

AiM Infotech

Pressure sensor
0-10 bar/0-145 PSI

Release 1.00





This datasheet explains how to use AiM 0-10 bar (0-145 PSI) pressure sensor. The sensor comes with a 50 cm cable. Its **part number** is:

- Turbo pressure sensor 0-10 bar/0-145 PSI **X05SNP31010R**

1

Introduction

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

This sensor fits the measurement of oil and fuel pressure.

2 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.

2.1 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	10

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

The screenshot shows the 'Customize sensor' dialog box in RaceStudio 2.55.34. The dialog box has a table for sensor configuration with columns 'x [Mv]', 'y [Bar]', and 'Curve Error'. The first two rows are filled with values 1000, 0 and 5000, 10. The 'Type of measure' is set to 'Pressure' and the unit is 'bar'. The 'Compute Curve' button is highlighted. The 'Sensor name' field is filled with 'AIM 0-4 bar (X05SNP31004A)'. The 'Save sensor' button is highlighted. The 'Exit' button is also highlighted. The background shows the main RaceStudio interface with various tabs and a list of channels.



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

RaceStudio 2.55.34

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Language

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System manager

Transmit Receive CAN-Net info SmartyCam Functions setting Set acquisition system time

Current configuration

Installation name	Data logger type	Ecu	Lap Timer	Vehicle name	Available time	Time with GPS	Total frequency	Master frequency	Expansions frequency	Tot. Expansions
DEFAULT	EV04 - 5 channels	EMTRON - CAN	Optical	DEFAULT	4.52.25 (h.m.s)	3.38.51 (h.m.s)	476 (Hz)	476 (Hz)	0 (Hz)	0

Select configuration Channels System configuration Display CAN-Expansions configurator

Speed1
Wheel circumference (mm) 1666
Pulses per wheel revolution 1

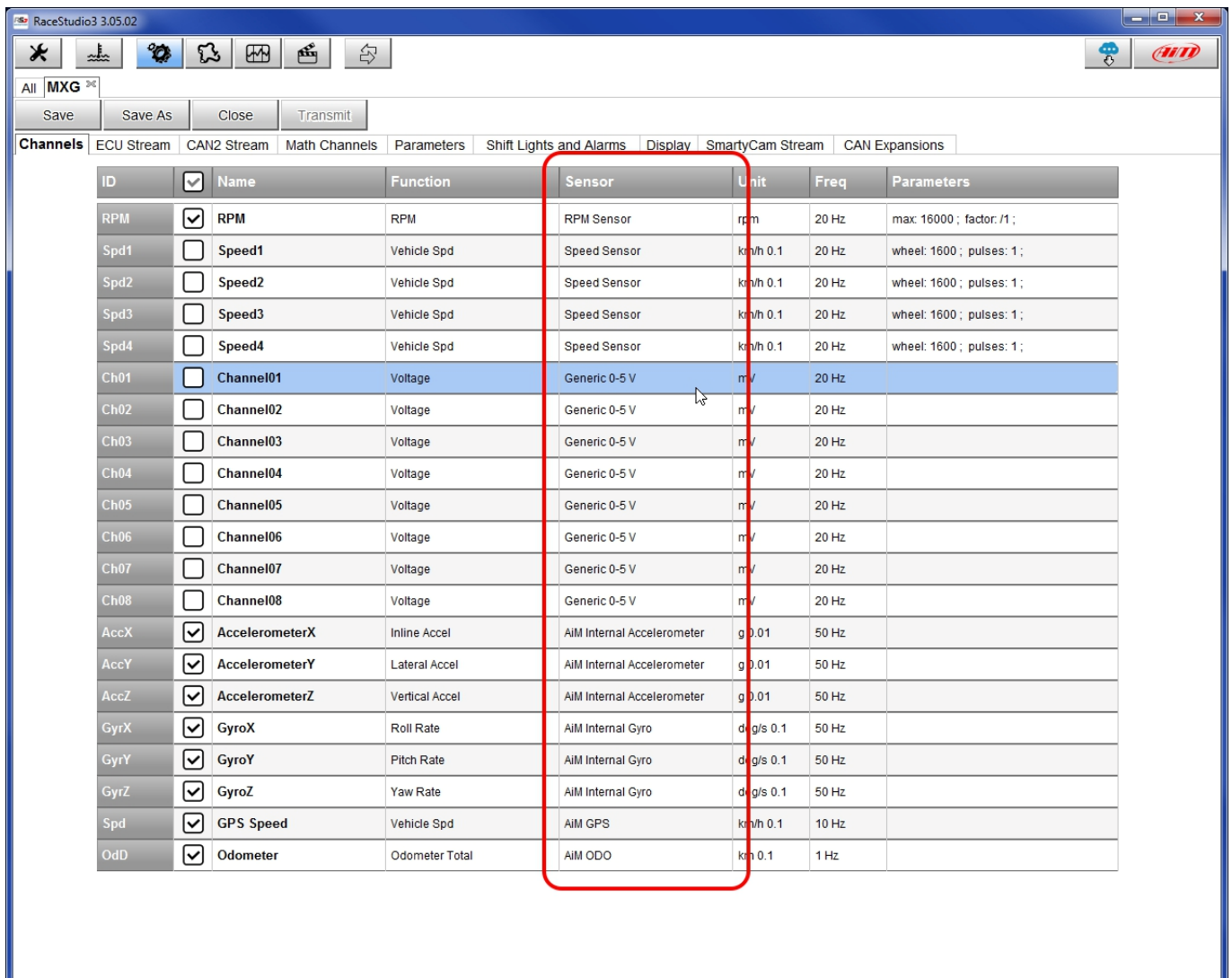
Speed2
Wheel circumference (mm) 1666
Pulses per wheel revolution 1

Channel identifier	Enabled/disabled	Channel name	Sampling frequency	Sensor type	Measure unit	Low scale	High scale
RPM	<input type="checkbox"/> Disabled	Engine	10 Hz	Engine revolution speed	rpm	0	20000
SPD_1	<input checked="" type="checkbox"/> Enabled	Speed1	10 Hz	Speed	km/h .1	0.0	250.0
SPD_2	<input checked="" type="checkbox"/> Enabled	Speed2	10 Hz	Speed	km/h .1	0.0	250.0
CH_1	<input checked="" type="checkbox"/> Enabled	Channel_1	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_2	<input checked="" type="checkbox"/> Enabled	Channel_2	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_3	<input checked="" type="checkbox"/> Enabled	Channel_3	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_4	<input checked="" type="checkbox"/> Enabled	Channel_4	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_5	<input type="checkbox"/> Disabled	Channel_5	10 Hz	AIM 0-4 bar (X0SSNP31004A)	bar	0	5
CALC_GEAR	<input type="checkbox"/> Disabled	Calculated_Gear	10 Hz	Calculated Gear	#	0	9
ACC_1	<input checked="" type="checkbox"/> Enabled	Lateral_acc	10 Hz	Lateral accelerometer	g .01	-3.00	3.00
ACC_2	<input type="checkbox"/> Disabled	Longitudinal_acc	10 Hz	Longitudinal accelerometer	g .01	-3.00	3.00
ACC_3	<input checked="" type="checkbox"/> Enabled	Vertical_acc	10 Hz	Vertical internal accelerometer	g .01	-3.00	3.00
LOG_TMP	<input checked="" type="checkbox"/> Enabled	Datalogger_Temp	10 Hz	Cold joint	°C	0	50
BATT	<input checked="" type="checkbox"/> Enabled	Battery	1 Hz	Battery	V .1	5.0	15.0
ECU_1	<input checked="" type="checkbox"/> Enabled	ECU_RPM	10 Hz	Engine speed sensor	rpm	0	10000
ECU_2	<input checked="" type="checkbox"/> Enabled	ECU_MAN_AIR_PR	10 Hz	Pressure sensor	kPa .1	50.0	200.0
ECU_3	<input checked="" type="checkbox"/> Enabled	ECU_ENG_TMP	10 Hz	Temperature sensor	°C	20	130
ECU_4	<input checked="" type="checkbox"/> Enabled	ECU_ENG_IN_T	10 Hz	Temperature sensor	°C	10	90
ECU_5	<input checked="" type="checkbox"/> Enabled	ECU_THROTTLE1	10 Hz	Percentage sensor	% .1	0.0	100.0
ECU_6	<input checked="" type="checkbox"/> Enabled	ECU_CHARGE_T	10 Hz	Temperature sensor	°C	10	90
ECU_7	<input checked="" type="checkbox"/> Enabled	ECU_GEAR	5 Hz	Gear sensor	#	0	7
ECU_8	<input checked="" type="checkbox"/> Enabled	ECU_V_BATT	10 Hz	Voltmeter	V .1	5.0	20.0
ECU_9	<input checked="" type="checkbox"/> Enabled	ECU_OIL_PR	10 Hz	Pressure sensor	kPa .1	0.0	1000.0
ECU_10	<input checked="" type="checkbox"/> Enabled	ECU_OIL_TMP	10 Hz	Temperature sensor	°C	10	150
ECU_11	<input checked="" type="checkbox"/> Enabled	ECU_FUEL_PR	10 Hz	Pressure sensor	kPa .1	0.0	1000.0
ECU_12	<input checked="" type="checkbox"/> Enabled	ECU_FUEL_TMP	10 Hz	Temperature sensor	°C	10	90
ECU_13	<input checked="" type="checkbox"/> Enabled	ECU_EXH_PRE	10 Hz	Pressure sensor	kPa .1	20.0	100.0
ECU_14	<input checked="" type="checkbox"/> Enabled	ECU_EXH_PIE	10 Hz	Pressure sensor	kPa .1	0.0	100.0

2.2

Configuration with Race Studio 3

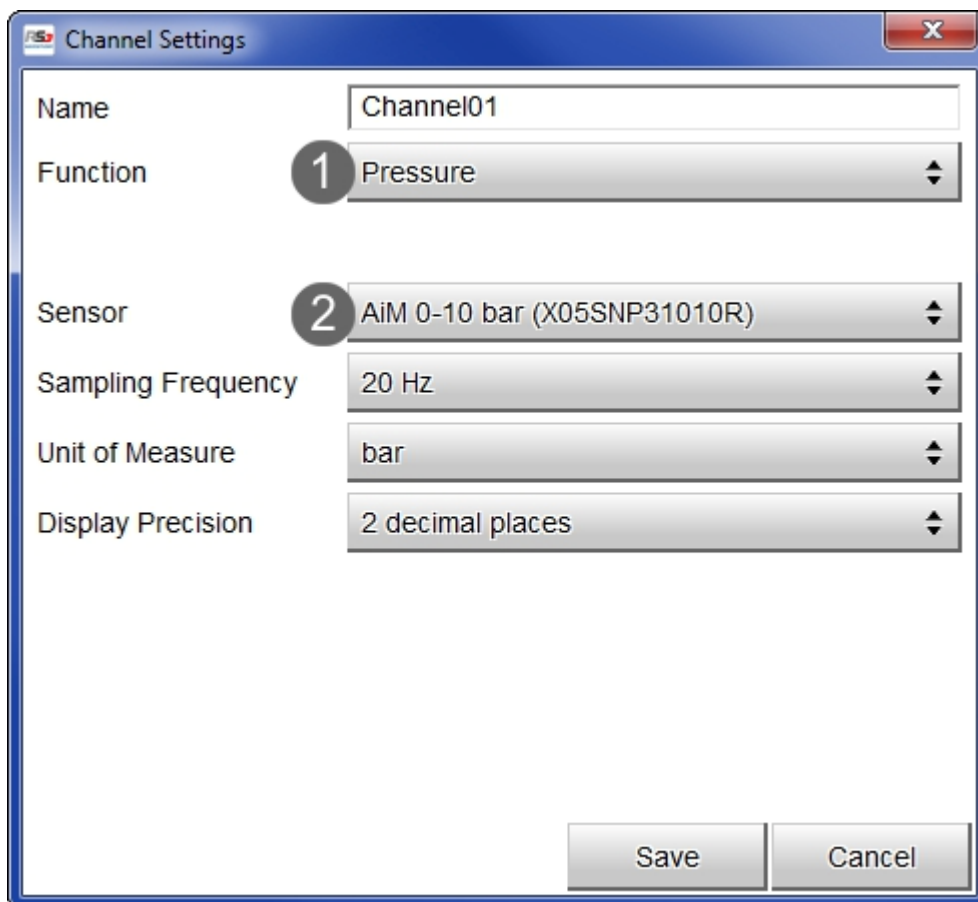
- run Race Studio 3 and select the logger the sensor is connected to;
- select the configuration where the sensor is to be set or create a new one pressing "New" and select "Channel" layer shown here below;
- select the channel where to set the sensor and click on the related cell of "Sensor" column;



The screenshot shows the RaceStudio3 3.05.02 software interface. The 'Channels' tab is selected, displaying a table of sensor configurations. A red box highlights the 'Sensor' column, which contains the sensor names for each channel. The table includes columns for ID, Name, Function, Sensor, Unit, Freq, and Parameters.

ID	<input checked="" type="checkbox"/>	Name	Function	Sensor	Unit	Freq	Parameters
RPM	<input checked="" type="checkbox"/>	RPM	RPM	RPM Sensor	rpm	20 Hz	max: 16000 ; factor: /1 ;
Spd1	<input type="checkbox"/>	Speed1	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd2	<input type="checkbox"/>	Speed2	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd3	<input type="checkbox"/>	Speed3	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd4	<input type="checkbox"/>	Speed4	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Ch01	<input type="checkbox"/>	Channel01	Voltage	Generic 0-5 V	mV	20 Hz	
Ch02	<input type="checkbox"/>	Channel02	Voltage	Generic 0-5 V	mV	20 Hz	
Ch03	<input type="checkbox"/>	Channel03	Voltage	Generic 0-5 V	mV	20 Hz	
Ch04	<input type="checkbox"/>	Channel04	Voltage	Generic 0-5 V	mV	20 Hz	
Ch05	<input type="checkbox"/>	Channel05	Voltage	Generic 0-5 V	mV	20 Hz	
Ch06	<input type="checkbox"/>	Channel06	Voltage	Generic 0-5 V	mV	20 Hz	
Ch07	<input type="checkbox"/>	Channel07	Voltage	Generic 0-5 V	mV	20 Hz	
Ch08	<input type="checkbox"/>	Channel08	Voltage	Generic 0-5 V	mV	20 Hz	
AccX	<input checked="" type="checkbox"/>	AccelerometerX	Inline Accel	AIM Internal Accelerometer	g 0.01	50 Hz	
AccY	<input checked="" type="checkbox"/>	AccelerometerY	Lateral Accel	AIM Internal Accelerometer	g 0.01	50 Hz	
AccZ	<input checked="" type="checkbox"/>	AccelerometerZ	Vertical Accel	AIM Internal Accelerometer	g 0.01	50 Hz	
GyrX	<input checked="" type="checkbox"/>	GyroX	Roll Rate	AIM Internal Gyro	deg/s 0.1	50 Hz	
GyrY	<input checked="" type="checkbox"/>	GyroY	Pitch Rate	AIM Internal Gyro	deg/s 0.1	50 Hz	
GyrZ	<input checked="" type="checkbox"/>	GyroZ	Yaw Rate	AIM Internal Gyro	deg/s 0.1	50 Hz	
Spd	<input checked="" type="checkbox"/>	GPS Speed	Vehicle Spd	AIM GPS	km/h 0.1	10 Hz	
OdD	<input checked="" type="checkbox"/>	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:
 - Oil pressure
 - Brake Pressure
 - Wheel Brake Pressure
 - Pressure
- select the sensor "AiM 0-10 bar (X05SNP31010R)" **(2)** press "Save" and transmit the configuration to the logger pressing "Transmit"



The image shows a "Channel Settings" dialog box with the following fields and values:

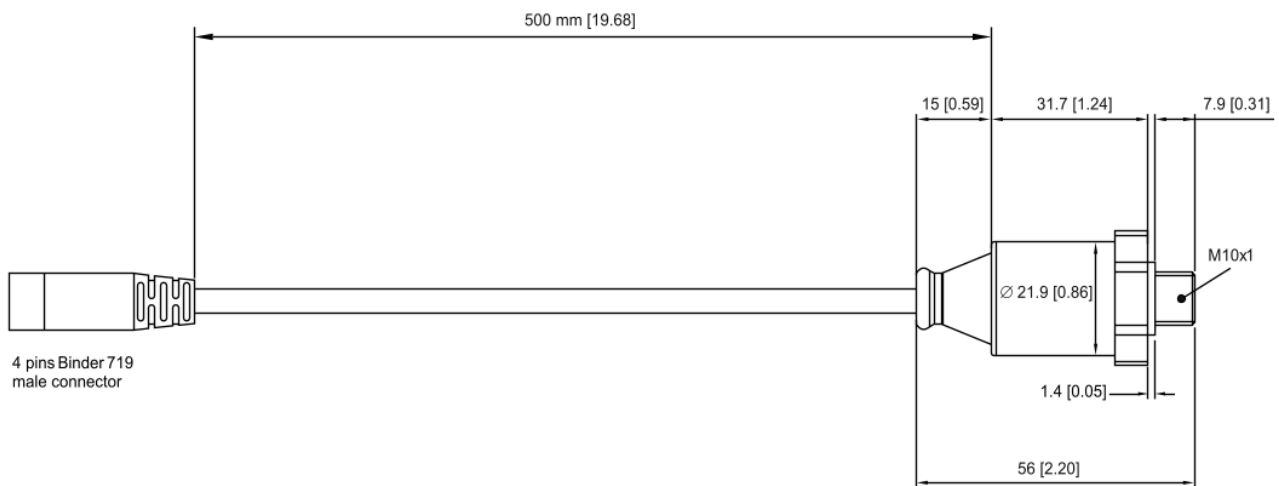
Field	Value
Name	Channel01
Function	Pressure (marked with 1)
Sensor	AiM 0-10 bar (X05SNP31010R) (marked with 2)
Sampling Frequency	20 Hz
Unit of Measure	bar
Display Precision	2 decimal places

At the bottom right, there are two buttons: "Save" and "Cancel".

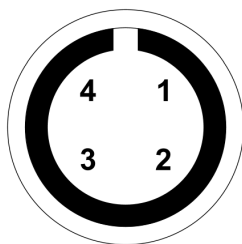
3

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
1	Analog signal 0-500 mV	White
2	GND	Black
3	+Vb	Red
4	Not connected	



The table here below shows the sensor electrical characteristics.

Technical characteristics	Value
Pressure type	Absolute
Output signal	1.5 V
Accuracy	<+/-1 0.5%
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

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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

