User Manual

ACC2 Open

Release 1.01

1 – Introduction

ACC2 Open (**Analog CAN Converter Open**) is an external expansion module that samples up to 4 analogic signals, converts them into digital values depending upon the chosen unit of measure and transmits them via CAN through freely configurable messages, at a maximum frequency of 200 Hz. The analog signals that ACC2 Open manages are:

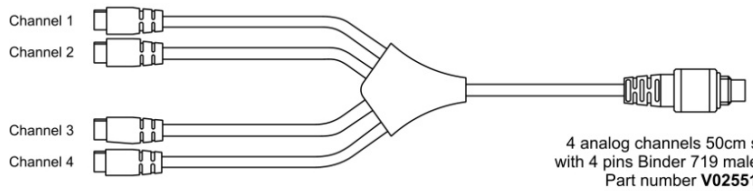
- 0-5V
- Thermoresistences
- 0-12V
- K Type Thermocouples

2 – Wirings

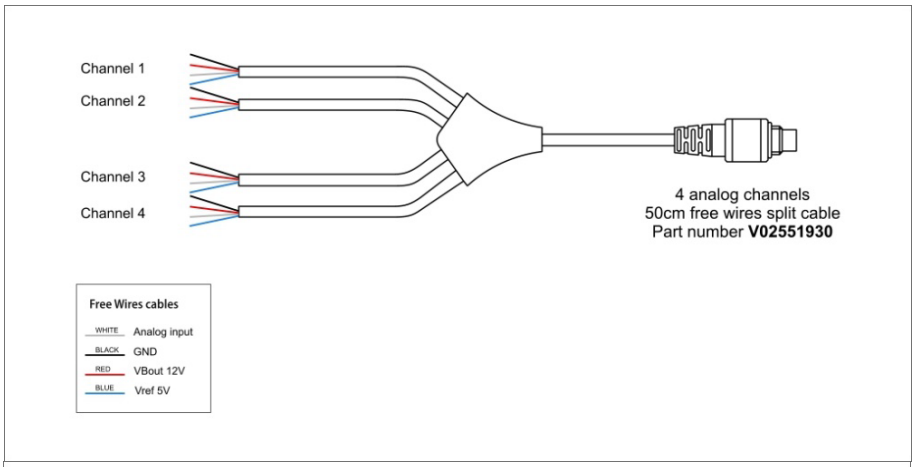
2.1 – Sensors Connections

ACC2 Open can manage many different sensors, from Thermocouples to sensors whose output is 0-12V. Please, note that the thermocouples require dedicated compensated cables, so different kits and different harnesses and cables are available. Here down some examples of the available harnesses.

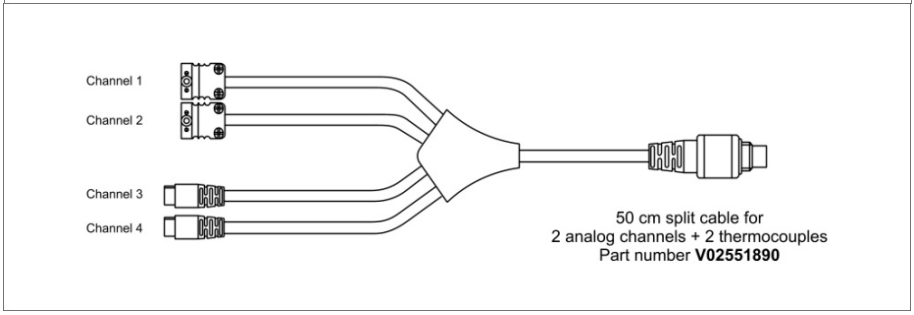
Harness intended to be used with AiM sensors (Thermo-resistances, 0-5V, 0-12V).



Harness free wires for Thermo-resistances, 0-5V, 0-12V.



Harness for 2 thermocouples and two AiM sensors.



2.1 – USB, Power and CAN Connections

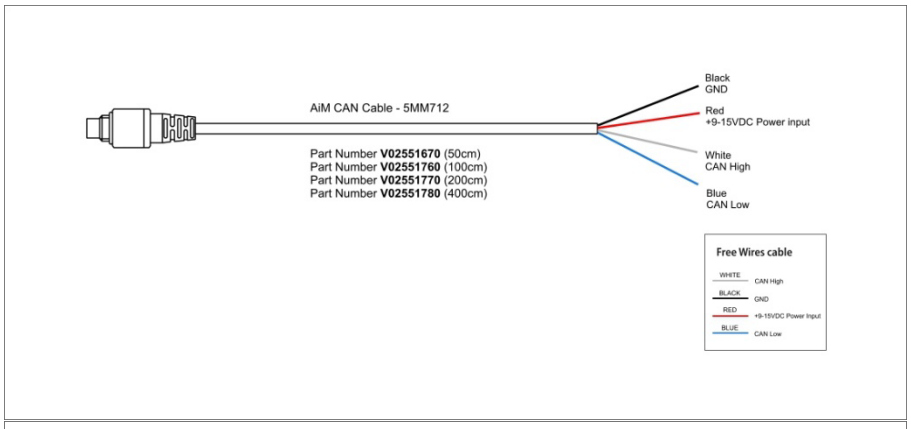
The second connector of the ACC2 Open is intended for:

- power:
  - 9-12V for sensors which output is less than 12V
  - 12-15V for sensors which power is 12V

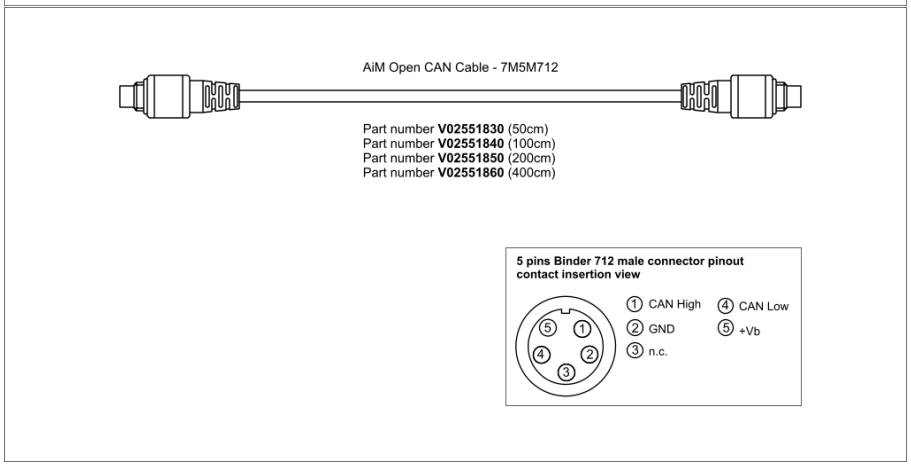
- USB connection: it is required for transmitting the configuration and for eventually look at the data online.
- CAN Connection

The available harnesses are the following:

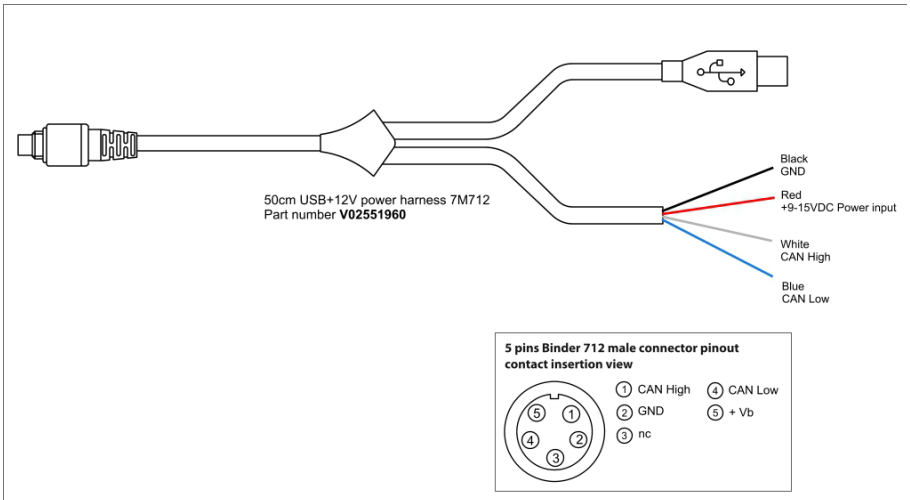
Used for connecting the ACC2 Open to a device through CAN and get the power.



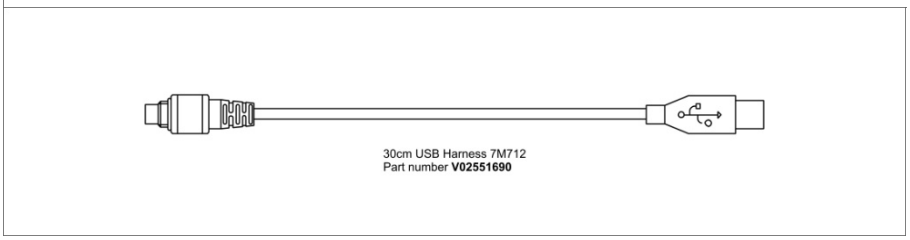
Used for connecting the ACC2 Open to a device through CAN and get the power.



Used to connect the ACC2 Open to the PC and power the sensors. This cable is necessary when you need to check the channels values on the PC through the OnLine feature or you need to calibrate the sensor.



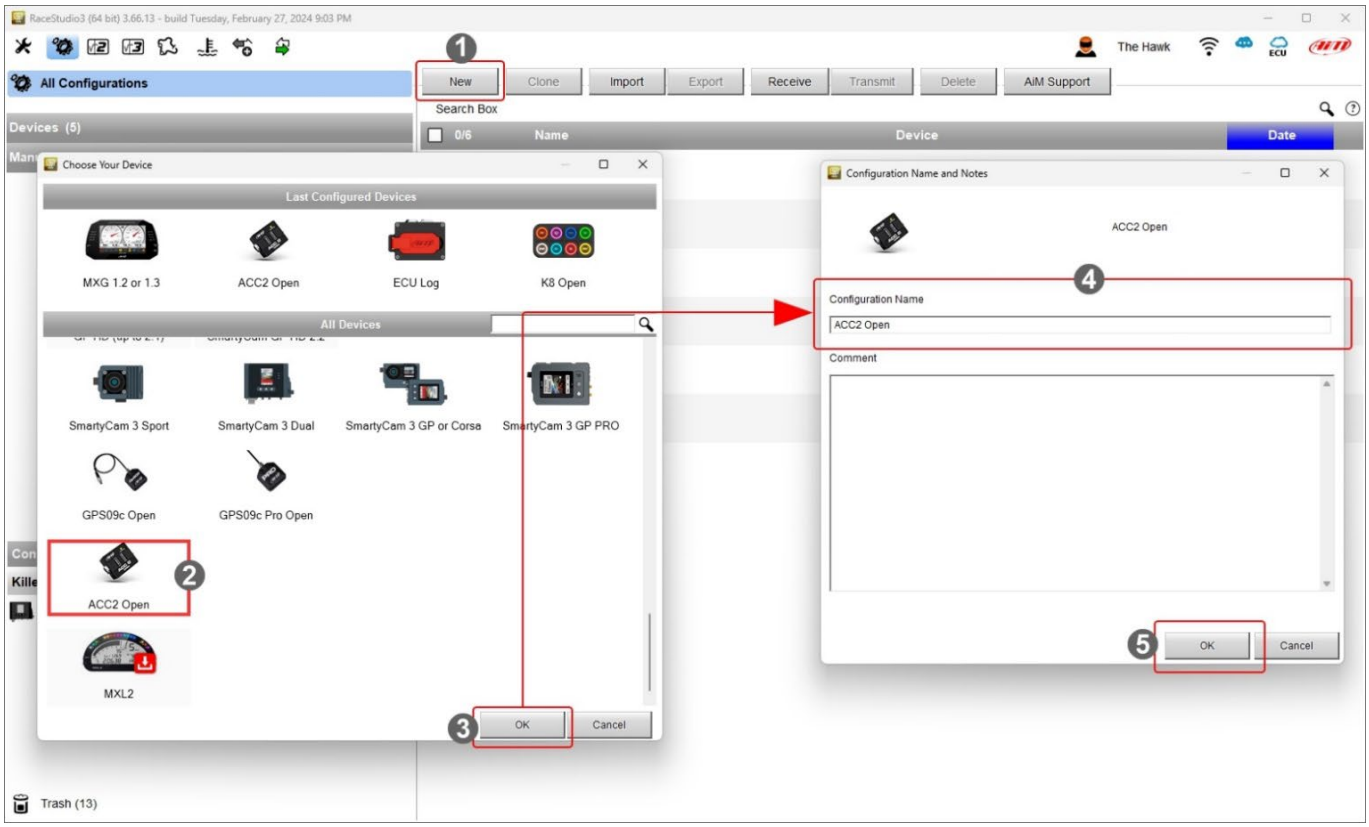
Used for connecting the ACC2 Open to the PC for the configuration. This cable may be used for configuring the ACC2 Open but does not allow you to evaluate the channels OnLine or to calibrate the sensors.



3 – Configuration with RaceStudio 3 software

To configure ACC2 Open, please follow these steps:

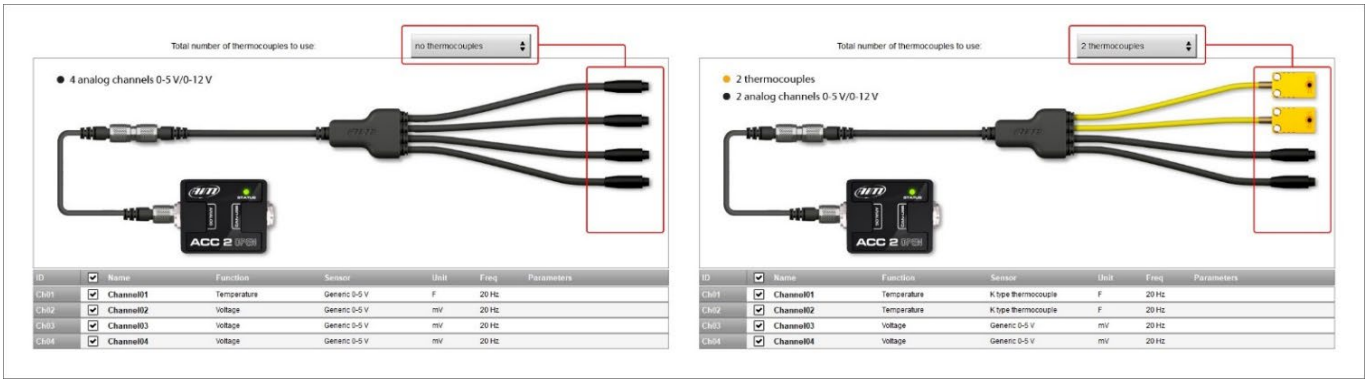
- run RaceStudio 3
- press "New" button on the top right keyboard (**1**)
- select ACC2 Open (**2**)
- name the configuration if desired (default name is ACC2 Open – **4**)
- press "OK" (**5**).



You need to configure ACC2 Open channels and the CAN messages.

3.1 – ACC2 Open channels configuration

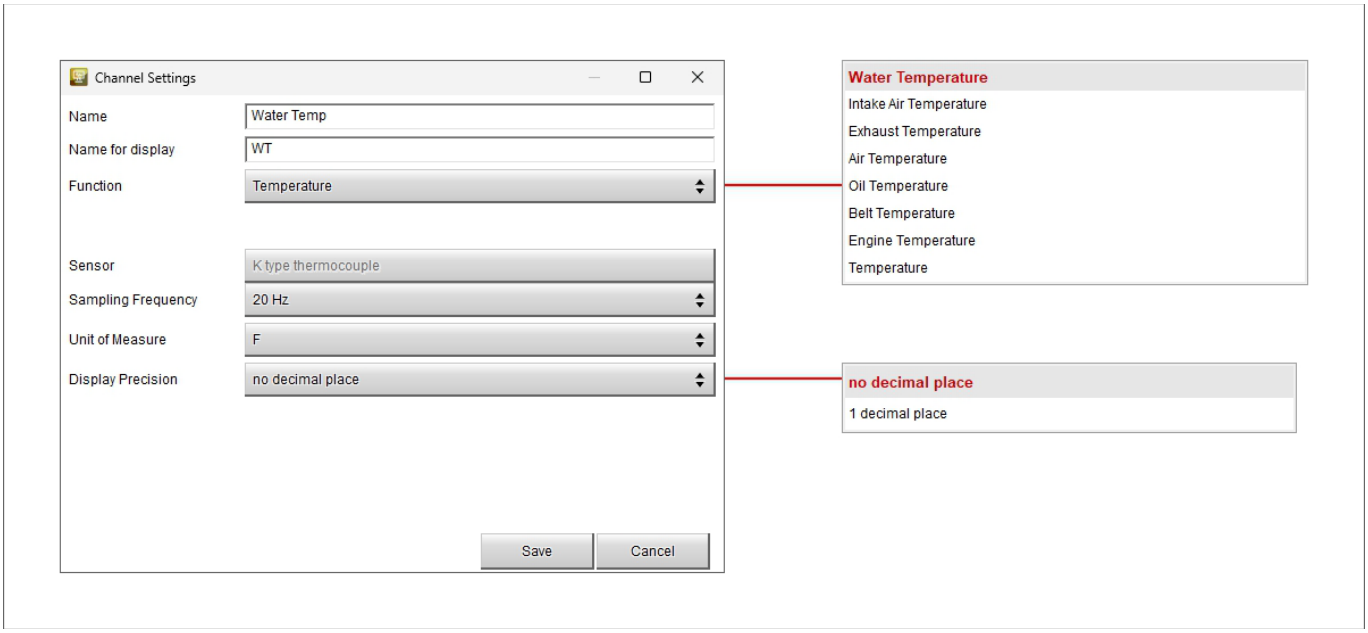
First of all, **you need to set the number of thermocouples you will connect**; of course, you need the proper harness.



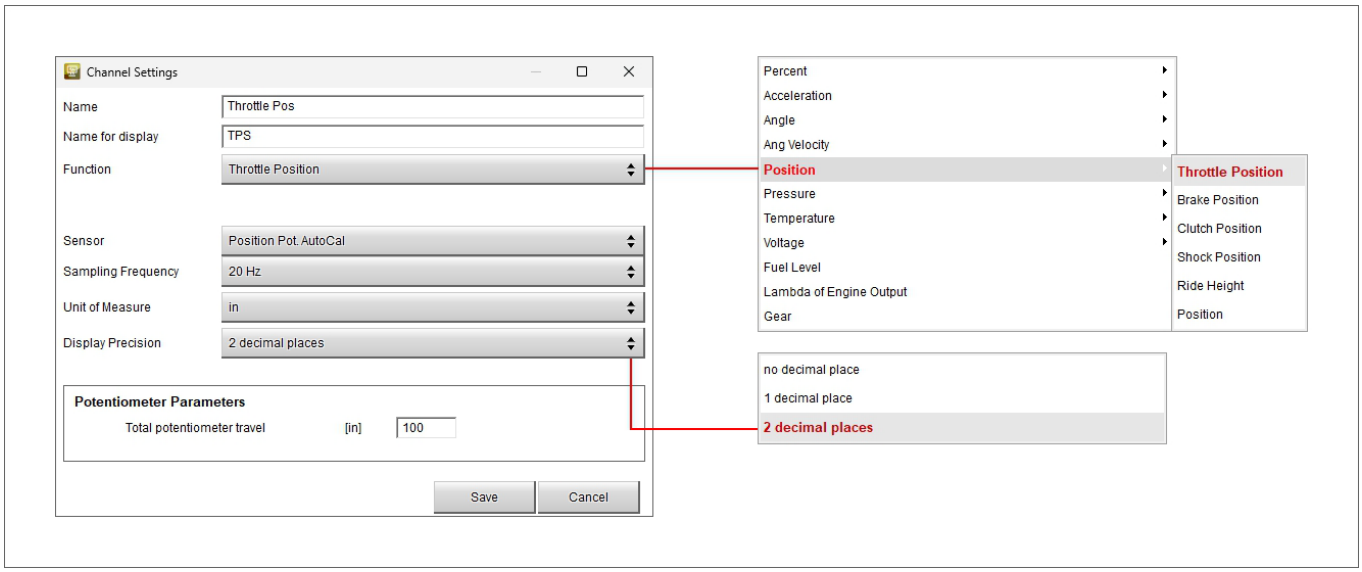
ACC2 Open supports up to four K type thermocouples. Once the number of thermocouple(s) to be connected is fixed the software warns you and the corresponding channel(s) switches to “Temperature”.

To set the temperature channel:

- select the channel
- name it (“Water Temp” in the example below)
- select the function in the menu (Water Temperature)
- set the sampling frequency
- set the unit of measure (°C or °F)



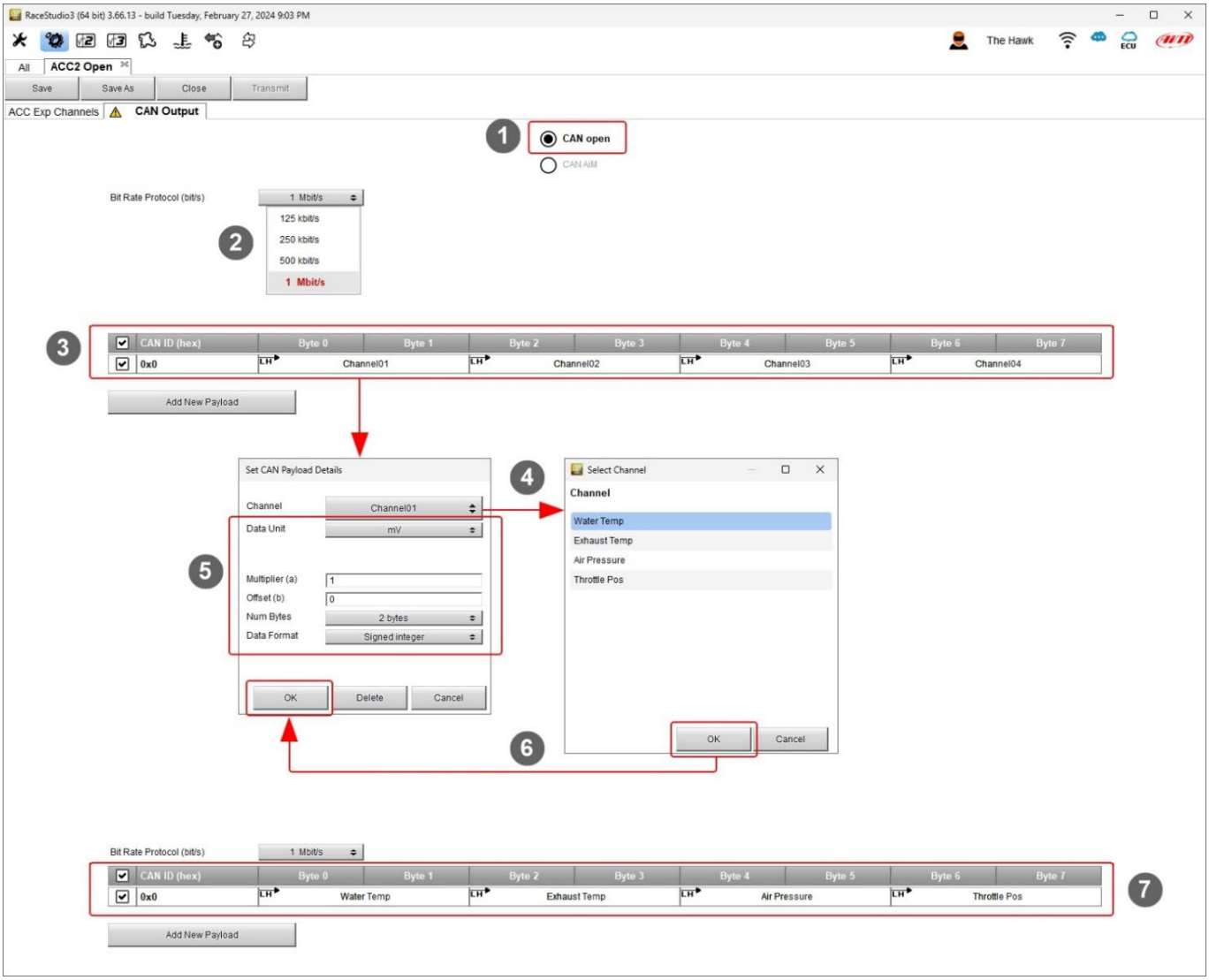
In the similar way you have to configure the remaining channels: click on the channel to set and a setting panel is prompted; a lot of possible function can be set according to the kind of sensor you connect to ACC2 Open.



3.2 – Configuring ACC2 Open CAN Output messages

ACC2 Open allows to build a CAN Output to communicate with external devices. To do so:

- set "CAN open" (**1**)
- set the Bit rate protocol (**2**)
- define the fields in the message; as default, the software proposes 4 fields, one per every analog input (**3**)
- "Set CAN Payload Details" panel is prompted: click the button corresponding to "Channel" and select the channel to set in "Select Channel" panel (**4**)
- set all other parameters in "Set CAN Payload Details" panel according to device ACC2 Open is communicates with (**5**)
- repeat the operation for all channels
- press "OK" in both panels (**6**)
- the CAN protocol is modified (**7**)
- save and transmit the protocol through the top left keyboard

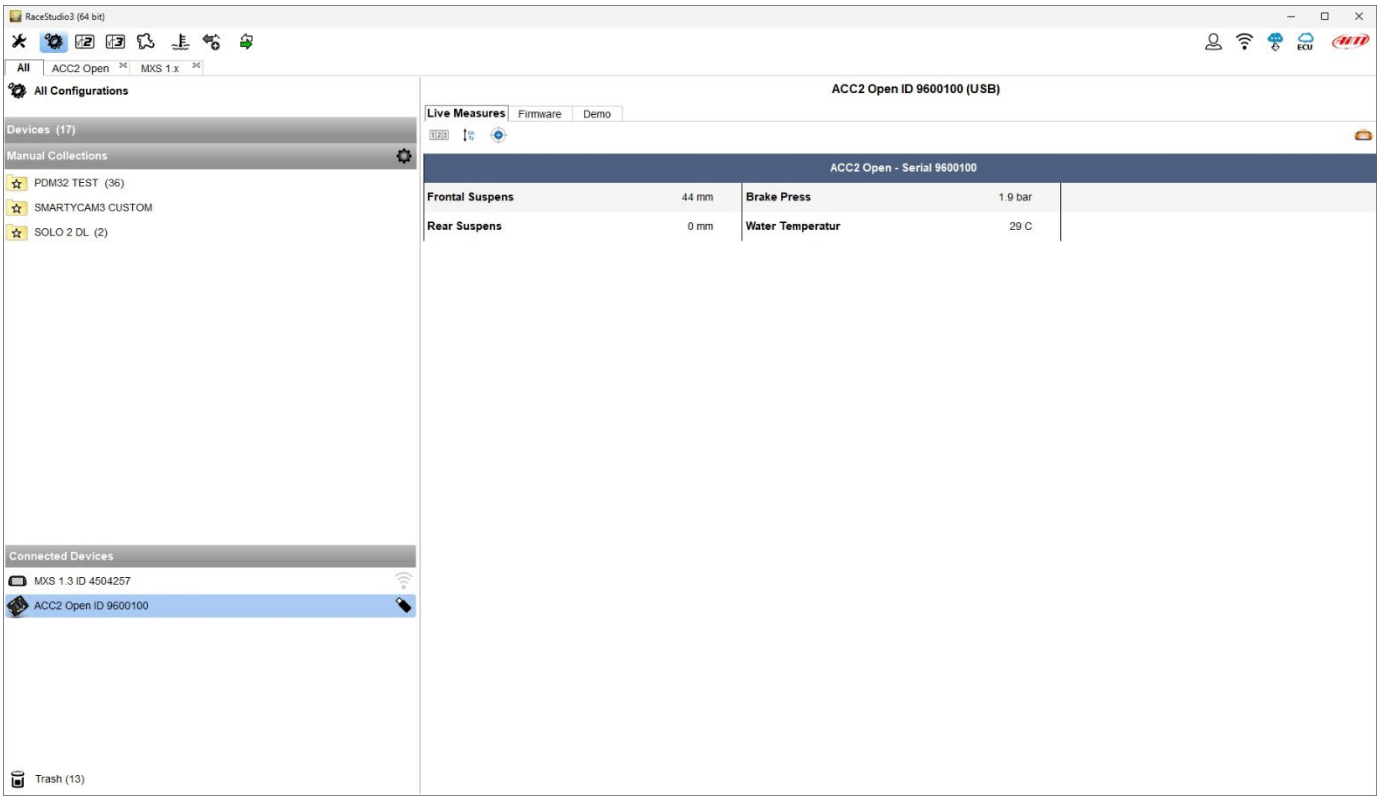


3.3 – Configuring ACC2 Open CAN Output as CAN AiM

As said ACC2 Open can also use AiM CAN Bus. In this case there is no CAN output to set and it works as ACC2.

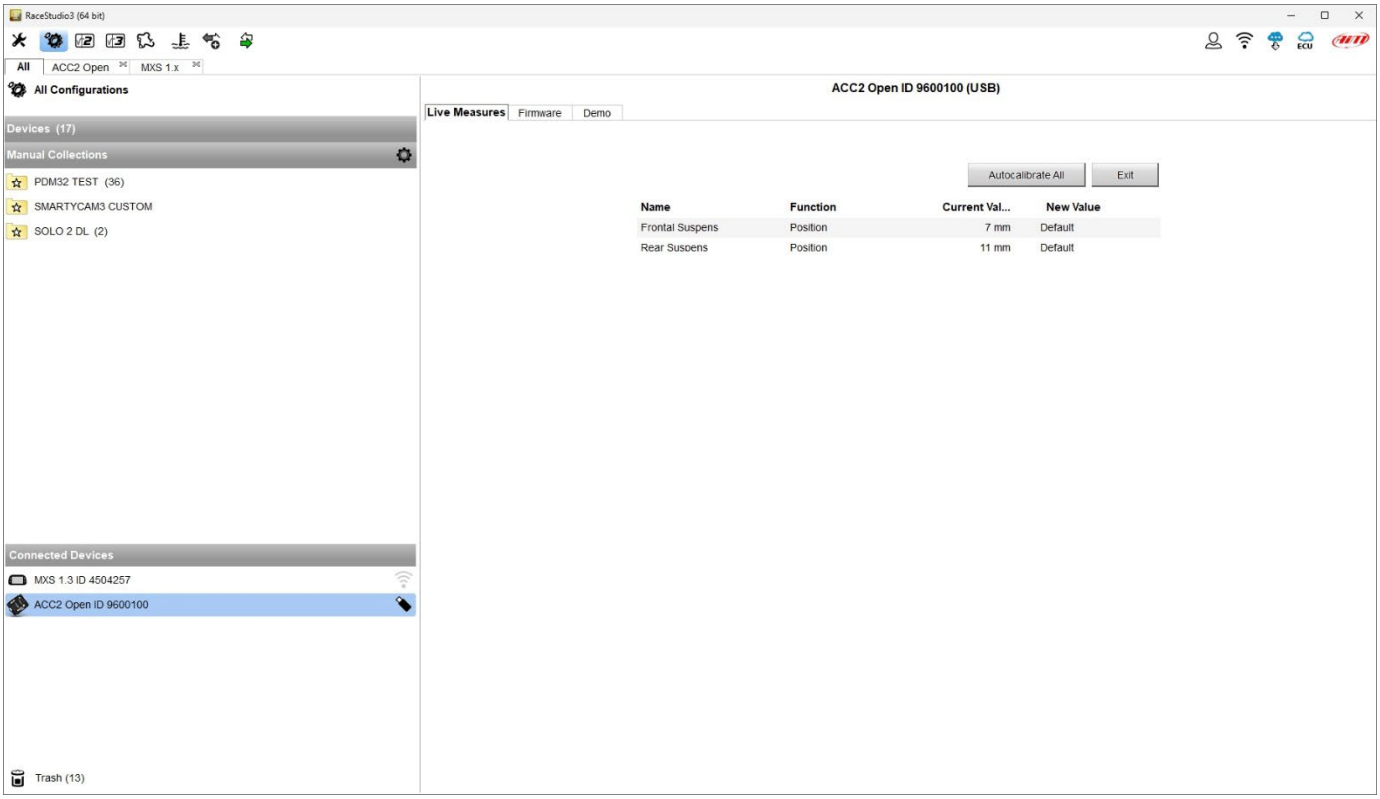
3.4 – OnLine

After having configured your ACC2 Open, you can verify the channels values selecting the OnLine feature.



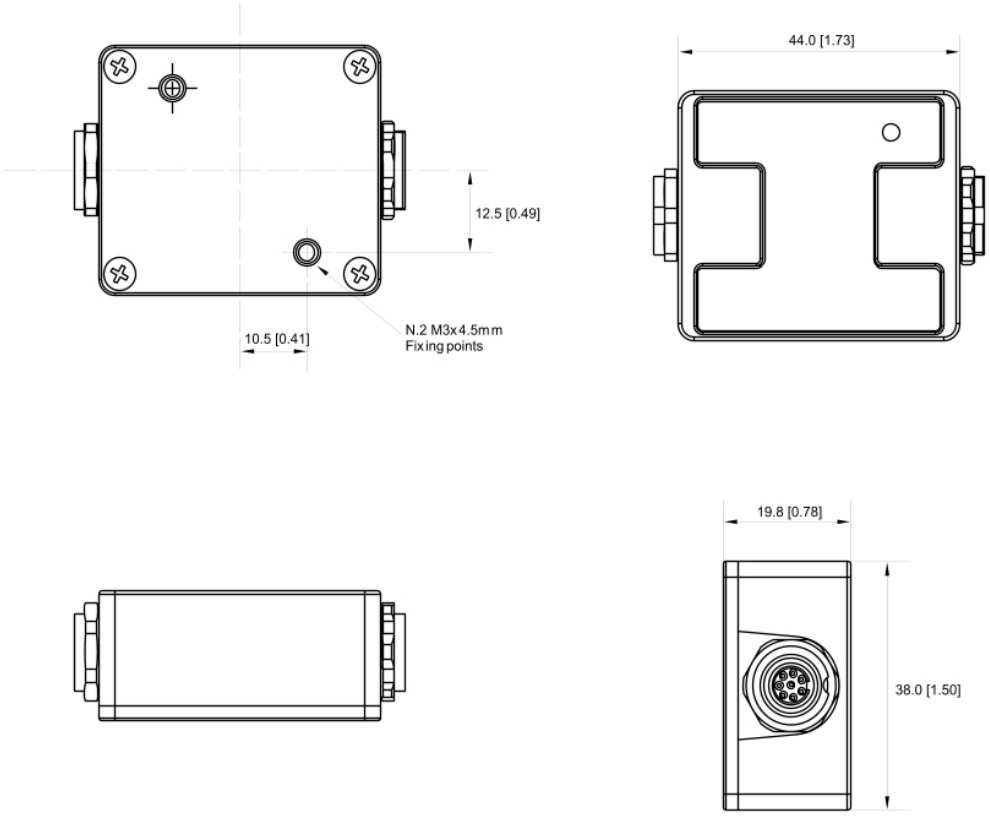
3.5 – Calibration

Some sensors, the potentiometers, for example, require a calibration, in order to set the "0" value. In this case, this procedure can be executed through our software RaceStudio 3, after having opened the here down view.locvfr



4 – Dimensions and technical characteristics

The image below shows ACC2 Open dimensions in mm [inches].



Technical characteristics:

- Analog Channels: 4 fully configurable, 12 bit ADC, 200 Hz each: thermocouple(s) with dedicated cable(s), thermos resistors, 0-5v, 0-12v
- External Power: 9-12V for sensors thermocouples, thermos resistors, 0-5V
  12-15V for sensors that need 12V power
- Connection: CAN, USB
- Connectors: 2 Binder 712 female connectors
- Material: PA6 30% glass
- Dimensions: 44x38x19.8mm
- Weight: 50g
- Waterproof: IP65