

Specification

Measurement object	Gasoline engines	Diesel engines	Motors(EV/HEV)	General rotating objects
Applicable sensor	<ul style="list-style-type: none"> Ignition pulse detector IP-296/292/3100/3000A OM-1200 Engine vibration detector VP-1220 	<ul style="list-style-type: none"> Engine vibration detector VP-1220 	<ul style="list-style-type: none"> Ignition pulse detector (electromagnetic type) OM-1200 	<ul style="list-style-type: none"> Rotation detector (electromagnetic type) MP-900/9000series *MP-981/9820 (magneto-electric type detector) are not applicable.
Object of measurement	<ul style="list-style-type: none"> Ignition coil, primary/secondary ignition cables ECU rotation pulses (5-V) Cylinder head of an engine etc. (when the VP-1220 used.) 	<ul style="list-style-type: none"> Cylinder head of an engine etc. (when the VP-1220 used.) 	<ul style="list-style-type: none"> Motor 	<ul style="list-style-type: none"> Rotation detection gear

*In the motor rotation measurement using the OM-1200, the measurement range may change according to the detector position or motor type.

	Gasoline, diesel engine rotation measurement	Rotation measurement other than an engine
Measurement unit	r/min (rotation speed)	r/min, r/s (rotation speed), m/min (line speed), ms (cycle), COUNT (accumulated count)
Input frequency range	1 to 1666.67 Hz	3.33 to 1666.6 Hz
Maximum measurement value	20,000 r/min (The maximum rotation speed is 20000 r/min regardless of the number of pulses per rotation.)	99999 r/min (P/R), 999.99 r/s(P/R=1), 9999.9 m/min (diameter= 100 mm), 300 (ms), 99999 (COUNT) The maximum value changes with the number of pulses per rotation.

Object to be measured	Engines, motors and general rotating objects
Display	5-digit LCD with backlight (character height: 10.2mm)

Calculation method	Periodic operation method
Measurement time	1s + input signal one-period time or less
Measurement accuracy	Displayed value* x ($\pm 0.02\%$) ± 1 count * The displayed value is the count value excluding figures after the decimal point. The measurement accuracy of the line speed depends on the accuracy of rotation speed (r/min) .
Setup range of the number of pulses (P/R)	0.50 to 200.00(engine rotation measurement) 0.50 to 999.99(other than engine rotation measurement) (can be set in 0.01)
Measurement function	
Peak hold function	Maximum value (MAX), minimum value (MIN)
Memory function	20 data (MAX)
Over-range function	The over-range (ERROR mark) is displayed when the measured value exceeds the display range.
Upper limit rotation warning function	The upper limit warning (\uparrow mark) is displayed when the number of rotations exceeds the preset upper limit value.
Line speed calculation function	Calculates the line speed from the preset diameter value (mm) and the measured number of rotations
Accumulating function	Cont accumulated pulses of input signal
Cycle measurement function	Measures the input pulse cycle (however, when the cycle is less than 1 s, measures the mean value of the input pulses)
Trigger level adjustment function	Trigger level can be adjusted using a rotary dial at the right-hand side of the device.
Output section	
Connector	$\phi 2.5$ mini-mini jack
Analog output	
Output content	Output to the display value of rotation speed
Output voltage	0 to 1 V/0 to F.S.
Conversion method	10-bit D/A conversion method
Linearity	$\pm 1\%$ / F.S.
Output refresh time	50 ms + Input signal one-period time or less
Temperature stability	$\pm 0.05\%$ of F.S./ $^{\circ}\text{C}$ (ZERO & SPAN)
Setting error	$\pm 0.5\%$ of F.S.
Load resistance	100 k Ω or more

Monitor output	
Output content	Detected signal of a sensor
Load resistance	100 kΩ or more
Output voltage	Hi level: +4.5 V or more Lo level: +0.5 V or less
Output logic	Positive logic pulse
Load resistance	100 kΩ or more
Operating temperature range	0 to +40°C
Storage temperature range	-10 to +50°C
Power supply	Type AAA battery (x 4) or exclusive AC adapter (PB-7090)
Continuous operating time	16 hours or more (backlight OFF), 8 hours or more (backlight ON)
Battery LOW display	Lights up at about 4.5 V
Outer dimensions	189.5 x 47.5 x 66 mm
Weight	Approx. 280 g
Accessories	Type AAA battery x 4, carrying case x 1, instruction manual x 1
Options	
Detectors	<ul style="list-style-type: none"> • IP-292/296 Ignition pulse detector • IP-3000A Ignition pulse detector • IP-3100 Ignition pulse detector • VP-1220 Engine vibration detector • OM-1200 Motor/gasoline engine RPM detector • OM-0102 Mounting fixture for OM-1200 (with pressure-sensitive adhesive sheet x 3) • MP-900/9000 Electromagnetic rotation detector <p style="text-align: center;">*The MP-980/9820 Magneto-electric rotation detector cannot be used.</p>
Peripherals	<ul style="list-style-type: none"> • MX series Signal cable for electromagnetic rotation detector MX-005 (5 m) / MX-010 (10 m) • LA-0203C Tripod • HT-0521A Stand jig (use with the HT-0522 magnet stand) • HT-0522 Magnet stand (use with the HT-0521A) • PB-7090 AC adapter • AX-501 Output cable with BNC connector

Option

IP-292/296 Ignition pulse detector **IP-3000A Ignition pulse detector** **IP-3100 Ignition pulse detector**



OM-1200 Motor/gasoline engine RPM detector (with OM-0102 mounting fixture)

VP-1220 Engine vibration detector

MP-900/9000 series Electromagnetic rotation detector



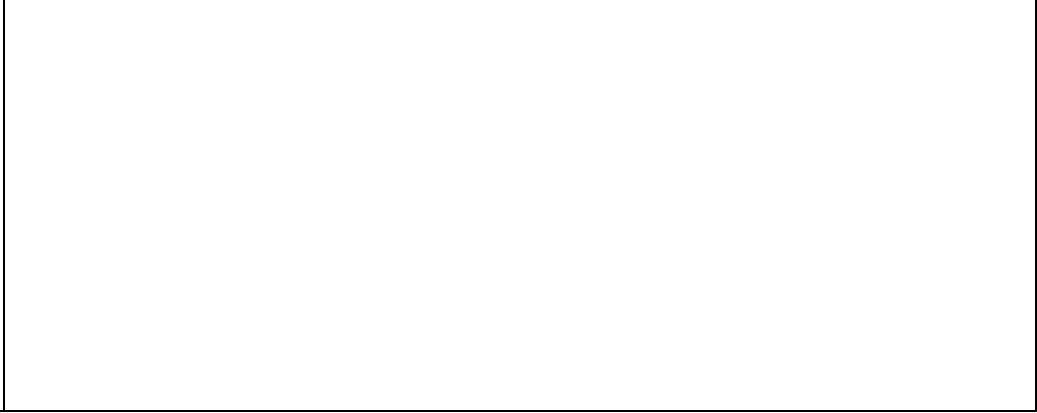
AX-501 Output cable with BNC connector

PB-7090 AC adapter

HT-0522/0521A Magnet stand/Stand jig



LA-0203C Tripod



Features

- **Rotation measurement of EV, HEV motors**
- **Rotation measurement of gasoline & diesel engines**
- **Applicable detector: Choose the detector depending on your application.**

Engine	IP-292/296 Ignition pulse detector IP-3000A/3100 Ignition pulse detector OM-1200 Motor/gasoline engine RPM detector VP-1220 Engine vibration detector
Motor	OM-1200 Motor/gasoline engine RPM detector
General rotating object	MP series electromagnetic rotation detector

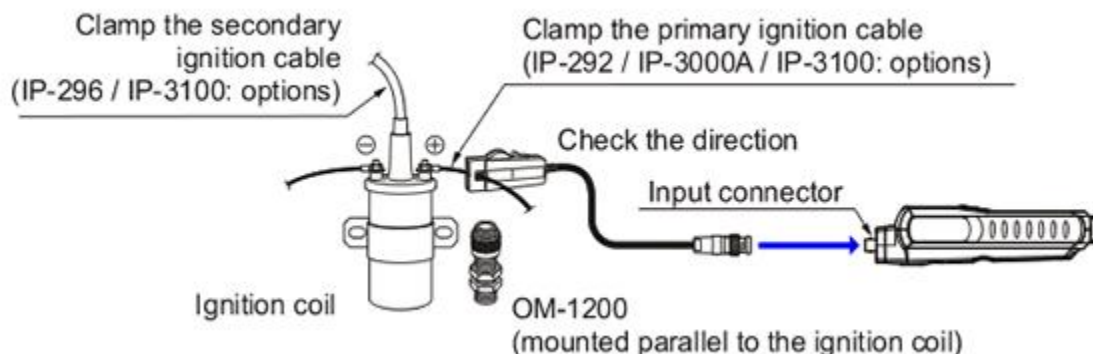
- **Up to 20 data can be stored. (Built-in memory function)**
- **The maximum and minimum values can be displayed during measurement. (Peak-hold function)**
- **Three outputs are provided as standard. (Analog, monitor and pulse)**

■ Analog output	Outputs to the display value of rotation speed. (for recording of rotation speed)
■ Monitor output	Outputs sensor signal after wave-form shaping (for checking waveform of detected signal)
■ Pulse output	Outputs one pulse for each signal detection (for rotation synchronous signal)

- **Large LED with backlight useful for checking the displayed value in dark place**

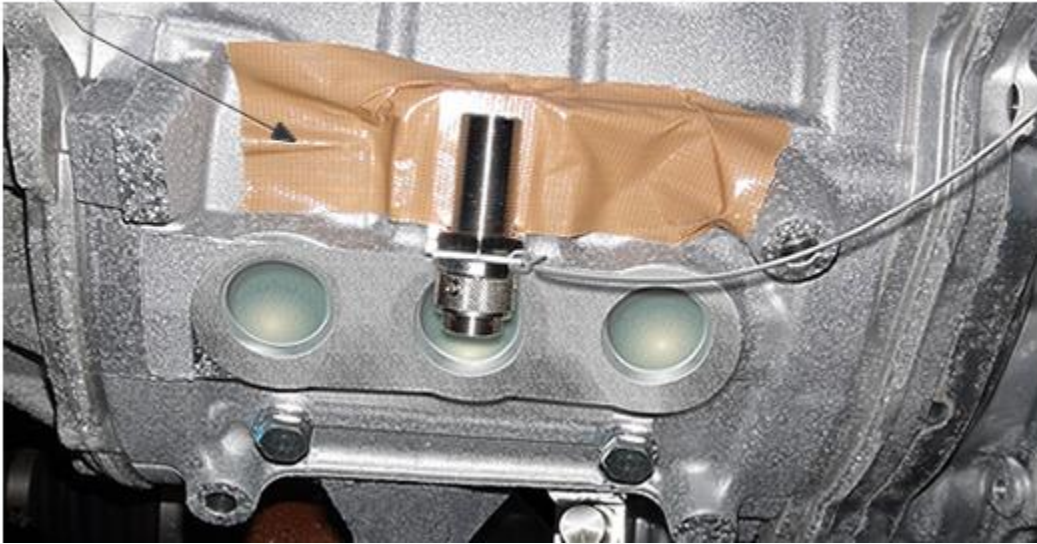
Measurement method

■ Gasoline engine



■EV·HEV motor

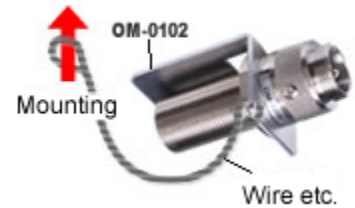
Mount the sensor (OM-1200/OM-0102) perpendicularly on a rotating shaft of a motor.
(Please take a safety measure to prevent sensor from dropping
such as fixing the sensor securely using tape etc.)



Caution about mounting a sensor



Before you perform running test mounting a sensor on an engine or a motor, clean the mounting surface with degreasing agent and fix the sensor securely using mounting fixture, safety wire and tape etc. Please take safety measures to prevent sensor from dropping.
(Please use a mounting hole of the OM-0102)

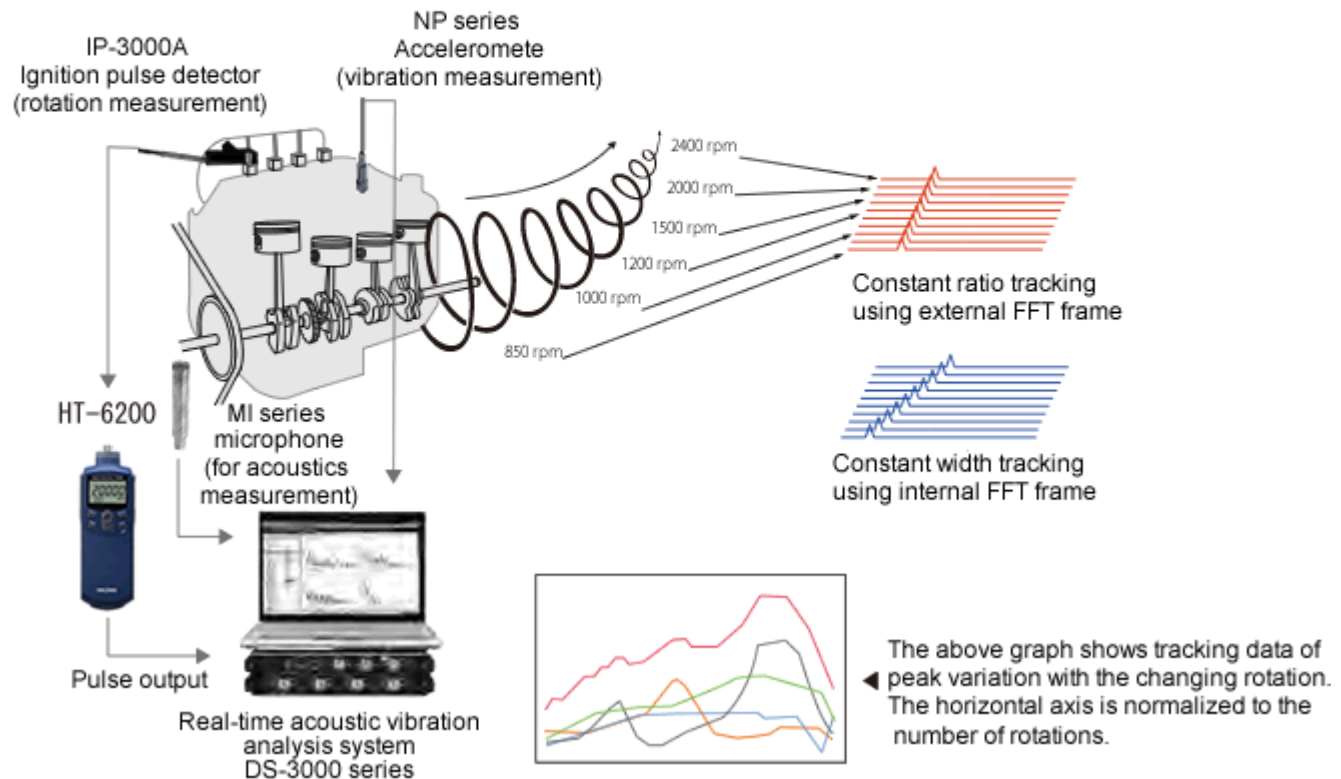


Application

■Gasoline engine

Tracking analysis of noise & vibration

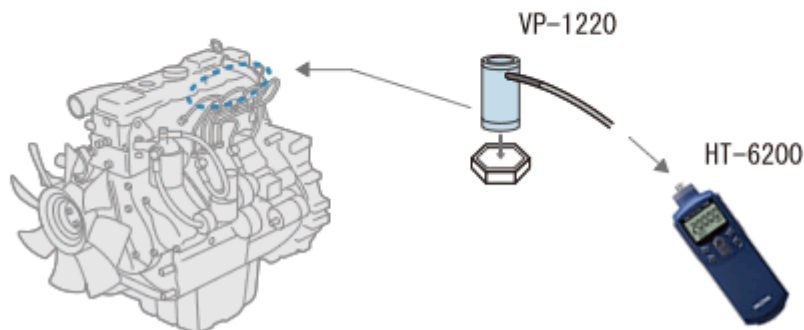
The pulse output signal from the HT-6200 can be used for tracking analysis. By measuring noise and vibration data and pulse signal from the HT-6200 with the FFT Analyzer, order-ratio analysis can be performed.



■ Diesel engine

Measuring rotation of diesel engines

The HT-6200 can measure rotation of a diesel engine combined with the VP-1220. By detecting engine vibration with the VP-1220, rotation speed of an engine can be measured. (The rotation of an engine with 6 or more cylinders may not be measured.)



■ EV·HEV motor

Measuring rotation of HEV motors

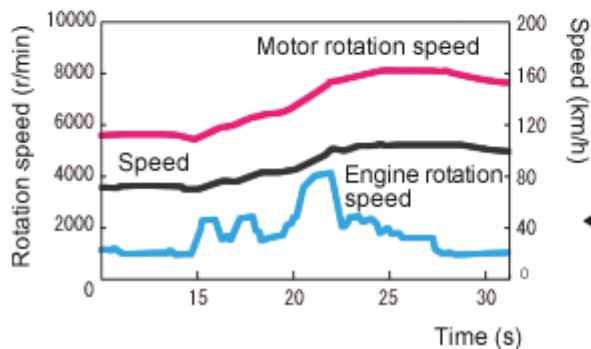
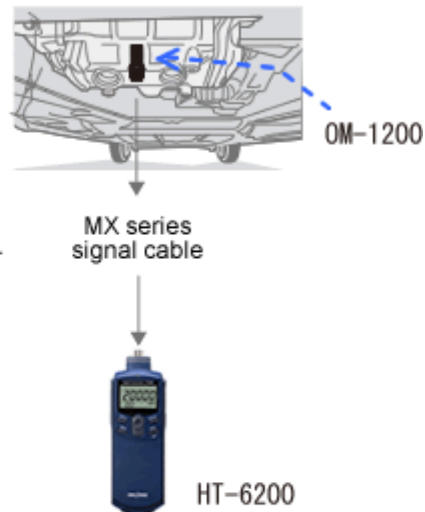
The HT-6200 can measure rotation of an EV/HEV motor combined with the motor rotation detector (OM-1220).

Mount the OM-1200 orthogonally on a rotating shaft of a motor.

The OM-1200 detects magnetic flux leakage from the motor.

The rotation can be measured easily by mounting the detector on outside of a motor. Processing for mounting detector is not required.

*The setting of the pole number is required for the HT-6200.



Actual running test of HEV

Motor rotation speed: measured by the HT-6200

Engine rotation speed: Measured by the HT-6200

Speed: Measured by the LC-8100

Caution about mounting a sensor



Before you perform running test mounting a sensor on an engine or a motor, clean the mounting surface with degreasing agent and fix the sensor securely using mounting fixture, safety wire and tape etc. Please take safety measures to prevent sensor from dropping. (Please use a mounting hole of the OM-0102)

