AiM Infotech

VDO pressure sensor 0-5 bar (0-72 PSI) 0-10 bar (0-145 PSI)

Release1.04







This datasheet explains how to use VDO pressure sensors. These sensors are sold with a dedicated cable. Sensors kit **part numbers** are:

- VDO pressure sensor+cable
- VDO pressure sensor+cable

0-5 bar 0-10 bar X05SNBO05 X05SNBO00

VDO cable is the same for both sensors and can be bought also as spare part with part number: **V0255204**.

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 pressure of liquids like oil and gasoline. Do not use it to measure brake pressure.

VDO 0-5 bar/0-10 bar sensor is made of a cylinder – with M10*1 thread that has to be screwed to the engine – and two connectors that sample GND and pressure signals. If the engine thread is bigger than the cylinder thread AiM suggests to use joints. AiM recommends to tightly screw the sensor to the engine so that vibrations do not loosen it.



2 VDO cable

AiM sensor is supplied with a proper cable, shown here below on the left; it has to be mounted as shown here below on the right.



AiM VDO sensor cable ends with a four pins Binder 719 male connector. Between pins 1 and 4 of the connector is mounted a 1,8 k Ω resistor. AiM recommends not to tamper the sensor or it will not work. Drawing here below shows the cable constructive scheme.





3 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.

3.1 Configuration with Race Studio 2

- run Race Studio 2 and select the logger the sensor is connected to;
- select the configuration where to set the sensor or create a new one pressing "New" and select "Channel" layer shown here below;

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File Device Configuration Download Dat	ta Import SmartyCam [Data Analysis Device	Info Online Devic	e Calibration	Customize	Sensor Language	e ?					
	🔛 System manager											- • •
Racing Data Power	Transm		Receive	Receive CAN-Net info			SmartyCam Functions			Set acquisition system tim		
AIM Sportline	Current configuration											
The World Leader in Data Acquisition	Installation name Data	logger type Ecu	Lap Timer Veh	icle name Availa	ble time	Time with GPS	Total frequency	Ma	ster frequency	Expan	sions freque	Tot. Expansions
	DEFAULT EVO	4 - 5 channels None - I	None Optical DEF	AULT 19.10	.22 (h.m.s)	8.15.21 (h.m.s)	121 (Hz)	12	1 (Hz)	0 (Hz)		0
A <u>n</u> alysis	Select configuration C	hannels System configur	ation Display CAN-E	xpansions configur	ator							
Download Data	Wheel circumference Pulses per wheel revol	(mm) 1666 Whe ution 1 Puls	eel circumference (mm es per wheel revolution	1 1666								
Import SmartyCam	Channel identifier	Enabled/disabled	Channel name	Sampling frequ	Jency	Sensor type			Measure unit		Low scale	High scale
inicioso bata	RPM	🗹 Enabled	Engine	10 Hz	-	Engine 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
	CH_5	M Enabled	Channel_5	10 Hz	*	Gear potentiomete	er		#		0	5
Online Online	CALC_GEAR	Disabled	Calculated_Gear	10 Hz	-	Calculated Gear			#		0	9
	ACC_1	Enabled	Lateral_acc	10 Hz	-	Lateral accelerome	ter	•	g .01		-3.00	3.00
	ACC_2	Enabled	Longitudinal_acc	10 Hz	-	Longitudinal accel	erometer	-	g .01		-3.00	3.00
Device Calibration	ACC_3	Enabled	Vertical_acc	10 Hz	-	Vertical internal ac	celerometer	•	g .01		-3.00	3.00
	LOG_TMP	Enabled	Datalogger_Temp	10 Hz	•	Cold joint			°C	-	0	50
	BATT	Enabled	Battery	1 Hz	•	Battery			V .1		5.0	15.0
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• select "Pressure VDO 0-10 bar" (or 0-5 bar)sensor – in the column "sensor type" shown here below and press "Transmit" top of the page.

RaceStudio 2.55.32										- • ×	
File Device Configuration Dov	nload Data Import Smart	yCam Data Analysis	Device Info Online	Device Calib	ration Customize	Sensor Languag	je ?				
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AIM Sportline	Current configurat	ion									
The World Leader in Data Acqu	Installation name	e Data logger type	Ecu Lap Time	r Vehicle nam	e Available time	Time with GPS	Total frequency	Master frequence	cy Expansions freque	Tot. Expansions	
	DEFAULT	EVO4 - 5 channels	None - None Optical	DEFAULT	19.10.22 (h.m.s)	8.15.21 (h.m.s)	121 (Hz)	121 (Hz)	0 (Hz)	0	
A <u>n</u> alysis	Select configura	tion Channels System	configuration Display	CAN-Expansion	s configurator						
Download Data	Wheel circumfe Pulses per whe	erence (mm) 1666 eel revolution 1	Wheel circumference Pulses per wheel rev	e (mm) 166	6						
Import SmartyCa		Con English (20)	hind Channeline			Constant			a laurate	Ufab and	
microSD Data		Enabled/dis	Engine	me Samp	ing frequency	Sensor type	cneed	rom	Low scale	Align scale	
	SPD 1	Enabled	Sneed1	10 Hz		Speed	speeu	km/h_1	- 0.0	250.0	
Device Configurat	SPD 2	Enabled Enabled	Speed2	10 Hz	•	Speed		I km/h .1	0.0	250.0	
and a second	CH_1	Enabled	Channel_1	10 Hz	•	Generic linear 0-5	V	V.1	<u> </u>	5.0	
	CH_2	✓ Enabled	Channel_2	10 Hz	•	Thermocouple		V .1	 0.0	5.0	
Device Info	CH_3	CH_3 IV Enabled Channel_3 10 Hz CH_4 IV Enabled Channel_4 10 Hz		•	Thermoresistance	PT100	V .1	그 0.0	5.0		
-	CH_4			10 Hz	•	Temperature VDC	0 40-120 °C 0 50-150 °C	V .1	- 0.0	5.0	
	CH_5	🗹 Enabled	Channel_5	10 Hz	•	Temperature VDC	60-200 °C	#	0	5	
Donline	CALC_GEAR	Disabled	Calculated_	Gear 10 Hz	<u>.</u>	Water temp. (CLI Water temp. (SU2	UKI SUPERSPOR	#	0	9	
	ACC_1	Enabled	Lateral_acc	10 Hz	•	Pressure VDO 0-2	bar 🗏	≡ g .01	-3.00	3.00	
	ACC_2	ACC_2		ongitudinal_acc 10 Hz		Pressure VDO 0-3	0 bar	g .01	-3.00	3.00	
Device Calibratio	ACC_3			10 Hz	-	AIRBOX pressure	sensor X05SNA	g .01	-3.00	3.00	
	LOG_TMP	🗹 Enabled	Datalogger_	Temp 10 Hz	•	Distance potentio	meter	°C	_ 0	50	
	BATT	TT 🗹 Enabled Battery		1 Hz	-	Zero based potentiometer		V .1	5.0	15.0	
Customize <u>S</u> ense						Lambda sensor B Lambda sensor B Lambda sensor N Water pitot speed Gyro External vertical a External vertical a External vertical Generic linear 0-5 Generic linear 0-5 Generic linear 0-5 MSI 0-100 psi sen MSI 0-150 psi sen	SCH GK TL7111W1 - M I sensor ccelerometer velerometer V 00 mV 00 mV 50r sor				
aim-sportline.com © boor ann sru All Rights Reserved Vig Gavalcontt, s Cernusco sul Naviglio, Milan	ITALY			III		SEAT Brake Press SEAT Engine Press SEAT Water Temp	Jre sure serature	-]		



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;

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Save Save As Close Transmit									
Channels	ECU Stream	CAI	12 Stream Math Channels	Parameters Shift Light	ts and Alarms Display Sm	nartyCam Stre	eam 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		
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- a configuration panel shows up
- select: "Pressure" function as well as the kind of pressure to sample (1)
- select the sensor (2)

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Save	Save As		Close Transmit						
Channels	ECU Stream	CA	12 Stream Math Channels	Parameters Shift Lights	and Alarms Display Sm	artyCam Strea	m CAN E	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	Verify Channel Settings		×	Hz	wheel: 1600 ; pulses: 1 ;	
	Spd3		Speed3	V Name	Channel01		- Hz	wheel: 1600 ; pulses: 1 ;	
	Spd4		Speed4	Function	Oil Pressure	\$	Hz	wheel: 1600 ; pulses: 1 ;	
	Ch01	\Box	Channel01	V			ΗZ		
	Ch02		Channel02	Sensor 2	AiM VDO 0-10 bar	ŧ	Hz		
	Ch03		Channel03	Sampling Frequency	20 Hz	\$	Hz		
	Ch04		Channel04	V Unit of Measure	bar	÷	Hz.		
	Ch05		Channel05	Display Precision	2 decimal places	÷	- Hz		
	Ch06		Channel06	V			J Hz		_
	Ch07		Channel07				HZ.		_
	Ch08		Channel08				HZ		
	AccX		AccelerometerX				HZ		_
	ACCY		Accelerometer?		Save	Cancel	HZ		
	Gur		GwoX	Poll Pate	AiM Internal Cyre	degic 0.1	50 47		
	GyrY		GyroX	Pitch Rate	AiM Internal Gyro	deg/s 0.1	50 Hz		_
	Gyr7	5	Gyro7	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		_
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4 Dimensions, pinout and electrical characteristics

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



Here below are VDO cable measures.





The images here below show:

- the sensor pinout front view on the left
- the pinout of 4 pins Binder 719 male connector of V0255204 cable solder termination view central
- Binder 719 connection table on the right.



The table here below shows the sensor electrical characteristics.

Electrical characteristics	Value
Working range X05SNBO00	0-5 Bar
Working range X05SNBO05	0-10 Bar
Sensor thread	M10*1
Cable length V0255204	450 mm



5 Extension cables

The sensor is sold with a 45 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



