TS180-001 Turbo Speed Sensor Specification

TS180-002 Probe

Dimensions	Approx 52mm overall (42mm probe length)
Material / Weight	Brass approx 60gms
Head Size	10mmAF
Installation	6.2mm diameter hole threaded M7 by 1 Tip of sensor must align with blades Maximum off-axis installation 10 degrees Gap up to 1.5mm recommended, 2.0mm maximum
Cable Length	1 metre terminated in IP65 rated connector
Max Operating Temperature	200 degree C

TS180-003 Module

Dimensions	Approx 70mm wide, 32mm high, 86mm deep
Material / Weight	Anodized Aluminium approx 315 gms
Fixing	Screwed to bulkhead through mounting tabs
Operating Temperature	85 degrees C
Probe Connection	via IP65 rated socket with dust cap
Indicator	Red LED indicates 'N' on power up & flashes with speed
Connections	2 metre length flying leads in braided sleeve
Red	+12V supply (min 8V max 15 volts) at approx 30mA
Black	Ground (negative battery terminal)
White	Data Logger / Tachometer drive (blade frequency divided by 10N where 'N' can be programmed between 1 and 32. Open collector output with 2K2 pullup to +12V

Use with Data Loggers

A turbine speed of 180,000 rpm with a 14 blade turbo has a blade frequency of 42,000 Hz. The module divides this by 10 and then by 'N' to give an output frequency that can be fed into data loggers. The software settings required in the Data Logger software for some values of 'N' are shown below.

TS-180 Output Frequency (14 blades at 180,000 rpm)		Data Logger Software Settings to log as Turbo RPM	
'N'	**TS-180 Output Frequency**	**Teeth**	**Multiplier**
1	4200 Hz	14	10
2	2100 Hz	7	10
14	300 Hz	1	10

N can be set to other values if needed to better match the frequency range.

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Use with Tachometer Gauges

A normal 4 stroke car tachometer gauge can be used to display turbo speed.

If 'N' is set to the number of turbo blades, the output will be 300Hz at 180,000 rpm. This registers as 9,000 rpm on a 4 cylinder gauge or 6000 rpm on a 6 cylinder gauge.

4 cylinder tacho scale readings should therefore be multiplied by 20 and 6 cylinder scale readings by 30 to obtain turbo speed.

Turbo Speed	4cyl Tacho reads	6 Cyl Tacho reads
30,000 rpm	1,500 rpm	1,000 rpm
60,000 rpm	3,000 rpm	2,000 rpm
90,000 rpm	4,500 rpm	3,000 rpm
120,000 rpm	6,000 rpm	4,000 rpm
150,000 rpm	7,500 rpm	5,000 rpm
180,000 rpm	9,000 rpm	6,000rpm

N can be set to other values if needed to better match the range of the gauge.

Setting 'N' within the Module

When the module is powered up the LED flashes 'N' times to confirm the stored setting.

To change 'N' connect a pushbutton switch between the white and black wires. Press and hold the switch and turn the ignition off and back on. After 3 seconds the LED will come on and remain on to show that the module is in programming mode.

Release the switch and the LED will flash 'N' times then pause. This is repeated all the time it is in programming mode.

Every time the switch is pressed it will increment 'N' and store it within the module. The LED will then flash the new value of times. 'N' will increment up to 32 then it will reset to 1 and start counting up again.

If the switch is held pressed for greater than 3 seconds 'N' is reset to 1

When you have the required 'N' flashes turn the ignition off to exit programming mode.