

## HAND TACHOMETER INSTRUCTION MANUAL

In-contact Adaptor

Remote Sensor

TM-5000/5010/E TM-5013 TM-4015



**Attention**

Please note that misuse of this device may lead to injury to the user or damage to the device.

Thank you for purchasing our hand tachometer.  
Please read this instruction manual carefully before using to ensure the correct usage of this device.  
Please keep this instruction manual for future reference.

## Safety Precautions

For safe usage of this device, please observe all statements regarding precautions and warnings in this instruction manual.



**Attention**

- Do not use this device near machines that emit strong electromagnetic fields or objects that store static electricity.
- Do not drop this device or submit it to strong impact.
- Do not use or store the device where it can be exposed to direct sunlight, dust, high temperature and high humidity.
- Inspect the device before conducting measurements.
- Use the battery case to ensure that the battery is properly installed.
- Remove the battery when the device will not be used for a long period of time.
- Do not attempt to disassemble or modify this device.

## 1. Preparations

### 1. Installing the batteries

- 1) Press and slide down the battery cover at the back side of the main unit.
- 2) Install the four batteries (AAA 1.5V) noting the polarity as indicated inside.
- 3) After installing the batteries, replace and slide back the cover.

### 2. Using the reflective tape (for non-contact type)

Cut off a length of 1 to 3 cm. of the reflective tape. Remove the kraft paper backing and stick the reflective tape on the object whose rotational speed is to be measured.

Wipe off oils or stains from the surface where the reflective tape will be attached. Stick the reflective tape as near as possible to the outer edge of the object whose rotational speed is to be measured.

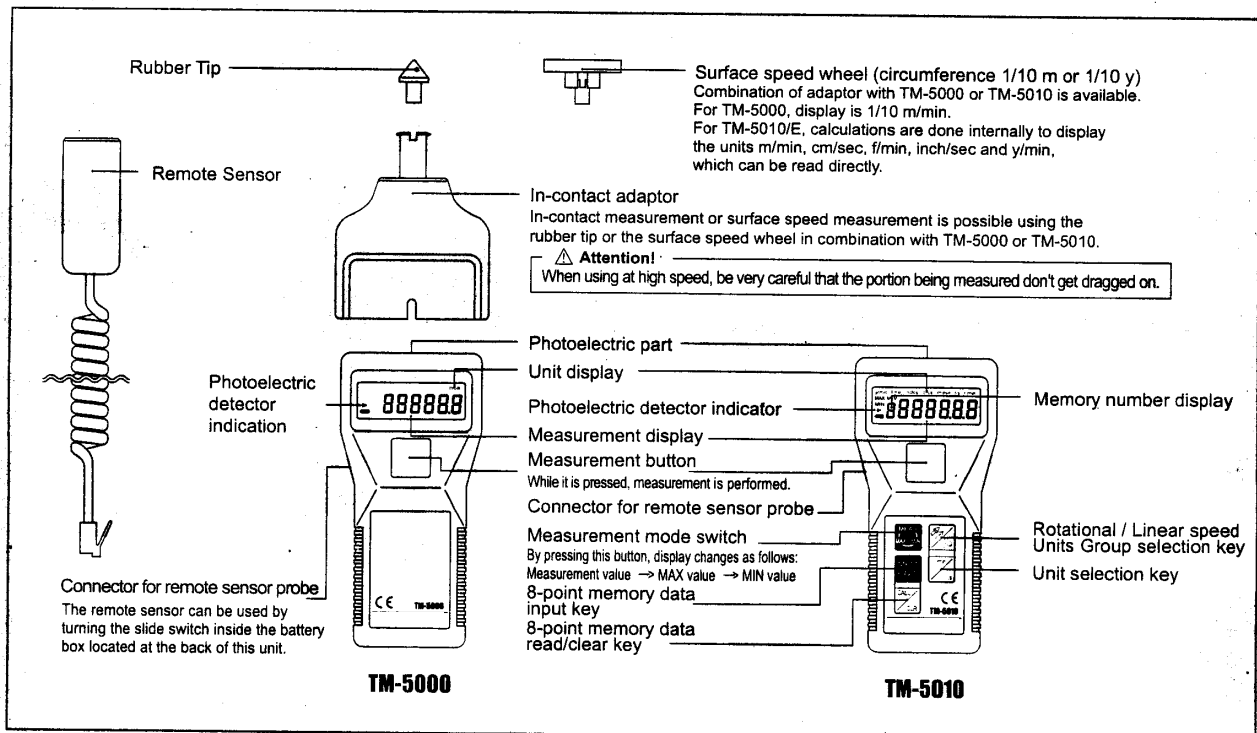
### 3. Installing the In-contact Adaptor (for contact type)

Loosen the lock screw at the back of the unit, insert the in-contact adaptor to the upper side of the main unit and tighten the lock screw using a screw driver. Use a coin if a screw driver is not available. The lock screw must be tightened securely to ensure that the in-contact adaptor does not fly off while in use.

### 4. Installing the remote sensor

Set the switch in the battery compartment to off position. Insert the connector of the remote sensor to the modular telephone style connector on the left hand side.

## 2. Components and Functions



### 3. Measurement

- 1) Press the measurement button to turn the unit on, the LCD will then light up.
- 2) To measure, press the measurement button for at least 1 second.
- 3) When measuring using the reflective tape, the " (|)" mark will appear confirming that the photosensor is working.
- 4) If the measurement is out of range, the "—" mark will appear.

#### 1. Non-contact type measurement

- 1) The distance between reflective tape and tachometer main unit (or remote sensor) is 5 to 30 cm. and the angle of incidence of the light is within +/- 30 degrees
- 2) Press the measurement button, confirm that the " (|)" mark is displayed on the screen, then read the rotational speed.
- 3) When the measurement button is released, the display is held for about 3 mins. The unit automatically turns off after 3 mins. of inactivity.

#### 2. Contact type measurement

- 1) Use the rubber tip correctly by touching it perpendicular to the center of the axle of the rotating object under test. To measure the peripheral speed of the items such as belts, replace the rubber tip with the surface speed wheel.
- 2) To attach the surface speed wheel, pull out the rubber tip with your hand and press the surface speed wheel axle so that the boss of the wheel axle is inserted into the slit of the adaptor axle. Pull the surface speed wheel gently to confirm that it does not come off.
- 3) When measuring the circumferential velocity, the surface speed wheel should touch the measured object so that the surface speed wheel turns in parallel with it.

#### 3. Auto-power off

After the measurement button is released, the display is held for about 3 minutes then the unit automatically turns OFF if no further measurements are made during that time. (Applicable for both TM-5000 and TM-5010/E)

#### \* Note

Make sure that lights coming from a stroboscope and/or fluorescent lights do not reach the photoelectric part and reflective tape attached to the rotating object to prevent measurement errors. Before starting rotation of the object under test, please confirm that the measurement on the reflective tape is 0.0 rpm. If the measurement is affected by external light, change the position of the unit.

### 4. Functions

#### 1. Changing of Measurement Units (TM-5010/E only)

Changing of rotational speed units to peripheral speed units can be done by pressing the Rotational/Peripheral Units Group selection key. Pressing the Unit Selection key changes the units of rotational speed or peripheral speed into other units of measurement. After the installation of batteries, the default unit is r/min which will be displayed on the screen.


#### 2. Maximum / Minimum Values (TM-5010/E only)

Pressing the Measurement Mode switch will change the data displayed on the screen. "MAX" display represents the maximum value and "MIN" represents the minimum value. The maximum and minimum values are values measured from the start of measurement until the measurement button is released. Pressing the measurement button clears the previous maximum and minimum measurement values.

#### 3. Memory (TM-5010/E only)

By pressing the 8 point memory data input key, the measured values and unit can be stored in the 8 point memory. At each press of the 8 point memory data input key, data are stored accordingly into No. 1 to No. 8. MEM and the current memory No. is displayed on the screen. After memory No. 8 is displayed, no additional data can be inputted. Pressing the 8 point memory data read/clear key will recall the stored data. While the data are being called, MEM will blink and the memory no. is displayed on the screen. When the data from a memory no. is called out and the 8 point memory read/clear key is pressed, ALLCLR will be displayed on the screen. When ALLCLR is displayed on the screen, pressing the 8 point memory data input key will clear the memory and the display will return to the measured value. When the memory is being recalled and ALLCLR is displayed, not pressing any key for 20 seconds will return the display to the measured value.



### 5. Battery Replacement

When the  mark at the left portion of the screen starts to blink, please replace the batteries. Please refer to '1.1 Installing the Batteries' for the battery replacement procedure. Please replace all batteries with new ones. Be careful not to mix different types of batteries - i.e. manganese batteries and alkaline batteries together.

### 6. Storage

When storing this device, please avoid areas which are very humid, exposed to direct sunlight, high temperature, subject to vibration, dusty, dirty, saline, subject to organic gases.

#### SPECIFICATIONS (MAIN UNIT)

Model	TM-5000	TM-5010/E
Measuring Range	6.0~99999.9 rpm	6.0~99999.9 rpm 0.10~1666.66 rps 0.60~9999.99 m/min 1.00~16666.6 cm/s 0.39~6561.65 inch/s 1.97~32808.27 f/min 0.66~9936.09 y/min
Resolution	0.1 rpm	0.1 rpm, others 0.01
Accuracy	±0.01% ±1 digit rpm•m/min (for other units, the conversion accuracy is ±0.05% ±1 digit)	
Sampling Time	1.0~10.0 seconds	
Display	Display : 6 digits, 7 segment LCD Battery alarm :  mark Reflective light :  mark	
	Display unit : r/min	Display unit: r/min, r/s, m/min, cm/s y/min, inch/s, f/min Memory display: MAX, MIN, MEM1-8
Auto Power-off	After 3 mins. from last measurement or key operation	
Data Hold Time	Measurement data: until the next data is defined	
	—	Memory data: same as battery life
Measuring Method	Non-contact measurement using the main unit or with remote sensor (use with reflective tape) Contact measurement using the in-contact adaptor (use with rubber tip, surface speed wheel)	
Measuring Distance	50~300mm(using reflective tape)	
Power Supply	4 pcs. of AAA alkaline battery(continuous measurement of 20 hrs.)	
Operating Temperature	5~40°C no condensation	
Storage Temperature	-10~60°C no condensation	
Dimension/Weight	122(H) x 58(46)(W) x 28(D)mm 140g	

#### MODELS

TM-5000	TM-5000 main unit AAA alkaline battery, 4 pcs. Reflective tape, 10 pcs. Instruction manual
TM-5010/E	TM-5010/E main unit AAA alkaline battery, 4 pcs. Reflective tape, 10 pcs. Instruction manual
TM-5013	In-contact adaptor Rubber tip, 3 pcs. Surface speed wheel (1/10 m)
TM-5014	In-contact adaptor Rubber tip, 3 pcs. Surface speed wheel (1/10 y)
TM-4015	Remote sensor (21mm diameter, maximum cable length 1m)



This device conforms to the following EMC regulations:  
EM : EN50081-1  
EMS : EN50082-1  
Test was performed without using the remote sensor.

This manual is last revised on January 7, 2002.  
Specifications are subject to change without prior notice.  
1st Edition.