

Supporting a wide variety of sensors Enabling various rotation speed measurement

ΟΝΟ Ο ΚΚΙ



CT-6710 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.



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.

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.

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)

Analog Tachometer (option)



CT-6710



CT-0677





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 μ 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).

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) 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.



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.

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.

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.

CT-0675 Protection Plate

Colors root mantage below 18000 S an Anim Color Colo

CT-0676 Light shielding hood





CT-0674 Panel mounting fixture for CT-6520 replacement





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

Measurement on a vehicle

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



Measurement of Diesel Engine Vibration NP-3000 Frame series





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



• OM-1200/1500 Measure by placing it close to the ignition coil in parallel

Accelerometer



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.



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.)

Specifications

CT-6710 Motor & Engine Tachometer

| CT 07 10 111010 | a chighne rachte | Jineter | | | |
|-------------------|---|---|----------------------|--|--|
| | | IP-292/296/3000A/3100, 120 to 20.000 r/min | | | |
| | | VP-202/1220, NP-3000 series | 120 to 20,000 1/1111 | | |
| | Applicable sensor/ measurement range | OM-1200/1500, MP-992 | 120 to 99,999 r/min | | |
| Input | | 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 \pm 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 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 | | | |
| | | Within ±0.01% FS (±1 count) | | | |
| Display | Accuracy | * 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 | | | |
| | Number of output point | 1 (BNC connector) | | | |
| | Output item | Rotation speed (r/min) | | | |
| Analog output | 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 us after cycle becomes stable. | | | |
| | Resolution | 16 bit | | | |
| Pulse Output | Number of output | 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 kO or higher | | | |
| | Output item | Engine run. Over run | | | |
| | oupartient | 1 to 99 999 r/min | | | |
| Comparator | Output range | 0.1 to 9.999.9 r/min (When the decimal point is set to be displayed) | | | |
| Output | 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 | PS-D10758 | | | |
| | Output item | Potation speed (r/min) | | | |
| CAN | Baud rate | notation speed (r/min) | | | |
| (Optional CT-0671 | Frequency of | 123 Kupa/230 Kupa/300 Kupa/1 Mupa | | | |
| CAN Output) | 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 | Selection of | Time: 1 to 1200 ms | |
| | | calculation | time or cycle | Cycle: X1.5/X3/X5/X8/X16 | |
| | | 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 | 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 | 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 | | |
| | | Standards | | 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

| 5 | | | | |
|--|--|---|--|--|
| Display unit | 100 mm square wide-angle display | | | |
| Meter scales | 0 to 10,000 r/min | | | |
| meter seares | 0 to 20,000 r/min (Dual scale) | | | |
| Input specifications | 0 to 10 V/0 to FULL (scale) | | | |
| Input connector | BNC-J | | | |
| Outside dimensions | 115 (W) ×115 (H) ×150 (D) mm (not including protrusion) | | | |
| /weight | /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 | CE Marking | EMC Directive: 2014/30/EU Standard EN 61326-1 Class 1 | | |
| Standards | | industrial environment | | |
| Stanuarus | | RoHS Directive: 2011/65/EU Standard EN IEC 63000 | | |
| A | Connection cable, Fixing bracket x 1, Fixing bracket screw x 2, Rubber feet x 4, | | | |
| Accessories | Instruction manual | | | |
| | | | | |

* Assured accuracy range: 5 to 40°C

• Outer dimensions (Unit: mm)





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 $\star\, {\rm Outer}$ appearance and specifications are subject to change without prior notice.

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