 2022/04/26
External antenna: DISCONNECTED

Temperature
Enclosure/PCB: 28.96C
CPU: 58.89C

Relay States
Relay 1: OFF - Dam Pump (<1A)
Relay 2: OFF - Shed Light (<1A)

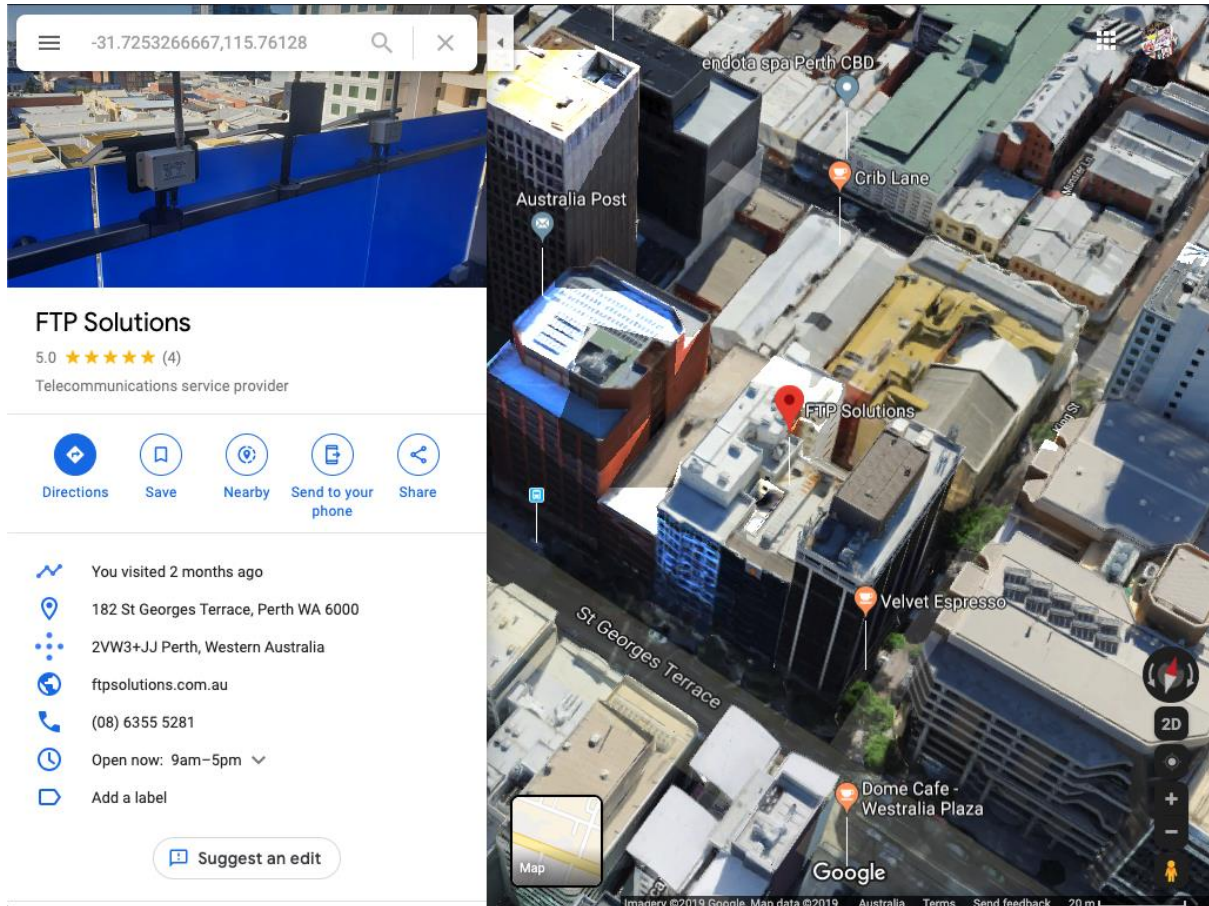
Enclosure Fan
Fan: OFF

Help and Support
[FTP's Hardware Knowledge Base](#)
[TracBox Quick Reference Guide](#)
[TracBox Technical Data](#)
[TracBox Product Information](#)

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3 Google Maps Location

TracBox is designed to be integrated into the IMS platform, however, by clicking the 'Show device's location in Google Maps' link in the TracBox web UI you can see the TracBox's location in Google Maps:



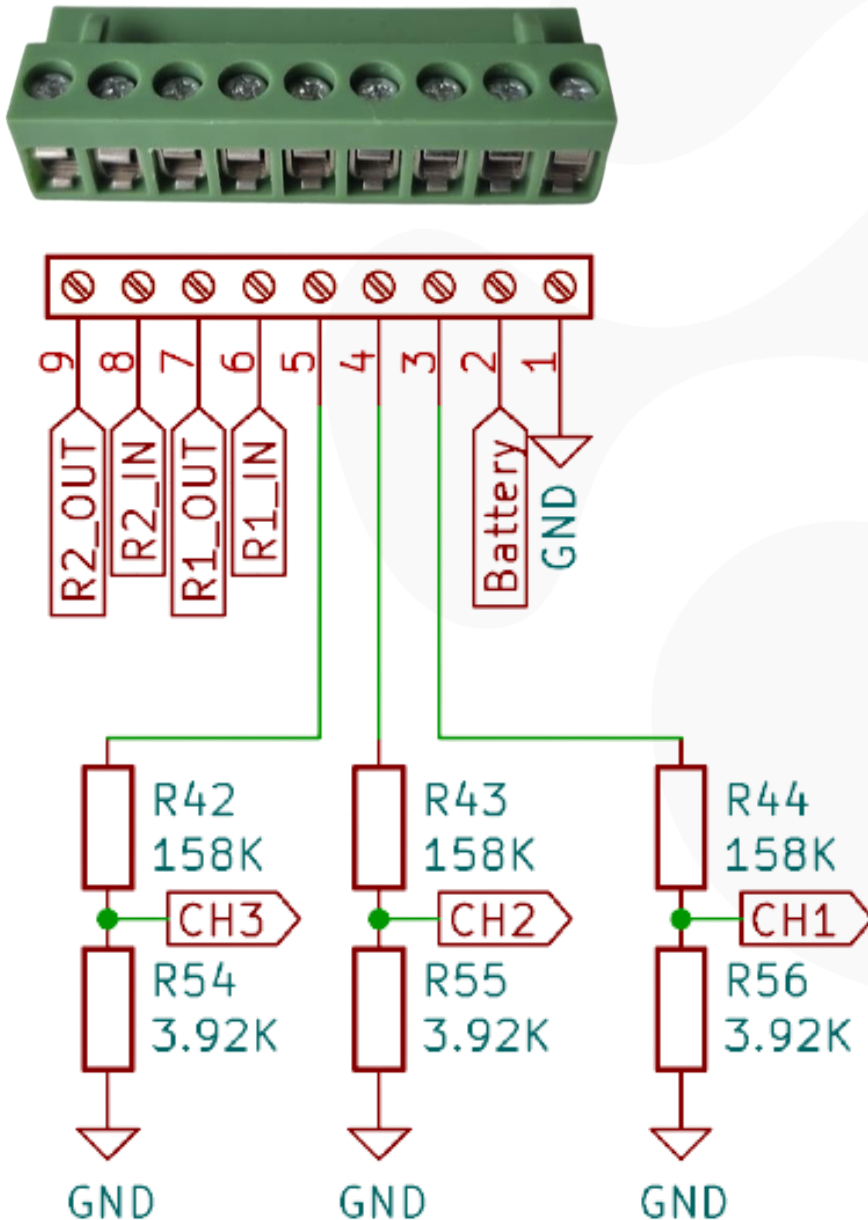
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otsc@ftpsolutions.com.au
1300 490 596
<http://ftpsolutions.com.au>

4 Sensor Data / Relay Control

TracBox is designed to read the input/battery/sensor voltage via an inbuilt ADC and voltage divider. By default, the 3rd pin on the connector is input/battery voltage.

As a minimum, TracBox needs to be connected to DC ground/negative on pin 1, and a positive DC power source on pin 2 capable of providing up to 3 watts between 5V and 100V. Pins 3-5 are 100V capable inputs and pins 6-9 are for triggering an external relay coil. The relay control circuit will close the contacts between Rn_IN in and Rn_OUT completing the circuit for the external relay coil.



Navigating to the IO page will allow you to control the external relays:
*The default username and password is **admin***



Relay Control

- Relay 1: OFF - Dam Pump (<1A)
- Relay 2: OFF - Shed Light (<1A)

Currently there is no relay control integration in IMS or the IoT platform, however, this may change in the future. Relay states can be read in IMS.

5 Settings Configuration

In order to configure the TracBox and make its inputs and configurations different to the default settings, you can navigate to the Settings Page or go direct to </settings.html>:

tracbox-8 - General Settings

Hostname	<input type="text" value="tracbox-8"/>
Device Label	<input type="text" value="FTP TracBox 8"/>
ADC CH 1 Label	<input type="text" value="12V rail (<100V DC)"/>
ADC CH 2 Label	<input type="text" value="24V rail (<100V DC)"/>
ADC CH 3 Label	<input type="text" value="48V rail (100V DC)"/>
Relay 1 Label	<input type="text" value="Dam Pump (<1A)"/>
Relay 2 Label	<input type="text" value="Shed Light (<1A)"/>
HTTP Username	<input type="text" value="admin"/>
HTTP Password	<input type="text" value="admin"/>

5.1 Hostname Setting

The Hostname can be used to give an identifiable network. This setting will also update the MDNS hostname configuration. Once the Hostname has been set, the TracBox will display that name in the web page header, API and MDNS broadcasts.

5.2 Device Label, ADC and Relay Channel Labels

The device, relay and channel labels are a way to give a device and the inputs/outputs a friendly name. You will most likely want to name it in a way that gives better context and understanding of the device or its inputs. Channel 0 is always Vin and can't be configured.

5.3 HTTP Username and Password

Changing these settings will update the username and password required to access the devices IO and Settings web pages. It will also change the OTA API Username, used to update the device over the air.

5.4 Ethernet Settings

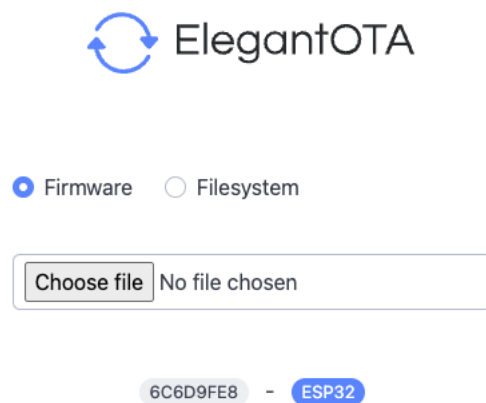
The TracBox ships with a static IP address configuration on the Ethernet port, which is 192.168.137.137/24. You will need to configure this to match your required settings. It is possible to request a DHCP address by toggling the 'Enable Static IP Configuration' toggle. If you are setup to receive MDNS multicasts, you will find the device at *hostname.local* which by default is *tracbox-8.local*

5.5 WiFi AP Settings

All settings are similar to Ethernet and WiFi Station settings above. It is not recommended to use WiFi in production. FTP recommends a wired deployment of a TracBox. It is also not recommended to use WiFi and Ethernet concurrently for extended periods. It is possible to have the TracBox connected as a Station and also as an AP.

5.6 Firmware Update

If an Over the Air update is required to be deployed it can be launched from the 'Launch OTA' button. You will need a firmware.bin file as a minimum, but you may be provided with a firmware.bin and a filesystem.bin file. In either case, upload and update one file at a time:



6 JSON Data Endpoints

The TracBox web interface provides a JSON data endpoint API at /api

Note: The TracBox will update its sensor and system data every 10 seconds.

```
{ "ethip": "0.0.0.0", "ethsubnet": "0.0.0.0", "ethgateway": "0.0.0.0",  
"ethdns": "202.142.142.142", "latitude": -32.936238, "longitude":  
151.757600, "altitudem": 6.50, "sats": 7, "hdop": 2.03, "gpsages": 6,  
"freeheapb": 90523, "hostname": "tracbox-8rc1", "enclosuretempc": 28.78,  
"enclosurefan": "OFF", "gpsantenna": DISCONNECTED, "vinvoltage": 4.24,  
"ch1voltage": 0.08, "ch2voltage": 0.08, "ch3voltage": 0.08, "ch0name":  
"TracBox Vin <100V DC", "ch1name": "12V rail (<100V DC)", "ch2name": "24V  
rail (<100V DC)", "ch3name": "48V rail (100V DC)", "relay1state": "OFF",  
"relay2state": "OFF", "relay1name": "Dam Pump (<1A)", "relay2name": "Shed  
Light (<1A)", "ethmacaddress": "E8:9F:6D:6C:01:8B", "cputempc": 56.67,  
"devicelabel": "tracbox-8rc1", "hwversion": "8RC1", "fwversion":  
"2022031601", "wifimacaddress": "E8:9F:6D:6C:01:88", "staticethipen":  
"False", "uptime": "0d:1h:34m:41s" }
```

7 TracBox IMS Integration

IMS has a TracBox polling engine that utilises the JSON API endpoint to scrape the date from a remote TracBox device. To configure IMS to poll a TracBox follow these steps:

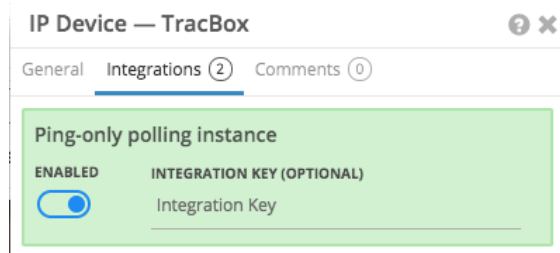
- Add a new IP device and configure it to be a TracBox

The screenshot shows the 'IP Device — TracBox' configuration window. The 'General' tab is active, displaying fields for NAME (TracBox), MONITOR IP (192.168.137.137), MAC (IP Device MAC), TYPE (FTP TracBox device (server-side)), POLL EVEN WHEN OFFLINE (checked), and IGNORE STATS (unchecked). The 'INTEGRATIONS' tab is also visible, showing four polling instances: Cisco BR350, Cisco switch (SNMPv2), SAEtech TracBox (highlighted in green), and FTP MJPEG Replay Proxy management. Each instance has an 'ENABLED' toggle and an 'INTEGRATION KEY (OPTIONAL)' field.

- Create an Asset if necessary and then add the TracBox IP device to it:

The screenshot shows the 'Asset — Rooftop TracBox' configuration window. The 'General' tab is active, displaying fields for NAME (TracBox Asset), TYPE (Building), TAGS, and DESCRIPTION. The 'IP DEVICES' tab is also visible, showing a '+ CREATE NEW IP DEVICE' button and a list containing 'TracBox 5.5' with a trash icon.

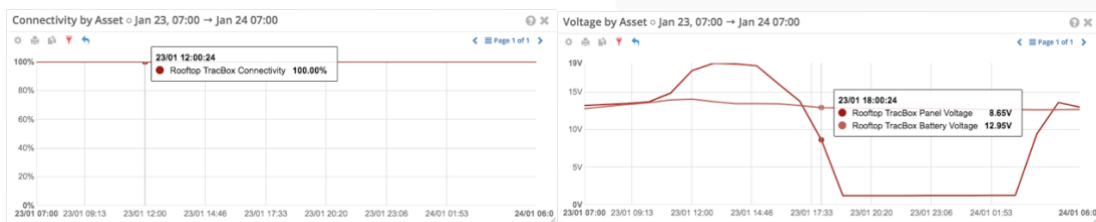
- If there is a requirement to track the latency and availability of a TracBox it can also be integrated against the 'ping only' polling instance, like so:



After ~60 seconds the TracBox data will be available in the IMS application, like so:

Infobox		Infobox	
Rooftop TracBox		Rooftop TracBox	
Type:	Building	Type:	Building
Location Timestamp:	18-01-2018 18:46:40	Location Timestamp:	18-01-2018 18:46:40
Location:	-31.946052,115.920418	Location:	-31.946052,115.920418
Description:	...	Battery Statistics	
FTP TracBox device (server-side)		Battery Temperature :	No Data
Name:	TracBox 5.5	Battery Current :	0.03A
MAC:	Unknown	Battery Voltage :	12.68V
IP Address:	10.10.10.12	Panel Statistics	
Device Type:	FTP TracBox device (server-side)	Panel Current :	0.03A
Description:	...	Panel Voltage :	12.81V
Timestamp:	24-01-2018 06:58:32	Load Statistics	
Latency:	0.55 ms	Input Power :	No Data
Connectivity:	100.00%	Output Power :	No Data
		Present Status	
		Charge Status :	Discharging

And at that point the ability to graph the data will become available:



8 Fault Finding

TracBox has a WebSerial feed that provides debug information via a websocket. The page is located at /webserial

WebSerial

```
Warnings: None!  
Uptime: 0d:0h:2m:51s  
GPS Time: 00:38:35, GPS Date: 2022/04/27  
Sats: 9, HDOP: 0.96, LAT: -32.936362, LON: 151.757717, ALT: 27.20  
ADC: Board temp: 28.54, Vin: 4.24, CH1 V: 0.08, CH2 V: 0.08, CH3 V: 0.08
```

8.1 Help!

If there is something not right in the logs or you would like help with your issues, you will need to call the FTP support line on:
1300 490 596

For less urgent advice you can email:
otsc@ftpsolutions.com.au

To log a bug, browse to:
<https://bugs.ftpsolutions.com.au>

To get an electronic copy of this guide, browse to:
<http://ftpsolutions.com.au/hardware#tracbox>

For information regarding FTP, it's service, software or hardware, you can visit:
<http://ftpsolutions.com.au>

9 Technical Specifications

Name:	TracBox v8
Mounting:	DIN and screw tabs
Operational Temperature:	-20-80 degrees C
Input Voltage:	5-100V DC
Fuse:	External 500mA fuse required
Current Draw:	~100mA @ 24v DC (~2.4w)
Real Time Clock:	No (GPS Time Sync)
Enabled Interfaces from Factory:	Ethernet, GPS, 3 + 1 x ADC.
Management IP:	192.168.137.137/24
ADC Resolution:	12bit
ADC Channels:	4, 3 configurable
GPS Chipset:	Quectel L96
GPS Channels:	99 search, 33 continuous
GPS Bands	GPS, GLONASS, BeiDou, Galileo and QZSS
GPS Accuracy:	2.5m, standard
GPS Rx Sensitivity:	-165dBm tracking, -148dBm acquisition
GPS Update Rate:	10s
External GPS Antenna:	SMA Female, active 3.3v
Dimensions:	W:90mm L:75mm H:25mm, 125g



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