

# UNIVERSAL ENGINE TACHOMETER

## CT-6520

*Provides error-free digital rpm measurements and, when used in combination with Ono Sokki detectors, can be used to make rpm measurements on virtually any engine type.*



# ONO SOKKI

# Sensor selection enables rpm me



The CT-6520 Universal Engine Tachometer uses a multiplier circuit to both reduce measurements time and improve measurement accuracy. An input pulse selection switch is used to set the number of pulses produced by the detector for each revolution, enabling measurement on virtually any engine type. In addition, the CT-6520 can be used for rpm measurements on other rotating bodies as well.

## Major Features

- A selector switch can be used to specify the type of engine to be measured, optimizing measurement conditions for the Ono Sokki detector to be used.
- Used in combination with various detectors, rpm measurements are possible on 2/4-cycle engines having from one to eight cylinders.
- The number of input pulses per revolution can be set in the range 0.5 to 199.5 P/R in 0.5 P/R steps.
- Digital and analog outputs and pulse outputs are provided as standard.
- CE marking compatible.
- Both AC and DC-powered operation are possible, making the CT-6520 highly useful in both indoor and vehicle-mounted applications.
- Two speed levels can be preset for comparison.

## Applicable Detectors

### Detectors for Gasoline Engines

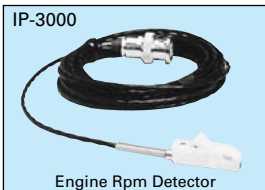
IP-292/296



Engine Rpm Detector

The IP-292/296 is clamped around the ignition coil cable to detect the spark signal of the ignition system. IP-292: Low-voltage (primary) side detection  
IP-296: High-voltage (secondary) detection

IP-3000



Engine Rpm Detector

The IP-3000 is clamped around the ignition coil cable to detect the spark signal of the ignition system and can be applicable for both low-voltage (primary) and high-voltage (secondary) side detection.

OM-1200

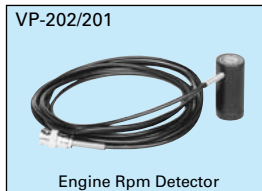


Engine Rpm Detector

The OM-1200 is an electromagnetic detector which detects the leakage flux from the magneto rotating shaft of engines having a magneto-type ignition system.

### Detectors for Both Gasoline and Diesel Engines

VP-202/201

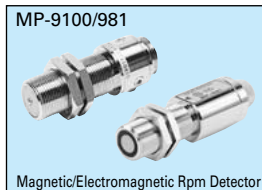


Engine Rpm Detector

The VP-202/201 is a magneto type vibration detector which detects the vibrations caused by the reciprocating up and down movement of the engine's piston. (Measurements on some 6-cylinder engines may not be possible.)

### Detector for Gasoline/Diesel Engines and Other Rotating Bodies

MP-9100/981



Magnetic/Electromagnetic Rpm Detector

The MP-9100/981 detector is mounted in close proximity to a detection gear mounted on the rotating shaft, and output a signal having a frequency proportional to the rpm.

LG-916



Opto-electric Rpm Detector

An LED light source and light receiver combination is used to detect the presence of a reflective mark affixed to a rotating part of the engine. The LG-916 includes the light source, light receiver and an amplifier in one unit.

## Measurements on all engine types.

### Specifications

#### Input Section

Applicable detectors : IP-292, IP-296, IP-3000, VP-202(201), (sold separately) OM-1200, MP-9100, MP-981, LG-916.  
 Measurement range : 400 to 20,000 r/min  
 Input pulse switching : 0.5 to 199.5 P/R (in 0.5 P/R steps) (depending upon detector)  
 Trigger level : IP-292/296/3000/OM-1200/VP-202/201:  
 Set using a dial-type potentiometer  
 Other detectors : Internally adjusted and fixed

\* The measurement range (i.e., upper rpm limit) will depend upon the detector used and the setting of the input pulse switch.

#### Digital Display

Type : 5-digit green LED display (maximum indication : 20,000 r/min)  
 Measurement time : Updated every 1 s  
 Time base : Quartz oscillator  
 Frequency : 16 MHz  $\pm 3 \times 10^{-5}$   
 Display accuracy :  $\pm 0.02\%$  of full scale  $\pm 1$  digit in the range 400 to 20,000 r/min

#### Alarm Section

Setting : By thumb-wheel switches  
 Range : Overrun: 1 to 199  $\times$  100 r/min  
 Running detection: 1 to 99  $\times$  100 r/min  
 Comparison interval : Every 100 ms  
 Output : Transfer contact  
 Capacity: Non-inductive load /AC240V 2A /DC30V 2A

#### Analog Output

Voltage output : 0 to 10 V/ 0 to 20,000 r/min, load resistance : 1 k $\Omega$  min.  
 0 to 2 V/ 0 to 20,000 r/min (Optional)  
 Current output : Optional  
 0 to 20 mA/ 0 to 20,000 r/min, load resistance : 100 k $\Omega$  max.  
 Note : The voltage output is eliminated when the current output is provided.  
 Linearity :  $\pm 0.5\%$  of full scale  
 Output adjustment range :  $\pm 4\%$  of full scale (zero),  $\pm 4\%$  of full scale (span)  
 Response time : 80ms from 10% to 90% level

#### Digital Output

Format : BCD, TTL level, fanout : 2  
 (Receptacle connector type: 57-40500)

#### Pulse Output

Format : 1 P/R, 60P/R (un-synced to the input signal) and wave-shaped output of the input signal TTL level, fanout : 2

#### General Specifications

Power requirements : 100 to 240 VAC  $\pm 10\%$ , approx. 30W  
 11 to 15 VDC, approx. 25W  
 Operating temperature range : 0 to +40°C  
 Dimensions and weight : 210(W) $\times$ 99(H) $\times$ 300(D)mm, approx. 3kg  
 Accessories : AC power cable (1.9m long)  
 DC power cable (3.5m long)  
 Midget fuses (one each for AC and DC)  
 Instruction manual

### Pulse Selector Setting for Engine Rpm Measurements

#### (1) IP-292/3000 Detector (Primary Side of Gasoline Engine Ignition Coil)

Pulse selector setting(P/R)	0.5	1	1.5	2	2.5	3	4
4cycles	1cyl.	2cyl.	3cyl.	4cyl.	5cyl.	6cyl.	8cyl.
2cycles		1cyl.		2cyl.		3cyl.	4cyl.

#### (2) IP-296/3000 Detector (Secondary Side of Gasoline Engine Ignition Coil)

Pulse selector setting(P/R)	0.5	1
4cycles	<input type="radio"/>	
2cycles		<input type="radio"/>

#### (3) VP-202 (201) Detector (For 4-Cylinder Diesel/Gasoline Engine)

Pulse selector setting(P/R)	2	4
4cycles	<input type="radio"/>	
2cycles		<input type="radio"/>

\*The above number of cylinders will depend upon the engine ignition system type.

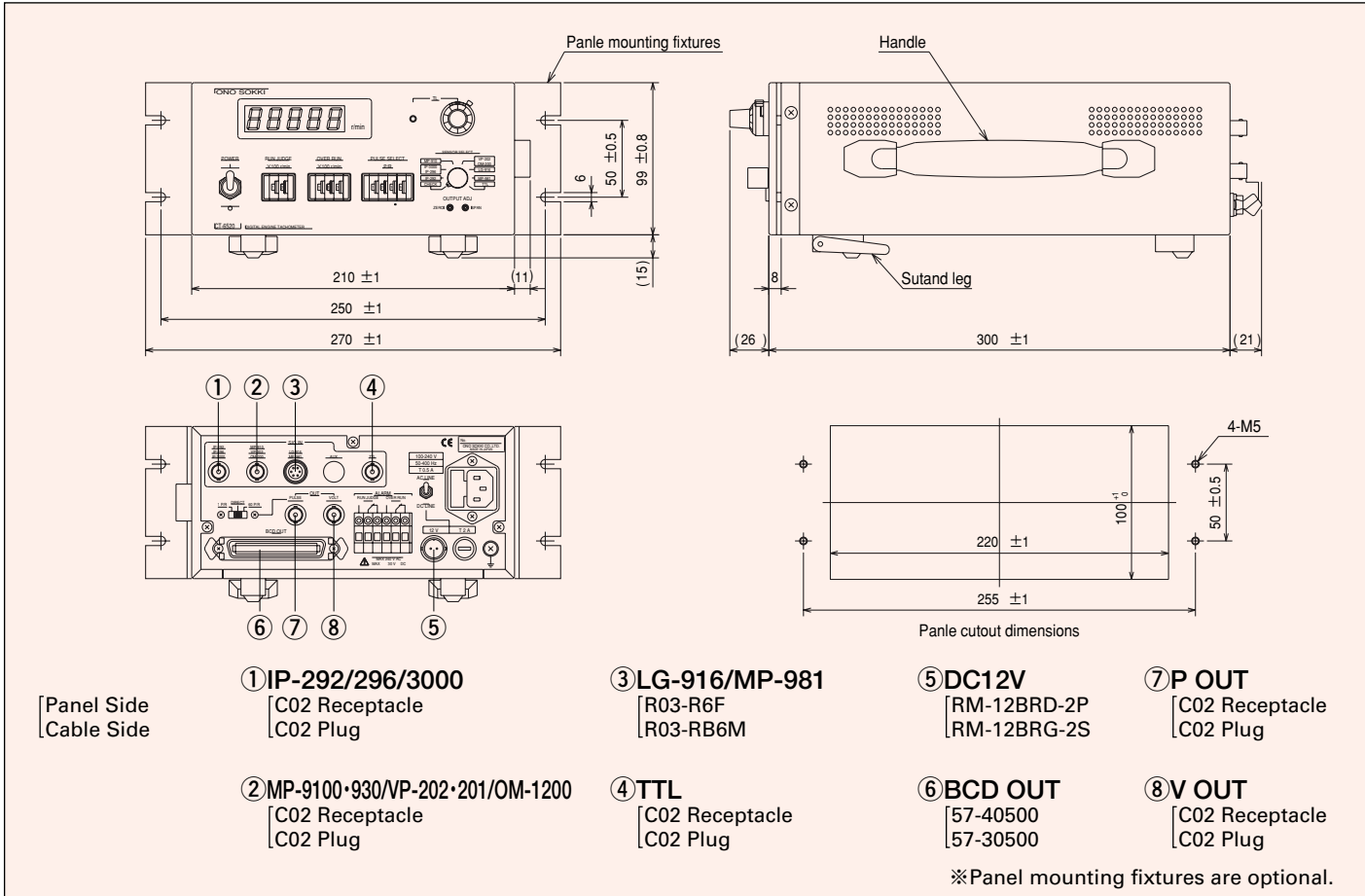
\*For engines having dummy spark cycles, the pulse selector setting and number of cylinder combinations will differ.

### Overrun Alarm and Engine Running Detection Function

	0 Below running detection level	Upper limit 20000r/min	
RUN JUDGE			When rpm exceeds the preset level, the meter will output a contact signal. It can be used for the lower limit alarm, also.
OVER RUN			When rpm exceeds the preset level, a contact signal will be output as an overspeed alarm.

# Outer Dimensions, Panel Cutout Dimensions and Panel Description

(Unit: mm)



## Signal Cable Guide

Detector type	Detector output cable	Detector output connector	Connecting cable
IP-292/296	Approx. 4.9m, direct output (3C-2V)	CO2 plug	<p>Required to extend the IP-292/296/3000 and VP-202</p> <p>(A connecting cable is not required for the IP-292/296/3000 and VP-202.)</p>
IP-3000	Approx. 4.9m, direct output (FEP-fluorocarbon resin)	CO2 plug	
VP-202	Approx. 2.9m, direct output (Chloroprene)	CO2 plug	
MP-930	Approx. 0.5m, direct output (3C-2V)	CO2 plug	
OM-1200	—	12R2A	<p>MX- 005 5 m MX- 020 20m                      010 10m 030 30m                      015 15m</p>
MP-9100	—	12R2A	<p>MX- 805 5 m MX- 815 15m                      810 10m 820 20m</p>
MP-981	—	R04-R6M	
LG-916	—	R04-R6M	<p>Jack Chloroprene wires CT-002 5 m</p>
VP-201	Approx. 2.9m, direct output (Chloroprene)	PS109 (Miniplug-terminated cable)	

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

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

## ONO SOKKI

### U.S.A. & CANADA

Ono Sokki Technology Inc.  
 2171 Executive Drive, Suite 400  
 Addison, IL. 60101 U.S.A.  
 Phone : 630-627-9700  
 Fax : 630-627-0004  
 URL : <http://www.onosokki.net>  
 E-mail : [info@onosokki.net](mailto:info@onosokki.net)

### THAILAND

Ono Sokki (Thailand) Co., Ltd.  
 29/67 Moo 5 Tivanon Road, Pakkred,  
 Nonthaburi 11120, Thailand  
 Phone : 02-964-3884  
 Fax : 02-964-3887  
 E-mail : [osth\\_sales@onosokki.co.jp](mailto:osth_sales@onosokki.co.jp)

### P.R.CHINA

Ono Sokki Beijing Office  
 Beijing Jing Guang Center 3510  
 Hu Jia Lou, Chao Yang Qu  
 Beijing P.R.C. 100020  
 Phone : 010-6597-3113  
 Fax : 010-6597-3114  
 E-mail : [onosokki@public.bta.net.ch](mailto:onosokki@public.bta.net.ch)

### WORLDWIDE

Ono Sokki Co., Ltd.  
 1-16-1 Hakusan, Midori-ku,  
 Yokohama 226-8507, Japan  
 Phone : 045-935-3976  
 Fax : 045-930-1906  
 E-mail : [overseas@onosokki.co.jp](mailto:overseas@onosokki.co.jp)