Handheld Digital Tachometer
HT-5500

Instruction Manual (Function Reference)

Thank you for your selection of the HT-5500 Handheld Digital Tachometer.
To ensure the performance of the HT-5500, please read this manual thoroughly.

ONO SOKKI

Functions and Operations

1.Power 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 product code "HT5" of the main unit is displayed in the SUB display. Then, the measurement mode is entered.

For each parameter, the condition of previous measurement is backed up. However, the peak-hold mode becomes the "NORMAL" condition.

Set each parameter at first whenever the measurement condition and function shall be changed.

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. Establish parameters and select items using the MODE & NEXT switch.
The operation flow in the parameter setup mode is shown below.
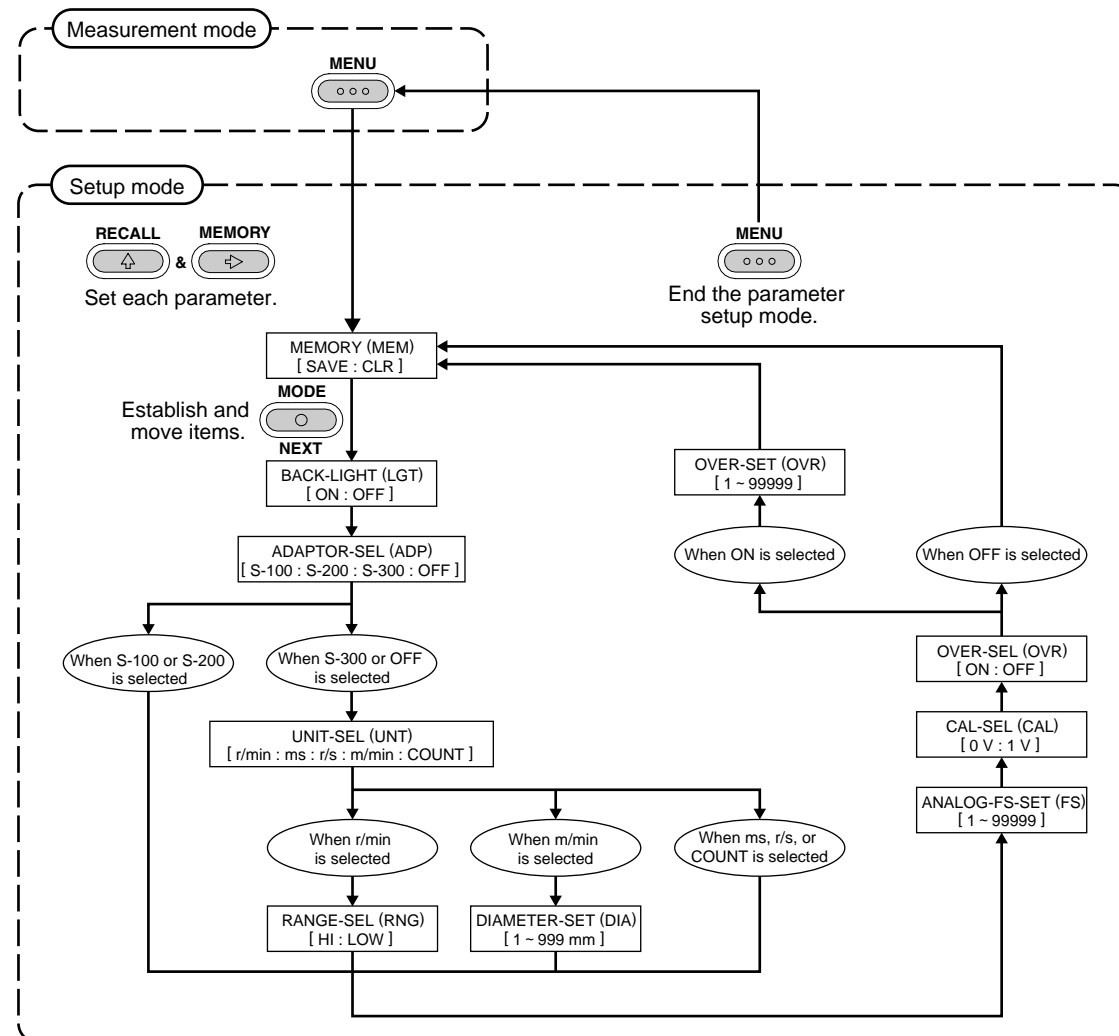
Setting clearance of all memory values (Memory　mEm)
When you press the MODE & NEXT switch when "CLr" is displayed in the MAIN display or press the MENU switch to return to the measurement mode, the memory values are all cleared.
Note: The setting of this function is not retained. When you select this item, "SAuE" is initially selected.

| SAuE	Saves the memory values.
CLr	Clears all the memory values.
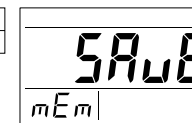
Also for the following settings, when you press the MODE & NEXT switch to move items or press the MENU switch to return to the measurement mode, the setting condition is established.

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.
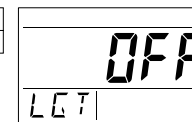
Setting the contact adapter (Adaptor　AdP)
Select whether the contact adapter is used or not and the type of tip accessories.
When KS-100 or KS-200 is selected, the measurement unit is converted automatically into line speed.
KS-100: The measurement unit is set to m/min.
Note: Owing to no capability to display the unit of "mm/s", r/min is displayed instead. Read the unit as "mm/s" for usage.
KS-200: The measurement unit is set to m/min.

| OFF	Adapter not used (non-contact).
S-100	Adapter + KS-100 (circumferential ring)
S-200	Adapter + KS-200 (circumferential ring)
S-300	Adapter + KS-300 (contact)

* Set to "OFF" at the time of shipment.
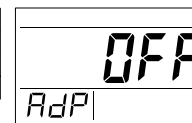
Setting the measurement unit (Unit　UNT)
Select the measurement unit for each measurement.
Note: Except for COUNT, if no input signal is received for 10 seconds, "0" or "0.0" is displayed.

r/min	Revolution (No decimal point or 0.0)
ms	Average period time (Decimal point position 0.0)
r/s	Revolution (Decimal point position 0.00)
m/min	Line speed (Decimal point position 0.0)
COUNT	Accumulated value (No decimal point)

* Set to "r/min" at the time of shipment.
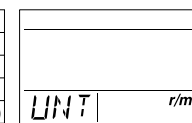
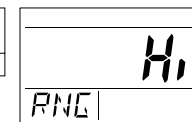Setting the measurement range (Range　RNG)
(Enabled only when r/min is selected as the unit setting.)
Select high-speed revolution or low-speed revolution.

Hi	6 to 99999 r/min (non-contact)
	6 to 20000 r/min (contact)
Lo	6.0 to 600.0 r/min (non-contact and contact)

* Set to "Hi" at the time of shipment.
* When Lo range is selected, it is displayed at one digit after decimal point (0.0 r/min).

The above revolution corresponds to frequency 0.1 to 1666.66 Hz (non-contact) for Hi and frequency 0.1 to 10Hz for Lo. If the input signal exceeds this range, the error alarm mark "ERROR" lights up.

Setting the diameter of the body of revolution (Diameter　dIA)
(No diplaying when KS-100/KS-200 is used.)
Set the diameter of the body of revolution when obtaining the revolution from the line speed.
Setup range: 1 to 999 mm (When 0 is set, 1 is set automatically.)

* Set to "100" at the time of shipment.
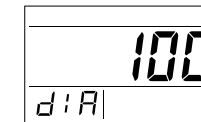
Setting the analog output full-scale (Full Scale　FS)
Set the count value corresponding to the full-scale (F.S. value: 1 V) of the analog voltage output.
Setup range: 1 to 99999 (When 0 is set, 1 is set automatically.)
Note: When Lo range is selected, the values is set which disregard the decimal point.
Set 1000 when 1V is output against 100.0 r/min.

* Set to "99999" at the time of shipment.
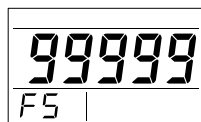
Setting analog output calibration (Calibration　CAL)
Output the calibration signal at 0V or 1V for the analogue voltage output.
Note: The setting of this function is not retained. When you select this item, "0u" is selected initially.
The selected analog output is enabled only while the same item is selected.

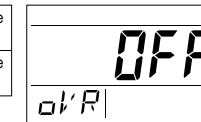| 0 V	Output at 0 V
1 V	Output at 1 V
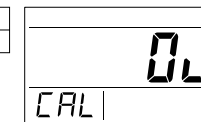
Setting the upper limit value against measurement value (Over　oVR)
Turns the measurement value peak-limit function ON or OFF.

OFF	Over alarm function for upper limit value against measurement value OFF
ON	Over alarm function for upper limit value against measurement value ON

* Set to "OFF" at the time of shipment.
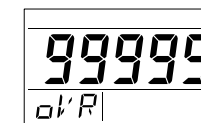
Setting the upper limit value (Over　oVR)
(Can be set only when the over alarm function against upper limit value is set to ON.)
Set the upper limit value.
If the measurement value exceeds the specified value, OVER mark "▲" lights up.
Setup range: 1 to 99999 (When 0 is set, 1 is set automatically.)

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

Note: When measured using the contact adapter, if the following values are exceeded, OVER mark "▲" blinks (even when the measurement value peak-limit function is set to OFF).

1) r/min unit　: 20000 r/min
2) m/min unit　: 400.0 m/min
3) mm/s unit　: 4000 mm/s
(Display unit: r/min when KS-100 is used.)
4) r/s unit　: 400.00 r/s
5) ms unit　: 2.5 m/s
6) COUNT unit : At a revolution equivalent to 2000 r/min

Measurement Operations

1.Peak value hold function

To measure and hold the peak value (Max. or Min.), select the desired peak-hold measurement mode (MAX or MIN) by pressing the MODE & NEXT switch in the measurement mode.

When measurement of the peak value (Max. or Min.), "MAX" or "MIN" lights up in the CONDITION display section of the LCD.
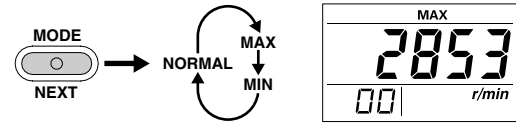
When "MAX" or "MIN" is not lit, the peak-hold mode is suspended. (Displays the current measurement value for the body of revolution.)

Each peak-hold value is updated only when the peak-hold measurement mode is selected.

To clear the peak-hold value, select "CLr" for setting "mEm" (Memory) in the setup mode to clear the peak-hold value and then return to the measurement mode.
The measurement value present when cleared is set to "MAX" and "MIN."
Note: If the peak-hold measurement mode is entered when the body of revolution stops, the "MIN" value becomes zero. Therefore, the value is not updated even if the body of revolution rotates, disabling measurement of the "MIN" value. Therefore, if the peak-hold measurement mode is entered when the body of revolution is rotating or if the "MIN" value becomes zero, once clear the peak-hold value before starting measurement.
Note: When the peak-hold value is cleared, the memorized measurement values are also cleared. The peak-hold value is also cleared when you turn OFF the power.
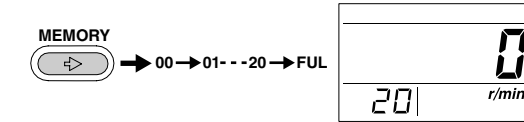
2.Memorizing Measurement Values

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

3.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.
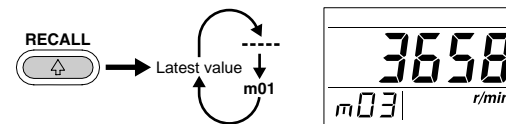
To return to the measurement mode, press the MENU switch. The numerical value in the SUB display changes to "XX" which indicates the number of values memorized (without leading "m").

4.Clearing All Memory Values

To clear all memory values, select "CLr" for setting "mEm" (Memory) in the setup mode and press the MODE & NEXT switch or press the MENU switch to return to the measurement mode.
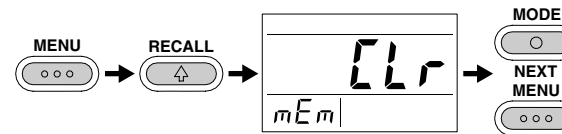
When the memory values are cleared, the numerical value in the SUB display becomes "00."
Note: When you perform the memory clear operation (all clear), the memory values are all cleared. When there is the peak-hold value, it is also cleared at the same time.

Outputs

1.Analog Output

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   .

2.Pulse Output

A pulse waveform shaped according to the detected amount of reflected light 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   .

- Pulse output
- Analog output
- DC power input
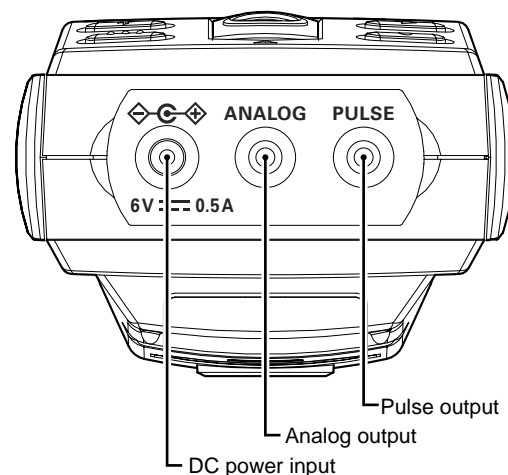
Rapid Deceleration Following Function

If the input signal decreases rapidly (sudden drop of revolution) and then no input signal is supplied for one second or more, this function decreases the revolution automatically and then displays zero in about 11 seconds.
The tachometer waits for the input signal for 10 seconds because the input frequency on the low-speed side is 0.1Hz. This function predicts the revolution reduction in the meantime and performs operation so that zero display is made in 11 seconds.

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 measurement value exceeds "99999", the display digit over error occurs.
* The display value is averaged. Therefore, even if the display value is smaller than "99999" (except for the decimal point), this mark lights up when the result of one measurement is larger than "99999."

If the input frequency exceeds the upper-limit frequency corresponding to the revolution of the measurement range, the frequency over error occurs.
* Although the display value is averaged, this mark lights up if the result of one measurement exceeds the upper-limit frequency.
Hi range: 0.1 to 1666.66 Hz (non-contact)
Lo range: 0.1 to 10Hz (non-contact and contact)

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.
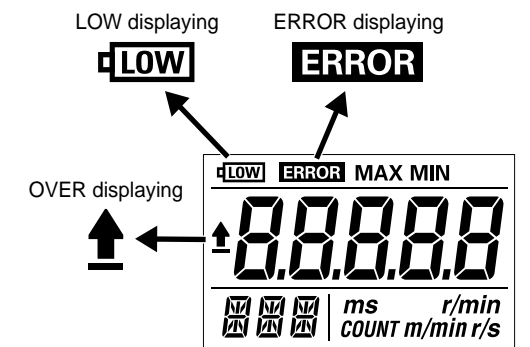Using the consumed batteries may disable measurement.

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).

3.OVER Display (Blink)

With the measurement value peak-limit function set to ON in setup mode, if the display value exceeds the upper limit setting, the "↑" mark blinks.

* The displayed value is processed averagely. Therefore, even if the display value is smaller than the upper-limit setting, this mark blinks when result of one measurement exceeds the upper-limit value.

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	Solution
No display	Are batteries set ?	Set batteries.
	Are the batteries set at correct polarity ?	Put the batteries at thecorrect polarity.
	Are batteries consumed ?	Replace all batteries with new ones.
	When using the AC adapter, is the dedicated AC adapter connected to an outlet and the DC input connector of the main unit ?	Plug the dedicated AC adapter to an outlet and then connect the DC plug to the DC input connector of the main unit.
Non-contact measurement Display value different from actual value	Are reflective marks stuck on the body of revolution ?	Stick the reflective mark on the body of revolution during measurement.
	Does projected light hit the reflective mark ?	Apply projected light to the reflective mark.
	Is projected light applied properly ?	Make arrangement so that projected light hit the reflective mark once per revolution.
	Is the distance appropriate ?	Use the instrument with a measurement distance of 20 mm to 300 mm. However, 300-mm measurement distance may not be ensured depending on how the reflective mark is stuck (for example, stuck on a thin shaft)
	Is the body of revolution shiny with plating ?	Apply black tape, apply light aslant, or take other measures.
	Does irregular reflection occur by a crack or irregularity on the body of revolution ?	Apply black tape or take other measures.
	Any space between several reflective marks which are is attached to the rotational body?	When sticking two or more reflective marks, do not make a space between them.
	Is the distance appropriate ?	Maintain an appropriate distance.
Contact measurement Display value different from actual value	Is the end of the of the contact tip worn or deformed ?	Replace the contact tip
	Does slip occur between the body of revolution and the contact tip ?	Support the main unit firmly to prevent slip.