



# MOTORSPORT ELECTRONICS SETUP GUIDE

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# Introduction

Thank you for purchasing Team Plus® Motorsport Electronics products.

This guide is intended to provide you the core information you need, to setup the products you have chosen to implement on your race car.

At Team Plus®, we are regularly introducing new products and updates to firmware of our existing products. So, it is possible this version of the setup guide is not the most recent, or the product you have purchased is not covered by this guide. Check for our latest guides at: <https://team-plus.com/downloads>

This guide covers setup and install guidance for:

- **Team Plus® Wheel Turtle®** - tyre temperature, distance and colour sensors (PRO or WT1 models)
- **Team Plus® Track Grade TPMS** - tyre pressure sensors (internal and external)
- **Team Plus® Brake Turtle™ PRO** - brake temperature sensors
- **Team Plus® CanGate®** - display and can bus gateway
- **Team Plus® TELEDASH** – phone app for data display and device configuration

The above products are also available as bundles that include various combinations of products. The products can be purchased from our resellers around the world, or from <https://team-plus.com>.

## Getting Started

We suggest that you read the relevant sections of this document for each product, before starting the setup process. This guide is intended for customers who may have bought a single product or a set of products. Some information is repeated and some information may direct you to other parts of the document.

The typical scenarios for implementation are:

- Using the Team Plus® TeleDash® phone app for sensor data viewing and logging.
- Using Team Plus® CanGate® as in-car display for sensors but no connection to a CANbus race dash logger.
- Using Team Plus® CanGate® as gateway for sensor data to a third party CANbus based race dash logger and optionally as a secondary in-car display.

In each of these scenarios, you will be connecting to one or more of the Team Plus® sensor sets. This could include:

- Stand-alone Team Plus® Wheel Turtle® tyre temp sensors
- Stand-alone Team Plus® Track Grade TPMS sensors
- Wheel Turtle® and TPMS and optionally Brake Turtle™ sensors.

To get best value from this guide, choose to read the setup of your chosen display section first (TeleDash® or CanGate®), and then the relevant sensor install section as needed.

# Team Plus® CanGate® Setup and Configuration



The Team Plus® CanGate® is a combined display and data gateway for Team Plus® tyre temperature sensors, pressure sensors and brake temperature sensors. The CanGate® reads the Bluetooth sensor information and displays it live. Optionally the CanGate® can forward the data to Race Dash Loggers that support external CAN based devices. Team Plus® sensors are Bluetooth devices, so a Team Plus® CanGate® is essential to capture the Bluetooth signals and add them to the CAN bus needed for this integration.

Team Plus® sensors that are compatible with the CanGate® include:

- Team Plus® Wheel Turtle® - Tyre Temperature System (all models)
- Team Plus® Street Grade External TPMS – Tyre Pressure Sensors
- Team Plus® Track Grade External TPMS – Tyre Pressure Sensors
- Team Plus® Track Grade Internal TPMS – Tyre Pressure Sensors
- Team Plus® Brake Turtle™ Pro - Brake Temp Sensors (Wheel Turtle® Pro also required)

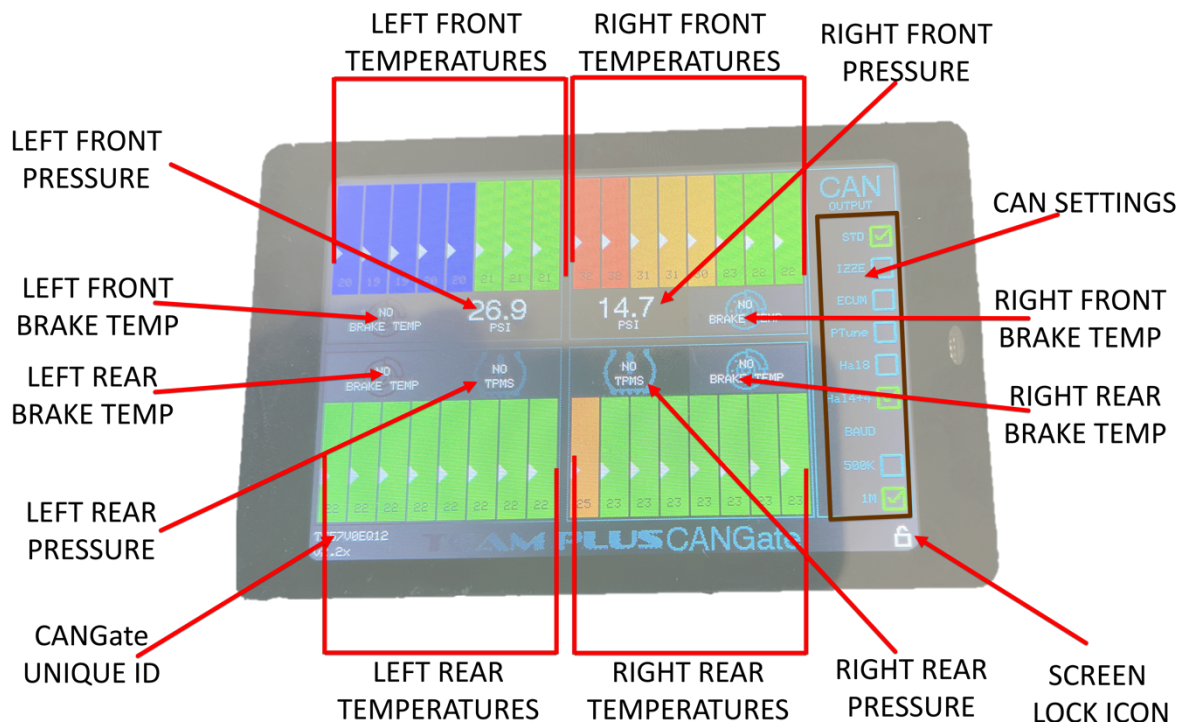
**Team Plus® sensor devices are available from**

<https://team-plus.com/>

Understanding the CanGate® Screen:

The CanGate® screen displays 8 temperatures, 1 tyre pressure and 1 brake temperature for each of the 4 wheels.

- Tyre temperature data is colour coded to be Blue (cold), Green (OK), Orange (warning), and Red (HOT). These colour bands are adjustable in the config.
- Pressure data is highlighted in Red if out of set pressure range. Pressure range is adjustable in the config.
- Brake Temperature is shown as a blue to red colour scales image, plus a text temperature.
- If no Wheel Turtle® is configured but a TPMS is found, the tyre temperatures for that wheel will show the TPMS sensor temperature for all 8 sectors.
- If no TPMS is configured or not found, it will show the NO TPMS icon.
- If no Brake Turtle™ temperature is configured or active, display will show “No Brake Temp” on icon.



There are 3 common scenarios for using the CanGate®:

- CanGate® as a standalone display for Team Plus® Temperature and/or Pressure, and/or Brake Temperature Sensors
- CanGate® to put Team Plus® Temperature and/or Pressure and/or Brake Temperature sensor data onto the CANBus
- CanGate® as both a display and the data gateway to CANBus

Depending on your scenario, use the steps below to configure the components you need to use.

### WHAT DO I NEED:

- Team Plus® CanGate®
- At least one of Team Plus® sensor types
  - Team Plus® Wheel Turtle® – set of 4 (any model)
  - Team Plus® TPMS – set of 4 (any model)
  - Team Plus® Brake Turtle™ Pro – set of 4 (requires Wheel Turtle® Pro as well)
- Team Plus® TeleDash® phone app – Android or iOS (for configuration of devices)
- Power supply connection to the CanGate® (12V and Ground)
- Optionally, connection to your compatible CAN based Race Dash Logger

### STEP 1: Install Hardware

- Find a location for the CanGate® in the car. You may choose to mount it in a visible location, to act as a second dash to monitor temperatures. Alternatively, you may choose to hide it away, depending on your usage plan.
- If you are using Team Plus® Wheel Turtle® tyre temperature sensors, Install them in each wheel arch as per the install section of this guide. We suggest you use the supplied mounting brackets for Battery Powered Wheel Turtle® models, so you can remove them for charging. The mounting bracket also provides important protection to the connection port and switch on the Wheel Turtle® itself.

- If you are using Team Plus® TPMS sensors, install on each wheel as indicated in the relevant section of this guide.
- If you are using Team Plus® Brake Turtle™ sensors, install in each wheel arch area as indicated in the section of this guide. Note: Brake Turtle™ sensors require you to also have Wheel Turtle® Pro sensors installed.

- CanGate® is supplied with a 4 pin DTM plug configured as per diagram on the right. Ensure that the USB-C connector on the CanGate® cable is plugged into the CanGate® USB-C socket.



- If you are using CanGate® to connect to a CAN Dash logger, connect the CanGate® to dash logger CAN port via direct wiring or through a CAN Hub. We suggest using the second CAN port of any Dash Logger when available, keeping CanGate® data away from standard ECU and other Vehicle CAN messages.

## STEP 2: Configure CanGate®

Using the TeleDash® app for iOS or Android, you can make any required configuration changes to the CanGate® including:

- **CanGate® Wheel Turtle® Selection:** If you have more than one set of Wheel Turtle®s or use them in proximity to others, you will need to set the specific ID of each of your Wheel Turtle®s into the CanGate®. This will ensure you are connecting to the correct one.
- **CanGate® TPMS Selection:**
  - **Automatic Selection:** If you have Team Plus® Wheel Turtle®s installed, you can use an automatic detection of any Team Plus® TPMS. The Wheel Turtle® will locate the closest active TPMS sensor and send the data to CanGate®. The CanGate® will resolve any conflicts of multiple Wheel Turtle®s reporting the same closest TPMS. When using this automatic selection method, you do not need to enter the TPMS ID's in the CanGate® configuration.



- **Manual Configuration:** If you are not using Wheel Turtle®'s, you will need to manually set the ID of each of your TPMS mounted to the car.
  - **Street Grade** - Ensure TPMS Type is set to "STREET" and the 4 ID's should be set to "1" "2" "3" and "4" respectively.
  - **Track Day Grade** - Ensure TPMS Type is set to "TRACK" and the 4 ID's need to be set using the last 5 digits of the ID code etched onto the respective sensor in the format "xx:xx". (this is case sensitive)  
Note: because of a security limitation in Apple iOS, the TPMS ID's need to be manually entered. However if you are using the Android app version, you can scan for the available sensors.
- **CanGate® Brake Turtle™ Selection:** Configuration and discovery of the Brake Turtle™ temperature sensors is always automatic. The Wheel Turtle® will locate the closest active Brake Turtle™ sensor and send the data to CanGate®. The CanGate® will resolve any conflicts of multiple Wheel Turtle®s reporting the same closest sensor. Using the Brake Turtle™ Sensors is not possible without a Wheel Turtle® Pro set.
- **Measurement Units:** Set the units of measurement you want to see on the CanGate® itself for temperatures (C or F) and pressure (psi, kpa or bar). This does not impact the units of measurement used on the dash logger, only the CanGate® screen.
- **Temperature Display Colour Limits:** Set the values for when CanGate® will display colour for the tyre temperature using the sliding bars. You set where it changes from blue to green, green to orange and orange to red. The value limits are set in the chosen measurement unit (C or F). This does not impact the alerts or colours used on the Dash Logger systems, only the CanGate® screen.
- **Pressure OK range:** set the lower and upper pressure value that represent an acceptable pressure level. Pressures outside of the set range these will show as RED on the CanGate®. This does not impact the alerts or colours used on the Dash Logger systems, only the CanGate® screen.

- **CanGate® CAN speed:** The CanGate® can use 500K or 1M CANbus speeds. This can be set on the screen of the CanGate® or in the configuration settings in the TeleDash® app.
- **CanGate® protocol:** If you are setting up the CanGate® to pass data to a Race Dash Logger, you need to choose the CAN message protocol that will be transmitted. In most cases, you should use the native Team Plus® (TP) CAN protocol. The CanGate® can use multiple protocols at the same time, but to ensure best performance on the CAN Bus we suggest only enabling the required protocol. The TP protocol can be set on the CanGate® touch screen or in the configuration setting in the TeleDash® app.

If you are using Wheel Turtle® Temperature sensors you can also use the TeleDash® app to configure some parameters of each individual Wheel Turtle® sensor. This includes:

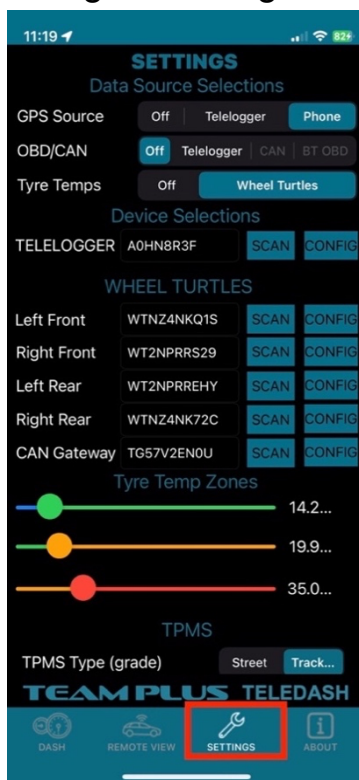
- **Wheel Turtle® mounting direction:** Wheel Turtle®s can be mounted in a reverse direction depending on where you place it. You may find that the temperatures are showing the wrong direction across the tyre. You can fix that by changing a setting in the Wheel Turtle® called “Reverse Mount”.
- **Wheel Turtle® Distance Calibration:** If you are using the Wheel Turtle® distance sensor to act as a suspension travel meter, you may wish to set the calibration numbers of each Wheel Turtle® to provide starting point of zero.

Once each device is configured, check that the CanGate® finds each one and is showing the live data. Check that:

- The CanGate® screen shows data for each Wheel Turtle® within a few seconds of the sensor being turned on.
- The CanGate® is showing each active Brake Turtle™ temp sensor through the Wheel Turtle® data, within 20 seconds of the sensors being turned on.
- The CanGate® is showing each TPMS sensor data live. This will only display if the TPMS is reading pressure AND the sensor detects the wheel is rotating. The TPMS will not update data if the wheel is not turning.

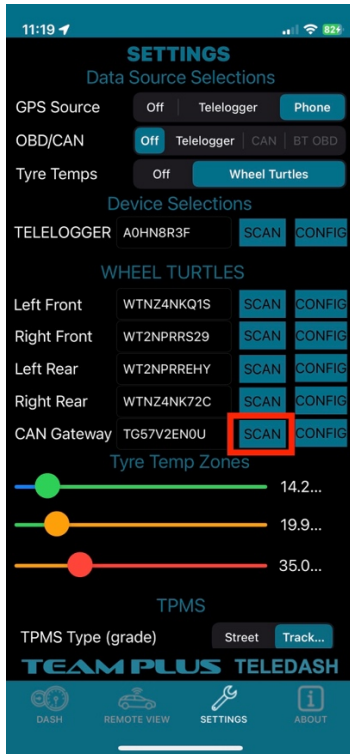
Using the TeleDash® app to configure CanGate®:

- Install TeleDash® app from Apple app store or Google Store
- Start TeleDash® app and accept the permissions request for location and Bluetooth access. On some model phones, this may require restarting the app a second time to ensure all permissions are granted.
- The iOS and Android versions of the Teledash are very similar, however there are platform driven differences. The images in this guide are using the iOS version, and may vary a little from the Android releases. For example, the Android version has the menu selection at the top bar, where iOS has it at the bottom.
- Go to the settings tab. The setting tab will present to you many options in a scrolling screen. Most of these options manage the behaviour of the TeleDash® app itself, including which sensors it should connect to and display directly. CanGate® configuration is SEPARATE from the configuration of the TeleDash®, however it is configured using the TeleDash® app. See more below.



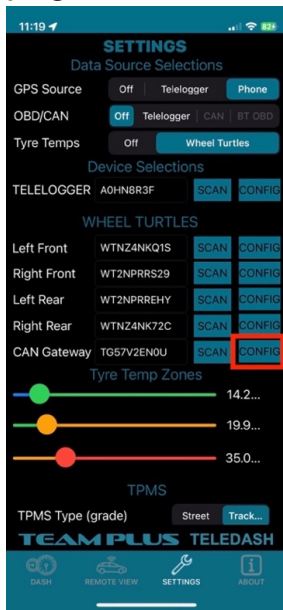
- Make sure the CanGate® is turned on and within Bluetooth range of the phone. Ideally within 5 metres (15 feet) to keep a good strong signal.

- From Settings tab, find the CanGate® selection option, and press the “SCAN” button next to it.

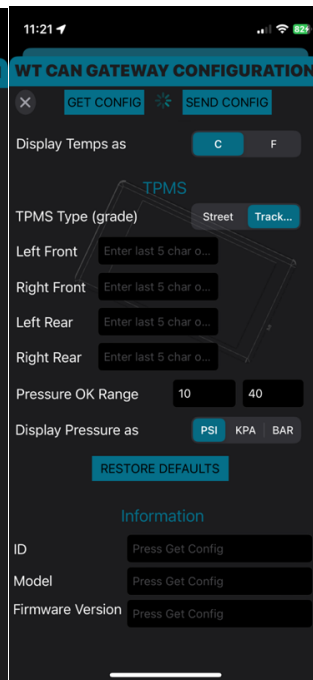
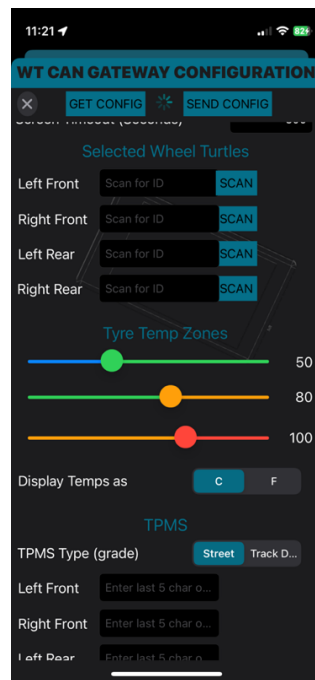
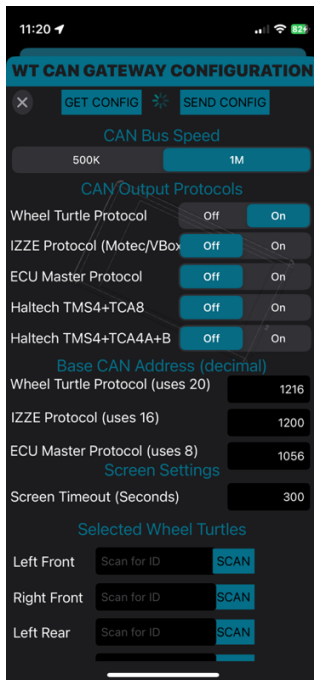


- You will then be shown a list of CanGate® devices within Bluetooth range that are turned on. Select the device with the same ID as shown on your CanGate® Screen.
- Once the CanGate® ID is selected you will return back to the Settings page, and the CanGate® ID option will now be populated with the ID you selected.

- Press the “CONFIG” button on the CanGate® line of the Settings page



- The configuration page for your CanGate® will now open in the phone app. You will notice a small spinning icon while the current config is read from the CanGate® over bluetooth. Once the configuration has been loaded the spinner will disappear and the current configuration settings of your CanGate® will be visible.



- **Change the settings as needed, and then when to activate the new settings, press the “SEND CONFIG” button.**

Once confirmed, the settings will be transmitted back to the CanGate® over Bluetooth and the CanGate® will reboot to activate the new config.

### Notes on CanGate® Settings:

- Use the “SCAN” button next to each Wheel Turtle® ID field to look for available Wheel Turtle®s that are turned on and in range. By default, your CanGate® is set to find the first available Wheel Turtle® for the appropriate corner of the car. In some cases, such as when another car close to you is also using Wheel Turtle®s, the CanGate® may attempt to connect to other set. For this reason we suggest you set the ID fully.
- TPMS device ID's only need to be set if you are not using also using Wheel Turtle® Pro sensors. From version 2.5 of the CanGate® firmware and 2.0 of Wheel Turtle® Firmware, the detection of closest TPMS is automatic.
- If you do need to manually enter TPMS ID, because of a security limitation in Apple iOS, the TPMS ID's need to be manually entered. However, if you are using the Android app version, you can scan for the available sensors.
- There is no setting for Brake Turtle™ (brake temp) sensor ID, as these are automatically detected by Wheel Turtle® Pro sensors for that wheel.
- Use the slider bars to set the thresholds for temperature colour ranges.
- Enter the values for high and low thresholds for pressure ranges. Any pressure reported outside of these ranges will show with a RED background.
- A “RESET DEFAULT SETTINGS” button is available to get back to the starting point if you need it. But remember to save that back to the CanGate®.
- Screen Timeout can be set to 0 if you wish the screen to never timeout.

## STEP 3: Configure your CAN Dash Logger

If you are using CanGate® to send data to your CAN based Dash Logger, you need to configure the dash logger to understand the data being sent.

Each brand and model of CAN Dash logger has different methods for achieving this configuration. Team Plus® provides integration packs for the leading brands, which include config files, a guide and samples. Integration guides are available to download from <https://team-plus.com/downloads>

### CanGate® Touch Screen

#### Settings

CanGate® allows some settings to be changed using its touch screen:

- CAN bus speed
- Protocol selection

To set these options on the touch screen, simply tap the check box next to the desired setting. The changes are instant and are saved automatically.

#### Screen Lock

To prevent accidental change of settings on the screen, the touch screen can be locked.

To Lock: Hold your finger on the word “CAN” in the top right corner of the screen for more than 6 seconds. You will see the lock icon in the bottom right corner change from open to closed.

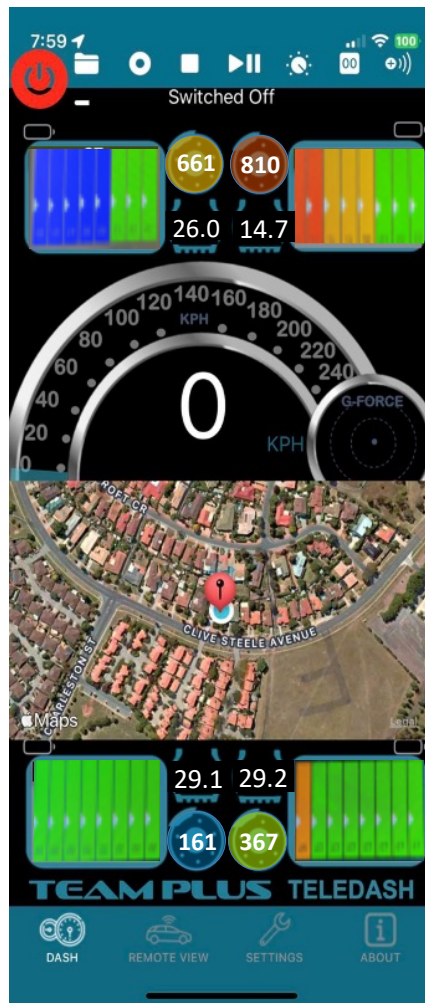
To Unlock: Hold your finger on the word “CAN” in the top right corner of the screen for more than 6 seconds. You will see the lock icon in the bottom right corner change from closed to open.

#### Screen Rotate

The CanGate® screen can be rotated 180 degrees to allow it to be mounted with the cables on the left or right.

To Rotate: Press and hold your finger in any part of the temperature or pressure display areas on the screen for more than 6 seconds. You will see the screen rotate to the new orientation. Note the screen needs to be unlocked to be able to rotate.

# Team Plus® TeleDash® Setup and Configuration



The Team Plus® TeleDash® is a mobile phone/tablet app for Team Plus® tyre temperature sensors, pressure sensors and brake temperature sensors. TeleDash® reads the Bluetooth sensor information, displays it live and can optionally record and playback the data, and download the data to analyse or share. Sensor data is enhanced with the phone or tablet GPS and motion sensor data, which displays and logs the location and G force information with the sensor information.



The Team Plus® TeleDash® also allows for a basic remote view or data telemetry service. Live data can be transmitted from the phone over the internet to our servers and then to another app user to monitor the information from the car.

Team Plus® sensors that are compatible with the TeleDash® include:

- Team Plus® Wheel Turtle® - Tyre Temperature System (all models)
- Team Plus® Street Grade External TPMS – Tyre Pressure Sensors
- Team Plus® Track Grade External TPMS – Tyre Pressure Sensors
- Team Plus® Track Grade Internal TPMS – Tyre Pressure Sensors
- Team Plus® Brake Turtle™ Pro - Brake Temp Sensors (Wheel Turtle® Pro also required) Note: iOS app only at this time. Android app support for Brake Sensors expected very soon.

**Team Plus® sensor devices are available from**  
<https://team-plus.com/>

### Understanding the TeleDash® Screens:








The TeleDash® app home screen (Dash) displays 8 temperatures, 1 tyre pressure and 1 brake temperature, distance to tyre and colour detected by tyre for each of the 4 wheels.

- Tyre temperature data is colour coded to be Blue (cold), Green (OK), Orange (warning), and Red (HOT). These colour bands are adjustable in the config.
- Pressure data is highlighted in Red if out of set pressure range. Pressure range is adjustable in the config.
- Brake Temperature is shown as a blue to red colour scales image, plus a text temperature.

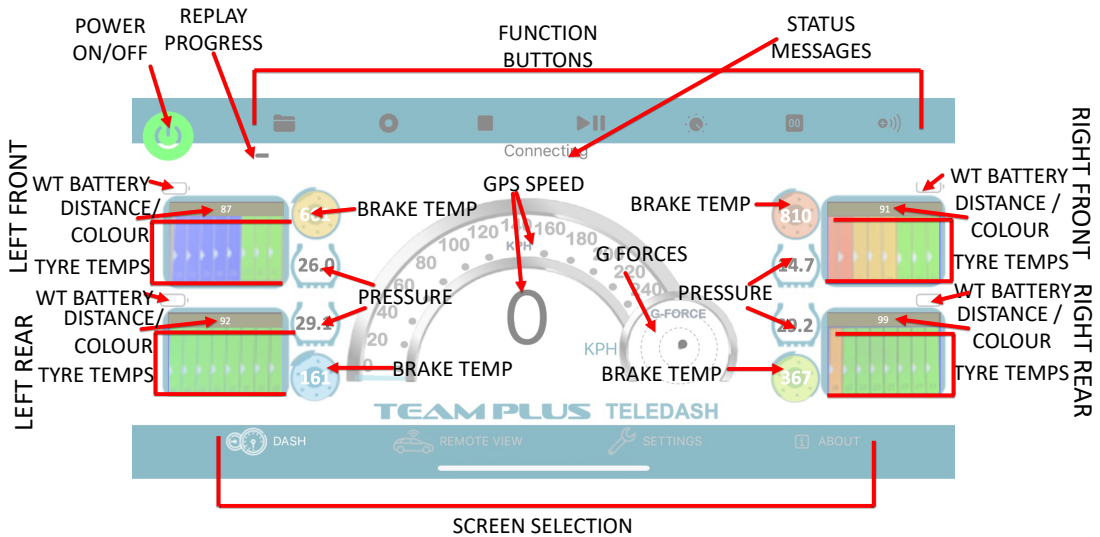
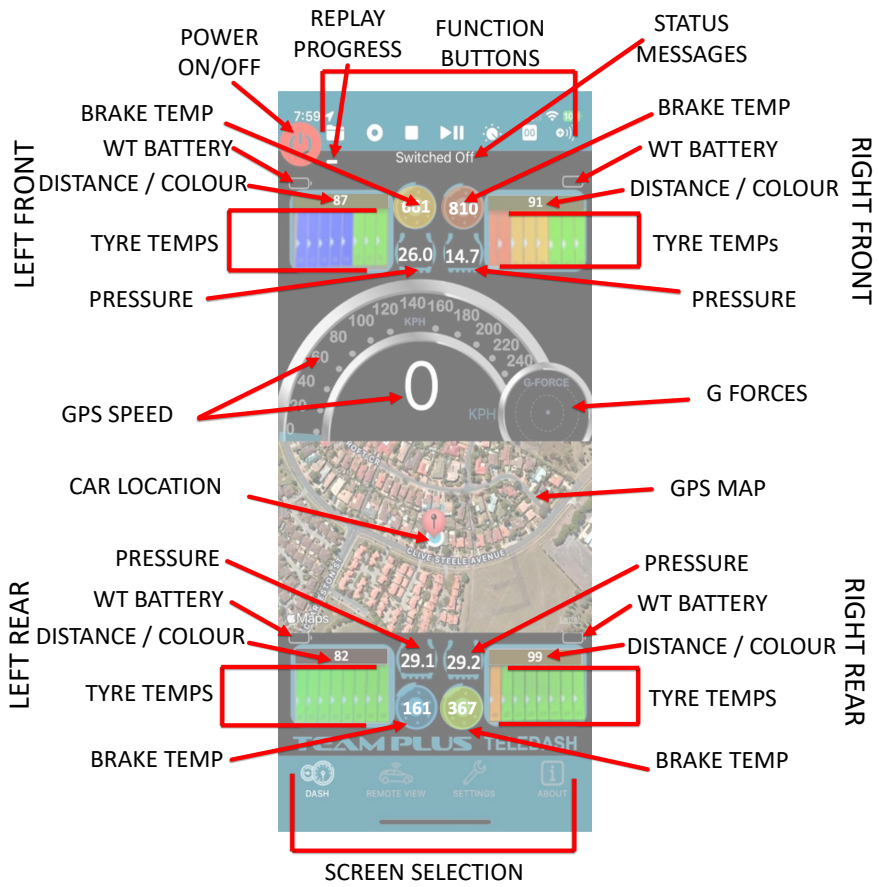


The Dash screen has a power button that is Red when turned off and Green when turned on.

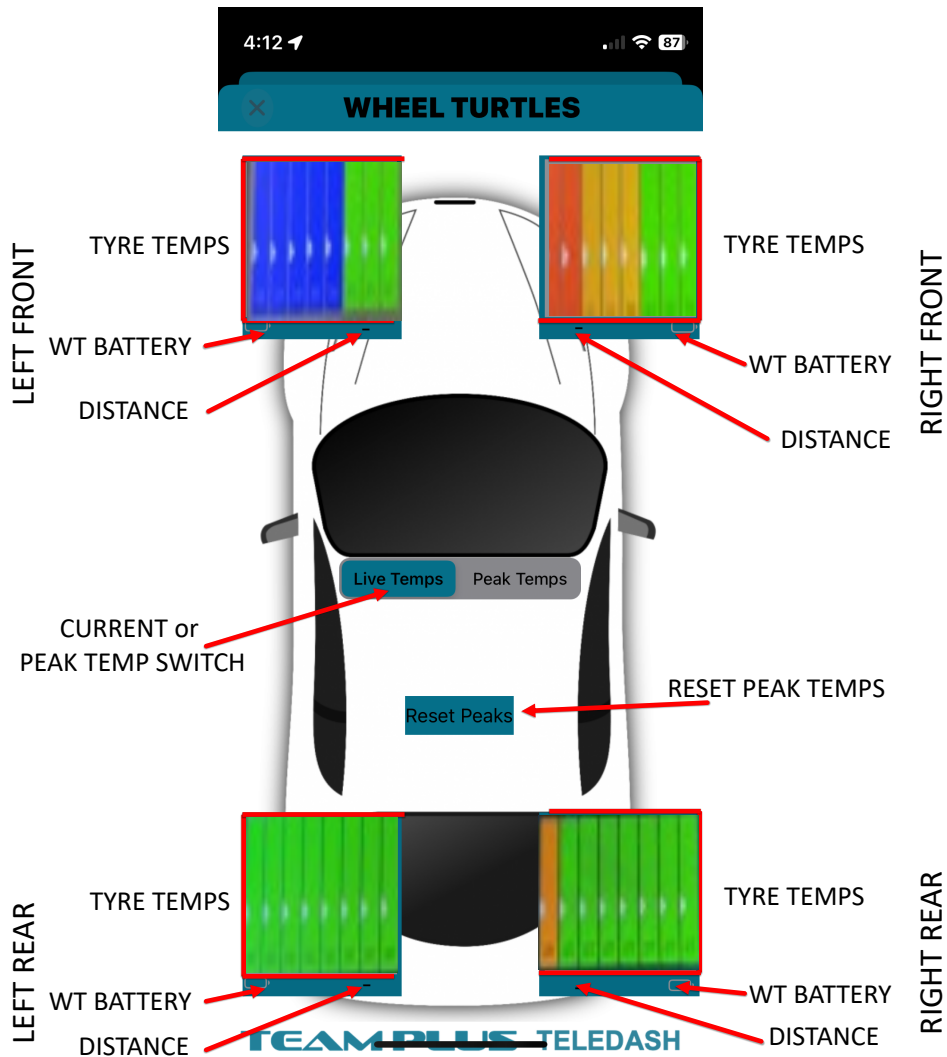
There is a row of function button icons for the following functions:

	Folder	Access the list of recorded session to replay, download, import or export
	Record	Start and stop recording session. Black = not recording Orange = set to record when speed > 40kph Red = recording
	Stop	Stop recording or playback
	Play/Pause	Start playback or Pause playback Black = not playing Orange = paused Green = playing Note: during playback a progress bar will show below the buttons. The end of this progress bar can be dragged back and forth to move around the recorded data timeline.
	Max Temps	Toggle between viewing the current temps or maximum temps since last reset
	Reset Max	Reset the max temps
	Live Share	Start or Stop the Live Share function which sends telemetry over phone data that other app users can use. Black = not sending live Share Green = Live Share is active Note: when active a share code will show that needs to be used by a viewer to see your data.

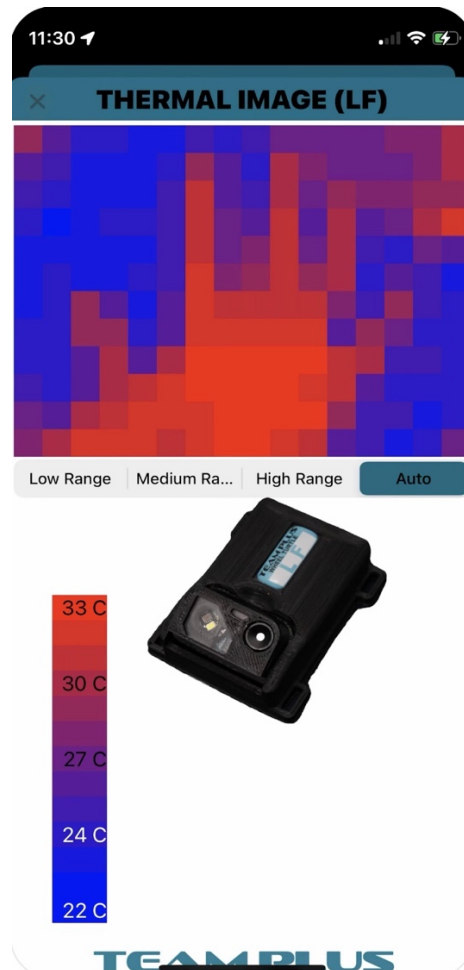
# Team Plus® Setup Guide



Pressing on any of the Tyre Temp areas of the Dash screen will open up a simplified view with tyre/tire temperatures and distance data only for more focused study. This view is available in both live data and replay data modes.



Pressing on any of the Tyre Temp areas of the simplified view will open up a Thermal Image view for that specific wheel. The Thermal image is valuable to help alignment and setup of Wheel Turtle® position. Thermal view is not available in data replay mode.



## WHAT DO I NEED:

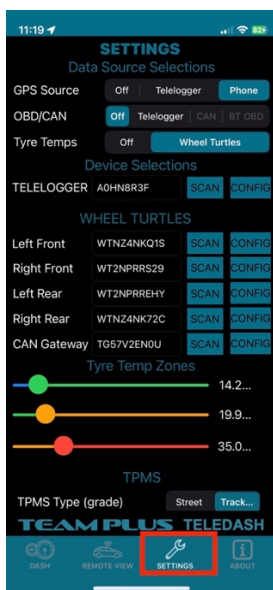
- Team Plus® TeleDash® phone app from iPhone app store or Google Play app store.
- Compatible Phone or Tablet
  - Apple iPhone compatible with iOS 16 and above
  - Android device supporting Android 12 and above.
  - Also works on Apple MacOS with M1 and above chips.
- At least one of Team Plus® sensor types
  - Team Plus® Wheel Turtle® – set of 4. (any model)
  - Team Plus® TPMS – set of 4 (any model)
  - Team Plus® Brake Turtle™ Pro – set of 4 (also requires Wheel Turtle® Pro set)

## STEP 1: Install Hardware

- Find a location to securely mount or store the phone or tablet running TeleDash® in the car. You may choose to mount it in a visible location to monitor temperatures or hide it away depending on your usage plan. The tablet or phone must stay in the car during the session and be powered on to capture the sensor information by Bluetooth.
- If you are using Team Plus® Wheel Turtle® tyre temperature sensors, Install them in each wheel arch as per the install section of this guide. We suggest you use the supplied mounting brackets for Battery Powered Wheel Turtle® models, so you can remove them for charging. The mounting bracket also provides important protection to the connection port and switch on the Wheel Turtle® itself.
- If you are using Team Plus® TPMS sensors, install on each wheel as indicated in the section of this guide.
- If you are using Team Plus® Brake Turtle™ sensors, install in each wheel arch area as indicated in the section of this guide. Note: Brake Turtle™ sensors require you to also have Wheel Turtle® Pro sensors installed.

## STEP 2: Configure TeleDash®

- Install TeleDash® app from Apple app store or Google Play Store.
- Start TeleDash® app, and accept the permissions requested for location and Bluetooth access. On some model phones, this may require restarting the app a second time to ensure all permissions are granted.
- The iOS and Android versions of TeleDash® are very similar, however there are platform driven differences. The images in this guide are using the iOS version and may vary a little from the Android releases. For example, the Android version has the menu selection at a top bar, where iOS has it at the bottom.
- Go to the settings tab. The setting tab will present to you many options in a scrolling screen. Most of these options manage the behaviour of the TeleDash® app itself, including which sensors it should connect to and display directly. CanGate® settings and individual Wheel Turtle® configuration is SEPARATE from the configuration of the TeleDash®, however it is configured using the TeleDash® app. More information about device configuration is in the relevant section of this document.



The TeleDash® app for iOS or Android settings page is where you can make any required configuration changes including:

- **Wheel Turtle® Selection:** If you have more than one set of Wheel Turtle®s or use them close to others, you will need to set the specific ID of each of your Wheel Turtle®s into the TeleDash® to ensure you are seeing the correct one.
- **TPMS Selection:**
  - **Automatic Selection:** If you have Team Plus® Wheel Turtle®s installed you can use an automatic detection of any Team Plus® TPMS. The Wheel Turtle® will locate the closest active TPMS sensor and send the data to TeleDash®. TeleDash® will resolve any conflicts of multiple Wheel Turtle®s reporting the same closest TPMS. When using this automatic selection method, you do not need to enter the TPMS ID's in the TeleDash® configuration.
  - **Manual Configuration:** If you are not using Wheel Turtle®'s, you will need to manually set the ID of each of your TPMS mounted to the car.
    - **Street Grade** - Ensure TPMS Type is set to "STREET" and the 4 ID's should be set to "1" "2" "3" and "4" respectively.
    - **Track Day Grade** - Ensure TPMS Type is set to "TRACK" and the 4 ID's need to be set using the last 5 digits of the ID code etched onto the respective sensor in the format "xx:xx" (this is case sensitive).  
Note: because of a security limitation in Apple iOS, the TPMS ID's need to be manually entered. However if you are using the Android app version, you can scan for the available sensors.
- **Brake Turtle™ Selection:** Configuration and discovery of the Brake Turtle™ temperature sensors is always automatic. The Wheel Turtle® will locate the closest active Brake Turtle™ sensor and send the data to TeleDash®. TeleDash® will resolve any conflicts of multiple Wheel Turtle®s reporting the same closest



sensor. Using the Brake Turtle™ Sensors is not possible without a Wheel Turtle® Pro set.

- **Measurement Units:** Set the units of measurement you want to see on the TeleDash® screen for temperatures (C or F) and pressure (psi, kpa or bar).
- **Temperature Display Colour Limits:** Set the values for when TeleDash® will display colour for the tyre temperature using the sliding bars. You set where it changes from blue to green, green to orange and orange to red. The value limits are set in the chosen measurement unit (C or F).
- **Pressure OK range:** set the lower and upper pressure value that represent an acceptable pressure level. Pressures outside of the set range these will show as RED on the TeleDash® screen.
- **Recording Preferences:** TeleDash® can be set to always start recording (logging) the data when the connection is turned on. You can also set if you want the recording (logging) to start immediately, or when the car exceeds a set speed.
- **Live View Preferences:** TeleDash® can be set to always start transmitting data over the phone's internet 4G/5G connection for others to watch your information. Choose if you want this to always turn on or not.
- If you are using Wheel Turtle® Temperature Sensors you can also use the TeleDash® app to configure some parameters of each individual Wheel Turtle® sensor. This includes:
  - **Wheel Turtle® mounting direction:** Wheel Turtle®s can be mounted in a reverse direction depending on where you place it. You may find that the temperatures are showing the wrong direction across the tyre. You can fix that by changing a setting in the Wheel Turtle® called "Reverse Mount".
  - **Wheel Turtle® Distance Calibration:** If you are using the Wheel Turtle® distance sensor to act as a suspension travel meter, you may wish to set the calibration numbers of each Wheel Turtle® to provide starting point of zero.
- Once each device is configured check that the TeleDash® finds each one and is showing the live data.
  - The TeleDash® screen shows each Wheel Turtle® data live within a few seconds of the sensor being turned on.



- TeleDash® will show each active Brake Turtle™ temp sensor through the Wheel Turtle® data within 20 seconds of the sensors being turned on.
- TeleDash® will show each TPMS sensor data live only if the TPMS is reading pressure AND it senses the wheel is rotating. The TPMS will not update data if the wheel is not turning.

### Notes on TeleDash® Settings:


- Use the “SCAN” button next to each Wheel Turtle® ID field to look for available Wheel Turtle®s that are turned on and in range. By default, TeleDash® is set to find the first available Wheel Turtle® for the appropriate corner of the car. In some cases, such as when another car close to you is also using Wheel Turtle®s, TeleDash® may attempt to connect to other set. For this reason we suggest you set the ID fully.
- TPMS device ID's only need to be set if you are also using Wheel Turtle® Pro sensors. From version 2.7.1 of the TeleDash® app and 2.0 of Wheel Turtle® Firmware, the detection of closest TPMS is automatic.
- If you do need to manually enter TPMS ID, because of a security limitation in Apple iOS, the TPMS ID's need to be manually entered. However, if you are using the Android app version, you can scan for the available sensors.
- There is no setting for Brake Turtle™ (brake temp) sensor ID, as these are automatically detected by Wheel Turtle® Pro sensors for that wheel.
- Use the slider bars to set the thresholds for temperature colour ranges.
- Enter the values for high and low thresholds for pressure ranges. Any pressure reported outside of these ranges will show with a RED background.

## STEP 3: Using TeleDash®


Once TeleDash® has been configured for your sensors, you are ready to use the app.


- To connect to your sensors, press the power button in the app. Green is ON, Red is OFF. 
- To Record a session for later replay, press the Circle Record Button.  Will show RED if recording, or Orange if set to record when speed exceeds 40kph (typical speed exceeded once on track). To Stop recording, press the Square Stop Button.
- **Safety note:** It can be inconvenient and dangerous to action buttons on your phone while in the car. We suggest setting up auto record, and speed activated, so that the phone app connection can be turned on in the pits before you move out, and it will start recording when needed.

### Live sharing

- To Start a Live Share session so that a friend or crew can watch your data on their phone over the internet, press the Live Share button.  It will be GREEN when live share is active. Press the same button again to stop live share. Live Share can be set to automatically start every time, using an option in the settings page.
- When Live Share is activated, a Code is displayed under the buttons on the screen that will be needed by your crew or friends to view your data. This is a security measure, so please don't share with everyone. The code will be the same each time you activate live share from the same phone or tablet.
- To View another person's Live Share data as a crew member or friend, use the "Remote View" page of the app and enter the Live Share Code provided by the racer.
- At the end of a session don't forget to Stop any recording and disconnect from Sensors by pressing the stop and power button accordingly.

### Replay/view a session

- To replay (view) the session you just completed press the play/pause button.  The screen will now be showing the data from the session. A progress bar and date/time will display below buttons to show playback position. You can move around within the playback timeline by moving the end of the progress bar left and right with your finger.

- All your recorded sessions are available in a list using the Folder button.  The list shows the date and time of each session.
- Any session in the list can be selected by clicking on it, and then press play.
- Deleted a session by pressing the bin / trash button next to it.
- Exported a session to your device files, or send to another person by using the share icon next to each one.
- An exported session will be csv data file with an extension of .tpd You can send this to another user, or rename to a .csv file to analyse in other tools.
- A session from another user sent to you can be imported to your list by clicking the import icon at top right of the list and selecting a file on your device.
- Team Plus® has developed a template project to use TeleDash® data in RaceRender 3 software by HP Tuners. See separate documentation in Team Plus® downloads.

## Team Plus® Wheel Turtle® Install



The Team Plus® Wheel Turtle® is a sensor module to measure:

- 8 Temperatures across the face of each tyre/tire
- Distance to tyre/tire
- RGB colour detected of tire/tyre tread surface

Data from the Team Plus® Wheel Turtle® devices are transmitted by Bluetooth Low Energy (BLE) to either a Team Plus® CanGate® or to a Phone app like Team Plus® TeleDash®.

We suggest reading the Setup and Configuration section for CanGate® or TeleDash® to understand how to get these solutions connected.

Team Plus® currently offers 2 different models of Wheel Turtle® sensors. The Wheel Turtle® WT1 is our Club motorsport level offering, and the Wheel Turtle® PRO is targeted at the needs of dedicated race cars.

## Wheel Turtle® Tire/Tyre Temperature Sensor

### Club

**Temps per tire/tyre:** 8  
+ Distance  
& RGB Color/Colour  
**Update Rate:** 10Hz  
**Case:** HT Nylon  
**Power Source:** Battery  
or USB  
**Sensor Head:** Movable  
**Dimensions:** mm  
59(L) x 47(W) x 20(H)

### Pro

**Temps per tire/tyre:** 8  
+ Distance  
& RGB Color/Colour  
**Update Rate:** 15Hz  
**Case:** Alloy  
**Power Source:** Hard  
Wired 12V  
**Sensor Head:** Fixed  
**Dimensions:** mm  
47(L) x 50(W) x 13(H)



Team Plus® Wheel Turtle®s also provide auto connection and data relay capabilities to other Team Plus® sensors including:

- Team Plus® Street Grade External TPMS – Tyre Pressure Sensors
- Team Plus® Track Grade External TPMS – Tyre Pressure Sensors
- Team Plus® Track Grade Internal TPMS – Tyre Pressure Sensors
- Team Plus® Brake Turtle™ Pro - Brake Temp Sensors (Wheel Turtle® Pro also required) Note: Android app support for Brake Sensors expected very soon.

**Team Plus® sensor devices and CanGate® are available from <https://team-plus.com/>**

### WHAT DO I NEED:

- Team Plus® Wheel Turtle® Set
  - Wheel Turtle® WT1 - Club level set plus:

- mounting brackets (4 basic mounts provided with set)
- cable ties for mount bracket
- Micro USB to USB C charge cables (provided with set)
- USB Charger (not included)

OR

- Wheel Turtle® PRO set
  - USB wiring kit (provided with set)
  - M6 Mounting bolts (not included)
  - Cable ties for neat power cable management
- Display Unit
  - Team Plus® TeleDash® phone app from iPhone app store or Google Play app store.

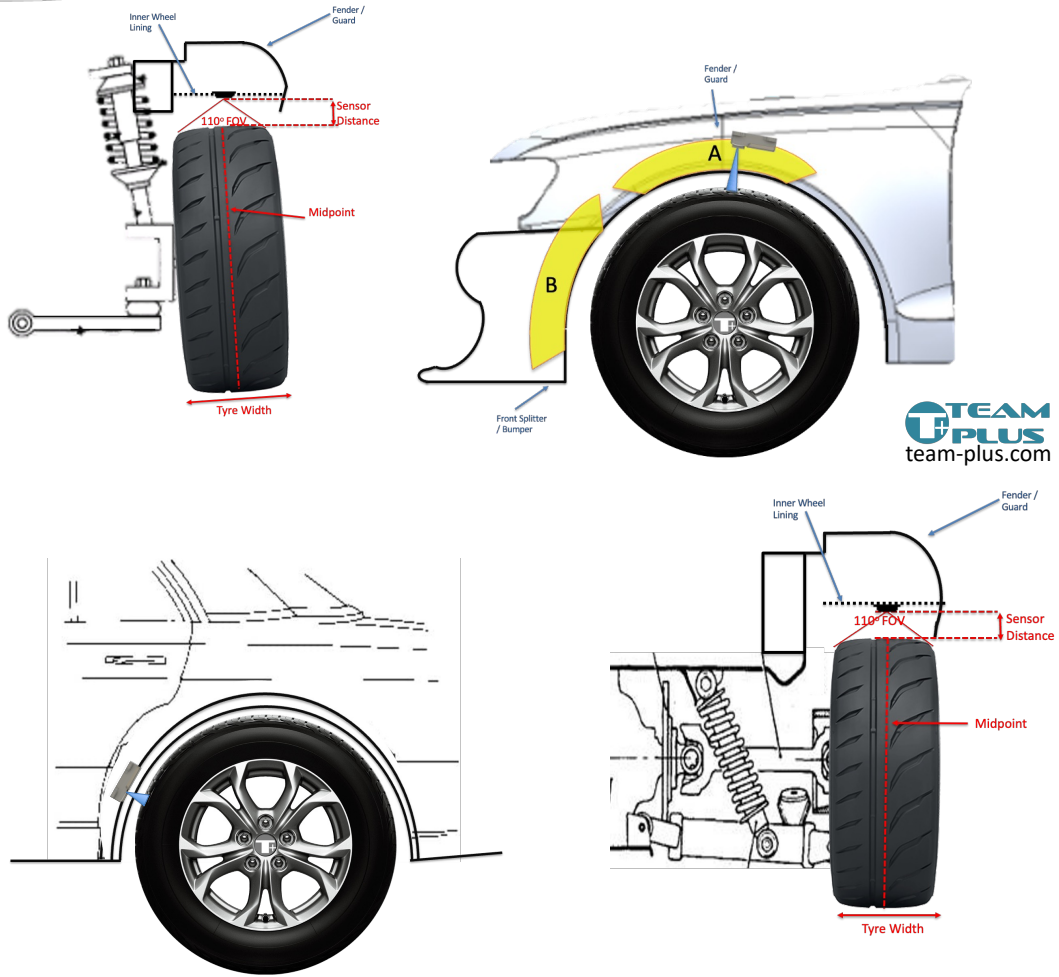
OR

- Team Plus® CanGate®
- Optional additional sensors
  - Team Plus® TPMS
  - Team Plus® Brake Turtle™ Pro

## STEP 1: Install Sensor

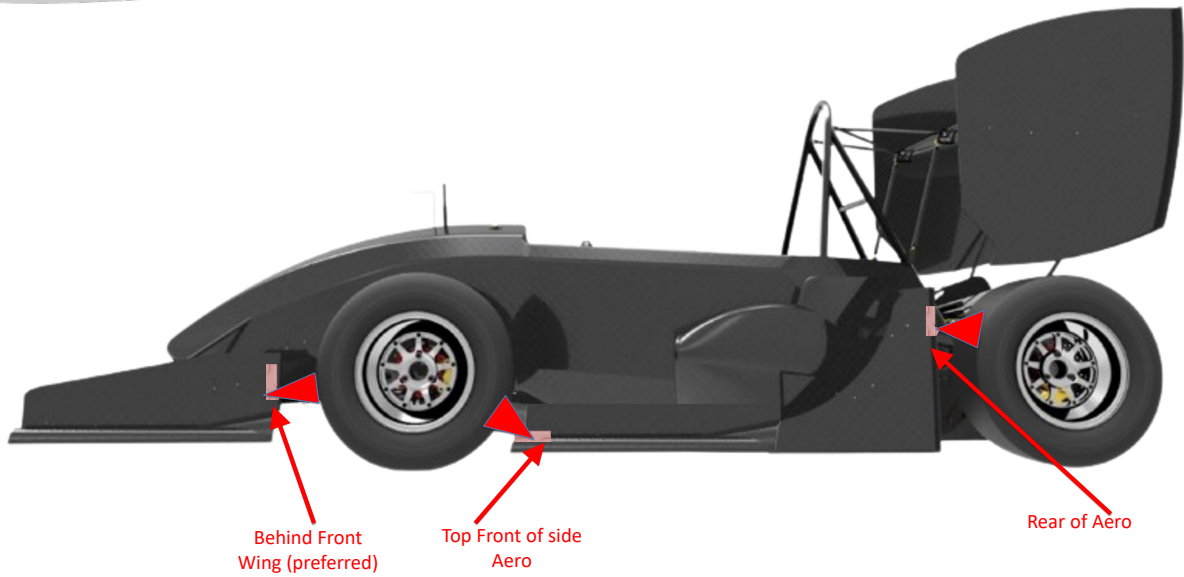
Each Wheel Turtle® needs to be mounted so that the thermal sensor can see the face of the tire/tyre. The Wheel Turtle® thermal sensor has a 110° Field of View which is divided into 8 temperatures. When determining Wheel Turtle® placement consider the following:

- The ideal distance from face of tyre is 33% of the tyre width. For example, if you have a 295 wide tyre, about 100mm from tyre surface is ideal.
- The Wheel Turtle® also contains a distance sensor which can be used to track suspension movement.
- The best positioning for sensors is as close to directly above the tyre/tire as possible (shown as A in image below).
- An alternative location (shown as B in image below) would be in front of the tire/tyre. The distance sensor will not be as effective in this set up, but the Wheel Turtle® will still capture the hottest edges of tyre for all turns of front wheels.



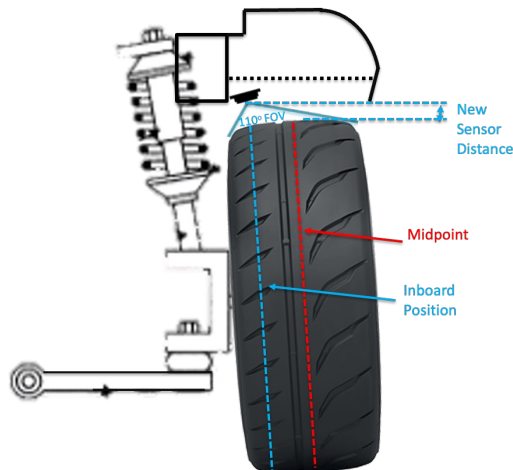
In an open wheel vehicle, the side pods or aero wings may be the best location for placement. Alternately for test days, a bracket fixed to suspension arms to hold Wheel Turtle® above the tyre may be valuable.





If there is limited space around the tyre/tire, a smaller distance to the tyre can be used by using an angle across the tyre.

Mount further inboard and angle across the face significantly reduces distance from tyre needed



- Once a location is decided, a fixing mechanism will need to be determined. This depends on the style of vehicle and level of modifications made to the wheel areas.
- Wheel Turtle® PRO models should be mounted directly to the mount location, but Wheel Turtle® WT1 models should have the

mounting bracket secured to the location so the battery powered WT model can be removed for charging.

- Mounting location could be:
  - Wheel arch liner
  - Front or rear splitter
  - Side sill panels
  - Open wheeler side pods
- In some exceptional cases, an additional stand-off mount may need to be constructed, often when a car has been heavily modified, and the wheel arch liners removed.

### **STEP 2: Wiring Kit (PRO model only)**

Wheel Turtle® PRO models will require the wiring to be connected to provide power to the sensors. The sensor comes with a wiring kit that includes:

- 2x DC-DC converters. One for the front and one for the back of the car. For each of these, find a switched and fused 12V power source, and ground connection and connect the Red and Black wires of the converter.
- 4x USB connector cables. These cables need to run from each Wheel Turtle® to one of the outlets of the DC converters.

To set up the wiring simply:

- Secure all the wires with cable ties (not included).
- Check that each Wheel Turtle® Pro correctly powers on when the switched power is turned on. A Red LED on the face of the Wheel Turtle® will illuminate when powered correctly. A White LED should show for first 1-6 seconds at power on, but should go out after that. If the White LED stays on, there may be a Wheel Turtle® fault that may require a firmware update or repair.

## STEP 3: Make configuration changes to individual Wheel Turtle®s

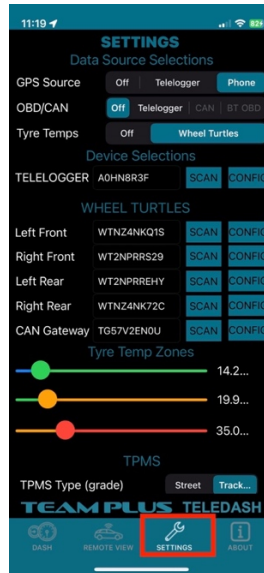
Each Wheel Turtle® has some individual settings that can be changed using the TeleDash® app configuration pages. These do not normally need to change from the standard settings, but there may be need to adjust the following:

- **Mounting Direction** – If the mounting location requires the Wheel Turtle® to be mounted in a reverse orientation, a setting for reversing the mount direction allows the inside edge vs outside edge direction to be reversed.
- **Distance Sensor Calibration Settings** – The distance sensor has a default calibration, however the angle of the sensor to the car can require an adjustment to the calibration. Adjust the scale and offset values as needed.
- **Thermal Sensor Calibration Settings** – very rarely you may need to adjust the calibration of the temperature sensor. This could be because of some sort of filter or layer of protection placed between the sensor and tyre/tire surface. Adjust the scale and offset values as needed.
- **Wheel Location** – Each Wheel Turtle® is set for a specific wheel on the car. However, if for some reason you wish to re-assign the sensor to a different wheel, you can change this setting.

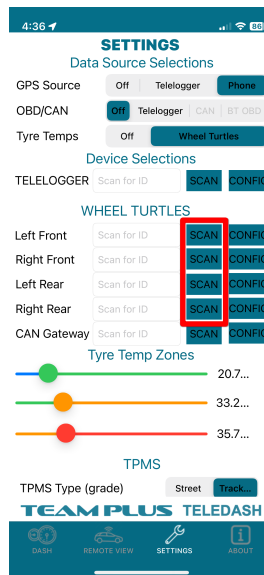
Using the TeleDash® app to configure CanGate®:

- Install TeleDash® app from Apple app store or Google Play Store.
- Start TeleDash® app, and accept the permissions requested for location and Bluetooth access. On some model phones, this may require restarting the app a second time to ensure all permissions are granted.
- The iOS and Android versions of TeleDash® are very similar, however there are platform driven differences. The images in this guide are using the iOS version and may vary a little from the Android releases. For example, the Android version has the menu selection at a top bar, where iOS has it at the bottom.

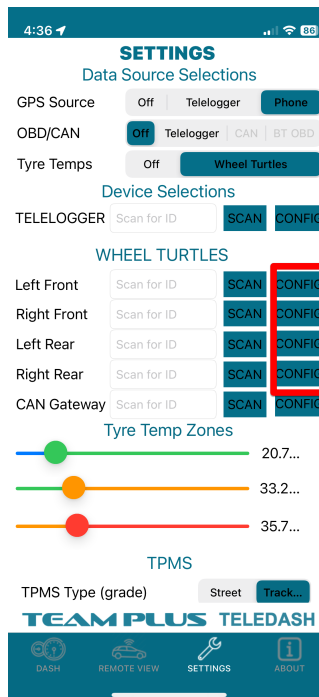
- Go to the settings tab. The setting tab will present to you many options in a scrolling screen. Most of these options manage the behaviour of the TeleDash® app itself, including which sensors it should connect to and display directly. Wheel Turtle® configuration is SEPARATE from the configuration of the TeleDash® however it is configured using the TeleDash® app. See more below.



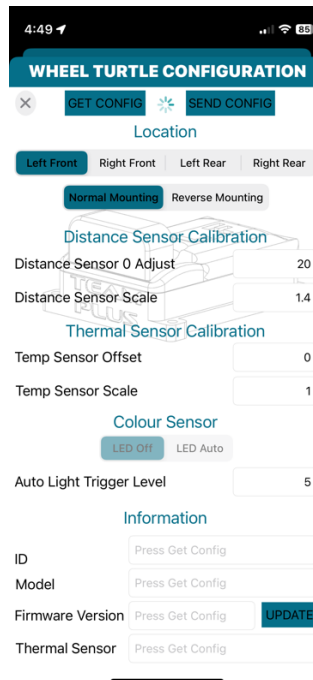
- Make sure the Wheel Turtle® is turned on and within Bluetooth range of the phone. Ideally within 5 metres (15 feet) to keep a good strong signal.
- From Settings tab, find the relevant Wheel Turtle® selection option, and press the “SCAN” button next to it.



- You will then be shown a list of Wheel Turtle® devices within Bluetooth range that are turned on. Select the device with the same ID as shown on your Wheel Turtle® Serial number label.
- Once the ID is selected you will return back to the Settings page, and the Wheel Turtle® ID option will now be populated with the ID you selected.
- Press the “CONFIG” button on the appropriate Wheel Turtle® line of the Settings page



- The configuration page for your Wheel Turtle® will now open in the phone app. You will notice a small spinning icon while the current config is read from the Wheel Turtle® over bluetooth. Once the configuration has been loaded the spinner will disappear and the current configuration settings of your sensor will be visible.



**Change the settings as needed, and then when to activate the new settings, press the “SEND CONFIG” button.**

## STEP 4: Configure the display/receiver device (CanGate® or TeleDash®)

Follow the steps in the CanGate® or TeleDash® sections of this document to configure connection to the Wheel Turtle®s and any other Team Plus® devices.

## Team Plus® Brake Turtle™ Install



The Team Plus® Brake Turtle™ is a sensor module to measure Brake Rotor Temperature.

Data from the Team Plus® Brake Turtle™ devices are transmitted by Bluetooth Low Energy (BLE) to a Team Plus® Wheel Turtle® set, which relays the data to either a Team Plus® CanGate® or to a Phone app like Team Plus® TeleDash®.

We suggest reading the Setup and Configuration section for CanGate® or TeleDash® to understand how to get these solutions connected.

Team Plus® Wheel Turtle®s provide auto connection and data relay capabilities for Brake Turtle™.

**Team Plus® sensor devices and CanGate® are available from <https://team-plus.com/>**

### WHAT DO I NEED:

- Team Plus® Brake Turtle™ PRO Set
- Team Plus® Wheel Turtle® PRO Set
- Display Unit
  - Team Plus® TeleDash® phone app from iPhone app store or Google Play app store.

OR

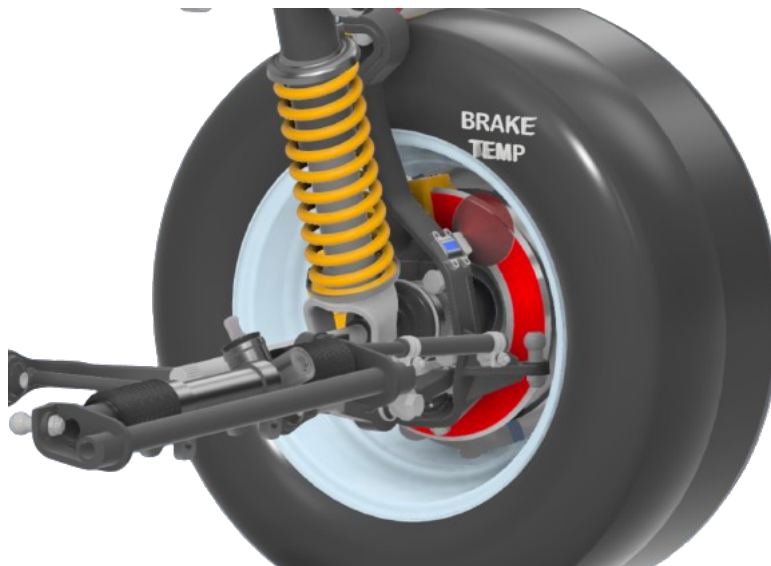
- Team Plus® CanGate®

- Optional additional sensors
  - Team Plus® TPMS

### STEP 1: Install Sensor

Each Brake Turtle™ needs to be mounted so that the thermal sensor can see the face of the brake rotor. The Brake Turtle™ thermal sensor has a 33° Field of View and will report the highest temperature it can see in that range, which would normally be the brake rotor. Guidance for placement is:

- Between 50mm and 300mm from brake rotor surface
- Mounting location can be anywhere on suspension uprights or arms where the sensor can directly see the rotor face.



### STEP 2: Wiring Kit (PRO model only)

Brake Turtle™ PRO models will require the wiring to be connected to provide power to the sensors. The sensor comes with a wiring kit that includes:

- 2x DC-DC converters. One for the front and one for the back of the car. For each of these, find a switched fused 12V power source, and ground connection and connect the Red and Black wires of the converter. These are the same as the converters used for the Wheel Turtle® PRO, so expect they will connect to the same power and ground locations.



- 4x USB connector cables. These cables need to run from each Brake Turtle™ to one of the outlets of the DC converters.

To set up the wiring simply:

- Secure all the wires with cable ties (not included).
- Check that each Brake Turtle™ Pro correctly powers on when the switched power is turned on. A Red LED on the face of the Brake Turtle™ will illuminate when powered correctly.

### **STEP 3: Configure the display/receiver device (CanGate® or TeleDash®)**

Follow the steps in the CanGate® or TeleDash® sections of this document to configure connection to the Brake Turtle™s, Wheel Turtle®s and any other Team Plus® devices.

# Team Plus® Tyre Pressure Monitor (TPMS) Install



The Team Plus® Tyre Pressure Monitors (TPMS) is a sensor module to measure:

- Tyre Pressure
- Tyre Valve Temperature.

Team Plus® offers 3 different TPMS products:

- Street Grade External TPMS – Low update speed, Low resolution, Long battery life
- Track Grade External TPMS – Our own design model with firmware designed for race track. 10Hz update rate and 0.1psi accuracy. External design. Low battery life, but replaceable battery.
- Track Grade Internal TPMS – using the Team Plus® specifications for track use. 10Hz update rate and 0,1psi accuracy. Internal unit. Battery is not replacable, so unit is replaced once battery is flat.

Team Plus® Wheel Turtle®s provide auto connection and data relay capabilities for our TPMS sensors. So even a wheel change to a different TPMS will be auto discovered. No configuration needed.

Data from the Team Plus® TPMS devices are transmitted by Bluetooth Low Energy (BLE) to a Team Plus® Wheel Turtle® set, which relays the data to either a Team Plus® CanGate® or to a Phone app like Team Plus® TeleDash®. Alternately, if you don't use Wheel Turtle® sensors, the Team Plus® TPMS can connect directly to the CanGate® or TeleDash® phone app.

We suggest reading the Setup and Configuration section for CanGate® or TeleDash® to understand how to get these solutions connected.

**Team Plus® sensor devices and CanGate® are available from <https://team-plus.com/>**

## **WHAT DO I NEED:**

- Team Plus® TPMS Devices for each tyre.
- Team Plus® Wheel Turtle® PRO Set
- Display Unit
  - Team Plus® TeleDash® phone app from iPhone app store or Google Play app store.
- OR
  - Team Plus® CanGate®
- Optional additional sensors
  - Team Plus® Brake Turtle™ Pro

## **STEP 1: Install Sensor**

- For Street Grade External TPMS, install each on the wheel indicated on the sensor.
- For Track Day Grade External TPMS, install any sensor on any wheel, taking note of the ID code laser etched on the outside of each sensor for each wheel.
- For Track Day Grade Internal TPMS, the sensors will need to be installed when the tyre is off the rim in place of the existing valve stem. Take note of the ID code laser etched on the body of each sensor for each wheel, so that you can identify this wheel within the CanGate® later. We suggest placing a small label with the TPMS ID on it on the front of rim next to the valve stem for easy reference.



## STEP 2: Configure the display/receiver device (CanGate® or TeleDash®)

- Follow the steps in the CanGate® or TeleDash® sections of this document to configure connection to the Wheel Turtle®s and any other Team Plus® devices.
- If you wish to use the auto discovery and configuration capability for your TPMS combined with a Wheel Turtle® PRO set, do not set the TPMS ID's in the TeleDash® or CanGate® configuration. The Wheel Turtle® will find its closest TPMS sensor.

## MORE HELP NEEDED?

If you require support please see our support pages at:  
<https://team-plus.com/support>