Caerbont Automotive Instruments

"The original makers of SMITHS Instruments"

Instructions for:

- ***All Flight and Prism***
- ***All 52mm and 60mm***

Programmable Tachometers For Petrol *and* Diesel Engines

Negative earth only!

Independently tested and approved to 95/54/EC.

Designed and manufactured under ISO9001:2015 quality standard.

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Installation Guide

Application Notes

- For fitment to **NEGATIVE EARTH VEHICLES ONLY.**
- Operating voltage: 11 – 17volts DC
- Recommended using 5K suppressed spark plug caps or resistive spark plugs

- Input signal:
  Petrol Engines
  - Contact breaker ignition (coil)
  - ECU tachometer output

Diesel Engines
  - Alternator (W terminal)

- Calibration switch 8 should always be in the 'on' position.

Caution: Disconnect The Negative Battery Cable Prior To Installation

Harness connections	
Wire Colour	**Connect to**
Red	Only use if required, Pull Up/Down works only with Red/Blue input.
Green	Switched ignition positive 12volt supply (via 3A fuse)
Black	Chassis or battery negative
Red/White	Instrument illumination 12volt supply (side light feed)
White/Black	Contact breaker or (for diesels) alternator 'W' terminal
Red/Blue	Tacho output from ECU

The Red wire is **not** normally connected.

Calibration

The tachometer is calibrated/programmed by setting a combination of seven switches located under the grommet on the back case. Remove the grommet to access the switches. Set the switches prior to installing the tachometer. The switch setting ***must*** be completed with the power off. Factory default is set for 4 cylinders.

The table overleaf shows the switch settings relative to the number of pulses per engine revolution.

To assist with the switch setting, the table below shows the number of pulses per engine revolution versus the number of cylinders for both single spark and 'wasted' spark ignitions.

Petrol Engines Only

PPR - Pulses per Revolution

Number of Cylinders	Single Spark Ignition	Wasted Spark Ignition
1	0.5	1
2	1	2
3	1.5	3
4	2	4
6	3	6
8	4	8
10	5	10
12	6	12

Diesel Engines Only

Pulses per engine revolution (PPR) is equal to the number of alternator pole pairs multiplied by the crank to alternator pulley ratio.

Switch settings							PPR No.
sw1	sw2	sw3	sw4	sw5	sw6	sw7	
0	0	0	0	0	0	0	0.5
1	0	0	0	0	0	0	1
0	1	0	0	0	0	0	1.5
1	1	0	0	0	0	0	2
0	0	1	0	0	0	0	3
1	0	1	0	0	0	0	4
0	1	1	0	0	0	0	5
1	1	1	0	0	0	0	6
0	0	0	1	0	0	0	8
1	0	0	1	0	0	0	8.1
0	1	0	1	0	0	0	8.2
1	1	0	1	0	0	0	8.3
0	0	1	1	0	0	0	8.4
1	0	1	1	0	0	0	8.5
0	1	1	1	0	0	0	8.6
1	1	1	1	0	0	0	8.7
0	0	0	0	1	0	0	8.8
1	0	0	0	1	0	0	8.9
0	1	0	0	1	0	0	9
1	1	0	0	1	0	0	9.1
0	0	1	0	1	0	0	9.2
1	0	1	0	1	0	0	9.3
0	1	1	0	1	0	0	9.4
1	1	1	0	1	0	0	9.5
0	0	0	1	1	0	0	9.6
1	0	0	1	1	0	0	9.7
0	1	0	1	1	0	0	9.8
1	1	0	1	1	0	0	9.9
0	0	1	1	1	0	0	10
1	0	1	1	1	0	0	10.1
0	1	1	1	1	0	0	10.2
1	1	1	1	1	0	0	10.3
0	0	0	0	0	1	0	10.4
1	0	0	0	0	1	0	10.5
0	1	0	0	0	1	0	10.6
1	1	0	0	0	1	0	10.7
0	0	1	0	0	1	0	10.8
1	0	1	0	0	1	0	10.9
0	1	1	0	0	1	0	11
1	1	1	0	0	1	0	11.1
0	0	0	1	0	1	0	11.2
1	0	0	1	0	1	0	11.3
0	1	0	1	0	1	0	11.4
1	1	0	1	0	1	0	11.5
0	0	1	1	0	1	0	11.6
1	0	1	1	0	1	0	11.7
0	1	1	1	0	1	0	11.8
1	1	1	1	0	1	0	11.9

Switch settings							PPR No.
sw1	sw2	sw3	sw4	sw5	sw6	sw7	
0	0	0	0	1	1	0	12
1	0	0	0	1	1	0	12.1
0	1	0	0	1	1	0	12.2
1	1	0	0	1	1	0	12.3
0	0	1	0	1	1	0	12.4
1	0	1	0	1	1	0	12.5
0	1	1	0	1	1	0	12.6
1	1	1	0	1	1	0	12.7
0	0	0	1	1	1	0	12.8
1	0	0	1	1	1	0	12.9
0	1	0	1	1	1	0	13
1	1	0	1	1	1	0	13.1
0	0	1	1	1	1	0	13.2
1	0	1	1	1	1	0	13.3
0	1	1	1	1	1	0	13.4
1	1	1	1	1	1	0	13.5
0	0	0	0	0	0	1	13.6
1	0	0	0	0	0	1	13.7
0	1	0	0	0	0	1	13.8
1	1	0	0	0	0	1	13.9
0	0	1	0	0	0	1	14
1	0	1	0	0	0	1	14.25
0	1	1	0	0	0	1	14.5
1	1	1	0	0	0	1	14.75
0	0	0	1	0	0	1	15
1	0	0	1	0	0	1	15.25
0	1	0	1	0	0	1	15.5
1	1	0	1	0	0	1	15.75
0	0	1	1	0	0	1	16
1	0	1	1	0	0	1	16.25
0	1	1	1	0	0	1	16.5
1	1	1	1	0	0	1	16.75
0	0	0	0	1	0	1	17
1	0	0	0	1	0	1	17.25
0	1	0	0	1	0	1	17.5
1	1	0	0	1	0	1	17.75
0	0	1	0	1	0	1	18
1	0	1	0	1	0	1	18.25
0	1	1	0	1	0	1	18.5
1	1	1	0	1	0	1	18.75
0	0	0	1	1	0	1	19
1	0	0	1	1	0	1	19.25
0	1	0	1	1	0	1	19.5
1	1	0	1	1	0	1	19.75
0	0	1	1	1	0	1	20
1	0	1	1	1	0	1	20.25
0	1	1	1	1	0	1	20.5
1	1	1	1	1	0	1	20.75

Switch settings							PPR No.
sw1	sw2	sw3	sw4	sw5	sw6	sw7	
0	0	0	0	0	1	1	21
1	0	0	0	0	1	1	21.25
0	1	0	0	0	1	1	21.5
1	1	0	0	0	1	1	21.75
0	0	1	0	0	1	1	22
1	0	1	0	0	1	1	22.25
0	1	1	0	0	1	1	22.5
1	1	1	0	0	1	1	22.75
0	0	0	1	0	1	1	23
1	0	0	1	0	1	1	23.25
0	1	0	1	0	1	1	23.5
1	1	0	1	0	1	1	23.75
0	0	1	1	0	1	1	24
1	0	1	1	0	1	1	24.25
0	1	1	1	0	1	1	24.5
1	1	1	1	0	1	1	24.75
0	0	0	0	1	1	1	25
1	0	0	0	1	1	1	25.25
0	1	0	0	1	1	1	25.5
1	1	0	0	1	1	1	25.75
0	0	1	0	1	1	1	26
1	0	1	0	1	1	1	26.25
0	1	1	0	1	1	1	26.5
1	1	1	0	1	1	1	26.75
0	0	0	1	1	1	1	27
1	0	0	1	1	1	1	27.25
0	1	0	1	1	1	1	27.5
1	1	0	1	1	1	1	27.75
0	0	1	1	1	1	1	28
1	0	1	1	1	1	1	28.25
0	1	1	1	1	1	1	28.5
1	1	1	1	1	1	1	28.75

Switch setting ‘1’ signifies On
Switch setting ‘0’ signifies 0ff

Setting example:

Four-cylinder, single spark engine
PPR is 2
From table, switch setting is:

Sw1	sw2	sw3	sw4	sw5	sw6	sw7
1	1	0	0	0	0	0
On	On	Off	Off	Off	Off	Off

Note: Switch number 8 should always be in the ‘on’ position.