

Rotating Machine Tester with Thermal Imager RMTi-1

PRODUCT INTRODUCTION

While testing a motor the important parameters to test are the Insulation Resistance, Winding Resistance, Temperature of the Motor and all Electrical Parameters like the current, voltage and the voltage of the Variable Frequency Drive.

Measuring these parameters enables the user to know how efficiently the motor is working and also to decide upon the pre-emptive maintenance of the motor.

This unique instrument is a combination of Digital Multimeters that can work on VFD, Digital Insulation Resistance Tester with Polarisation Index and DAR measurement, Low Resistance measurement using 4 wire method and a Thermal Imager. The instrument has Bluetooth to connect it to your mobile device so that you can record the readings on the go. Not to mention it has a Data Logger and a K type thermocouple that can be used to measure temperature.

A professional, True RMS Multimeter and Insulation Tester with built-in Thermal Imager, featuring a TFT color LCD display, provides fast A/D converting sampling time and high accuracy, making it easy to find and solve problems of production equipment. It helps in taking measurements safely with a double-moulded plastic housing and IP65 waterproof features.

- 6000 Count 3.5" TFT Colour LCD Display
- Built-in Thermal Imager with Max, Min and Center Crosshair Targeting
- 50Hz Fast Thermal Image Frame Rate
- DC Voltage
- AC, AC+DC TRMS Voltage
- VFD (Variable Frequency Drive) measurements
- Low Ohms measurements
- Flexible Clamp or Coil can be used to measure high currents
- Resistance and Continuity Test
- Diode Test
- Capacitance
- Frequency
- Duty Cycle
- Temperature with K-Type Probe
- Insulation Tester
- PI/DAR Test
- Data Logger Function and Recall
- Re-chargeable battery and battery charger



Rotating Machine Tester with Thermal Imager RMTi-1

GENERAL SPECIFICATIONS


Reference Standards

| | |
|------------------------|-----------------------------|
| Safety | IEC/EN61010-1 |
| EMC | IEC/EN 61326-1, 61557-1-2-4 |
| Insulation | Double Insulation |
| Pollution Level | 2 |
| Overtoltage Category | CAT IV 600V, CAT III 1000V |
| Max Operating Altitude | 2000m (6562ft) |

Mechanical Characteristics

| | |
|-----------------------------|-----------------|
| Size (L x W x H) | 210 x 85 x 65mm |
| Weight (batteries included) | 680g |

Power Supply

| | |
|------------------------------|---|
| Battery Type | 1 x7.4V rechargeable Li-ION battery, 2600mAh |
| Battery Charger Power Supply | 100/240VAC, 50/60Hz, 12VDC, 2A |
| Low Battery Indication | symbol "  " on the display |
| Auto Power Off | After 5-60min minutes idling (May be disabled) |
| Fuses | 500mA/1000V |

Display

| | |
|--------------------|------------------------------------|
| Conversion | TRMS |
| Characteristics | Color RGB, 6000 dots with bargraph |
| Sampling Frequency | 3 times/s |

Environmental Conditions for Use

| | |
|-----------------------------|---------------------------|
| Reference Temperature | 18 to 28°C (64 to 82°F) |
| Operating Temperature | 5 to 40°C (41 to 104°F) |
| Allowable Relative Humidity | <80%RH |
| Storage Temperature | -20 to 60°C (-4 to 140°F) |
| Storage Humidity | <80%RH |

THERMAL IMAGER

| | |
|--|---|
| Field of View (FoV) / Minimum Focus Distance | 21°x 21° / 0.5m |
| Spatial Resolution (IFoV) | 4.53mrad |
| IR Resolution | 80 x 80 Pixels |
| Thermal Sensitivity / NETD | < 0.1°C at 30°C (86°F) / 100 mK |
| Image Frequency | 50Hz |
| Focus Mode | Focus free |
| Focal Length | 7.5mm |
| Focal Plane Array (FPA) / Spectral Range | Uncooled microbolometer / 8-14µm |
| Object Temperature Range | -20 to 260°C (-4 to 302°F) |
| Accuracy | ±3°C (±36°F) or ±3% of reading (Environment temperature 10 to 35°C, object temperature >0°C) |

Rotating Machine Tester with Thermal Imager RMTi-1

METER AND TESTER

Accuracy calculated as [%reading + (num. digits*resolution)] at 18 to 28°C; <75%RH.

DC Voltage

| Range | Resolution | Accuracy | Input Impedance |
|---------|------------|--------------------|-----------------|
| 600.0mV | 0.1mV | ±(0.8% + 8 digits) | >10MΩ |
| 6.000V | 0.001V | ±(0.5% + 5 digits) | |
| 60.00V | 0.01V | | |
| 600.0V | 0.1V | ±(0.8% + 5 digits) | |
| 1000V | 1V | | |

Protection Against Overcharge: 1000V DC/AC RMS.

AC TRMS Voltage

| Range | Resolution | Accuracy (50 to 60Hz) | Accuracy (61 to 1kHz) |
|--------|------------|-----------------------|-----------------------|
| 6.000V | 0.001V | ±(1.2% + 5 digits) | ±(2.5% + 5 digits) |
| 60.00V | 0.01V | | |
| 600.0V | 0.1V | | |
| 1000V | 1V | | |

Protection Against Overcharge: 1000V DC/AC RMS.

(*) Accuracy specified from 10% to 100% of the measuring range, sine wave.

Input impedance: > 9MΩ

Accuracy PEAK function: ± 10%rdg+ 25dgt.

PEAK response time: 1 ms.

VFD AC Voltage reading for reference only.

AC+ DC TRMS Voltage (50 to 1 kHz)

| Range | Resolution | Accuracy | Input Impedance |
|--------|------------|---------------------|-----------------|
| 6.000V | 0.001V | ±(2.5% + 20 digits) | >10MΩ |
| 60.00V | 0.01V | | |
| 600.0V | 0.1V | | |
| 1000V | 1V | | |

Protection Against Overcharge: 1000V DC/AC RMS.

Rotating Machine Tester with Thermal Imager RMTi-1

Flexible Coil Current (50 to 400Hz)

| Test Current | Resolution | Accuracy |
|--------------|------------|--------------------------|
| 30.00A | 0.01A | ±(3.0%reading + 5digits) |
| 300.0A | 0.1A | |
| 3000A | 1A | |

Protection Against Overcharge: 1000V DC/AC RMS.

(*) Accuracy specified from 10% to 100% of the measuring range, sine wave.

Diode Test

| Test Current | Max Voltage with Open Circuit |
|--------------|-------------------------------|
| <2mA | 3.2VDC |

Resistance and Continuity Test

| Range | Resolution | Accuracy | Buzzer |
|---------|------------|---------------------|--------|
| 600.00Ω | 0.1Ω | ±(1.0%+ 10 digits) | >50Ω |
| 6.000kΩ | 0.001kΩ | ±(0.8% + 5 digits) | |
| 60.00kΩ | 0.01kΩ | | |
| 600.0kΩ | 0.1kΩ | | |
| 6.000MΩ | 0.001MΩ | ±(2.5% + 10 digits) | |
| 60.00MΩ | 0.01MΩ | | |

Protection Against Overcharge: 1000V DC/AC RMS.

Frequency (Electronic Circuits)

| Range | Resolution | Accuracy |
|----------|------------|--------------------|
| 60.00Hz | 0.01Hz | ±(0.2% + 5 digits) |
| 600.0Hz | 0.1Hz | |
| 6.000kHz | 0.001kHz | |
| 60.00kHz | 0.01kHz | |
| 600.0kHz | 0.1kHz | |
| 6.000MHz | 0.001MHz | |
| 10.00MH | 0.01MHz | |

Protection Against Overcharge: 1000V DC/AC RMS.

Sensitivity: >±2V (at 20 to 80% Duty Cycle) and f<100kHz: >5Vrms (at 20 to 80% Duty Cycle) and f>100kHz.

Rotating Machine Tester with Thermal Imager RMTi-1

Frequency (Electrical Circuits)

| Range | Resolution | Accuracy |
|----------------|------------------|---------------------------------|
| 40.00 to 10kHz | 0.01 to 0.001kHz | $\pm(1.0\% + 5 \text{ digits})$ |

Protection Against Overcharge: 1000V DC/AC RMS.

Sensitivity: $>\pm 2V$

Duty Cycle

| Range | Resolution | Accuracy |
|---------------|------------|---------------------------------|
| 10.0 to 90.0% | 0.1 % | $\pm(1.2\% + 8 \text{ digits})$ |

Pulse Frequency Range: 40 to 10kHz.

Pulse Amplitude: $\pm 5V$ (100s to 100ms)

Capacity

| Range | Resolution | Accuracy |
|---------------|---------------|----------------------------------|
| 60.00nF | 0.01nF | $\pm(3.0\% + 20 \text{ digits})$ |
| 600.0nF | 0.1nF | $\pm(3.0\% + 8 \text{ digits})$ |
| 6.000 μ F | 0.001 μ F | |
| 60.00 μ F | 0.01 μ F | |
| 600.0 μ F | 0.1 μ F | $\pm(3.5\% + 20 \text{ digits})$ |
| 6000 μ F | 1 μ F | |

Protection Against Overcharge: 1000V DC/AC RMS.

Temperature with K-Type Probe

| Range | Resolution | Accuracy |
|------------------|------------|--|
| -20.0 to 600.0°C | 0.1°C | $\pm(2.5\% \text{ reading} + 5^\circ\text{C})$ |
| 600 to 1000°C | 1°C | |
| -20.0 to 600.0°F | 0.1°F | $\pm(2.5\% \text{ reading} + 9.0^\circ\text{F})$ |
| 600 to 1800°F | 1°F | |
| 253.0 to 600.0K | 0.1K | $\pm(2.5\% \text{ reading} + 5K)$ |
| 600 to 1273K | 1K | |

Protection Against Overcharge: 1000V DC/AC RMS.

(*) Instrument accuracy without probe: Specified accuracy with stable environmental temperature at $\pm 1^\circ\text{C}$.

For long-lasting measurements, reading increases by 2°C .



Rotating Machine Tester with Thermal Imager RMTi-1

Low Ohms

| Range | Resolution | Accuracy |
|-----------------|------------|---------------------|
| 1.00 to 60.00Ω | 0.01Ω | ±(1.5% + 40 digits) |
| 60.00 to 600.0Ω | 0.1Ω | ±(1.5% + 20 digits) |

The open circuit voltage is about 4V and the short circuit current is greater than 200mA.

Meg Ohms

| Terminal Voltage | Range | Resolution | Accuracy | Test Current |
|------------------|-------------------|------------|---------------------|--------------|
| 125V (0 to 20%) | 125kΩ - 6.000MΩ | 0.001MΩ | ±(3.0% + 20 digits) | 1mA at 125kΩ |
| | 6.000MΩ - 60.00MΩ | 0.01MΩ | ±(2.5% + 8 digits) | |
| | 60.00MΩ - 600.0MΩ | 0.1MΩ | ±(3.0% + 8 digits) | |
| | 600.0MΩ - 5000MΩ | 1MΩ | ±(5.0% + 20 digits) | |
| 250V (0 to 20%) | 250kΩ - 6.000MΩ | 0.001MΩ | ±(2.5% + 20 digits) | 1mA at 250kΩ |
| | 6.000MΩ - 60.00MΩ | 0.01MΩ | ±(2.0% + 8 digits) | |
| | 60.00MΩ - 600.0MΩ | 0.1MΩ | ±(3.0% + 8 digits) | |
| | 600.0MΩ - 5000MΩ | 1MΩ | ±(5.0% + 20 digits) | |
| 500V (0 to 20%) | 500kΩ - 6.000MΩ | 0.001MΩ | ±(2.5% + 20 digits) | 1mA at 500kΩ |
| | 6.000MΩ - 60.00MΩ | 0.01MΩ | ±(2.0% + 8 digits) | |
| | 60.00MΩ - 600.0MΩ | 0.1MΩ | ±(3.0% + 8 digits) | |
| | 600.0MΩ - 5000MΩ | 1MΩ | ±(5.0% + 20 digits) | |
| 1000V (0 to 20%) | 1.000MΩ - 6.000MΩ | 0.001MΩ | ±(3.0% + 20 digits) | 1mA at 1.0MΩ |
| | 6.000MΩ - 60.00MΩ | 0.01MΩ | ±(2.5% + 8 digits) | |
| | 60.00MΩ - 600.0MΩ | 0.1MΩ | ±(4.0% + 8 digits) | |
| | 600.0MΩ - 5000MΩ | 1MΩ | ±(5.0% + 50 digits) | |

A Insulation Resistance.

See Electrical Specifications <30%.

*Indicates maximum amount allowable by standard.

Accessories Provided

Pair of Test Leads • K-type Wire Temperature Probe • 1x7.4V Rechargeable Li-Ion Battery • Carrying Bag • User Manual