

# GE-1400

## Instruction Manual (Function Reference)

Thank you for your selection of the GE-1400 Digital Engine Tachometer.

To ensure the performance of the GE-1400, please read this manual thoroughly together with the instruction manual of the CP-044 Detector (option).

### Functions and Operations

#### 1. Power Supply Switch

When you slide the power switch upward, the power of the main unit turns ON.

When you turn ON the power, the software version is displayed in the MAIN display and the product code "GE1" of the main unit in the SUB display. Then, the measurement mode is entered.

For each parameter, the condition of previous measurement is backed up.

When you perform measurement for the first time, set each parameter first.

#### 2. Function of Each Switch

When you turn ON the power, each switch has a different function between the measurement mode and the parameter setup mode

The function of each switch in each mode is shown below.

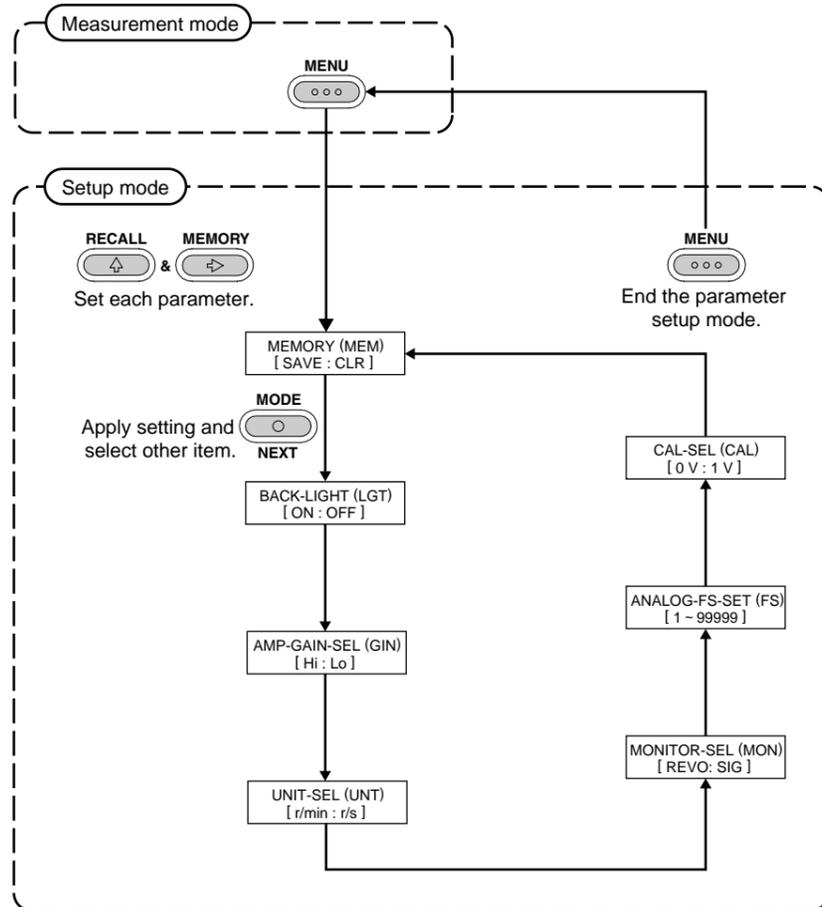
	Measurement Mode	Parameter Setup Mode
Power switch	Ends the measurement mode and then turns OFF the power.	Cancels the current setting and then turns OFF the power.
RECALL & switch	Recalls the memory value in sequence.	Changes the selection of the current setting. During numerical parameter setting, increments the numerical value of the relevant digit. When 9, returns to 0.
MENU switch	Selects the parameter setup mode. When pressed during memory value call, returns to the measurement mode.	Establishes the current setting condition and then change to the measurement mode.
MEMORY & switch	Memorizes up to 20 measurement values present when pressed.	During numerical parameter setting, moves the setting cursor to the right. When it is at the least significant digit, returns to the most significant digit.
MODE & NEXT switch	Changes the peak-hold mode (MAX, MIN and normal) in order.	Establishes the current setting condition and then moves to the next setting.

#### 3. Setup Mode

When you press the MENU switch in the measurement mode, the parameter setup mode is selected.

Then, set parameters using the RECALL & and MEMORY & switches. Apply parameters and select items using the MODE & NEXT switch.

The operation flow in the parameter setup mode is shown below.

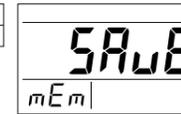


Setting clearance of all memory values (Memory mEm)

When you press the MODE & NEXT switch when "CLr" is displayed in the MAIN display or press the MENU switch to return to the measurement mode, the memory values are all cleared.

Note: The setting of this function is not retained. When you select this item, "SAuE" is initially selected.

SAuE	Saves the memory values.
CLr	Clears all the memory values.



Also for the following settings, when you press the MODE & NEXT switch to move items or press the MENU switch to return to the measurement mode, the setting condition is established.

Setting the lighting condition of the LCD back light (Light LGT)  
Turn the LCD back light ON or OFF

OFF	Back light OFF
ON	Back light ON

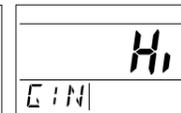
\* Set to "OFF" at the time of shipment.



Setting the gain of the sensor amplifier (GAIN GIN)  
Set the gain for the sensor amplifier.

Hi	Sets the gain for the sensor amplifier to the Hi level. Usually, measurement is performed with the Hi level setup. However, if the rotational speed is not stable (the rotational speed becomes slightly high) when, for example, disturbance noise or signal of other cylinders is detected, set the gain to the Lo level.
Lo	Sets the gain for the sensor amplifier to the Lo level. If the rotational speed is not stable (the rotational speed becomes slightly low) when the Lo level is selected, the amplitude of the sensor signal may be small. Set the gain to the Hi level.

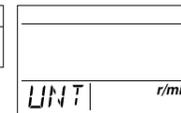
\* Set to "Hi" at the time of shipment.



Setting the measurement unit (Unit UNT)  
Select the measurement unit.

r/min	Rotational speed per minute
r/s	Rotational speed per second (Decimal point position 0.00)

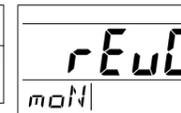
\* Set to "r/min" at the time of shipment.



Selecting the analog monitor output (Monitor moN)  
Select the signal to be output as an analog output.

rEuO	Voltage output proportional to the rotational speed
Sig	Output for monitoring the sensor signal after waveform shaping (before pulse conversion)

\* Set to "rEuO" at the time of shipment.



Setting the analog output full-scale value (Full Scale FS)  
Set the count value corresponding to the full-scale value (F.S. value: 1V) of the analog voltage output.  
Setup range: 1 to 99999 (when 0 is set, 1 is set automatically)  
When 10000 r/min corresponds to 1V, set 10000.

\* Set to "99999" at the time of shipment.



Setting analog output calibration (Calibration CAL)  
Output the calibration signal at 0V or 1V for the analogue voltage output.

Note: The setting of this function is not retained. When you select this item, "0u" is selected initially.

The selected analog output is enabled only while the same item is selected.

0 V	Output at 0V
1 V	Output at 1V



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Omission of Issuance of Certificate  
This product has been tested under strict inspections for correct operation before shipment. Please note that the issuance of certificate is omitted.

- Warranty
- This product is covered by a warranty for a period of one year from the date of delivery.
  - This warranty covers free-of-charge repair during the warranty period for defects occurred while the product is used under correct operating conditions according to descriptions in this manual and notices on the unit label.
  - For free-of-charge repair during the warranty period, contact your dealer or your nearest Ono Sokki sales office nearby.
  - Even during the warranty period, the following failures will be handled on a fee basis.
    - Failures or damages occurring through misuse, misoperation, repairing without ONO SOKKI'S approval.
    - Failures or damages occurring through mishandling (dropping) during transportation after purchase.
    - Failures or damages occurring by an Act of God (fires, earthquakes, flooding, and lightning), environmental disruption, or abnormal voltage.
    - Replenishment of expendable supplies, spare parts, and accessories.

This guarantee covers only the performance of the product itself only.  
All inconvenience by the trouble of this product is not included.  
\*Outer appearance and specifications are subject to change without prior notice.  
HOME PAGE: <http://www.onosokki.co.jp/English/english.htm>

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## Measurement Operations

### 1. Memorizing Measurement Values

To memorize the current measurement value, press the MEMORY & switch during measurement.

When the measurement value is memorized, the numerical value in the SUB display is incremented.

Therefore, the number "00" in the SUB display indicates that there is no measurement value memorized.

Up to 20 measurement values can be memorized. When the number of the memory values reaches 20, no more values can be memorized.

When you press the MEMORY & switch at this time, "FUL" is displayed.



Since memory values are stored in non-volatile memory, they are retained even if you turn the power OFF.

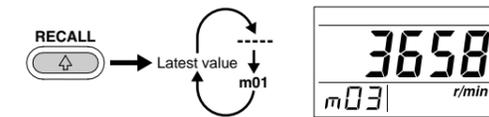
### 2. Recalling Memory Values

Memory values can be recalled by pressing the RECALL & switch in the measurement mode.

The memory No. is displayed as "mXX" (for example, m05) in the SUB display.

Memory values are recalled from the latest memory No. and then in order of the memory No., m01, m02, m03, and so on.

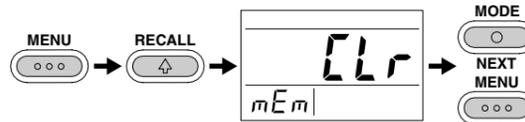
If there are three memory values, the value of memory No. m03 is displayed first. Then, the SUB display displays m04 and the MAIN display displays " - - - - " indicating that there is no measurement value memorized. Therefore, if there is no memory value, " - - - - " is displayed at m01.



To return to the measurement mode, press the MENU switch. The numerical value in the SUB display changes to "XX" which indicates the number of values memorized (without leading "m").

### 3. Clearing All Memory Values

To clear all memory values, select "CLr" for setup item "mEm" (Memory) in the setup mode and then press the MODE & NEXT switch or press the MENU switch to return to the measurement mode.



When the memory values are cleared, the numerical value in the SUB display becomes "00."

Note: When you perform the memory clear operation (all clear), the memory values are all cleared. When there is a peak-hold value, it is also cleared at the same time.

## Description of CONDITION Display Section

### 1. ERROR Display

If the error alarm mark "ERROR" lights up, one of the following error has occurred.

If the input frequency exceeds the upper-limit frequency 66.67Hz, an over-frequency error occurs.

\* Although the display value is averaged, the mark lights up if the result of single measurement exceeds the upper-limit frequency.

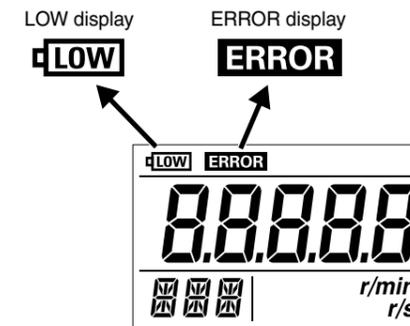
If the rotational speed exceeds the specified range

- a) If 8000 r/min is exceeded
- b) If 133.33 r/s is exceeded

### 2. LOW Display

If the low alarm mark "LOW" lights up, the battery has been consumed and the low battery condition occurred.

- This mark lights up if the battery voltage drops to 4.5V or less.
- If this mark lights up, immediately replace the four batteries with new ones. Using the consumed batteries may disable measurement.
- If the batteries are further consumed under this condition, measurement is disabled and the MAIN display displays " - - - - ."
- If the battery voltage drops to about 4.5V or less, the back light becomes dark (with no problem).

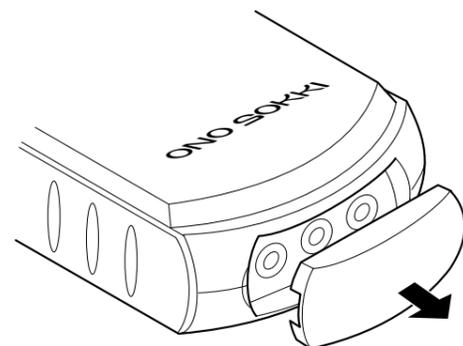


## Outputs

### 1. Analog Output

【When REVO is selected】

- The analog voltage output of the value set in the setup mode as the analog output "F.S." (full scale) setting is output from the analog output connector.
- The analog output becomes 1V when the value of the MAIN display agrees with the full-scale setting. The minimum load resistance of the analog output is 100k .

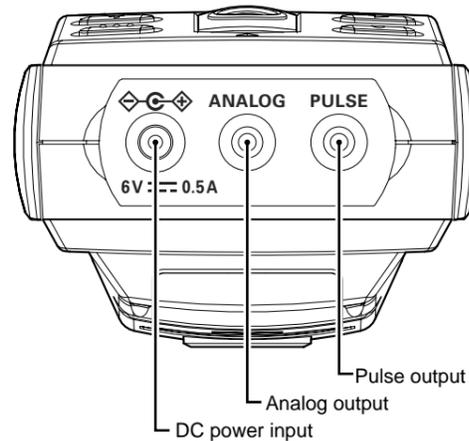


【When SIG is selected】

- The shaped waveform of the sensor signal (signal before pulse waveform conversion) is output.

### 2. Pulse Output

- A pulse waveform shaped according to the detected rotational signal is output from this connector.
- As for the output level, the Hi level is 4.5 to 5V and the Lo level 0 to 0.5V. The minimum load resistance is 100k .



## Troubleshooting

If you perceive any abnormal condition, first check the following points. If the instrument does not operate correctly after check, contact your dealer (Ono Sokki agency) or Ono Sokki sales office nearby.

Symptom	Check Point	Countermeasure
No display	Are batteries set ? Are the batteries set at correct polarity ? Are batteries consumed ? When using the AC adapter, is the dedicated AC adapter connected to an outlet and the DC input connector of the main unit ?	Set batteries. Put the batteries at the correct polarity. Replace all batteries with new ones. Plug the dedicated AC adapter to an outlet and then connect the DC plug to the DC input connector of the main unit.
Unstable display	Is the rotational speed slightly high ?  Is the rotational speed slightly low ?  Has measurement error occurred ?	When the gain for the sensor amplifier is Hi, selection may not be appropriate. Set the gain for the sensor amplifier to the Lo level. When the gain for the sensor amplifier is Lo, selection may not be appropriate. Set the gain for the sensor amplifier to the Hi level. The sensitivity may be higher than necessary. Re-adjust it using the trigger level adjustment knob. (Refer to Basic Operations/Before Use/2. Measurement/ (7) Setting the trigger level adjustment knob.)

\* If the problem cannot be solved with Troubleshooting, perform the following operation to restore all the settings to the initial conditions (settings at the time of shipment). While pressing the RECALL & switch and MENU switch, turn the power ON. The GE-1400 returns to the initial condition. However, memory values are retained (not cleared).