

# AiM CAN Dash Logger Integration with Team Plus Wheel Turtle via CAN (and optional TPMS)



The Team Plus Wheel Turtle Tyre Temperature Sensor data and Team Plus TPMS data can be accessed by the AiM 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.

**Wheel Turtle and TPMS devices are available from**  
<https://team-plus.com/>

The AiM Dash devices can be configured in many different ways and for different ECU's, sensors and accessories, so each configuration will be different, but this quick guide should provide the information you need to incorporate the Wheel Turtle Data into the dash logger.

## WHAT DO I NEED:

- Team Plus Wheel Turtle – set of 4. (any model)
- Team Plus CANGate for Wheel Turtle
- Optional Team Plus TPMS – set of 4 (any model)



- Team Plus TeleDash phone app – Android or iOS (for configuration of devices)
- AiM Dash Logger (models that support CAN devices)
- AiM RaceStudio3 PC software (for Dash Configuration)
- CANbus wiring from CANGate to your AiM Dash
- Wheel Turtle AiM Config files and Samples

## STEP 1: Install Hardware

- Install your AiM dash in car and connect to ECU as per manufacturer's Instructions
- Find a location for the CANGate for Wheel Turtle in the car. You may choose to mount it in a visible location as a second dash to monitor temperatures, or hide it away depending on your needs.
- Connect the CANGate to the AiM dash CAN port. We suggest using the second CAN port and keeping it away from ECU messages. 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. AiM provides power and ground in its CANbus cables as well. AiM provide a range of CAN connector cables depending on the specific Dash and ECU's being used.
- Install your Wheel Turtles in each wheel arch as per the quick start guide. We suggest you use the supplied Mounting Brackets for Battery Powered Wheel Turtle models, so you can remove them for charging, and the mounting bracket provides important protection to the connection port and switch on the wheel turtle itself.
- Install your TPMS on each wheel.
  - For "Street Grade" TPMS, install each on the wheel indicated on the sensor.
  - For "Track Day Grade" TPMS, install any sensor on any wheel, taking note of the ID code laser etched on the outside of each sensor for each wheel.



## STEP 2: Configure CANGate and Wheel Turtles



- Using the TeleDash app you can make any required configuration changes to each of the wheel turtles and the CANGate. The changes you may need to make are:
  - **Wheel Turtle mounting direction:** Wheel Turtles can be mounted in a reverse direction depending on the location 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 a zero starting point.
  - **CANGate Wheel Turtle Selection:** If you have more than one set of wheel turtles or use them close to others, you will need to set the specific ID of each of your wheel turtles into the CANGate to ensure you are seeing the correct one.
  - **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:** For this integration you should use the native Team Plus 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 screen or in the configuration setting in the TeleDash app.
  - **CANGate TPMS Selection:**
    - **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)
  - **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

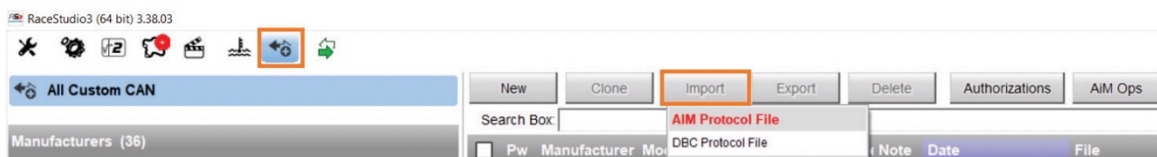


units of measurement used on the AiM systems, only the CANGate screen.

- **Temperature Display Colour Limits:** Set the values for when CANGate will display colour for the 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 AiM 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 AiM systems, only the CANGate screen.
- Once each device is configured check that the CANGate finds each one and is showing the live data. The CANGate screen shows each wheel turtle data live.

## STEP 3: Import Wheel Turtle CAN protocol into RaceStudio3

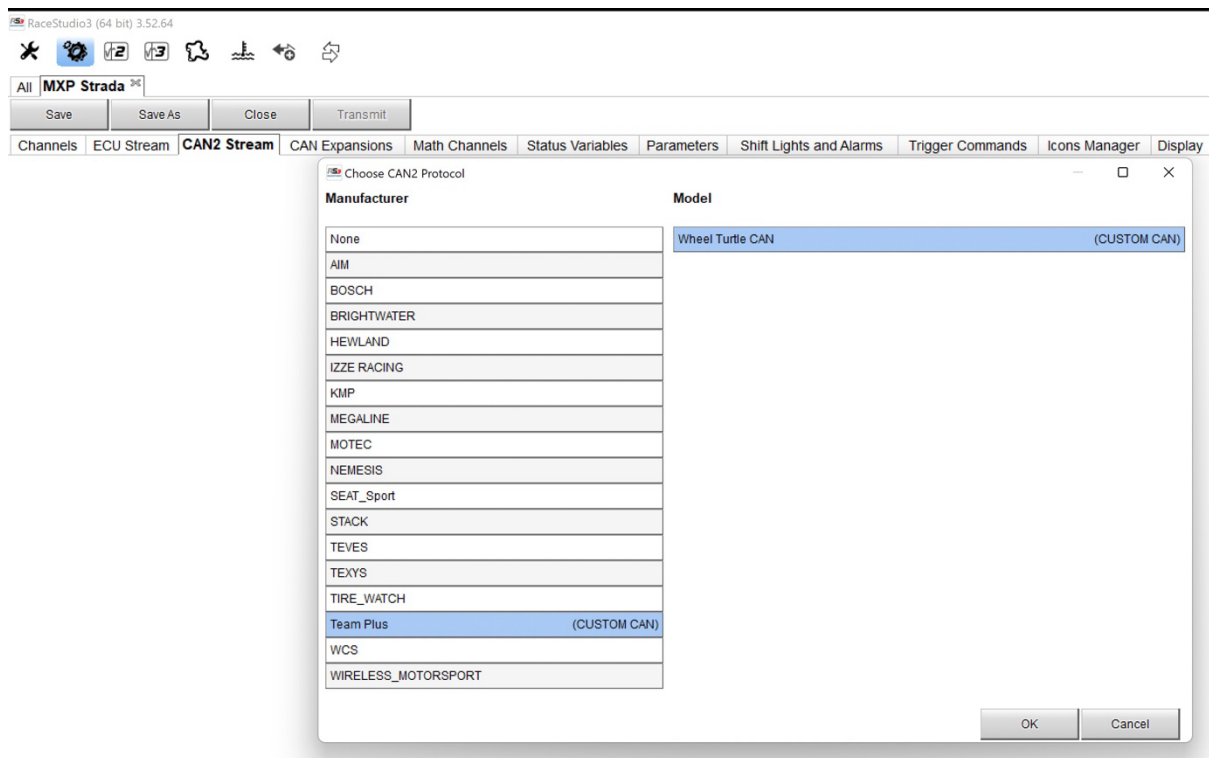
- The first time you want to include Wheel Turtle and TPMS data into a dash configuration, you need to use Import the protocol into RaceStudio3.
- An XC1 file is an AiM proprietary format, containing info relevant to the CAN protocol and its integration with AiM devices. Team Plus has supplied an XC1 file for the CANGate protocol.
- Import it into Race Studio 3, through the following steps:
  - Open Race Studio 3
  - Select CAN Protocols icon
  - Import
  - AiM Protocol File
  - Select the file to import
  - Select the speed of the CANbus. We suggest 1M



- Once imported, the CAN driver is loaded in the CAN Protocols list

## STEP 4: Add CANGate channels to your dash CAN config

- Open your dash config within RaceStudio3, or create a new one for your dash model, or import one of the sample files provided by Team Plus
- If you haven't already, In the Configurations Menus, setup your ECU Stream tab as per your ECU and manufacturer's instructions.
- In the CAN2 Stream tab, select the Team Plus CANGate protocol that you imported in STEP 3.



- You now have all the channels available to add to dash pages, and all these channels will be added to your log data.





## STEP 5: Configure dash to use and display tyre data

- The best way to setup a configuration for Wheel Turtle and TPMS data in your dash is to look at the sample configurations provided. There are several samples using different Dash models and ECU's and, in each case, the key configuration items to look at and replicate where needed are:
  - **Math Channels:** several simple math channels are used to create an average temperature for each tyre. Due to the limitation on numbers of calculated channels in RaceStudio3 the results in the example generate an overall average temperature for each tyre using segments 1-2,4-5 and 8-9 (the 2 outer and 2 inner segments) of each tyre. These average temp channels can be placed in any field on the dash AND are used to trigger some COLD and HOT conditions (see below)
  - **Status Variables:** The examples have status variables set to capture cold or hot status of each tyre. For example the 'LFCold' variable is TRUE if any of the 8 tyre temp segments in the Left Front are below 40 C. These variables are used to trigger LED's or ICONS (see below). You can alter the trigger point for cold temperatures to suit your tyres.
  - **Shift Lights and Alarms:** Depending on the dash model you are using there may be a number of LED indicators available to configure. The sample configurations have setup the following:
    - Top left LED shows BLUE if LFCold is true (tyres less than 40C). And same for the other 3 tyres in the other corner LED's.
    - Same LED shows YELLOW if LFhot is true (tyres more than 80C). And same for other 3 tyres in the other corner LED's
    - LED flashes WHITE if Tyre Pressure on that wheel is out of range. (pressure less than 20psi, and GPS speed greater than 20kph). Set for each corner LED
    - Any remaining side LED's are set to flash RED at SHIFT redline.
    - In some configuration samples any lockup also places an Alert popup or a message in the message line.



- **Icons Manager and Display:** Some models of AiM Dash Loggers have layouts with ICON areas. These can also be used to display Wheel Turtle temperature or pressure high or low alerts. See examples.
- The best value for DRIVER live use of Wheel Turtle and TPMS data is:
  - Are my tyres warmed up - Suggest using the LED blue indicators if they are not, so easy to glance and know when ok.
  - Are my tyres getting too hot – Suggest using LED YELLOW indicators when they go above trigger points for driver to consider easing back on tyre use.
  - Is there a tyre pressure out of preferred range – Suggest using LED WHITE indicators when pressure of wheel is outside of set high and low range constant values.
  - Learning best temperature ranges – have average temperature available for each tyre in a secondary page.
- All the tyre temperature segments for each tyre will be logged in the dash data for analysis later in RaceStudio as separate channels. This is good to analyse:
  - Camber and caster temperature changes across face of tyre
  - Overall temperature impacts of specific corners
  - Driver Technique impact on Tyre - overheating will impact tyre degradation.
  - Developing a temp to pressure map to help set starting pressures.

## MORE HELP NEEDED?

If you require support please see our support pages at:

<https://telemetry.teamplus.cloud/support/>