AiM Infotech

Turbo pressure sensor 0-4 bar/0-58 PSI

Release 1.00







This datasheet explains how to use turbo 0-4 bar (0-58 PSI) pressure sensor. The sensor is sold with a 50 cm cable. This sensor **part number** is:

• Turbo pressure sensor 0-4 bar/0-58 PSI X05SNP31004A

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 turbo pressure measurement.

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2 Sensor configuration

AiM logger can sample data sent by the sensor only if this last is physically connected to a logger channel 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	-1
5000	3

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

RaceStudio 2.55.34															
Device Configuration Download I	Data Import SmartyCam	n Data Analysis Devid	e Info Onli	ne Device Cal	ibration Custom	nize Sensor	Language	?							
	System manager														
Racing Data Power	Trans	imit Eş	Receive		CAN-Net in	nfo	S	martyCam Function setting	15 🚳 Set a	cquisition system tir	ne				
AIM Sportline	Current configuration														
he World Leader in Data Acquisition	Installation name	Data logger type	Ecu		Lap Timer	Vehicl	e name	Available	time Tim	e with GPS	Total frequency	Master free	quency	Expansions frequency	Tot. Expansions
	DEFAULT	EV04 - 5 channels	Customize se	ensor							X	476 (Hz)		0 (Hz)	0
A <u>n</u> alysis	Select configuration	Channels System config	Type of m	easur 2 ^{Pressu}	re 🔹		ĺ	Compute Cur	ve	Select sensor					
	Speed1	St	1 100	10 -1	0.000										
Download Data	Wheel drcumference	e (mm) 1666 V.	2 500	0 3	0.000	3.00	1			1					
	Pulses per wheel rev	rolution 1 Pr	3 0	0	0.0	j									
			M 4 0	0	0.0	2.20	-			-					
Import SmartyCam	Channel identifier	Enabled/disabled			0.0							asure unit	Low scale	High so	ale
microsD Data	RPM	Disabled		0	0.0	1.40						n	0	20000	
	SPD 1	Enabled			0.0			/				/h.1	0.0	250.0	
Device Configuration	SPD_2	Enabled				0.00						/h.1 .	0.0	250.0	
	CH_1	Enabled				0.00				Sensor name		1 .	0.0	5.0	
	CH_2	Enabled	10	0	0.0					AiM 0-4 bar	X05SNP31004A)	1 .	0.0	5.0	
Device Info	CH_3	Enabled		-	0.0	-0.20				_ <u>_</u>	Save	1 .	0.0	5.0	
.	CH_4	Enabled			0.0						Save School	1 .	0.0	5.0	
	CH_5	Disabled	12 0		0.0	-1.00				-	Delete sensor	1 .	0.0	5.0	
Online	CALC_GEAR	Disabled	13 0	0	0.0		100018	00 2600 3	400 4200 500	0			0	9	
	ACC_1	Enabled	14 0		0.0	y = a0	+ a1*x	+ a2 * x^2 + a3	*x^3 + a4*x^4	1	mport sensors	01	-3.00	3.00	
	ACC_2	Disabled	15 0		0.0		a0 -	2.000000e+000				01	-3.00	3.00	
Device Calibration	ACC_3	Enabled	16 0				a1 0	.001000		Expo	rt selected sensor	01	-3.00	3.00	
E Device Cambration	LOG_TMP	Enabled	17 0	0	0.0		-2 0	.000000e+000			mort all sensor		-	50	
1	BATT	Enabled	18 0	0	0.0			000000-1000			por cur serisor	1	5.0	15.0	
Customize Sensor	ECU_1	Enabled	19 0	0	0.0		a3 0					n	0	10000	
Sustomize Sensor	ECU_2	Enabled	20 0	0	0.0		a4 0	.000000e+000				1.	50.0	200.0	
	ECU_3	Enabled	ECU_EN	G_TMP	_	-	10 Hz	⊥ Te	mperature sensor	_	*c		20	130	
Longuogo	ECU_4	Enabled	ECU_EN	G_IN_T			10 Hz	Te	mperature sensor		*C		· 10	90	
Language	ECU_5	Enabled	ECU_TH	ROTTLE1			10 Hz	- Pe	rcentage sensor		% .	.1	0.0	100.0	
													-		



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

RaceStudio 2.55.34												_	
ile Device Configuration Download D	ata Import SmartyCam	n Data Analysis Dev	ice Info Online Devic	e Calibration Customize	Sensor Language ?								
	System manager												
Racing Data Power	Trans	mt	Receive	CAN-Net info	Smart	yCam Functions setting	Set acquistion system tin	ie					
AIM Sportline	Current configuration												
The World Leader in Data Acquisition	Installation name	Data logger type	Ecu	Lap Timer	Vehicle name	Available time	Time with GPS	Total frequency	Master fr	equency	Expansions frequency	Tot. Expansion	ns
	DEFAULT	EV04 - 5 channels	EMTRON - CAN	Optical	DEFAULT	4.52.25 (h.m.s	i) 3.38.51 (h.m.s)	476 (Hz)	476 (Hz)		0 (Hz)	0	
Analysis													
•	Select configuration	Channels System conti	guration Display CAN-Eq	pansions configurator									
	Speed1	S	peed2										
Download Data	Wheel circumference	(mm) 1666 V	/heel circumference (mm)	1666									
	Pulses per wheel rev	olution 1 P	ulses per wheel revolution	1									
Import SmartyCam	Channel identifier	Enabled/disabled	Channel name		Sampling fre	quency Sensor	type	Meas	ure unit	Low scale	High s	cale	•
inicioso bata	RPM	Disabled	Engine		10 Hz	Lengine	revolution speed	rpm		0	20000		
	SPD_1	Enabled	Speed1		10 Hz	Speed		⊥ km/h	1	• 0.0	250.0		
Device Configuration	SPD_2	Enabled	Speed2		10 Hz	Speed		⊥ km/h	1	• 0.0	250.0		
	CH_1	Enabled	Channel_1		10 Hz	- Generic	linear 0-5 V	- V 1		- 0.0	5.0		
	CH_2	Enabled	Channel_2		10 Hz	- Generic	linear 0-5 V	- V .1		- 0.0	5.0		
Device Info	CH_3	Enabled	Channel_3		10 Hz	🖃 Generic	linear 0-5 V	- V .1		- 0.0	5.0		
	CH_4	Enabled	Channel_4		10 Hz	🖃 Generic	linear 0-5 V	⊥ V .1		- 0.0	5.0		E
	CH_S	Disabled	Channel_5		10 Hz	-0 AiM 0	4 bar (X05SNP31004A)	▼ bar		- 0	5		
Dnline	CALC_GEAR	Disabled	Calculated_Gear		10 Hz	🗾 Calcula	ted Gear	#		0	9		
	ACC_1	Enabled	Lateral_acc		10 Hz	🔳 Lateral	accelerometer	01. و ات		-3.00	3.00		
	ACC_2	Disabled	Longitudinal_acc		10 Hz	🖃 Longitu	idinal accelerometer	g .01		-3.00	3.00		
Device Calibration	ACC_3	Enabled	Vertical_acc		10 Hz	L Vertical	internal accelerometer	01. و 🗠		-3.00	3.00		_
	LOG_TMP	Enabled	Datalogger_Temp		10 Hz	🔳 Cold jo	int	°C		<u>-</u> 0	50		- 11
	BATT	Enabled	Battery		1 Hz	Battery		V .1		5.0	15.0		
Customize Sensor	ECU_1	Enabled	ECU_RPM		10 Hz	I Engine	speed sensor	rpm		0	10000		
	ECU_2	Enabled	ECU_MAN_AIR_PR		10 Hz	Pressur	e sensor	kPa.	1	50.0	200.0		
	ECU_3	Enabled	ECU_ENG_TMP		10 Hz	I Tempe	rature sensor	•C		20	130		
Language	ECU_4	Enabled	ECU_ENG_IN_T		10 Hz	- Tempe	rature sensor	•c		10	90		
The second seco	ECU_S	Enabled	ECU_THROTTLE1		10 Hz	Percent	age sensor	% .1		0.0	100.0		
	ECU_6	M Enabled	ECU_CHARGE_T		10 Hz	Tempe	rature sensor	°C		- 10	90		
	ECU_7	I Enabled	ECU_GEAR		5 Hz	⊥ Gear se	nsor	#		0	7		
	ECU_8	Enabled	ECU_V_BATT		10 Hz	✓ Voltme	ter	V .1		± 5.0	20.0		
	ECU_9	I Enabled	ECU_OIL_PR		10 Hz	Pressur	e sensor	kPa .	1	- 0.0	1000.0		
	ECU_10	Enabled	ECU_OIL_TMP		10 Hz	Tempe	rature sensor	*C	1	- 10 - 10	150		
aim-sportline.com	ECU_11	Enabled	ECU_FUEL_PR		10 Hz	Pressur	e sensor	kPa .	1	- 0.0	1000.0		
8 2007 AIM SRL	ECU_12	Enabled	ECU_FUEL_IMP		10 Hz	Tempe	rature sensor	°C		*1 20.0	90		
ALL RIGHTS RESERVED	ECU_13	Crabled	ECU_EXH_PRE		10 Hz	Pressur	e sensor	KPa .	1	×100	100.0		
CERNUSCO SUL NAVIGLIO, MILAN - ITALY			FULL FUEL UNE		100.64	- Werein		1005			500.0		

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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;

🕾 RaceStudio3 3.05.02									
* 🚣 🐲 🕰 🗠 🕾									
AII MXG ×									
Save Save As Close Transmit									
Channels ECU Stream CAN2 Stream Math Channels Parameters Shift Lights and Alarms Display SmartyCam Stream CAN Expansions									
	ID		Name	Function	Sensor	Unit	Freq	Parameters	
	RPM	✓	RPM	RPM	RPM Sensor	rpm	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	m /	20 Hz		
	Ch02		Channel02	Voltage	Generic 0-5 V د¢	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	d g/s 0.1	50 Hz		
	GyrY	☑	GyroY	Pitch Rate	AiM Internal Gyro	d g/s 0.1	50 Hz		
	GyrZ	✓	GyroZ	Yaw Rate	AiM Internal Gyro	d g/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 0-4 bar abs (X05SNP31004A)" (2), press "Save" and transmit the configuration to the logger pressing "Transmit".

😂 Channel Settings			×			
Name	Channel01					
Function 1	Pressure		\$			
_						
Sensor 2	AiM 0-4 bar abs	(X05SNP31004/	A) 🗘			
Sampling Frequency	20 Hz		÷			
Unit of Measure	bar 🔶					
Display Precision	2 decimal places					
		Save	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
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
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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<mark>4</mark> 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



