

CT-6710

ONOSOKKI

# Motor & Engine Tachometer

Supporting a wide variety of sensors  
Enabling various rotation speed measurement



# Motor & Engine Tachometer

## Introducing evolved tachometer

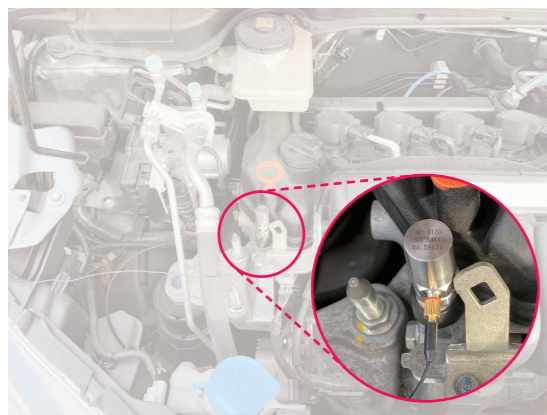
"Stability" is required to accurately measure the rotation speed of a motor or engine. We have developed the evolved tachometer to meet that demand. Supporting a wide variety of sensors, it provides stable measurements for EV/HEV motors, gasoline engines, and diesel engines.



## Compatible sensors increased

This makes it possible to measure the rotation speed of motors or diesel engines, which are difficult to be detected.

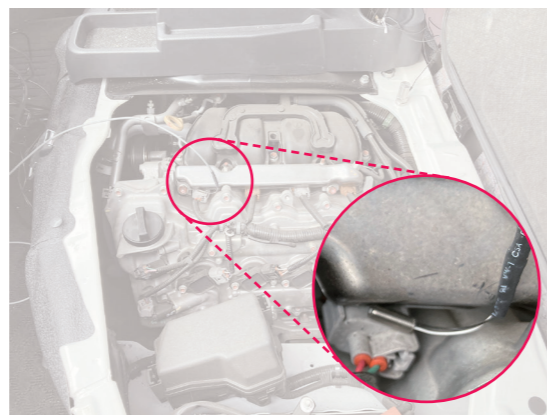
NP-3000 series Accelerometer



Vibration is detected using piezoelectric vibration detection method. Due to its high sensitivity and wide frequency range, it is possible to measure rotational speed even with smaller vibrations. It can also be used in diesel engines.



MP-992 Ultra compact Electromagnetic Detector



The rotational speed is detected by electromagnetic induction of leakage magnetic flux from the rotating shaft of a motor or magnet ignition engine. The compact size with a sensor head length of 13 mm allows it to be installed even in narrow spaces. Motor rotation measurement can be performed stably with simple installation.



## Enhanced to adjust trigger level

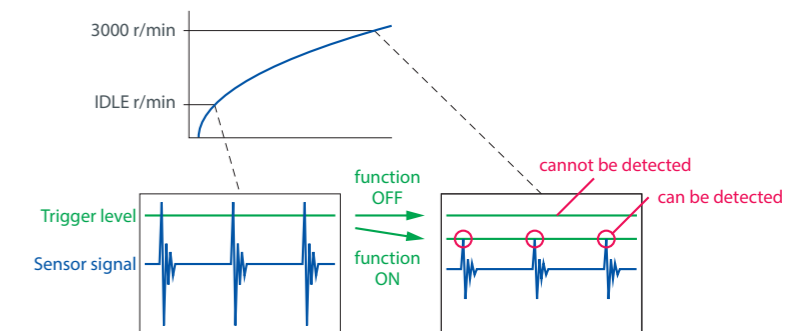
This suppresses variations in rotational speed from the start of the engine to high rotational speeds and achieves stable measurements. Also, it is more easy to adjust trigger level. Expands the possibilities for using your existing sensors.

Trigger Assist



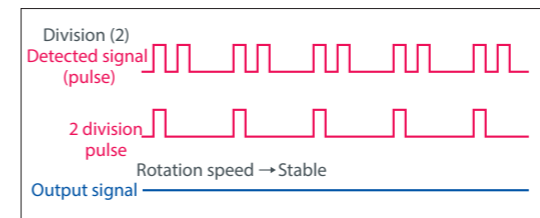
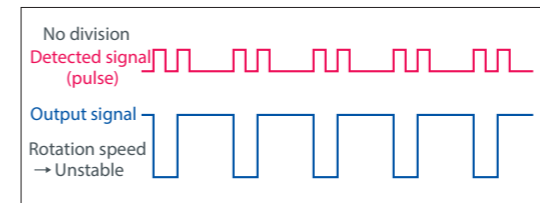
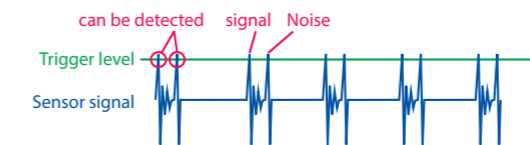
The ignition signal contains electromagnetic induction and noise caused by the ignition of multiple cylinders. By turning on the trigger assist mode, it automatically adjusts to the optimal level to detect only the ignition signal, allowing stable measurement even when the rotation speed is changed.

Trigger level Follow-up



This function reduces the trigger level as the rotation speed increases. Use this when the signal waveform becomes smaller as the rotation speed increases and becomes undetectable. ( for IP series only)

## Removing noise signals (Input Division function)



When periodic noise with the same magnitude as the ignition signal is input, it will remain unstable even if the trigger level is adjusted. By using the frequency division function, it is possible to convert to a signal with a constant period and perform stable measurements.

## Analog Tachometer (option)



CT-6710

CT-0677

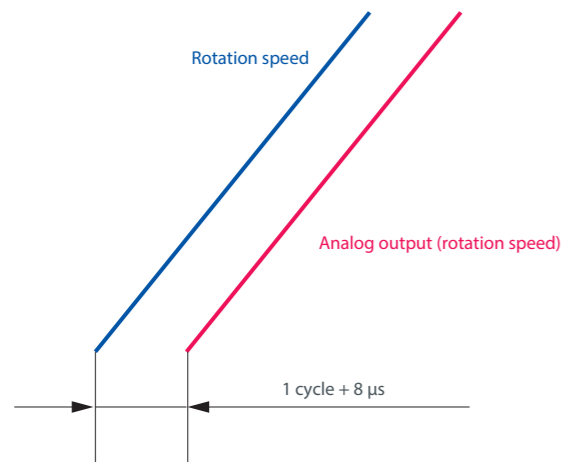
Analog signal cable (CT-0677 accessory) Connecting analog signal cable to BNC connector



CT-0677 Rear

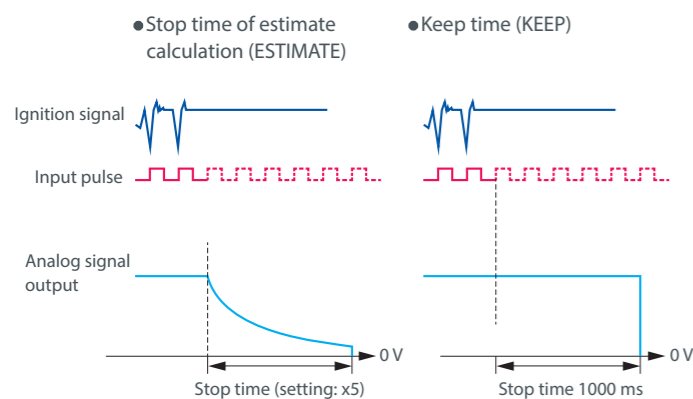
This is a separated meter that is recommended for those who want to see the rotation speed behavior using the meter needle. There is no need to connect the power to the display, and it can be used easily by simply connecting the analog signal cable. (Option: CT-0677)

## Various output functions that capture transient phenomena with high-speed response



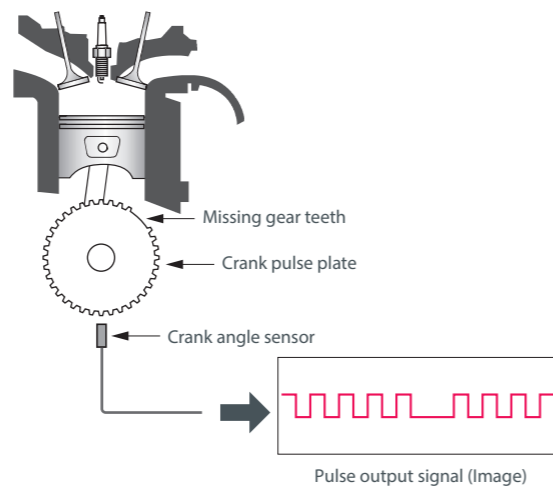
It catches transient phenomena of engine rotation speed with high response. The analog output follows up the behaviors of acceleration/deceleration within 1 cycle + 8  $\mu$ s of input signal. As for pulse output, waveform-shaped can be output without delay. High speed digital data output by CAN output function (option: CT-0671).

## Deceleration condition setup function for a sudden engine stop



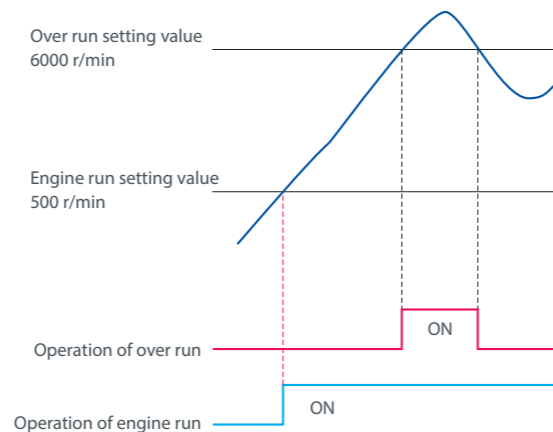
This function sets the stop condition when the detected pulse signals dramatically decrease due to a sudden engine stop, etc. The stop time of estimate calculation (ESTIMATE) function estimate from the last detected signal period, reduces the analog output, and then stops. The keep time (KEEP) sets the analog signal output to 0V at the specified time.

## Rotation speed measurement by ECU crank signal



As the crank pulse plate which generates the crank angle signals has additional teeth or missing teeth, the signals are not output equally. Therefore, by learning patterns with irregular intervals, it allows accurate measurements using crank angle signals. (Option: CT-0672)

## Comparator output function to monitor engine status



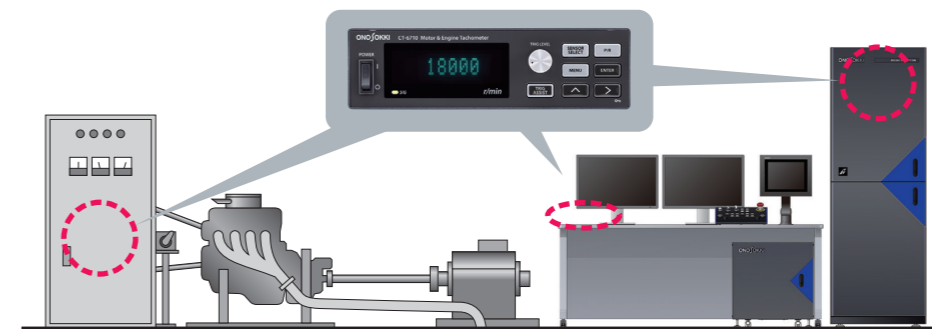
This function sets the conditions for determining engine run and overrun. When the engine speed exceeds the engine run setting, it is determined that the engine has started. When the overrun setting value is exceeded, it is determined that there is an engine abnormality and a contact signal is output.

The CT-6710 Motor and Engine Tachometer is lightweight and compact, inheriting the same design as the previous model (CT-6700). Even when placed on a desk, it doesn't interfere with your work space. In addition, we offer a wide range of options to facilitate installation on panels such as control panels and measurements on actual vehicles. It can be used in a variety of measurement situations.



## Measurement on test bench

Mounting on a panel:  
Attach the optional panel mounting fixture to the main unit.



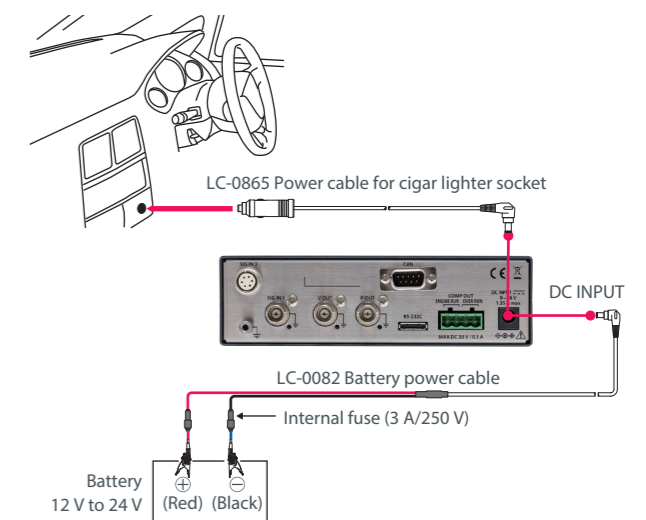
Mounting on a desk:  
Attach the rubber feet (x 4) to the bottom of the main unit. The rubber feet accessory have the protection feature against slippage and vibration.

## Measurement on a vehicle

Mounting on a vehicle:  
Providing a protection plate to protect the main unit from protruding objects and a light shielding hood to prevent external reflections.



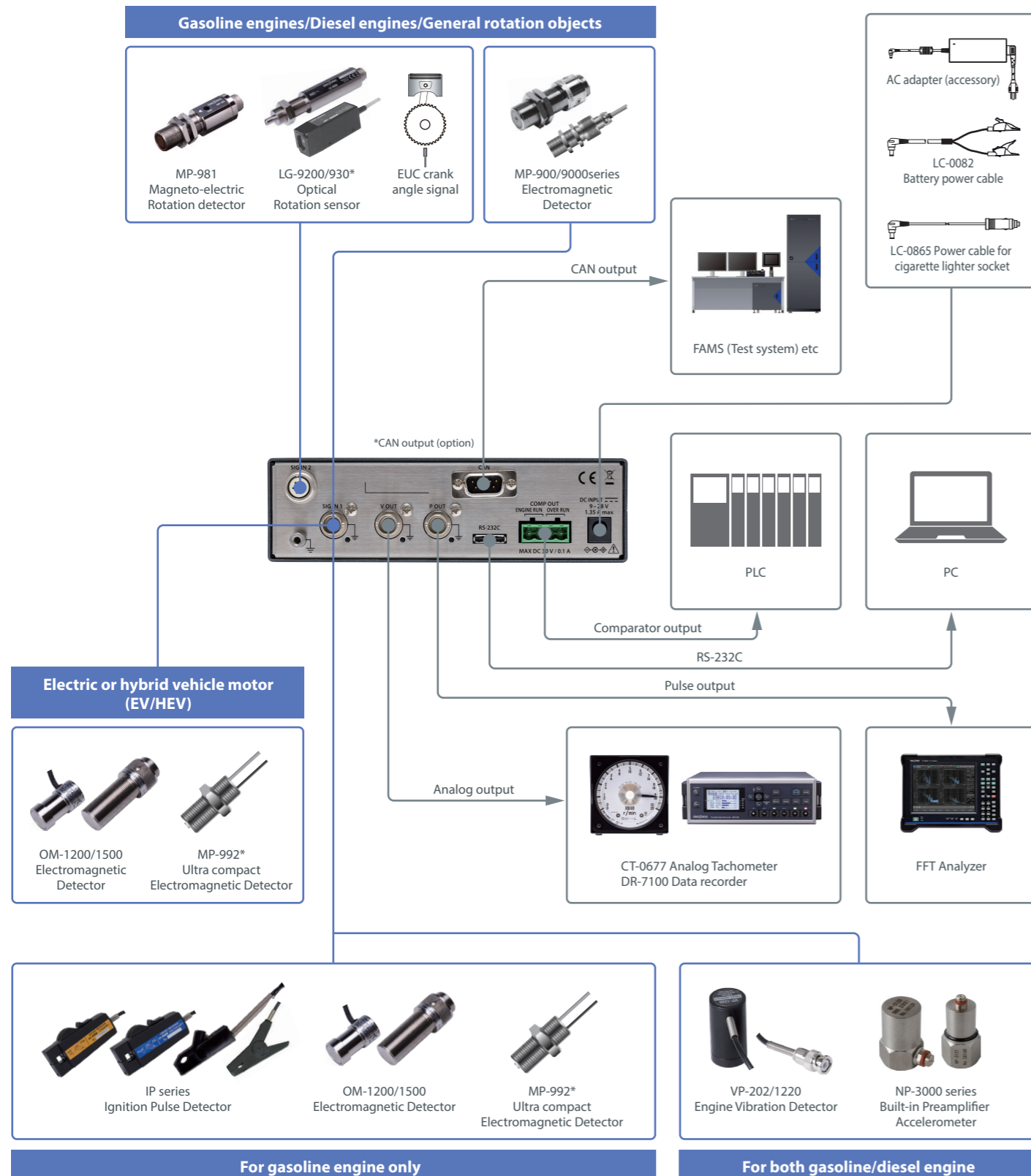
Power supply:  
Power can be supplied from a car battery or via a cigar lighter socket. (batter power cable: option)





## System configuration

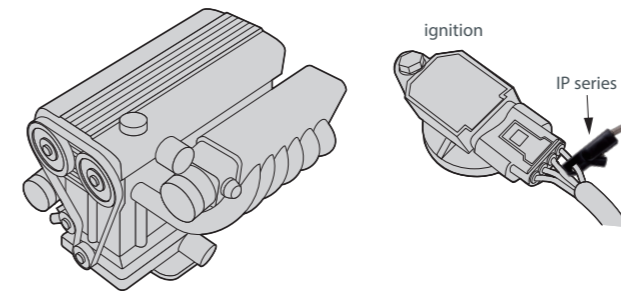
A wide variety of sensor lineup.  
With various output functions, monitoring, recording, and analyzing rotation speed can be realized flexibly.



\* The MP-992 uses direct FEP cable and the LG-930 uses one side open direct cable. We offer custom cable processing. Contact your nearest Ono Sokki sales office or the distributor where you purchased the equipment.

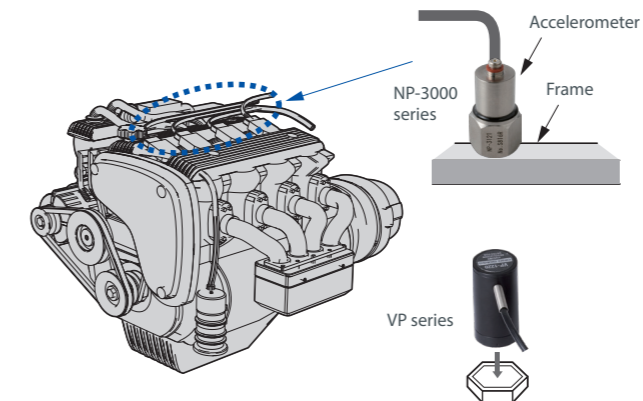
## Measurement examples

### Measurement of Gasoline Engine



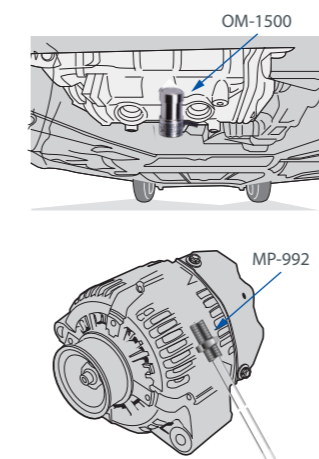
- **IP-292 for low voltage primary side**  
**IP-3000A/3100**  
Measure by clamping the low voltage primary side conductor
- **IP-296 for high voltage secondary side**  
**IP-3100**  
Measure by clamping the low voltage primary side conductor
- **OM-1200/1500**  
Measure by placing it close to the ignition coil in parallel

### Measurement of Diesel Engine Vibration



- **NP-3000 series**  
**VP-202/1220**  
Attach the sensor to the engine cylinder head bolt or engine fixing bolt to detect engine vibration. As for the NP-3000 series, use a magnetic base to attach. As for VP-202/1220, it has a magnetic bottom, thus it can be attached directly.

### Measurement of EV/HEV Motor or Alternator



- **OM-1200/1500**  
**MP-992**  
Detect leakage magnetic flux using electromagnetic induction method
- Motor (EV/HV)**  
Mount it perpendicular to the rotation axis of the motor, so it does not stick out of the motor.
- Alternator**  
Mount the long side of the sensor in the circumferential direction of the alternator. (In this case, the alternator rotation and the engine rotation need to be synchronized.)

Note: It may not be difficult to perform stable measurement depending on the type of motors or engines.

## ● Specifications

### CT-6710 Motor & Engine Tachometer

Input	Applicable sensor/ measurement range	IP-292/296/3000A/3100, VP-202/1220, NP-3000 series	120 to 20,000 r/min	
		OM-1200/1500, MP-992	120 to 99,999 r/min	
		MP-900/9000 series (Electromagnetic)	30 to 99,999 r/min	
		MP-981, LG-9200/930, EXT (PULSE)	0 to 99,999 r/min	
	ECU crank angle signal (optional)	120 to 20,000 r/min		
	Sensor power supply (R03-PB6M)	12 V ± 10% (100 mA or lower)		
	CCLD power supply (BNC)	18 V ± 1 V, 2.4 to 4.5 mA Current supplied coaxially to constant current drive sensor using the input connector (BNC)		
	Input frequency range	0.1 Hz to 120 kHz when EXT (Pulse)		
Display	Display method	Vacuum fluorescent display		
	Display size	52.5 mm × 11.5 mm		
	Display Item	Rotation speed (r/min) (average value)		
	Displayable range	0 to 99,999 r/min		
	Accuracy	Within ±0.01% FS (±1 count) * Factor value: 1.0000E + 0		
	Display status	SIG LED: Light each time when input signal is detected.		
	Number of display digits	Max. 5 digits		
	Number of digits after the decimal point	Selectable from OFF, one digit after the decimal point		
	Analog output	Number of output point	1 (BNC connector)	
		Output item	Rotation speed (r/min)	
Output range		0 to 10 V		
Range setting		1 to 99,999 r/min (set in steps of 1 r/min) 0.1 to 9,999.9 r/min (set in steps of 0.1 r/min): When the decimal point is set to be displayed		
Load resistance		100 kΩ or higher		
Response		Updates in less than 8 μs after cycle becomes stable.		
	Resolution	16 bit		
Pulse Output	Number of output point	1 (BNC connector)		
	Output item	DIRECT (Wave-shaped output) /0.5, 1, 60 [P/R]		
	Signal level	0 to 5 V logic signal (Lo: 0.4 V or lower, Hi: 4.5 V or higher)		
	Load resistance	100 kΩ or higher		
Comparator Output	Output item	Engine run, Over run		
	Output range	1 to 99,999 r/min 0.1 to 9,999.9 r/min (When the decimal point is set to be displayed)		
	Contact capacity	DC 30 V/0.1 A		
	Connector (Terminal block)	Phoenix Contact MVSTBR2, 5/4-ST-5, 08		
RS-232C	Transfer rate	9600 bps/38400 bps		
	Connector	ST60-18P(30) (Hirose Electric)		
	Dedicated cable	P5-D10758		
CAN (Optional CT-0671 CAN Output)	Output item	Rotation speed (r/min)		
	Baud rate	125 kbps/250 kbps/500 kbps/1 Mbps		
	Frequency of updating output	OFF/1 Hz/2 Hz/5 Hz/10 Hz/20 Hz/100 Hz/1 kHz		
	Connector	D-SUB9-pin (male)		

Other Functions	Moving average	2 to 720 times		
	Deceleration calculation	Selection of time or cycle	Time: 1 to 1200 ms Cycle: ×1.5 / ×3 / ×5 / ×8 / ×16	
	Pulse division	1 to 120		
	Trigger assist	Automatic setting of trigger level employed until pulse detection		
	Trigger level follow-up	Varies the trigger level according to the input frequency (dedicated function when IP sensor is selected)		
	Resume function	Preserving condition values even while power is off		
Condition memory	Maximum of five types of condition memory can be saved.			
General specifications	Power supply	DC 9 to 28 V, 1.35 A or lower		
	Outside dimensions /weight	170 (W) × 49 (H) × 120 (D) mm / Approximately 700 g		
	Operating temperature /humidity range	0 to +50 °C* / 5 to 85 %RH (no condensation)		
	Storage temperature /humidity range	-10 to +60 °C / 5 to 85 %RH (no condensation)		
	Conforming Standards	CE Marking	Low Voltage Directive: 2014/35 /EU Standard EN 61010-1	
			EMC Directive: 2014/30/EU Standard EN 61326-1 Class 1 Industrial environment RoHS Directive: 2011/65/EU Standard EN IEC 63000	
		FCC	47 CFR 15 Subpart B Class A	
Accessories	Rubber feet x 4, AC adapter (100 to 240V), Instruction manual			

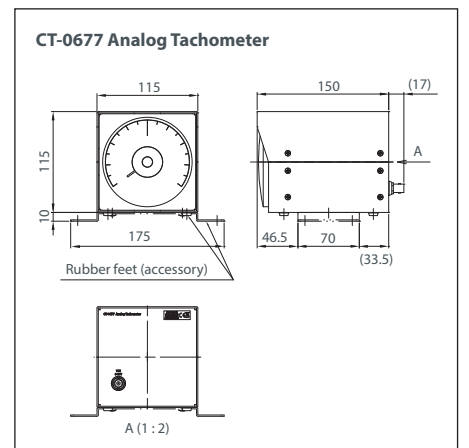
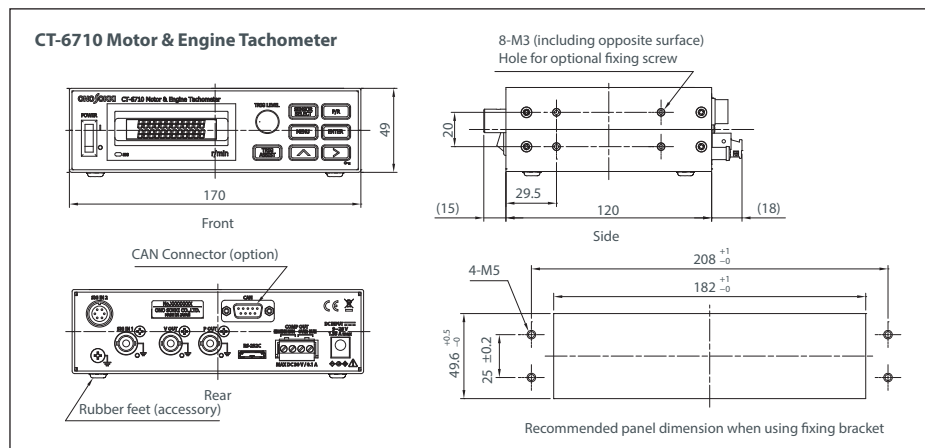
\* AC adapter operating temperature range: 0 to 40°C

### CT-0677 Analog Tachometer

Display unit	100 mm square wide-angle display		
Meter scales	0 to 10,000 r/min 0 to 20,000 r/min (Dual scale)		
Input specifications	0 to 10 V/0 to FULL (scale)		
Input connector	BNC-J		
Outside dimensions /weight	115 (W) × 115 (H) × 150 (D) mm (not including protrusion) /Approximately 1.1 kg		
Operating temperature /humidity range	0 to +50 °C* / 5 to 85 %RH (no condensation)		
Storage temperature /humidity range	-10 to +60 °C / 5 to 85 %RH (no condensation)		
Conforming Standards	CE Marking	EMC Directive: 2014/30/EU Standard EN 61326-1 Class 1 industrial environment	
		RoHS Directive: 2011/65/EU Standard EN IEC 63000	
Accessories	Connection cable, Fixing bracket x 1, Fixing bracket screw x 2, Rubber feet x 4, Instruction manual		

\* Assured accuracy range: 5 to 40°C

## ● Outer dimensions (Unit: mm)



**ONOSOKKI**

**WORLDWIDE ONO SOKKI CO., LTD.**

1-16-1 Hakusan, Midori-ku, Yokohama 226-8507, Japan  
Phone : +81-45-476-9725 Fax : +81-45-476-9726  
E-mail : overseas@onosokki.co.jp

\* Outer appearance and specifications are subject to change without prior notice.

URL : <https://www.onosokki.co.jp/English/english.htm>

**U.S.A.**  
Ono Sokki Technology Inc.  
2171 Executive Drive, Suite 400,  
Addison, IL. 60101, U.S.A.  
Phone : +1-630-627-9700  
Fax : +1-630-627-0004  
E-mail : info@onosokki.net  
<https://www.onosokki.net>

**THAILAND**  
Ono Sokki (Thailand) Co., Ltd.  
1/293-4 Moo.9 T.Bangphud  
A.Pakkred,  
Nonthaburi 11120, Thailand  
Phone : +66-2-584-6735  
Fax : +66-2-584-6740  
E-mail : sales@onosokki.co.th

**INDIA**  
Ono Sokki India Private Ltd.  
Plot No.20, Ground Floor, Sector-3,  
IMT Manesar Gurgaon-122050,  
Haryana, INDIA  
Phone : +91-124-421-1807  
Fax : +91-124-421-1809  
E-mail : osid@onosokki.co.in

**P.R.CHINA**  
Ono Sokki Shanghai Technology Co., Ltd.  
Room 506, No.47 Zhengyi Road, Yangpu  
District, Shanghai, 200433, P.R.C.  
Phone : +86-21-6503-2656  
Fax : +86-21-6506-0327  
E-mail : admin@shonosokki.com