AiM Infotech

Pressure sensor 0-100 bar/0-1450 PSI

Release 1.00







This datasheet explains how to use 0-100 bar (0-1450 PSI) pressure sensor. This sensor comes with a connection kit including:

- 0-100 bar (0-1450 PSI) pressure sensor with 50 cm cable
- connection kit including:
 - o two lock nuts
 - o 2 nipples
 - o 1 "T" brunch pipe female M10x1 thread

This sensor kit part number is: X05SNP31100R

1 Introduction

AiM loggers can measure the pressure with a proper sensor. It needs a proper installation. This is why we suggest to address to a specialized workshop. Once the sensor installed it needs a software configuration that can be made using AiM Race Studio freely downloadable from download area of www.aim-sportline.com.

This sensor fits brake pressure measurement.

2 Installation

To correctly install 0-100 bar brake pressure sensor use the included connection kit shown here below.





Please follow this procedure:

Cut the braking plant pipe in the point where you want to install the sensor and then repeat the operations here described on both edges of the pipe.

Insert the 2 locking nuts in the cut parts of the pipe.

Insert the nipple under the metallic braid.

Press the nipple until the contact with the internal part of the pipe ("**A**") is complete and then cover it with the metallic braid.









Place the junction so to determine the desired sensor position before tightening. We suggest to make a reference mark.



Tighten to 0,8 Kg (8 Nm).

Alternatively tighten the threads a quarter turn at a time until the right position is reached.

Please be careful: do not exceed 15 Nm

Install the sensor on the junction wrapping the thread with Teflon to guarantee its tightness.





Warning: once the installation is over ensure that the brake circuit is cleared and check its tightness.



3 Sensor configuration

AiM logger can sample data sent by the sensor only if this last is physically connected to a channel of the logger previously set using AiM Race Studio software and the configuration is transmitted to the logger.

3.1 Configuration with Race Studio 2

- run Race Studio 2 and select the logger the sensor is connected to;
- create a custom sensor pressing "Customize sensor" (1)
- select the type of measure (Pressure) and the unit of measure (bar) (2)
- complete the first two rows of the table on the left as follows (3):

| X [Mv] | Y [Bar] |
|--------|---------|
| 1000 | 0 |
| 5000 | 100 |

- press "Compute curve" (4), fill in sensor name and press "Save sensor" (5)
- premere "Exit" (6)





To set the sensor in the logger configuration select it in "Channels" layer as shown here below and press "Transmit".

| RaceStud | dio 2.55.34 | | | | | | | | | | | - 0 -× |
|-------------|--|-----------------------|-----------------------------|-----------------------------|-------------------------|-----------------|-------------------------------|----------------------------|-----------------|-----------------|------------------------|-------------------|
| File Device | e Configuration Download D | ata Import SmartyCam | Data Analysis | Device Info Online Device | e Calibration Customize | Sensor Language | ? | | | | | |
| | | 🔛 System manager | | | | | | | | | | |
| | Racing Data Power | Trans | mt | Receive | CAN-Net info | Sn Sn | nartyCam Functions setting | Set acquisition system til | ne | | | |
| | AIM Sportline | Current configuration | | | | | | | | | | |
| The Work | d Leader in Data Acquisition | Installation name | Data logger type | e Ecu | Lap Timer | Vehicle name | Available time | Time with GPS | Total frequency | Master frequenc | y Expansions frequence | y Tot. Expansions |
| | | DEFAULT | EVO4 - 5 chann | els EMTRON - CAN | Optical | DEFAULT | 4.52.25 (h.m. | s) 3.38.51 (h.m.s) | 476 (Hz) | 476 (Hz) | 0 (Hz) | 0 |
| 5 | A <u>n</u> alysis | Select configuration | Channels System of | configuration Display CAN-E | pansions configurator | | | | | | | |
| | | Speed1 | Speed1 Speed2 | | | | | | | | | |
| | Download Data | Wheel circumference | (mm) 1666 | Wheel circumference (mm) | 1666 | | | | | | | |
| | Download Data | | 1.0 | Share had a lar | 1 | | | | | | | |
| _ | | Puises per wheel revi | olution | Puises per wheel revolution | - | | | | | | | |
| 0 | Import SmartyCam | Channel identifier | Enabled/disable | d Channel name | | Sampling | requency Senso | type | Meacu | re unit Lo | w scale Hig | h scale |
| | microSD Data | RPM | Disabled | Engine | | 10 Hz | Engine | revolution speed | rom | 0 | 2000 | 0 |
| | | SPD 1 | Fnabled | Speed1 | | 10 Hz | ✓ Sneed | | | 1 10.0 | 250 | 0 |
| | Device Configuration | SPD 2 | Fnabled | Speed2 | | 10 Hz | ✓ Speed | | ▼ km/h | 1 .0.0 | 250 | 0 |
| - | | CH 1 | Enabled | Channel 1 | | 10 Hz | - Generi | c linear 0-5 V | • V .1 | ± 0.0 | 5.0 | |
| | | CH 2 | Enabled | Channel 2 | | 10 Hz | ⊥ AiM 0 | 4 bar (X05SNP31160R) | | - O | 5 | |
| 8 | Device Info | CH 3 | Enabled | Channel 3 | | 10 Hz | ⊥ AiM 0 | 100 bar (X05SNP31100R) | bar | _ 0 | 5 | |
| | | CH_4 | Enabled | Channel_4 | | 10 Hz | AiM 0 | 10 bar (X05SNP31010R) | 🔳 bar | _ 0 | 5 | - |
| | | CH_5 | Disabled | Channel_5 | | 10 Hz | AiM 0 | 4 bar (X05SNP31004A) | ⊥ bar | 0 | 5 | |
| | Online | CALC_GEAR | Disabled | Calculated_Gear | | 10 Hz | I Calcul | ated Gear | # | 0 | 9 | |
| | | ACC_1 | Enabled | Lateral_acc | | 10 Hz | 🖃 Latera | accelerometer | 01. و ات | -3.0 | 3.00 | |
| | | ACC_2 | Disabled | Longitudinal_acc | | 10 Hz | Longit | udinal accelerometer | g .01 | -3.0 | 3.00 | |
| | Device Calibration | ACC_3 | Enabled | Vertical_acc | | 10 Hz | L Vertica | l internal accelerometer | g .01 | -3.0 | 3.00 | |
| | | LOG_TMP | Enabled | Datalogger_Temp | | 10 Hz | 🔳 Cold je | pint | °C | _ 0 | 50 | |
| | | BATT | Enabled | Battery | | 1 Hz | 🖃 Batten | (| V .1 | 5.0 | 15.0 | |
| | Customize Sensor | ECU_1 | Enabled | ECU_RPM | | 10 Hz | 🖃 Engine | speed sensor | rpm | 0 | 1000 | 0 |
| | | ECU_2 | Enabled | ECU_MAN_AIR_PR | t | 10 Hz | Pressu | re sensor | kPa .1 | ± 50.0 | 0 200, | D |
| | | ECU_3 | Enabled | ECU_ENG_TMP | | 10 Hz | I Temp | erature sensor | *C | 1 20 | 130 | |
| | Language | ECU_4 | Enabled | ECU_ENG_IN_T | | 10 Hz | I Temp | erature sensor | °C | 10 | 90 | |
| Mas | 299- | ECU_5 | Enabled | ECU_THROTTLE1 | | 10 Hz | I Percer | tage sensor | % .1 | 0.0 | 100. | 0 |
| | | ECU_6 | Enabled | ECU_CHARGE_T | | 10 Hz | I Temp | erature sensor | °C | - 10 | 90 | |
| | | ECU_7 | Enabled | ECU_GEAR | | 5 Hz | 🔳 Gear s | ensor | # | 0 | 7 | |
| | | ECU_8 | Enabled | ECU_V_BATT | | 10 Hz | L Voltm | eter | V .1 | - 5.0 | 20.0 | |
| | | ECU_9 | Enabled | ECU_OIL_PR | | 10 Hz | Pressu | re sensor | kPa .1 | ⊥ 0.0 | 1000 | .0 |
| | | ECU_10 | Enabled | ECU_OIL_TMP | | 10 Hz | I Temp | erature sensor | °C | 10 | 150 | |
| | aim-sportline.com | ECU_11 | Enabled | ECU_FUEL_PR | | 10 Hz | I Pressu | re sensor | kPa .1 | ± 0.0 | 1000 | .0 |
| | B 2007 AIM SRL | ECU_12 | Enabled | ECU_FUEL_TMP | | 10 Hz | I Temp | erature sensor | °C | - 10 | 90 | |
| | L RIGHTS RESERVED | ECU_13 | Enabled | ECU_EXH_PRE | | 10 Hz | Pressu | re sensor | kPa .1 | - 20.1 | 0 100. | 0 |
| CERNUSCO | VIA CAVALCANTI, 8 SUL NAVIGLIO, MILAN - ITALY | 16/11/1 | Finahlari | FULLER DIE | | 10 H- | *I Drorrin | re centor | 1×Ds 1 | *100 | 500 | |



3.2 Configuration with Race Studio 3

- run Race Studio 3 and select the logger the sensor is connected to;
- select the configuration where the sensor is to be set or create a new one pressing "New" and select "Channel" layer shown here below;
- select the channel where to set the sensor and click on the related cell of "Sensor" column;

| 💁 RaceStudio3 3.05.02 | | | | | | | | | |
|------------------------|--|--------------|----------------|----------------|----------------------------|-----------|-------|---------------------------|---|
| * 🚣 🏘 😘 🖽 🍝 😔 👘 👘 | | | | | | | | | |
| | | | | | | | | | |
| Save As Close Transmit | | | | | | | | | |
| Channels | Channels ECU Stream CAN2 Stream Math Channels Parameters Shift Lights and Alarms Display SmartyCam Stream CAN Expansions | | | | | | | | |
| | ID | \checkmark | Name | Function | Sensor | Unit | Freq | Parameters | |
| | RPM | ✓ | RPM | RPM | RPM Sensor | rp m | 20 Hz | max: 16000 ; factor: /1 ; |] |
| | Spd1 | | Speed1 | Vehicle Spd | Speed Sensor | km/h 0.1 | 20 Hz | wheel: 1600 ; pulses: 1 ; | |
| | Spd2 | | Speed2 | Vehicle Spd | Speed Sensor | km/h 0.1 | 20 Hz | wheel: 1600 ; pulses: 1 ; |] |
| | Spd3 | | Speed3 | Vehicle Spd | Speed Sensor | km/h 0.1 | 20 Hz | wheel: 1600 ; pulses: 1 ; | |
| | Spd4 | | Speed4 | Vehicle Spd | Speed Sensor | km/h 0.1 | 20 Hz | wheel: 1600 ; pulses: 1 ; | |
| | Ch01 | | Channel01 | Voltage | Generic 0-5 V | mv | 20 Hz | | |
| | Ch02 | | Channel02 | Voltage | Generic 0-5 V い | m/ | 20 Hz | | |
| | Ch03 | | Channel03 | Voltage | Generic 0-5 V | m / | 20 Hz | | |
| | Ch04 | | Channel04 | Voltage | Generic 0-5 V | m/ | 20 Hz | |] |
| | Ch05 | | Channel05 | Voltage | Generic 0-5 V | m / | 20 Hz | | |
| | Ch06 | | Channel06 | Voltage | Generic 0-5 V | m/ | 20 Hz | |] |
| | Ch07 | | Channel07 | Voltage | Generic 0-5 V | m/ | 20 Hz | | |
| | Ch08 | | Channel08 | Voltage | Generic 0-5 V | m/ | 20 Hz | |] |
| | AccX | ✓ | AccelerometerX | Inline Accel | AiM Internal Accelerometer | g 0.01 | 50 Hz | | |
| | AccY | < | AccelerometerY | Lateral Accel | AiM Internal Accelerometer | g 0.01 | 50 Hz | |] |
| | AccZ | ✓ | AccelerometerZ | Vertical Accel | AiM Internal Accelerometer | g 0.01 | 50 Hz | | |
| | GyrX | ~ | GyroX | Roll Rate | AiM Internal Gyro | deg/s 0.1 | 50 Hz | |] |
| | GyrY | ✓ | GyroY | Pitch Rate | AiM Internal Gyro | deg/s 0.1 | 50 Hz | | |
| | GyrZ | ~ | GyroZ | Yaw Rate | AiM Internal Gyro | deg/s 0.1 | 50 Hz | |] |
| | Spd | ☑ | GPS Speed | Vehicle Spd | AIM GPS | km/h 0.1 | 10 Hz | | |
| | OdD | ✓ | Odometer | Odometer Total | AIM ODO | km 0.1 | 1 Hz | | |
| | | | | | | | | | |



- a configuration panel shows up
- select: "Pressure" function as well as the kind of pressure to sample (1) among:
 - o Oil pressure
 - o Brake Pressure
 - o Wheel Brake Pressure
 - o Pressure
- select the sensor "AiM 0-100 bar (X05SNP31100R)" (2) press "Save" and transmit the configuration to the logger pressing "Transmit".

| 🤷 Channel Settings | | | × |
|--------------------|------------------|---------------|--------|
| Name | Channel01 | | |
| Function | Pressure | | \$ |
| | | | |
| Sensor 2 | AiM 0-100 bar () | (05SNP31100R) | \$ |
| Sampling Frequency | 20 Hz | | ŧ |
| Unit of Measure | bar | | ŧ |
| Display Precision | 2 decimal places | 5 | ŧ |
| | | | |
| | | | |
| | | | |
| | | | |
| | | Save | Cancel |



4

Dimensions, pinout and technical characteristics

The drawing here below shows sensor dimensions in millimetres [inches].



The image here below shows 4 pins Binder 719 male connector pinout solder termination view.

| | Pin | Function | Cable colour |
|-----|-----|------------------------|--------------|
| 4 1 | 1 | Analog signal 0-500 mV | White |
| | 2 | GND | Black |
| 3 2 | 3 | +Vb | Red |
| | 4 | Not connected | |
| | | | |



The table here below shows the sensor electrical characteristics.

| Technical characteristics | Value |
|---------------------------|---------------------|
| Accuracy | <+/1 0.5% |
| Output signal | 1.5 V |
| Temperature working range | from -40° to 125° |
| Sealing | IP66 |
| Excitation | 10-32 VDC; 1-5 V |
| Consumption | <10 mA |
| Housing | 304 stainless steel |
| Weight | 60g |
| Sensor thread | M10*1 |
| Cable length | 50 mm |



4 Extension cables

The sensor is sold with a 50 cm cable. Standard and custom length extension cables are available; standard length are: 0,5 m, 1m and 1,5 m.

Product part number changes according to their length and to the product the sensor is to be connected to.

Extension cable for connection to:

- Channel Expansion
- EVO4.

Part numbers:

V02PCB05BTXG – cable length: 500mm V02PCB10BTXG – cable length: 1000mm V02PCB15BTXG – cable length: 1500mm V02PCB20BTXG – cable length: 2000mm V02PCB25BTXG – cable length: 2500mm V02PCB30BTXG – cable length: 3000mm

Extension cable for connection to:

- MXG
- MXS
- MXL2
- MXL Strada/Pista/Pro05

Part numbers:

V02PCB05B – cable length: 500mm V02PCB10B – cable length: 1000mm V02PCB15B – cable length: 1500mm V02PCB20B – cable length: 2000mm V02PCB25B – cable length: 2500mm V02PCB30B – cable length: 3000mm



