Speedometer Calibrator

Speedometer calibrator for automotive applications

Hummingbird's Speedometer Calibrator corrects signals from both hall-effect and inductive speed sensors, compensating for both manufacturer and user induced errors.

Electronic systems in vehicles require accurate speed information to operate correctly. Hummingbird's simple to install Speedometer Calibrator corrects for common sources of error and provides accurate speed without having to change the mechanics of the vehicle.

Powerful Performance

Designed for harsh automotive environments, the module features transient voltage protection on the supply and short circuit protected outputs. The unit is designed to work from 6V to 36V and so is suitable for use in motorcycles, cars and trucks.

Common sources of speed error include:

• 2% to 10% error direct from manufacturer.

• Change of wheel or tyre size.

• Gearing changes: sprockets, differentials etc.

• Replacement of gearbox, engine or diff.

• Instrument cluster / faceplate change.

The Speedometer Calibrator is able to compensate for signal errors by dividing the input signal down to as low as 1/8th and up to as high as 8 times in 0.1% increments.

Speedo Calibrator – true speed no matter what you've done to your vehicle

Level sensing technology means that a single unit can be used with both hall-effect and inductive speed sensors. Signal duplication technology means that the amplitude of the input signal is replicated on the output resulting in more reliable operation in more vehicles.

Benefits of a calibrated speedo

• Know how fast you really are going.

• Road legal after customisation.

• Odometer won't show more kilometers than you actually have driven.

• Accurate fuel consumption figures.

Technical Specifications and Ordering Information

Part number	HMSC8000C
Description	speed calibrator for hall effect and inductive speed sensors
Output frequency	minimum 0.5Hz, maximum 10kHz
Adjustable range	12.5% though 800% in 0.1% increments (200Hz can be 25Hz to 1600Hz)
Adjustment precision	0.1% - via multi-turn potentiometer
Power consumption	240mW, 20mA at 12V
Input voltage	minimum for operation 6V; maximum 30V
Input threshold	2.5V in normal mode and 125mV in sensitive mode
Output signal (hall effect mode)	0/5V in 5V mode; 0/Vin in Vin mode; maximum 25mA drain
Output signal (inductive mode)	±2.5V in 5V mode; ±Vin/2 in Vin mode; maximum 10mA drain
Dimensions (mm)	35mm (width) x 35mm (length) x 20mm (height) – baseplate 51mm wide
Operating temperature	-40°C to 85°C; 5% to 95% relative humidity

Speedometer Calibrator

Setup instructions

Installation of a Speedometer Calibrator is straightforward as long as a few critical points are noted. Critical items will be highlighted in **bold italics** in this document for your quick reference.
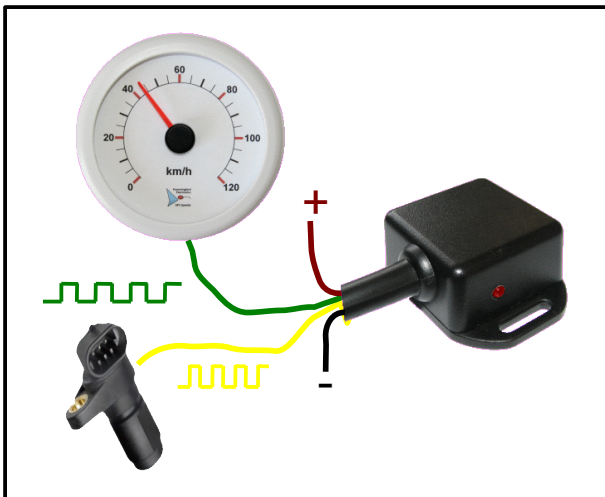
Works with hall-effect and inductive sensors

Installation Instructions

1) **Connect positive power to the red wire and ground to the black wire.** Some speed senders have a local power supply, and it may be possible to use this supply to power the unit.

2) The inductive or hall effect **pulse output from the existing speed sender should be connected to the yellow wire** on the speedometer calibrator.

3) The **green wire from the speedometer calibrator goes to the speedometer,** which needs to be calibrated.

Changing the sensor type

1) **Open the unit** by unscrewing the two screws on the rear of the unit.

2) Change the switch settings according to the table below to select the correct input and output mode.

| Switch	Function	On	Off
1	2k pullup resistor	enabled	disabled
2	input DC bias	passed	removed
3	output type	hall-effect	inductive
4	output amplitude	Vin	5V
5	sensitivity	high	normal
6	coarse adjust (divide)	enabled	disabled
7	coarse adjust (multiply)	enabled	disabled

Changing the calibration value

1) Identify the fine adjustment screw. ***Turn the screw clockwise*** to increase the multiplication factor and anti-clockwise to decrease it.

3) For more coarse adjustment, change the multiplication factor by setting switch 6 and switch 7 according to the table below.

Switch 6	Switch 7	Output range
off	off	0.5 to 2 times input
off	on	2 to 8 times input
on	off	0.125 to 0.5 times input
on	on	500Hz test frequency
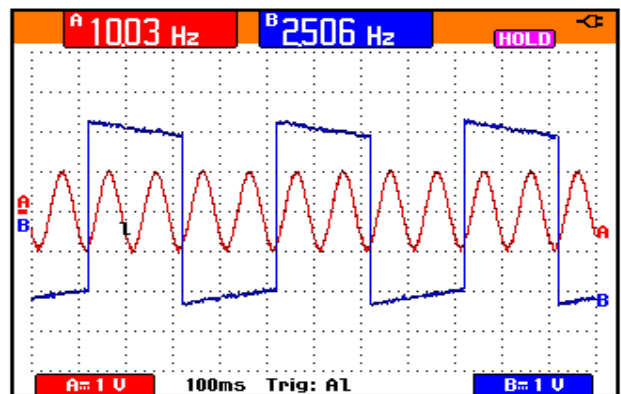
Example – inductive in, inductive out, divide by 4
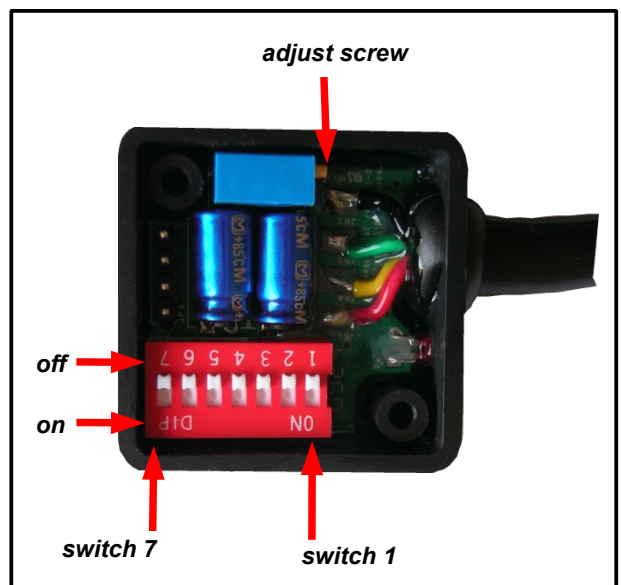
Internal view with cover removed