AiM InfoTech

AiM ECLIPSE
Car/bike linear potentiometer

Release 1.05

1 Introduction

This datasheet explains how to install the new AiM Eclipse car/bike linear potentiometer. The sensor, available with different travels and electrical connections, comes with high temperature harnesses.
AiM loggers can measure the displacement between two points using a sensor (linear potentiometer) directly connected to the points of measure. This potentiometer can measure linear displacements like:

- dampers compression or extension
- steering rotation measured through the rack displacement

2 Part numbers

AiM ECLIPSE linear potentiometers have an M4x0.7mm male thread on both ends; moreover ball joints or quick release pop joint are available as optional. The sensor can be:

- ending with a 4 pins Binder 719 male connector
- ending with flying wires

Its part number changes according to the sensor travel and to the **optional** joint type/no joint.

Sensors ending with a 4 pins Binder 719 male connector part numbers:

	No joints	**Ball joint**	**Quick Release pop joint**
50 mm	X05ELP050A	X05ELP050ABJ	X05ELP050APJ
75 mm	X05ELP075A	X05ELP075ABJ	X05ELP075APJ
100 mm	X05ELP100A	X05ELP100ABJ	X05ELP100APJ
125 mm	X05ELP125A	X05ELP125ABJ	X05ELP125APJ
150 mm	X05ELP150A	X05ELP150ABJ	X05ELP150APJ
175 mm	X05ELP175A	X05ELP175ABJ	X05ELP175APJ
200 mm	X05ELP200A	X05ELP200ABJ	X05ELP200APJ
225 mm	X05ELP225A	X05ELP225ABJ	X05ELP225APJ
250 mm	X05ELP250A	X05ELP250ABJ	X05ELP250APJ

Sensors ending with flying wires part numbers:

	No joints	**Ball joint**	**Quick release pop joint**
50 mm	X05ELP050FW	X05ELP050FWBJ	X05ELP050FWPJ
75 mm	X05ELP075FW	X05ELP075FWBJ	X05ELP075FWPJ
100 mm	X05ELP100FW	X05ELP100FWBJ	X05ELP100FWPJ
125 mm	X05ELP125FW	X05ELP125FWBJ	X05ELP125FWPJ
150 mm	X05ELP150FW	X05ELP150FWBJ	X05ELP150FWPJ
175 mm	X05ELP175FW	X05ELP175FWBJ	X05ELP175FWPJ
200 mm	X05ELP200FW	X05ELP200FWBJ	X05ELP200FWPJ
225 mm	X05ELP225FW	X05ELP225FWBJ	X05ELP225FWPJ
250 mm	X05ELP250FW	X05ELP250FWBJ	X05ELP250FWPJ

Optional mounting interfaces part numbers are:

- Quick release pop joint **JPCJN0290**
- Ball joint **JPCUBHQSA009**

3
Installation

This car/bike potentiometer can be connected to any analog channel of AiM loggers. To fix it use the two fixing points shown below.

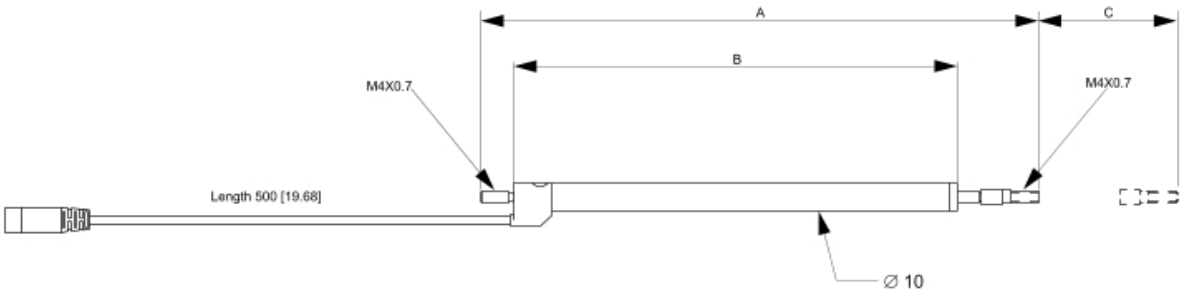
When installing the sensor:

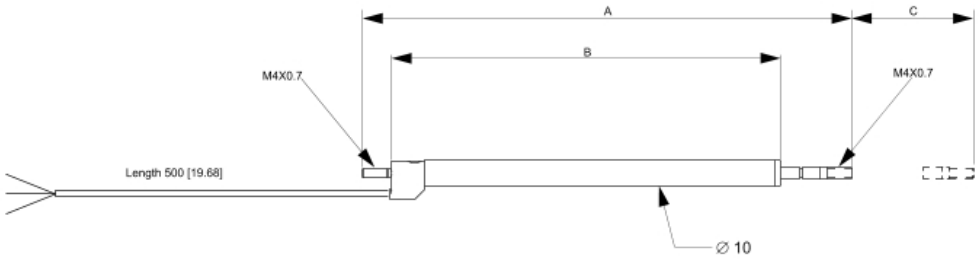
- be very careful avoiding possible bending of the internal cylinder; these bending, occurring when over tightening the screws or in case of incorrect mounting, can seriously damage the sensor;
- extract the internal cylinder for about 5mm (0.2 inches) from the sensor lower boundary position.

Please note: do not use this sensor to measure distances beyond the potentiometer maximum travel.

4
Dimensions, pinout and technical characteristics

The drawings below shows sensors dimensions in millimetres [inches]. Sensor ending with 4 pins Binder 719 male connector on top and sensor ending with flying wires bottom.





The table below shows the proportional growth in mm [inches] of:

- "A" (retracted mounting distance)
- "B" (sensor body length)
- and "C" (potentiometer travel).

"A" – Retracted mounting distance	**"B" Sensor body length**	**Potentiometer travel (C)**
165 mm [6.50]	131 mm [5.16]	50 mm [1.97]
190 mm [7.48]	156 mm [6.14]	75 mm [2.95]
215 mm [8.46]	181 mm [7.13]	100 mm [3.94]
240 mm [9.45]	206 mm [8.11]	125 mm [4.92]
265 mm [10.43]	231 mm [9.09]	150 mm [5.90]
290 mm [11.42]	256 mm [10.08]	175 mm [6.89]
315 mm [12.40]	281 mm [11.06]	200 mm [7.87]
340 mm [13.39]	306 mm [12.05]	225 mm [8.86]
365 mm [14.37]	331 mm [13.03]	250 mm [9.84]

Here below you see the **connector sensor on the left** and **any AiM device connector on the right**; the following table shows connector pinout.

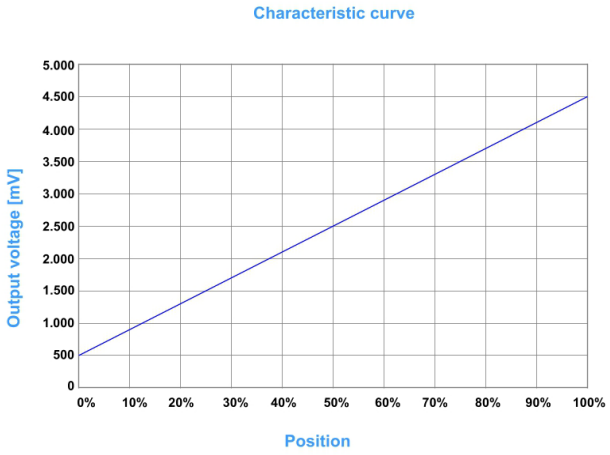
Pin	**Function**	**Wire colour**
1	Analog signal	White
2	GND	Black
3	Not connected	--
4	Vref 5 Vdc	Blue

Here below the sensor flying wires functions are explained.

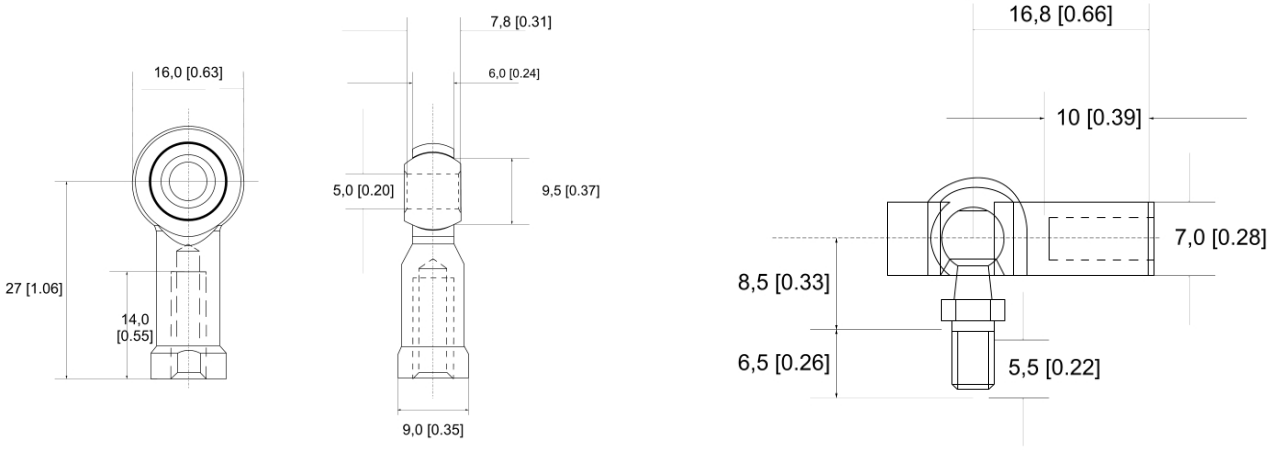
Function	Wire colour
Analog signal	White
GND	Black
Vref 5 Vdc	Blue

The sensor signal output range is from 500 to 4900 mV to enable fault detection. Here below the sensor diagnostic features and its characteristic curve are shown.

Reading: < 100 mV-> FAULT (**open circuit**)
Reading: > 4900 mV -> FAULT (**short circuit**)



The drawings here below shows ball joint (left) and quick release pop joint (right) dimensions in mm [inches].



The sensor technical characteristics are:

Technical characteristic	**Value**
Output signal	Vref 5 Vdc
Signal Output	500 m=0 4500 mV=full range
Repeatability	≤ 0.01 mm
Operational speed	≤ 10 m/s
Mechanical life	>25 million cycles
Independent linearity	≤±0.5%
Temperature working range	from –30°C to +100°C
Waterproof	IP65
Housing	Fiberglass reinforced epoxy resin
Shaft	Carbon fibre
Weight	20÷40 g
Cable type	High temp M22759 AWG26 wires, Viton Sleeve
Cable length	500 mm
Mounting interface	M4x0.7 male thread

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Extension cables

The sensor is sold with a 50 cm cable. Standard lengths extension cables are available as optional; it is also possible to ask for specific length extension cables. Extension cable's part numbers change according to their length and to device the sensor is to be connected to.

Mandatory extension cable for connection with:

- EVO4S
- Channel Expansion

Part numbers:

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

Extension cable for connection with:

- MX* 1.2/1.3
- MX*1.2/1.3 Strada
- MXPS
- MXsl
- MXm
- EVO5
- MXL2
- PDM08 /PDM32

Part numbers:

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