

AiM Infotech

Pressure sensor  
0-160 bar/0-2320 PSI

Release 1.00

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This datasheet explains how to use 0-160 bar (0-2320 PSI) pressure sensor. This sensor comes with a connection kit including:

- 0-160 bar (0-2320 PSI) pressure sensor with 50 cm cable
- connection kit including:
  - two lock nuts
  - 2 nipples
  - 1 "T" brunch pipe female M10x1 thread

This sensor kit part number is: **X05SNP31160R**

## 1 Introduction

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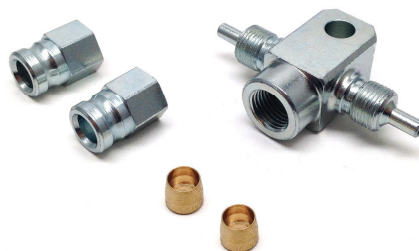
AiM loggers can measure the pressure with a proper sensor. It needs a proper installation. This is why we suggest to address to a specialized workshop. Once the sensor installed it needs a software configuration that can be made using AiM Race Studio freely downloadable from download area of [www.aim-sportline.com](http://www.aim-sportline.com).

This sensor fits brake pressure measurement.

## 2 Installation

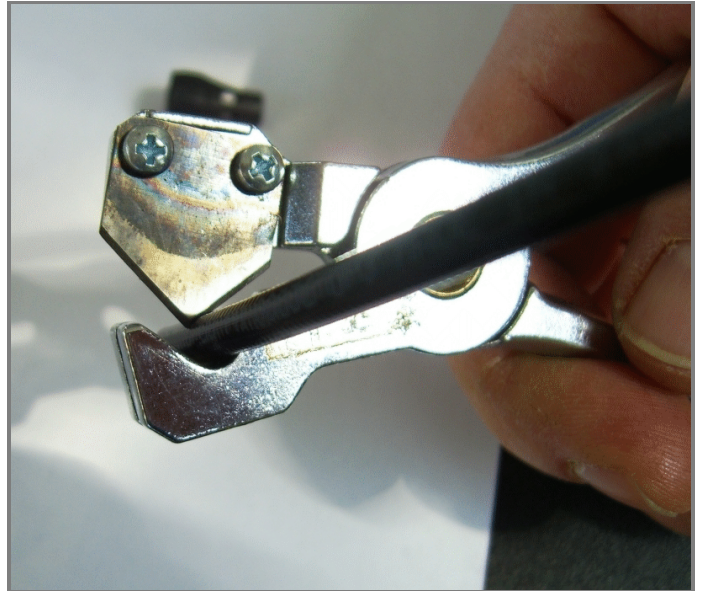
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To correctly install 0-160 bar brake pressure sensor use the included connection kit shown here below.

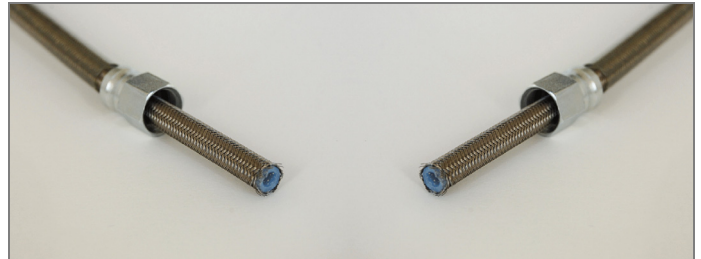


Please follow this procedure:

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.



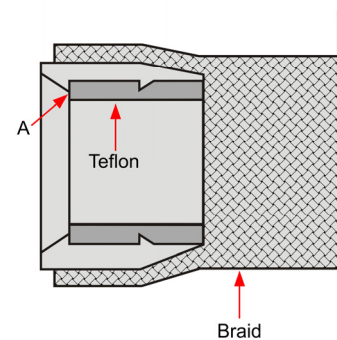
Insert the 2 locking nuts in the cut parts of the pipe.



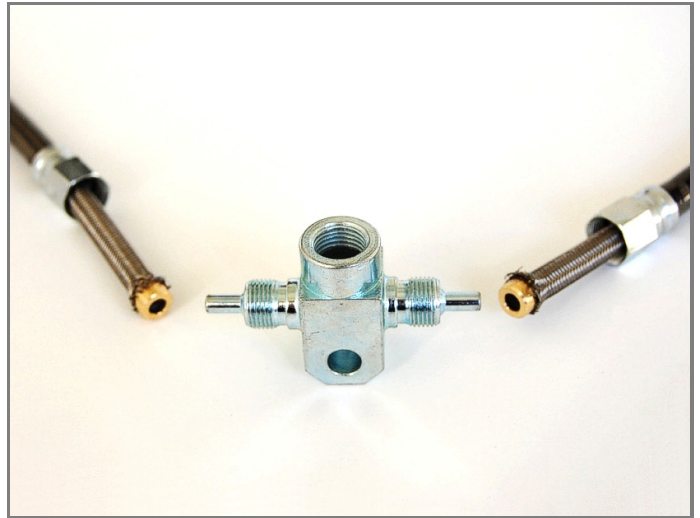
Insert the nipple under the metallic braid.



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

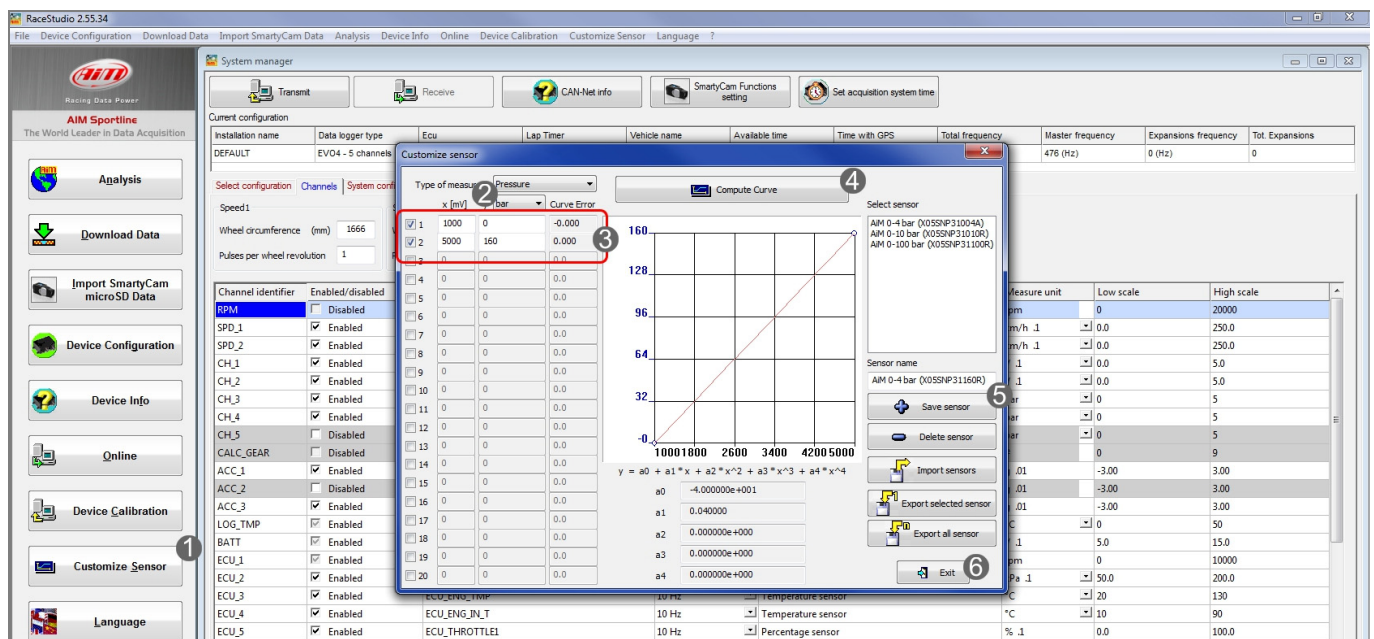
AiM logger can sample data sent by the sensor only if this last is physically connected to a channel of the logger previously set using AiM Race Studio software and the configuration is transmitted to the logger.

## 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	160

- 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".

The screenshot shows the RaceStudio 2.55.34 interface. The 'Channels' tab is active, displaying a table of sensor configurations. A red box highlights the 'Channels' tab and the table. The table lists various sensors with their identifiers, enabled status, names, sampling frequencies, sensor types, measure units, and scale ranges.

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	AIM 0-4 bar (X05SNP31160R)	bar	0	5
CH_3	<input checked="" type="checkbox"/> Enabled	Channel_3	10 Hz	AIM 0-100 bar (X05SNP31100R)	bar	0	5
CH_4	<input checked="" type="checkbox"/> Enabled	Channel_4	10 Hz	AIM 0-10 bar (X05SNP31010R)	bar	0	5
CH_5	<input type="checkbox"/> Disabled	Channel_5	10 Hz	AIM 0-4 bar (X05SNP31004A)	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
EFTI 14	<input checked="" type="checkbox"/> Enabled	EFTI 14 ISI DIE	10 Hz	Pressure sensor	kPa .1	0.0	400.0



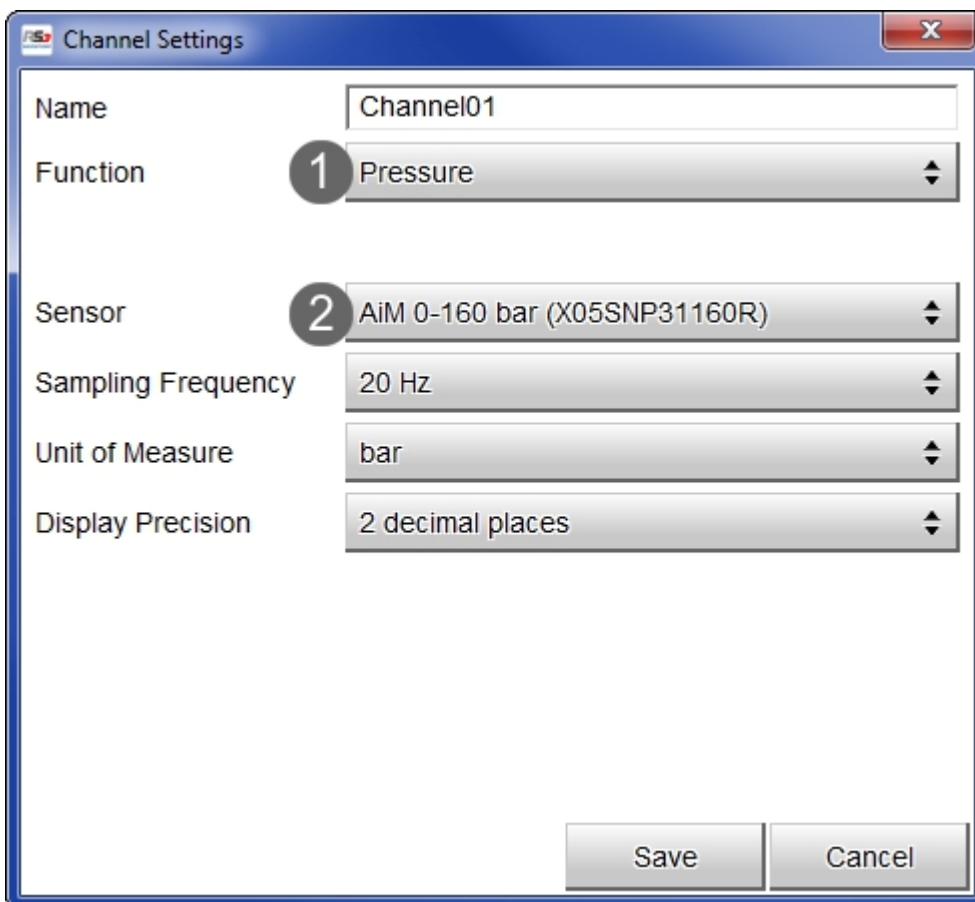
## 3.2 Configuration with Race Studio 3

- 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;

The screenshot shows the RaceStudio3 3.05.02 interface. The 'Channels' tab is active, displaying a table of sensor configurations. A red box highlights the 'Sensor' column. The table contains the following data:

ID	<input 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	d/g/s 0.1	50 Hz	
GyrY	<input checked="" type="checkbox"/>	GyroY	Pitch Rate	AIM Internal Gyro	d/g/s 0.1	50 Hz	
GyrZ	<input checked="" type="checkbox"/>	GyroZ	Yaw Rate	AIM Internal Gyro	d/g/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 0-160 bar (X05SNP31160R)" (**2**) press "Save" and transmit the configuration to the logger pressing "Transmit".



Channel Settings

Name Channel01

Function **1** Pressure

Sensor **2** AiM 0-160 bar (X05SNP31160R)

Sampling Frequency 20 Hz

Unit of Measure bar

Display Precision 2 decimal places

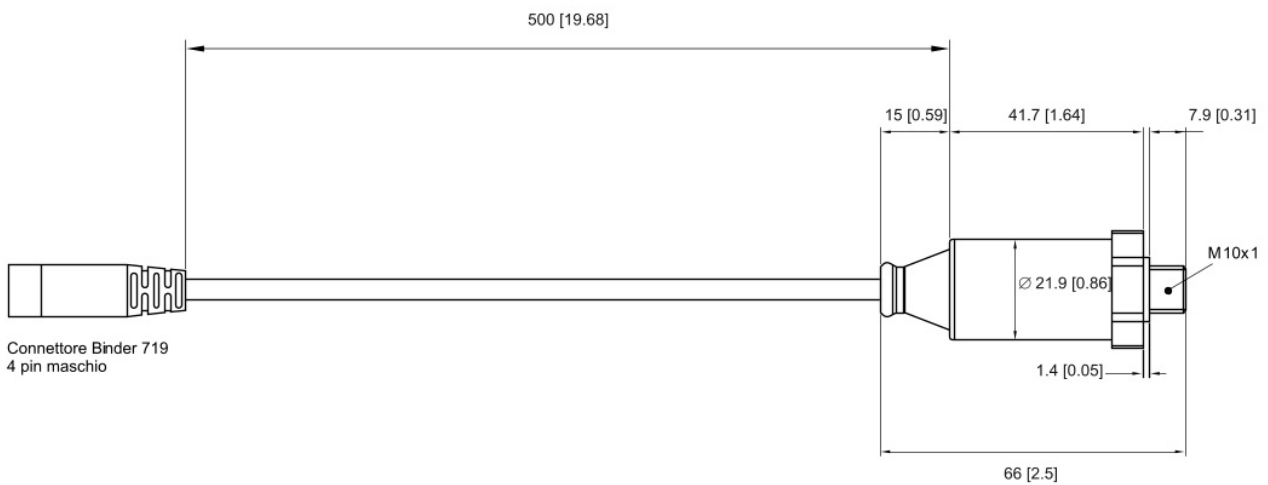
Save Cancel



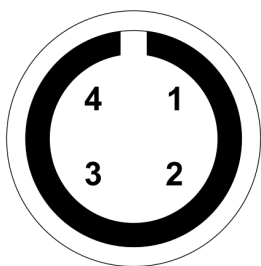
# 4

## 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
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.

<b>Technical characteristics</b>	<b>Value</b>
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

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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

