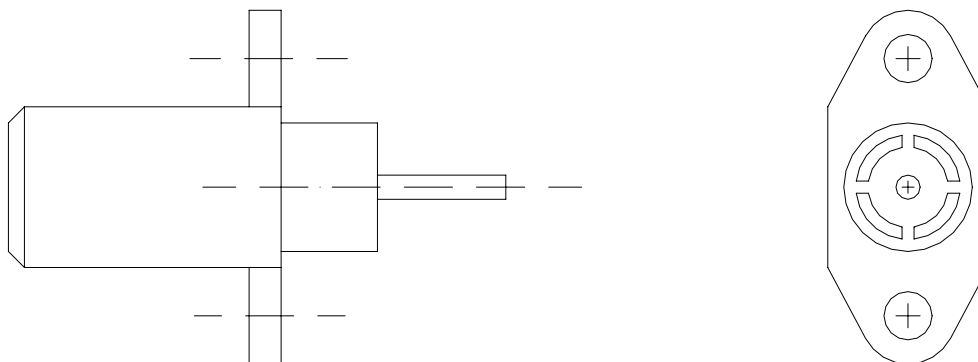


<b>SENSOR DOCUMENTATION</b>	<b>25/01/2005</b>	<b>DISPLACEMENT</b>	<b>Brake potentiometer</b>
Notes: <b>Brake potentiometer</b> technical documentation, dimensions and pinout – <b>Version 1.01</b>			



**Figure 1:** Brake potentiometer (side and front view)

## Introduction

Aim instruments can measure the relative displacement between two different points using a sensor (potentiometer) directly connected to the two measure points.

This sensor may be used to measure linear displacements, such as:

- Brake pedal displacement;
- Accelerator pedal displacement (rarely);
- Car chassis rolling angle.

## Installation notes

This sensor has been designed to measure linear displacements between a fixed point, called “reference point”, and a movable one.

In order to get correct and accurate informations from the sensor, the potentiometer has to be fixed, using a self-made bracket.

When installing the sensor, Aim recommends to be very careful to avoid possible bendings of the internal cylinder: these bendings, caused by incorrect mountings, may seriously damage the sensor.

As the instrument’s mechanical travel goes up to 12.5 mm and the electrical one goes up to 10 mm, Aim recommends, while installing the potentiometer, to mount the sensor with a preload of about 1 mm (0.04 inches) starting from the sensor’s lower boundary position, in order to avoid gaps between the sensor and the movable part.

**Please, do not exceed the instrument’s maximum measure range.**

If you need to measure bigger displacements, please use a different sensor: an incorrect use may seriously damage the sensor.

## Software

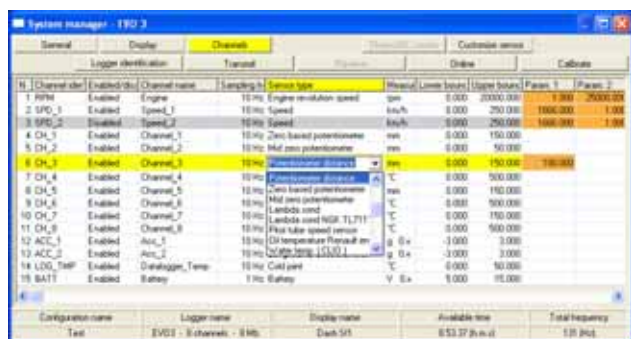
Once the potentiometer has been installed, it needs to be configured. To correctly configure the potentiometer, please use **Race Studio 2**, the software properly developed by Aim to configure its instruments and analyze stored data.

## Race Studio 2

In **Race Studio 2** main window you can choose the instrument where you wish to install the potentiometer (EVO 3, Drack, MyChron 3 Gold CAR, MyChron 3 Gold XG...). Once selected the gauge, please press “System manager” button.

## Sensor configuration

Once reached “System manager” main window, please press “Channels” button to set the sensors you have installed on your vehicle. The following screenshot appears.



To set a sensor, please double-click in the box corresponding to “Sensor type” column and to “Ch\_x” row (where x represents the channel number): a pop up menu like the one reported above appears.

You can choose between 3 different kind of potentiometers:

- Zero based potentiometer (recommended)
- Mid zero potentiometer
- Distance potentiometer

**Note: if you select a “Distance potentiometer”, a new screenshot where you have to insert the “Total potentiometer travel” (10 mm in this case) appears.**

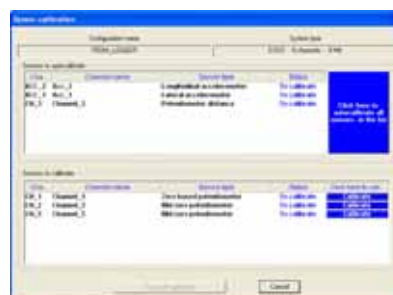
Once you have set the correct potentiometer type, please transmit the configuration to your gauge pressing “Transmit” button.

## Calibration

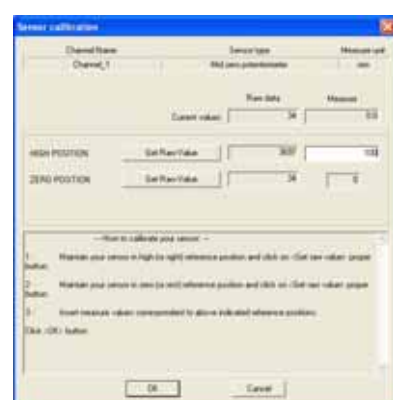
Once the configuration has been correctly transmitted to your gauge, the potentiometer needs to be calibrated.

In this datasheet is described how to calibrate the **Zero based potentiometer** (recommended for brake pedal displacement acquisition).

Please click on “Calibrate” button: the screenshot on top right column of this page appears.



Press button “Calibrate” corresponding to the “Zero based potentiometer”: the following screenshot appears.



Follow this procedure to correctly calibrate the “Zero based potentiometer”:

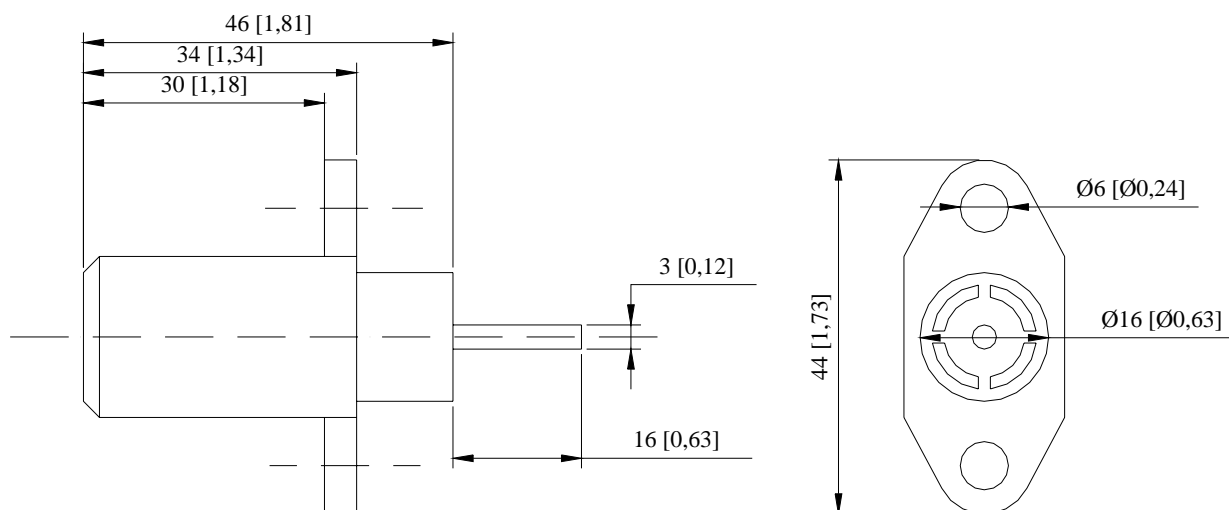
- Strongly push down the brake pedal and press button “Get raw data” corresponding to “HIGH POSITION”;
- Remove the feet from the brake pedal and press button “Get raw data” corresponding to “ZERO POSITION”;
- Insert the value you want to see when the brake pedal is pushed down (usual value **100**);
- Press “OK”.

Once the sensor’s calibration procedure has finished, press the red button “Transmit calibration”, as shown in the following screenshot.



Please note: it is absolutely necessary to transmit the calibration, otherwise the logger will not be able to acquire correct data.

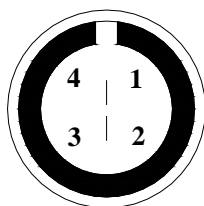
## Dimensions



Dimensions in millimeters [inches]

## Connector pinout

Pin	Function	Pin	Function
1	Analog signal 0-5 V	3	Not connected
2	GND	4	V reference (4.5 V)



4 pins Binder 719 male connector: solder termination view

## Technical characteristics

Electrical characteristics	Value
Nominal Resistance	5 k $\Omega$ , linear
Tolerance	$\pm 20$ %
Linearity	$\pm 2$ %
Electrical travel	10 mm
Mechanical characteristics	Value
Mechanical travel	12.5 mm
Temperature range	From -40 °C to 130 °C
Fatigue life	5*10 <sup>6</sup> complete cycles
Cable length	200 mm