

RS3


Pull-up resistor value calculation

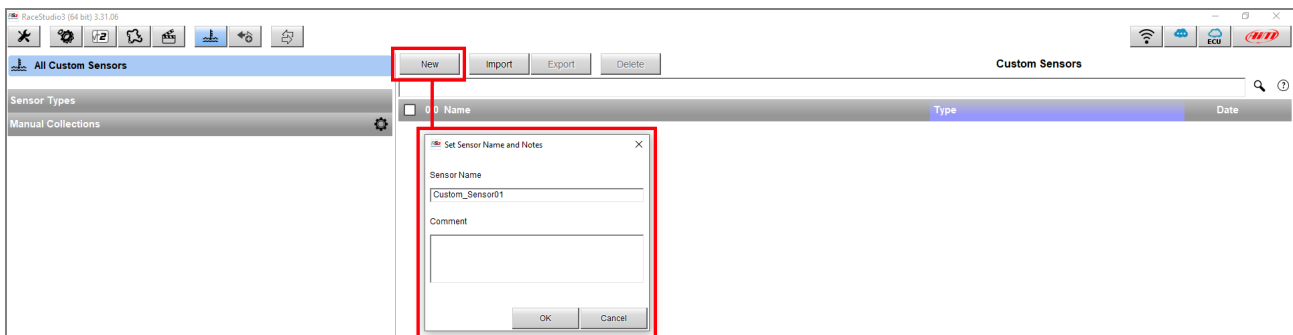
Question:

How do I have to calculate the value of the pull-up resistor which must be used when connecting a third-parties resistive sensor (i.e.: thermoresistors, VDO pressure/temperature sensors) to one of my AiM device channels?

Answer:

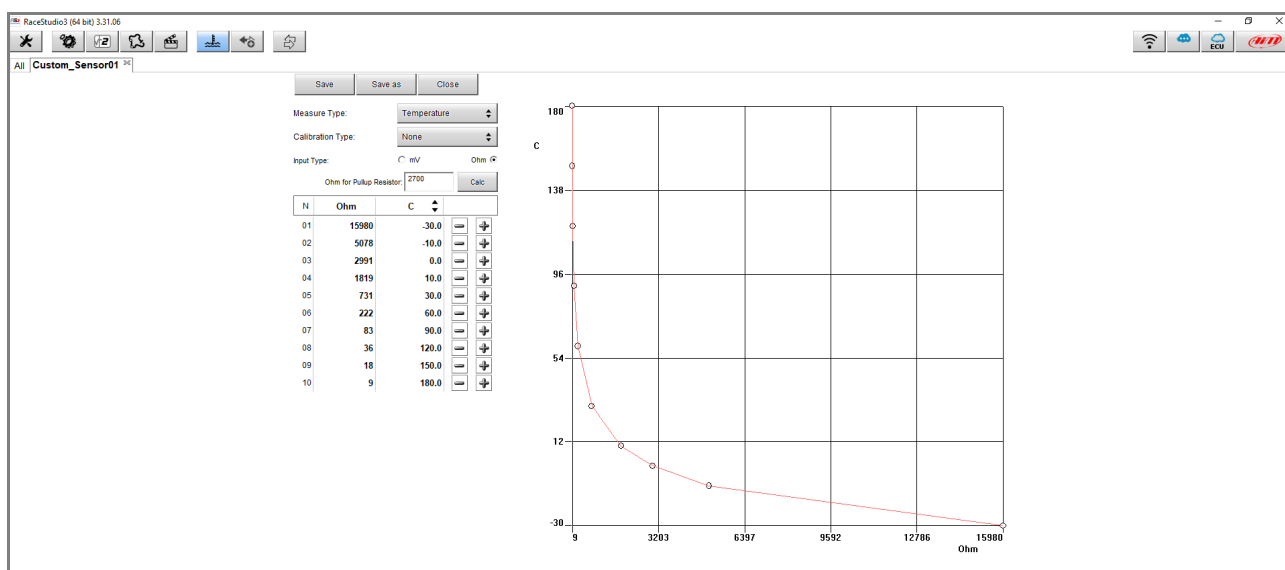
When connecting a third-parties resistive sensor, the pull-up resistor value is automatically calculated during the sensor characterization procedure, which must be executed from the Custom Sensors section of Race Studio 3, following the steps below:

- Run Race Studio 3, enter the Custom Sensor section () and create a new custom sensor, pressing "New": the popup window allows to add a name and a comment (following image). Once done, press "OK".

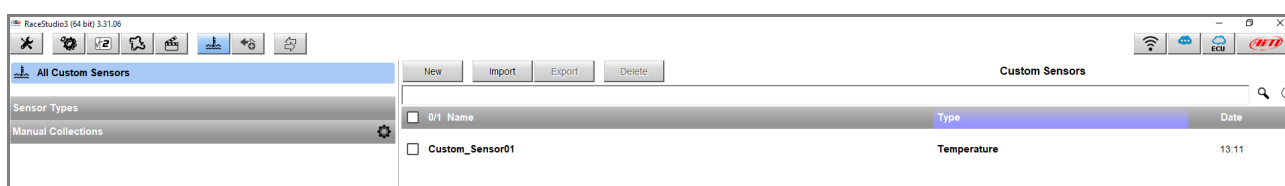


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- After “Measure Type”, “Calibration Type”(can be set as “None”), and “Ohm” as “Input Type” have been set, in the tab below, insert corresponding resistance values to each sensor reading breakpoint, which are generally specified in the sensor datasheet.
- Once done, pressing “Calc” button, it is possible to know the value of the pull-up resistor to use, automatically calculated by the software (“Ohm for pull-up resistor” field).



- Press “Save” to save the sensor, including it in the existing custom sensors list, available from the section main page (following image).

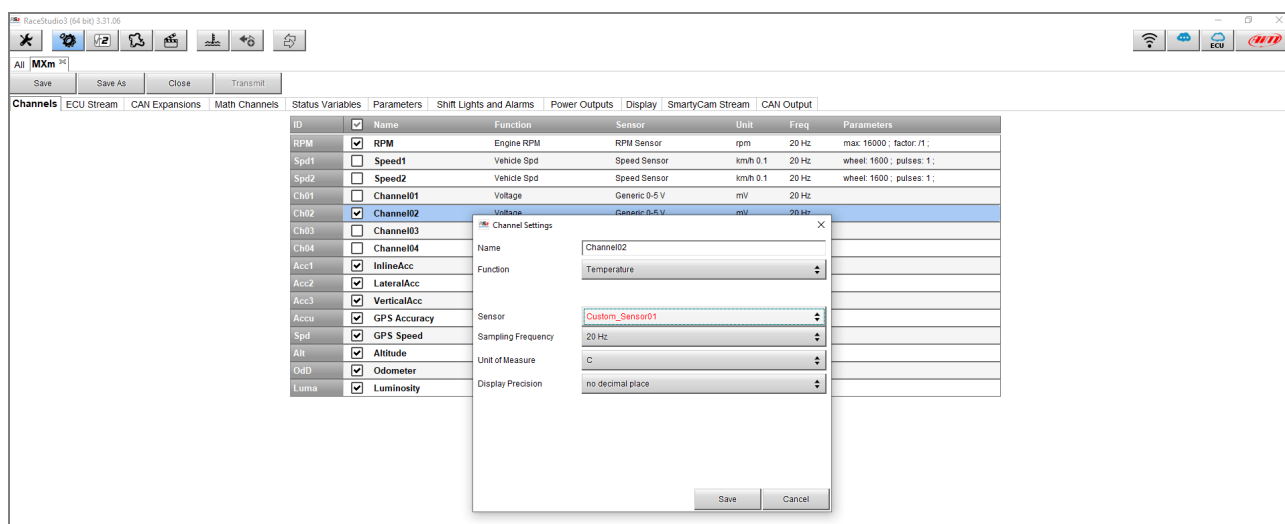


The screenshot shows the 'Custom Sensors' list in RaceStudio3. The list contains one entry: 'Custom_Sensor01' with a 'Type' of 'Temperature' and a 'Date' of '13-11'. The interface includes buttons for 'New', 'Import', 'Export', and 'Delete'.

0/1	Name	Type	Date
<input type="checkbox"/>	Custom_Sensor01	Temperature	13-11

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Entering the device configuration section, from the “Channels” tab it is possible to configure an analog channel with the created sensor (following image).



N.B.: if an arbitrary resistor cannot be used, it is possible to fill the “Ohm for pull-up resistor” field with the value of the pull-up resistor that will be used. In this way the sensor characteristic curve will be calculated according to this pull-up resistor value and not to the one calculated by the software.