

## RPM 8000 PRO – Sensorless RPM in Cars

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**NEW: with digital display  
and external calibration capability**

**R**PM-8000-PRO offers a discerning solution for automotive RPM measurement without an additional sensor: the instrument is simply connected via a standard jack to the cigarette lighter socket and the engine speed is shown directly on the LCD display, or is available as a proportional analog voltage or frequency for recording purposes.

The data can be output as an analog voltage (1 Volt per 1000 rev/min) or as a digital pulse sequence (TTL). The smart measuring principle is based on an analysis of the ripple balance of the supply system, characteristic for all automotive alternators. The frequency of this ripple amounts to about 100 to 120 pulses per engine rotation and therefore delivers good dynamic measuring results.

Though the frequency is proportional to the engine RPM, it also depends on the gear transmission ratio from crankshaft/alternators and on the number of alternators poles and phases. This makes the calibration of the input signal to the actual measured rpm necessary. The latest version of the RPM-8000-PRO now offers two elegant options:

**Internal calibration:** The internal calibration assumes a steady engine rpm of 2000 rev/min, which can be monitored by the automotive tachometer. By pushing the “Cal. Int” button the calibration starts, whereby the instrument assigns the actual measured pulse frequency to speed “2000” and outputs the actual engine RPM to the LCD display.

**External calibration:** A reflector tag is mounted on the crankshaft and scanned by laser beam. The TTL output of the laser instrument is connected via cable to the “Ext. Cal In.” input of the RPM-8000-PRO. Identical displays on the La-

- ▶ **Independent of vehicle and Engine Type**
- ▶ **No Sensor Installation Required**
- ▶ **Direct Reading of RPM**
- ▶ **Wide Dynamic Range**
- ▶ **Analogue and Digital Outputs**
- ▶ **Small, Lightweight, Convenient**
- ▶ **Simple and Accurate Calibration**
- ▶ **Universal 12 - 42 Vdc Supply**

ser and RPM-8000-PRO and illumination of the Cal. LED confirm successful calibration.

The measuring range of the analog output can be selected via jumpers (e.g. to 0.5, 1.0 or 2.0 Volt per 1000 rpm). The TTL output can also be scaled with a frequency factor of 1:8 or 1:16 – and therefore adapted to the resolution ability of attached measuring systems. The instrument saves the calculated calibration data in non-volatile memory until the next calibration. ■

**RPM 8000 PRO – Sensorless Rotation Speed Collection in Cars**

**Technical Data RPM 8000 PRO**

<b>System</b>	
<b>Supply voltage</b>	12 ... 42 Vdc
<b>Power consumption</b>	80 mA maximum
<b>Analog output:</b>	<ul style="list-style-type: none"> <li>▶ Adjustable 0.5 V, 1 V or 2 V per 1000 rev/min,</li> <li>▶ Max. delay 20 ms</li> <li>▶ Accuracy &gt; +/- 0.5 %</li> <li>▶ Output impedance 2Ω 10 mA</li> </ul>
<b>Digital output:</b>	<ul style="list-style-type: none"> <li>▶ Frequency range approximately 500 Hz ... 10 kHz</li> <li>▶ Set with frequency divider 1/1; 1/8; 1/16</li> <li>▶ TTL level 0 and 4 V</li> <li>▶ Output impedance 130 ohm</li> <li>▶ Jitter 0.1 – 1 %</li> </ul>

<b>Synchronization and Calibration</b>	
<b>Sync frequency range</b>	800 Hz ... 2 kHz
<b>Synchronization time</b>	1 – 2 seconds
<b>Calibration:</b>	<ul style="list-style-type: none"> <li>▶ Internal: Based on 2000 rev/min indicated on tachometer in vehicle.</li> <li>▶ External: With laser (RPM-LASER-CAL) and reflector tag on crankshaft.</li> </ul>

<b>Physical Data</b>	
<b>Dimensions</b>	150 x 75 x 40 mm (5.9 x 3 x 1.6 in.)
<b>Weight</b>	450g (1 lb.) without connection cable
<b>Material</b>	Anodized aluminium
<b>Operating temperature</b>	-5°C ... +70°C (23° ... 158°F)
<b>Storage temperature</b>	-20 to +80°C (-4° ... 176°F)
<b>Humidity</b>	20 – 80%
<b>Vibrations</b>	5g military standard 810C curve C
<b>shock in all directions</b>	100 g (3.5 oz)

<b>Displays, Switches and Connectors</b>									
<b>Displays:</b>	LCD screen 4½ digit for engine speed frequency or conversion factor frequency/engine speed								
<b>LEDs</b>	<table border="0"> <tr> <td>Red</td> <td>Power</td> </tr> <tr> <td>Green</td> <td>Sync. OK</td> </tr> <tr> <td>Yellow</td> <td>button check for frequency read-out on LCD screen</td> </tr> <tr> <td>Red</td> <td>Calibration OK</td> </tr> </table>	Red	Power	Green	Sync. OK	Yellow	button check for frequency read-out on LCD screen	Red	Calibration OK
Red	Power								
Green	Sync. OK								
Yellow	button check for frequency read-out on LCD screen								
Red	Calibration OK								
<b>Rotary switch</b>	Frequency divider 1/1, 1/8 or 1/16								
<b>Red button</b>	Start internal calibration								
<b>Yellow button</b>	Frequency read-out or conversion factor on the screen								
<b>Connectors:</b>	<ul style="list-style-type: none"> <li>▶ BNC for TTL output</li> <li>▶ BNC for analog output</li> <li>▶ BNC for external calibration input</li> <li>▶ 3 pole Tuchel for connecting to vehicle electrical distribution system through cable with connector for cigarette lighter</li> </ul>								



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