TC HUB Connected to MXL – EVO

User manual

Racing Data Power

INDEX

Chapter 1 – Characteristics, part number and installation

TC Hub is a thermocouples multiplier that can support up to four thermo couples (“K” type only) and cascade connection of more **TH Hub** is possible. It communicates through the CAN protocol increasing available channels without occupying any analog channel of the logger and minimizing wiring overall. **TC Hub** can be connected to: **MXL Pista**, **MXL Pro05**, **Evo3 Pro**, **Evo3 Pista** and **EVO4** and is waterproof IP 65.

TC Hub can monitor any temperature like, exhaust gas of all cylinders, water and oil temperature. It correctly support also infrared sensors that simulate thermocouples working mode (“K” type only).

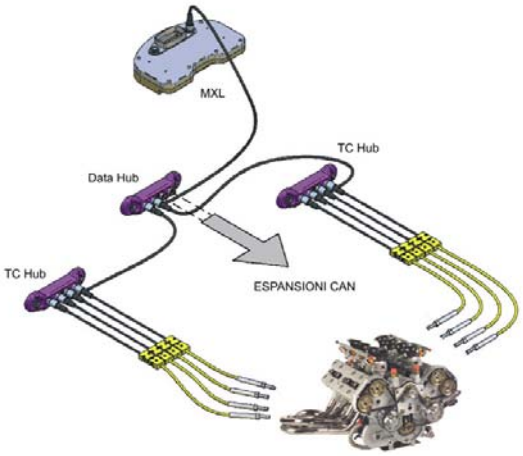
1.1 – Part number

TC Hub (with 150 cm CAN cable) part number is: **X08UTCCTC**

1.2 – Installation

To install **TC Hub** use the proper lateral holes and install it far from heat sources or from electromagnetic interference sources. Pay attention not to let cables pass near to heat sources.

1.3 – Connection with MXL and EVO



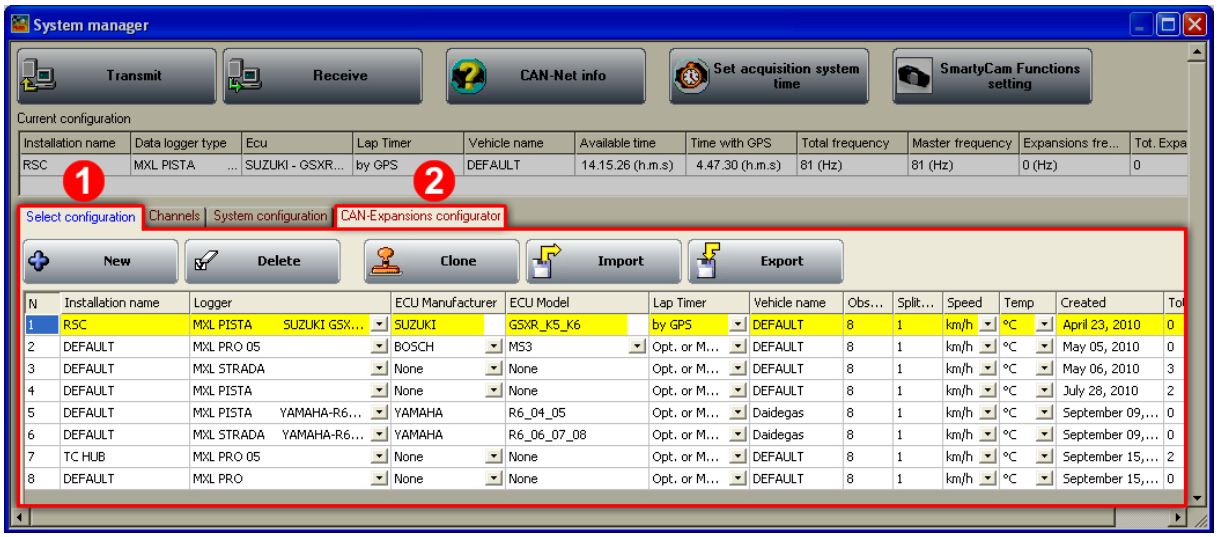
TC Hub can be connected as any CAN peripheral as shown here below.

Warning: connect TC Hub and MXL/EVO when both devices are OFF.

Chapter 2 – Configuration on MXL – EVO

At the very first installation, **TC Hub** is to be configured as **MXL** and/or **EVO** expansion using **Race Studio 2** software. After this it will be automatically recognised at each network start. In this example **TC Hub** is connected to **MXL Pro05**.
To configure **TC Hub** run **Race Studio2** software, press "AIM System Manager" (**1**) and select the proper logger (**2**) as shown here below.

"System Manager" window appears showing "Select configuration" layer (**1**). Select the configuration **TC Hub** is to be added to (it will be highlighted in yellow as here below) or create a new one and then select "CAN Expansions configurator" (**2**) layer.

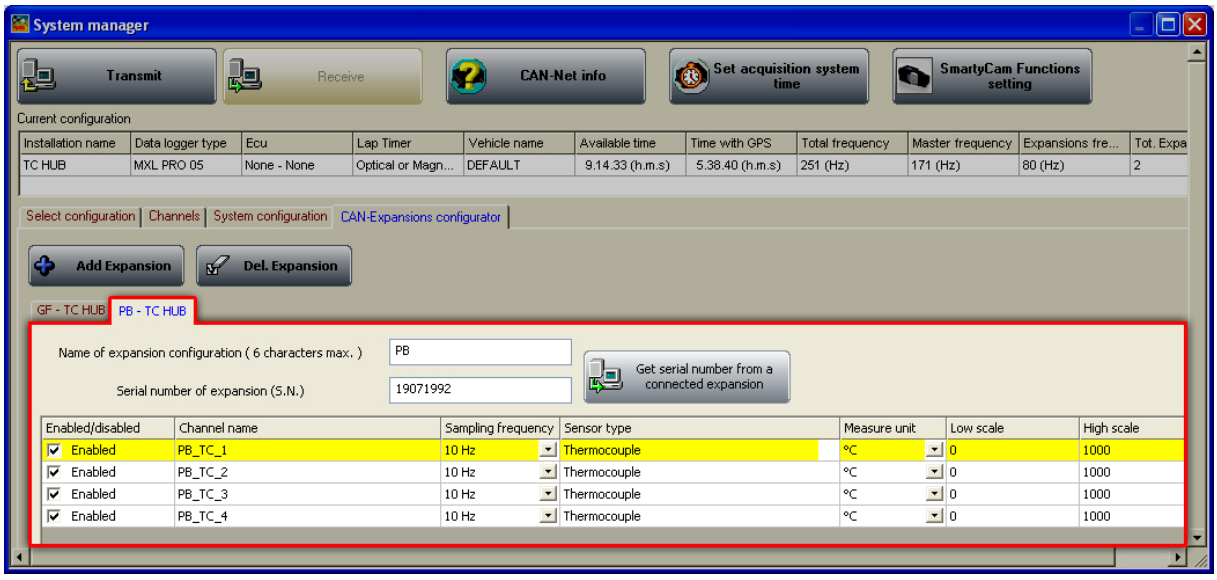


In case of very first configuration the layer will show up empty, press “Add expansion” (or “Delete Expansion” to eliminate an expansion and then confirm the choice) and the window here below appears:

Press “TC Hub” (**1**) and the fields below the images enables.
Fill in the configuration name (**2**) and press “Get serial number from a connected expansion” (**3**) button or type the serial number printed on the label placed under **TC Hub** in the proper field (left of “**3**” button).

Repeat this operation for all connected **TC Hub**.

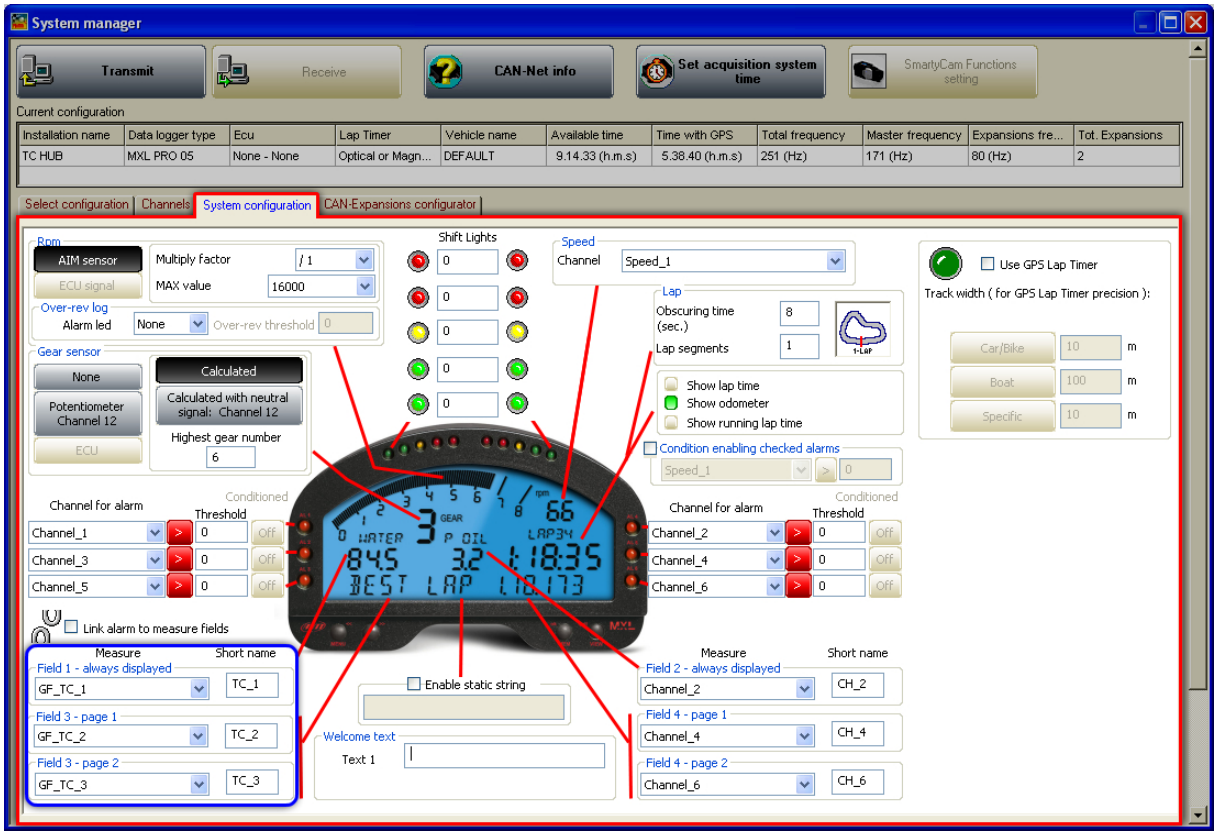
So many layers as many **TC Hub** have been added appear under “Add expansion” and “Del. expansion” buttons.



To configure each **TC Hub** select the related layer, as shown here below and enable/disable the channels connected to the thermocouples, name the channels, set their sampling frequency, unit of measure and low/high scale values.

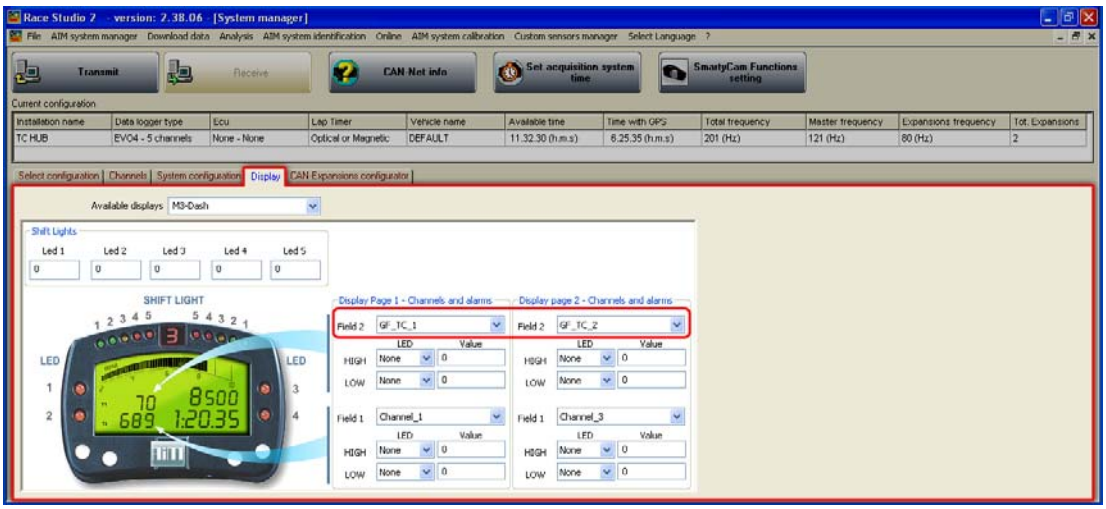
2.1 – Configurations of MXL and EVO displays

TC Hub channels can be shown on **MXL** display setting them in “System Configuration” layer as shown here below.



TC Hub channels visualisation can be set like the visualisation of any other channel (see **MXL** user manual for further information). In the example here below **TC Hub** enabled channels to be shown are TC_1, TC_2 e TC_3. Each of them can be shown in a field of the display.

In case, on the contrary, **TC Hub** is connected to an **EVO**, data visualisation is only possible if the logger is connected to a **Formula Steering Wheel** display or to a **MyChron3 Dash** and shown channels are set in the display configuration as shown here below.

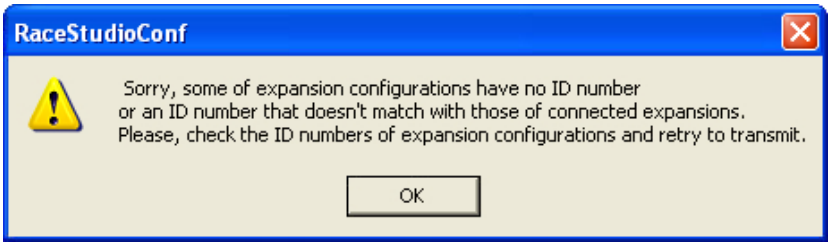


When all parameters have been fixed and the field have been associated with the respective channel the configuration is to be transmitted to the logger. Just press “Transmit” button on **Race Studio 2** top keyboard. When the configuration has been transmitted a confirmation message appears.

In case PC-logger USB connection is not ok or one or more peripherals have not been correctly recognised by the logger one of the following messages appears:

USB error:

unplug the USB cable from both the PC and the logger, re-plug it and retry to transmit the configuration.



The expansion has not been recognised by the logger: check that the expansion ID number is correct and retry transmitting the configuration to the logger.

Chapter 3 – Data visualisation and analysis

3.1 – Data visualisation on MXL

TC Hub channels visualisation on **MXL** works exactly like the visualisation of any other **MXL** channel and display pages are scrolled pressing “Quit/VIEW”. Refer to **MXL** user manual for any further information. In the image here below Temperature channel sampled through **TC Hub** value is **70°** and channel name is **OIL T**.

Powering on **MXL, TC Hub** is automatically recognised.

3.2 – Data visualisation on EVO

TC Hub channels visualisation on **EVO** works exactly like the visualisation of any other channel and is thereby possible only if the logger is connected to a display. The only display that allows the visualisation of **TC Hub** channels are **MyChron3 Dash** and **Formula Steering wheel**. Refer to **EVO3 Pro/Pista** or **EVO4** user manual for further information. In the image here below Temperature channel sampled through **TC Hub** value is 70 and channel label is “**°C**”.

Powering on **EVO, TC Hub** is automatically recognised.

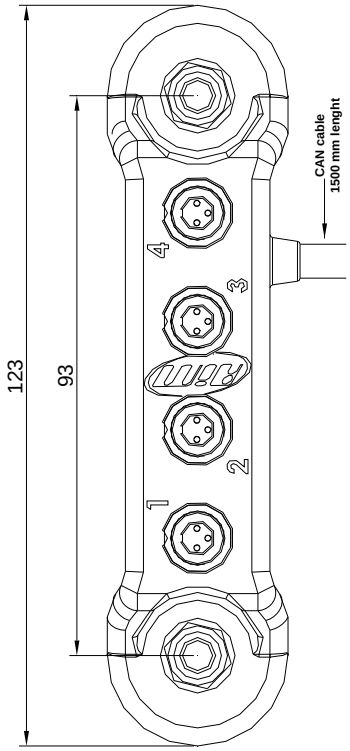
3.3 – Data analysis with Race Studio Analysis

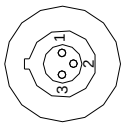
TC Hub does not influence data analysis views made through **Race Studio Analysis** because of **TC Hub** only adds four temperature channels that can be viewed like any other temperature channel.

Appendix – Technical drawings

N. rev. / Rev. N.	Descrizione / Description	Data / Date	Firma / Signature	Contr. da / Ckd. by

TC Hub pinout





3 pins female
Binder connector pinout

Position 1		Position 2		Position 3		Position 4	
Temperature Channel 1	1	Temperature Channel 2	1	Temperature Channel 3	1	Temperature Channel 4	1
GND	2	GND	2	GND	2	GND	2
n.c.	3	n.c.	3	n.c.	3	n.c.	3

Rif. / Ref.	Q.tà/Q.ty	Material / Material		N. articolo / Item N.	
Progettato da / Designed by	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name	Data / Date	Scala / Scale

Racing Data Power

Titolo / Title: **Pinout TC Hub**

N. disegno / Drawing N.	Rev. / Rev.	Foglio / Sheet
		1 of 1