Line Seiki TM-5000

Line Seiki Digital Combined Tachometer

Model: TM-5000 EK

Brand: Line Seiki

1. Introduction

The Line Seiki TM-5000/5010 series is a versatile hand-held tachometer designed for both non-contact and contact measurements. It accurately measures rotational and linear speeds up to 99,999.9 rpm. This device offers instant conversion of measured values into various units, including RPM, RPS, m/min, cm/s, inch/s, ft/min, and yd/min. The internal memory can store up to 8 measured values for convenient recall. Its remote sensor capability allows for measurements in hard-to-reach areas, making it a portable and user-friendly instrument that requires no specialized skills for operation. The TM-5000 EK model includes all necessary accessories to begin measurements immediately.

2. Key Features

- **Measurement Type:** Non-contact and contact measurement using an adapter.
- **Remote Sensor Capability:** Allows measurement in hard-to-reach areas.
- **Wide Measuring Range:** 6.0 to 99,999.9 r/min.
- **Multi-Unit Selection:** Instantly converts values to RPM, RPS, m/min, cm/s, inch/s, ft/min, and yd/min.
- **Data Storage:** Stores up to 8 measured values in internal memory.
- **High Accuracy:** ±0.01% ±1 digit r/min.
- **Display:** 6-digit, 7-segment LCD with 0.1 rpm resolution.
- **Portability:** Compact dimensions (122 x 58 x 28 mm) and lightweight (approx. 130g with batteries).
- **Power Source:** Operates on 4 AAA alkaline batteries.
- **Compliance:** In conformance to CE standards.

3. Package Contents (TM-5000 EK Kit)

The TM-5000 EK kit includes the following items:

- Main Tachometer Unit (TM-5000)
- Reflective Tape (10 pieces)
- Contact Adapter (Rubber Tip)
- Contact Adapter (Surface Speed Wheel)
- AAA Alkaline Batteries (4 pieces)
- Carrying Case
- Instruction Manual

Image 3.1: Overview of the TM-5000/TM-5010 series, showing the main unit, remote sensor (TM-4015), contact adapter with rubber tip and surface speed wheel, and the complete kit in its carrying case.

4. Parts Identification

Familiarize yourself with the components of your TM-5000 tachometer and its accessories.

Image 4.1: Detailed diagram identifying the main unit (TM-5000/TM-5010E), remote sensor (TM-4015), contact adapter components (rubber tip, surface speed wheel, in-contact adapter), and display elements.

- **Main Unit (TM-5000/TM-5010E):** Features a 6-digit LCD display, measurement buttons, and input key.
- **TM-4015 Remote Sensor:** Used for non-contact measurements in difficult-to-reach locations. Connects to the sensor probe input on the main unit.
- **In-Contact Adapter:** Attaches to the main unit for contact measurements.
- **Rubber Tip:** Used with the contact adapter for rotational speed measurements.
- **Surface Speed Wheel:** Used with the contact adapter for linear speed measurements (e.g., m/min, cm/s). Available in 1/10m or 1/10y circumference.
- **Photodetector Part:** Located on the main unit for non-contact measurements.
- **Display Unit:** Shows measured values, units, battery alarm, and memory indicators.

5. Setup

5.1. Battery Installation

1. Locate the battery compartment cover on the back of the TM-5000 unit.
2. Slide or unclip the cover to open it.
3. Insert four (4) AAA alkaline batteries, ensuring correct polarity (+/-) as indicated inside the compartment.
4. Replace the battery compartment cover securely.

Note: The device uses 4 pieces of AAA Alkaline Battery. Continuous measurement is approximately 20 hours.

5.2. Attaching Accessories

Depending on the measurement method, attach the appropriate accessory:

- **For Contact Measurement:**
    a. Attach the in-contact adapter to the main unit.
    b. Select either the rubber tip (for rotational speed) or the surface speed wheel (for linear speed) and securely

attach it to the in-contact adapter.

- **For Remote Sensor Non-Contact Measurement:**
    a. Connect the TM-4015 Remote Sensor cable to the sensor probe input jack on the main unit.
    b. Ensure the connection is firm.

6. Operating Instructions

6.1. Powering On/Off

Press the **POWER** button to turn the tachometer on. The display will illuminate. The unit features an auto-power-off function that activates after 3 minutes of inactivity to conserve battery life.

6.2. Measurement Method Selection

The TM-5000 supports both non-contact and contact measurement methods. The method is typically selected automatically based on whether a contact adapter is attached or if the remote sensor is active.

- **Non-Contact Measurement:**
  For non-contact measurements, ensure the contact adapter is removed. Apply a piece of reflective tape to the rotating object. Point the photodetector part of the main unit (or the remote sensor) at the reflective tape from a suitable distance. The display will show the rotational speed.
- **Contact Measurement:**
  Attach the in-contact adapter with either the rubber tip or surface speed wheel. Gently press the tip or wheel against the rotating shaft or surface. The display will show the rotational or linear speed.

6.3. Unit Conversion

The TM-5000 allows for instant conversion of measured values to different units. Use the**UNIT** button (if available, or refer to specific model buttons) to cycle through available units: RPM, RPS, m/min, cm/s, inch/s, ft/min, and yd/min. The selected unit will be displayed on the LCD.

6.4. Data Storage and Recall

The tachometer can store up to 8 measured values. To store a value, press the**MEM** button (or equivalent). To recall stored values, press the **RECALL** button (or equivalent) and use navigation buttons to browse through the memory. The display will indicate the memory number (e.g., MEM-1).
The unit also displays MIN/MAX values during measurement. These are automatically updated and can be viewed by pressing the appropriate button (e.g., **MIN/MAX**).

7. Maintenance

- **Cleaning:** Wipe the unit with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Battery Replacement:** When the battery alarm appears on the display, replace all four AAA batteries promptly to ensure accurate readings and prevent data loss.
- **Storage:** Store the tachometer in its carrying case in a cool, dry place when not in use for extended periods. Remove batteries if storing for several months.
- **Contact Adapters:** Inspect the rubber tip and surface speed wheel for wear or damage. Replace if necessary to maintain measurement accuracy.
- **Reflective Tape:** Ensure reflective tape is clean and securely applied for non-contact measurements.

8. Troubleshooting

Problem	Possible Cause	Solution
Display is blank or unit does not power on.	Dead or incorrectly installed batteries.	Check battery polarity. Replace with new AAA alkaline batteries.
"Battery alarm" displayed.	Low battery power.	Replace all four AAA batteries.
Inaccurate or unstable readings (Non-Contact).	Insufficient reflective tape, improper distance/angle, ambient light interference.	Ensure reflective tape is clean and properly applied. Adjust distance and angle to the target. Minimize strong ambient light.
Inaccurate or unstable readings (Contact).	Worn rubber tip/surface wheel, insufficient contact pressure, slippage.	Inspect and replace worn contact accessories. Apply firm, consistent pressure. Ensure no slippage during measurement.
"Measurement data: Until the next data is defined" message.	Indicates no new measurement data has been recorded since the last data hold or memory recall.	Initiate a new measurement to update the display.

9. Specifications

Parameter	Details (TM-5000)
Measuring Range	6.0 - 99,999.9 r/min
Resolution	0.1 rpm
Accuracy	±0.01% ±1 digit r/min
Sampling Time	1.0 - 10.0 seconds
Display	6-digit, 7-segment LCD
Auto Power-off	After 3 minutes from last measurement or key operation
Data Hold Time	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 contact adapter (rubber tip or surface speed wheel).
Measuring Distance	50 - 300mm (using reflective tape)
Power Supply	4 pieces of AAA alkaline battery (continuous measurement of 20 hrs.)
Storage Temperature	-10 to 60°C (Non-Freezing)
Operating Temperature	5 - 40°C (Non-Condensing)
Operating Humidity	35 - 85%RH (Non-Condensing)
Dimensions (LxWxH)	122(H) x 58(W) x 28(D)mm
Weight	Approx. 130g (including batteries)

Note: Some specifications may vary slightly for the TM-5010E model, particularly regarding peripheral speed selection.

10. Warranty & Support

For warranty information, technical support, or service inquiries, please refer to the warranty card included with your product or contact Line Seiki customer service directly. Contact details can typically be found on the manufacturer's official website or on the product packaging.

Please retain your purchase receipt as proof of purchase for warranty claims.