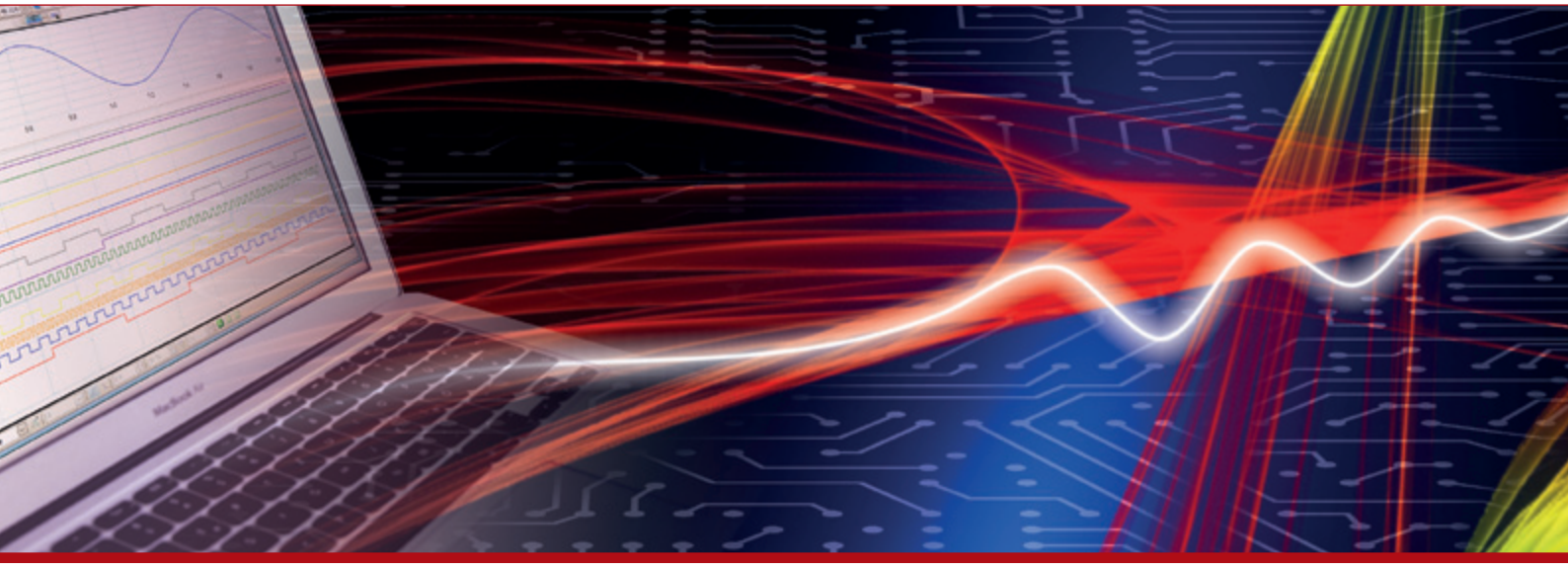
Product Datasheet - Technical Specifications



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HIOKI

RESISTANCE METER RM3548-50

NEW

Simplify precision resistance measurements with user-friendly design and instant connectivity

Product overview

The RM3548-50 is a precision handheld resistance meter measuring from 0.1 μΩ to 3.5 MΩ. It offers effortless operation and accuracy, making it ideal for EV maintenance, aircraft overhaul, and motor inspections.

Leveraging its precision, the RM3548-50 goes beyond basic resistance measurement. It not only performs temperature correction but also converts resistance to estimated motor temperatures and calculates cable lengths with 1 cm precision. Its versatile probes, including high-durability pin-types and needle probes that measure through paint, meet various maintenance needs. Advanced connectivity enables seamless wireless data output for efficient recording and management of measurements. Ensuring precise readings with a four-wire method and offset voltage compensation (OVC), the RM3548-50 is the go-to tool for dependable precision maintenance.

Key benefits at a glance

1 High precision

Detect even the smallest resistance changes, such as defects in motor windings or bonding issues, ensuring early problem identification and prevention.

2 User-friendly

Engineered for professionals, this device simplifies operation with automatic temperature correction, ensuring accurate results and faster testing.

3 Advanced connectivity

Seamlessly integrate data with Excel® and a mobile app to manage and analyze data efficiently, streamline workflows, and speed up data sharing and report generation.

4 Protections for safe operation

The device halts operation and triggers alerts when incorrect voltage inputs are detected, preventing damage and ensuring user safety.

5 Ensured compliance for EV maintenance

The device meets the performance standards required for electric vehicle maintenance under UN ECE R100, guaranteeing the accuracy and reliability needed for industry compliance.

CE 3 year Warranty Bluetooth® When Z3210 is installed Wireless Adapter Compatible

Features

User-friendly operation

Precision engineering

Adopts the four-wire measurement method and features an offset voltage compensation (OVC) function to ensure high accuracy measurements.

Simple resistance measurement

Enables even beginners to perform resistance measurements without the complexity of multifunctional devices.

Automatic calculations

Temperature correction converts the value of a resistance that depends on temperature, such as that of a copper wire, to a resistance value at a particular temperature to display it.

Enhanced connectivity

Direct Excel integration

Streamlines data handling with the HID (Human Interface Device) function for direct input and automatic data entry.

The optional wireless adapter Z3210 is required.

GENNECT Cross compatibility

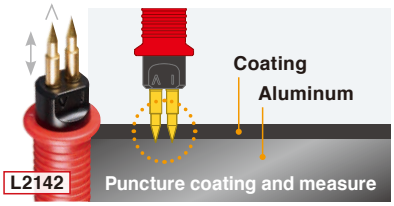
Utilizes templates that simplify data recording and analysis on your mobile device, enhancing overall workflow efficiency.

GET IT ON Google Play Download on the App Store

Versatile probing options

Variety of probes to choose from

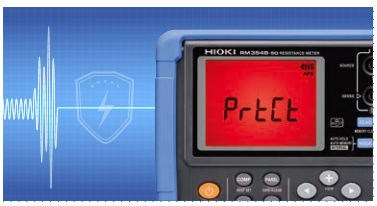
A diverse range of probes tailored to meet specific maintenance needs across various applications.



Optimized safety features

Circuit protection

In EV maintenance or battery busbar testing, accidental contact with live voltage can damage a resistance meter. The RM3548-50 features automatic overvoltage protection to prevent this, stopping measurements and safeguarding the circuit from live voltages of up to 60 V DC.



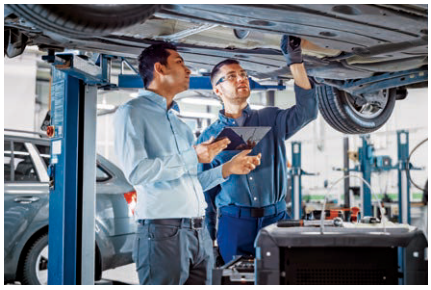
High standards compliance

EV maintenance test tool

4 essential tools for EV high-voltage shutdown and reinitialization

Recommended by leading EV and hybrid manufacturers for reliable and precise maintenance tasks, the RM3548-50 meets the UN ECE R100 international safety standards, which require a minimum measurement current of 0.2 A. We provide reliable electrical test tools to ensure safe operations for EV maintenance and service personnel.

Example of applicatons



EV and hybrid cars

Ideal for EV and hybrid car maintenance, the RM3548-50 excels in equipotential bonding tests, battery connection checks, and motor winding inspections. Compliant with UN ECE R100 standards, it offers dedicated probes, straightforward resistance measurements, and a PASS/FAIL function. The red backlight ensures safety by warning technicians if probes mistakenly contact the battery. This device provides reliable and precise diagnostics for optimal vehicle performance.

Recommended probes:
L2140, 9465-11

Aviation

Ideal for aircraft maintenance and overhaul, the RM3548-50 performs equipotential bonding tests to check resistance differences in various areas. The L2141 probe, with its rounded tip, is perfect for measuring resistance without damaging the aircraft body, while the L2142 probe's sharp edge allows for resistance measurement through paint. It can store up to 1000 data entries and offers real-time wireless data transfer to mobile devices, enhancing reporting and efficiency.

Recommended probes:
L2141, L2142

Industrial motors, transformers and power supply equipment

Ideal for industrial applications, the RM3548-50 measures resistance in motors, transformers, and power supply equipment. Applying a high current of 1 A to measure, it measures lower resistance values with a resolution of 0.1 microhms. This makes it ideal for verifying connection integrity in large transformers, wiring, and busbars.
Additionally, it predicts maximum temperature increases in motor windings and transformers using resistance measurement, as non-contact thermometers can't measure internal temperatures. Its interval measurement function records data at user-specified intervals for easy temperature estimation.

Recommended probes:
L2107 (bundled), 9467

Cable

The RM3548-50 includes an automated wiring-length calculation function. By inputting a resistance value per 1 meter of cable, it can convert resistance values into cable lengths, making it useful for managing cable inventory or estimating PCB pattern lengths.

Recommended probes:
L2107 (bundled), 9467

Options

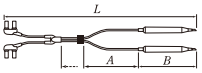
• Note: L2107, Z2002, Z5041 are included accessories.

Measurement Lead Selection Guide

For detailed dimensions, features, and measurement target information, please refer here.

About lead length

A: from junction to probe
B: probe length
L: overall length



TEST LEADS L2140
B: 177 mm (6.97 in.) red,
L: 1840 mm (72.44 in.) red, 3160 mm (124.41 in.) black,
60 V DC

PIN TYPE LEAD L2141
A: 1832 mm (72.13 in.) red, 1832 mm (72.13 in.) black,
B: 168 mm (6.61 in.),
L: 3000 mm (118.11 in.) red,
1000 V DC

PIN TYPE LEAD L2142
A: 1832 mm (72.13 in.) red, 1832 mm (72.13 in.) black,
B: 168 mm (6.61 in.),
L: 3000 mm (118.11 in.) red,
1000 V DC

PIN TYPE LEAD 9465-10
A: 45 mm (1.77 in.) red, 400 mm (15.75 in.) black,
B: 177 mm (6.97 in.),
L: 1925 mm (75.79 in.) red,
60 V DC

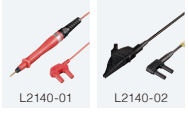
PIN TYPE LEAD 9465-11
A: 45 mm (1.77 in.) red, 1970 mm (77.56 in.) black,
B: 177 mm (6.97 in.),
L: 1980 mm (77.95 in.) red, 3900 mm (153.54 in.) black,
60 V DC

PIN TYPE LEAD 9772
A: 45 mm (1.77 in.) red, 400 mm (15.75 in.) black,
B: 173 mm (6.81 in.),
L: 1921 mm (75.63 in.) red
60 V DC

FOUR TERMINAL LEAD 9453
A: 280 mm (11.02 in.),
B: 118 mm (4.65 in.),
L: 1360 mm (53.54 in.),
60 V DC

LARGE CLIP TYPE LEAD 9467
A: 300 mm (11.81 in.),
B: 131 mm (5.16 in.),
L: 1350 mm (53.15 in.),
tip ϕ 28 mm (1.10 in.),
50 V DC

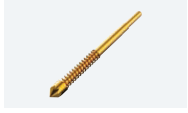
CLIP TYPE LEADS L2107
A: 130 mm (5.12 in.),
B: 84 mm (3.31 in.),
L: 1.1 m (3.61 ft.),
60 V DC



TEST LEAD (RED) L2140-01
L2140 red lead

TEST LEAD (BLACK) L2140-02
L2140 black lead

TIP PIN 9465-90
To replace the tip on the 9465-10, 9465-11, L2140 (one piece)



TIP PIN 9772-90
To replace the tip on the 9772 (one pin)

TEMPERATURE SENSOR Z2002
100 mm (3.94 in.)

LED COMPARATOR ATTACHMENT L2105
2 m (78.74 in.)

ZERO ADJUSTMENT BOARD 9454
For 9465-10 and 9465-11

0 ADJ BOARD Z5038
For 9465-10, and 9772

WIRELESS ADAPTER Z3210
Bluetooth® for additional wireless communication functions

PROTECTOR Z5041

CARRYING CASE C1015
Hard case

Specifications

Basic specifications

Measurement parameters	Resistance measurement, temperature measurement
Measurement method	Resistance: DC four-terminal method Temperature: thermistor
Operating temperature and humidity range	0°C to 40°C (32°F to 104°F), 80% RH or less (non-condensing)
Storage temperature and humidity range	-10°C to 50°C (14°F to 122°F), 80% RH or less (non-condensing)
Applicable standards	EN61010 (safety), EN61326 (EMC)
Circuit protection	The circuit is protected until 42.4 V peak AC, 60 V DC is reached
Memory storage	Number of recordable data points: up to 1,000 for manual/auto, up to 6,000 for interval; interval: 0.2 s to 10.0 s (0.2 s step); acquisition of data from memory: display, USB mass storage (CSV, TXT files)
Communication functions	USB, wireless communications via Bluetooth® (Z3210 is necessary)
Power supply	LR6 alkaline battery × 8 HR6 nickel-metal hydride battery × 8
Maximum rated voltage	5 VA
Continuous operating time	Approx. 10 hours (when eight fresh LR6 alkaline batteries or eight HR6 nickel-metal hydride batteries are used)
Dimensions and weight	Approx. 199 W × 132 H × 60.6 D mm (7.83 W × 5.20 H × 2.39 D in.), Approx. 890 g (31.4 oz.)
Included accessories	Clip Type Lead L2107 × 1, Temperature Sensor Z2002 × 1, Protector Z5041 × 1, LR6 alkaline battery × 8, instruction manual × 1, USB cable (A to mini-B) × 1, strap × 1, spare fuse × 1

Resistance measurement

Accuracy ±(% rdg. + % f.s.) (calculated as f.s. = 30,000 dgt., 0.010% f.s. = 3 dgt.)

Range	Max. measurement range*1*2	Measurement accuracy*3	Measurement current*4	Open-circuit voltage
3 mΩ	3.5000 mΩ	0.100 + 0.200 (0.100 + 0.020)	1 A	5.5 V max.
30 mΩ	35.000 mΩ	0.100 + 0.020 (0.100 + 0.010)		
300 mΩ	350.00 mΩ	0.100 + 0.010 (0.100 + 0.010)	300 mA	
		0.020 + 0.020 (0.020 + 0.010)	100 mA	
3 Ω	3.5000 Ω	0.020 + 0.007 (0.020 + 0.007)	100 mA	
30 Ω	35.000 Ω	0.020 + 0.007 (0.020 + 0.007)	10 mA	
300 Ω	350.00 Ω	0.020 + 0.007 (0.020 + 0.007)	1 mA	
3 kΩ	3.5000 kΩ	0.020 + 0.007		
30 kΩ	35.000 kΩ	0.020 + 0.007	100 µA	
300 kΩ	350.00 kΩ	0.040 + 0.007	5 µA	
3 MΩ	3.5000 MΩ	0.200 + 0.007	500 nA	

*1 A negative value is up to -10% f.s.
*2 The maximum display range corresponds to the maximum measurement range.
*3 ( ) indicates when the offset voltage compensation is ON.
*4 The Measurement current accuracy is ±5%.

Temperature measurement

Accuracy

Temperature	Accuracy
-10.0°C to 9.9°C	±(0.55 + 0.009 × | t - 10 |)°C
10.0°C to 30.0°C	±0.50°C
30.1°C to 59.9°C	±(0.55 + 0.012 × | t - 30 |)°C
60.0°C to 99.9°C	±(0.92 + 0.021 × | t - 60 |)°C

t: measurement temperature (°C)
The instrument accuracy is ±0.2°C.

Model: RESISTANCE METER RM3548-50

Model no. (order code)

RM3548-50

HIOKI E.E. CORPORATION