High-precision Portable Resistance Meter Measures from μΩ to MΩ

RESISTANCE METER RM3548

USB2.0

CE

- 0.02 % basic accuracy, 0.1 μΩ max. resolution, 1 A max. testing current, 1A max. testing current
- Measure from 0.0 μΩ (testing current 1 A) to 3.5 MΩ
- Easily record up to 1,000 data points in memory simply by applying the instrument's probes
- Smoothly capture temperature-rise test data using interval measurement
- Portable design is ideal for maintenance and testing of large equipment

Order Code: **RM3548**

■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Resistance range	3 mΩ (3.5000 mΩ display Max., 0.1 μΩ resolution) to 3 MΩ range (3.5000 MΩ display Max., 100 Ω resolution), 10 steps Measurement accuracy: ±0.020 % rdg. ±0.007 % f.s.
Testing current	[at 3 mΩ range] 1 A DC to [at 3 MΩ range] 500 nA DC
Open-terminal voltage	5.5 V DC max.
Temperature measurement	-10.0 to 99.9°C, accuracy: ±0.50°C (Temperature Sensor Z2002 and RM3548 combined accuracy)
Measurement speed	Fixed
Display refresh rate	Without OVC: approx. 100ms, With OVC: approx. 230ms
Functions	Temperature correction, temperature conversion, offset voltage compensation (OVC), comparator (ABS/REF%), length conversion, judgment sound setting, auto hold, auto power save (APS), Averaging, panel store/panel load, USB communication interface (RM3548 internal memory is recognized as a mass storage device when connected to a PC)
Memory storage	Number of recordable data points: (manual/auto) Up to 1,000, (interval) Up to 6,000; Interval: 0.2 to 10.0s (0.2s steps); Acquisition of data from memory: display, USB mass storage (CSV, TXT files)
Power supply	LR6 (AA) Alkaline batteries ×8, Continuous use: 10 hours (Under our company's conditions), Rated power consumption: 5 VA
Dimensions and mass	192 mm (7.56 in) W × 121 mm (4.76 in) H × 55 mm (2.17 in) D mm, 770 g (27.2 oz)
Accessories	Clip type lead 9287-10 ×1, Temperature sensor Z2002 ×1, LR6 Alkaline battery ×8, Instruction manual ×1, USB Cable(A-to-mini B type) ×1, Strap ×1, Spare fuse ×1

*The 9287-10, Z2002 are bundled with the RM3548

Measurement Lead

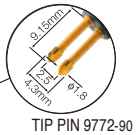
CLIP TYPE LEAD 9287-10
A:130 mm (5.12 in), B:83 mm (3.27 in), L:1100 mm (3.61 ft), 70V DC

FOUR TERMINAL LEAD 9453
A:280 mm (11.02 in), B:118 mm (4.65 in), L:1360 mm (4.46 ft), 60V DC

PIN TYPE LEAD 9465-10
A: 80 mm (3.15 in) (red), 140 mm (5.51 in) (black, max. 550 mm (21.65 in)), B: 121 mm (4.76 in), L: 1883 mm (6.18 ft)

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

PIN TYPE LEAD 9772
A: 80 mm (3.15 in) (red), 140 mm (5.51 in) (black, max. 550 mm (21.65 in)), B: 118 mm (4.65 in), L: 1780 mm (5.84 ft)



TIP PIN 9772-90
To replace the tip on the 9772, L2100, (one piece)

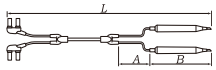
LARGE CLIP TYPE LEAD 9467
A:300 mm (11.81 in), B:116 mm (4.57 in), L:1360 mm (4.46 ft), 50V DC

TEMPERATURE SENSOR Z2002
100 mm (3.94 in)

LED COMPARATOR ATTACHMENT L2105
For RM3544s/3545s/3548, 2 m (6.56 ft)

ZERO ADJUSTMENT BOARD 9454
For the L2100, 9465-10, 9465, 9461

About probe length



A: From junction to probe
B: Probe part
L: Whole length

Case

CARRYING CASE C1006
For the RM3548

Featuring super-high accuracy and multi-channel capabilities (20 channels with 4-terminal measurement)

RESISTANCE METER RM3545

GP-IB
RM3545-01

RS-232C

USB2.0

CE

- 0.006% basic accuracy, 0.01 μΩ max. resolution, 1A max. testing current
- Measure from 0.00 μΩ (testing current 1 A) to 1200 MΩ
- Multiplexer Unit Z3003 (option) provides 20-channels of 4-terminal measurements for a complete assessment of multi-point signals (RM3545-02 only)
- Low-power resistance measurement with an open voltage not exceeding 20 mV
- High-speed, comprehensive productivity support delivers decisions in as little as 2.2 ms from start to finish

Order Code:
RM3545 (basic model)
RM3545-01 (with GP-IB interface)
RM3545-02 (support for the multiplexer unit)

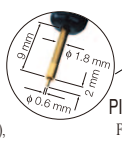
■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

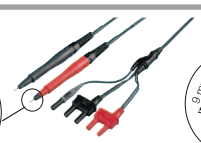
Resistance range	10 mΩ (12.00000 mΩ display Max., 10 nΩ resolution) to 1000 MΩ range (1200.0 MΩ display Max., 100 kΩ resolution), 12 steps [LP ON] 1000 mΩ (1200.00 mΩ display Max., 10 μΩ resolution) to 1000 Ω range (1200.00 Ω display Max., 10 mΩ resolution), 4 steps Measurement accuracy: ±0.006 % rdg. ±0.001 % f.s.
Testing current	1 A DC to 1 μA or less [LP ON] 1 mA to 5 μA DC
Open-terminal voltage	20 V DC (10 kΩ range or more), 5.5 V DC max. (1000 Ω range or less) [LP ON] 20 mV DC max.
Temperature measurement	-10.0 to 99.9 °C, accuracy: ±0.50 °C (Temperature Sensor Z2001 and RM3545 combined accuracy), -99.9 to 999.9°C (analog input)
Measurement speed	FAST (2.2ms) / MED (50Hz: 21ms, 60Hz: 18ms) / SLOW1 (102ms) / SLOW2 (202ms)
Functions	Temperature correction, temperature conversion, offset voltage compensation (OVC), comparator (ABS/ REF%), BIN, key-lock (OFF, menu lock, all lock), display digit count selection function (7- digit/ 6-digit/ 5-digit), automatic power supply frequency settings (AUTO/ 50Hz/ 60Hz), scaling, judgment sound setting, auto hold, averaging, statistical calculations, panel store/panel load, D/A output.
Multiplexer	[Only RM3545-02] Support unit: Z3003 (Install up to 2 units)
Communication interfaces	Select from GP-IB (RM3545-01 only), RS-232C, PRINTER (RS-232C), or USB . Remote function, communications monitor function, data output function, memory (50)
Power supply	100 to 240 V AC, 50/60 Hz, Rated power consumption: 40 VA
Dimensions and mass	215 mm (8.46 in) W × 80 mm (3.15 in) H × 306.5 mm (12.07 in) D [RM3545/RM3545-01] 2.5 kg (88.2 oz), [RM3545-02] 3.2 kg (35.3 oz)
Accessories	Power cord ×1, Clip type lead L2101 ×1, temperature sensor Z2001 ×1, Male EXT I/O connector ×1, Instruction manual ×1, Application disc ×1, USB cable (A-to-B type) ×1, Spare fuse ×1

*The L2101, Z2001 are bundled with the RM3545 series

Measurement Lead / Input scanner

CLIP TYPE LEAD L2101
For RM3544s/3545s, B:83 mm (3.27 in), L:1.5 m (4.92 ft)

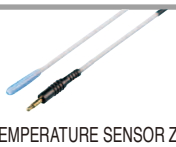




PIN TYPE LEAD L2102
For RM3544s/3545s, B:178 mm (7.01 in), L:1.5 m (4.92 ft)

PIN TYPE LEAD L2103
For RM3544s/3545s, B:176 mm (6.93 in), L:1.5 m (4.92 ft)

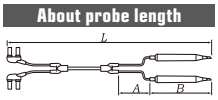
4 -TERMINAL LEAD L2104
For RM3544s/3545s, B:118 mm (4.65 in), L:1.5 m (4.92 ft)



TEMPERATURE SENSOR Z2001
For RM3544s/3545s, 1.75 m (5.74 ft)

LED COMPARATOR ATTACHMENT L2105
For RM3544s/3545s/3548, 2 m (6.56 ft)

About probe length



A: From junction to probe
B: Probe part
L: Whole length

Note: The L2101 to L2104 leads can be separated into two units, length A is not noted

MULTIPLEXER UNIT Z3003
For the RM3545-02, 4-wire 10ch or 2-wire 21ch input scanning

PC Communication

*The 9151-02 is only for the RM3545-01

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2m (6.56 ft) length

High-precision Bench-top Resistance Meter for Both Manual Testing and Integration with Automated Lines

RESISTANCE METER **RM3544**

USB2.0 RM3544-01

RS-232C RM3544-01

CE

- 0.02 % basic accuracy, 1 µΩ max. resolution, 300 mA max. measurable current
- Measure from 0.000 mΩ (testing current 300 mA) to 3.5 MΩ
- Probe for guard jack use and increased measurement current yield an instrument that's more resistant to noise
- Optional LED COMPARATOR ATTACHMENT and high-volume judgment tones combine to ensure PASS/FAIL judgments are communicated reliably in the noisy environment of the production floor
- EXT I/O interface with NPN/PNP support can accommodate a variety of automated production lines (-01 model)

Order Code: **RM3544** (basic model)
RM3544-01 (with EXT. I/O, communication interface)

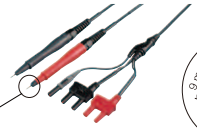
■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Resistance range	30 mΩ (35.000 mΩ display Max., 1 µΩ resolution) to 3 MΩ range (3.5000 MΩ display Max., 100 Ω resolution), 9 steps Measurement accuracy: ±0.020 % rdg. ±0.007 % f.s.
Testing current	[at 30 mΩ range] 300 mA DC to [at 3 MΩ range] 500 nA DC
Open-terminal voltage	5.5 V DC max.
Temperature measurement	-10.0 to 99.9°C, accuracy: ±0.50°C (Temperature Sensor Z2001 and RM3544/RM35440-01 combined accuracy)
Measurement speed	FAST (50Hz: 21ms, 60Hz: 18ms) / MED (101ms) / SLOW (401ms)
Display refresh rate	N/A
Functions	Temperature correction, comparator (ABS/REF%), key-lock (OFF, menu lock, all lock), display digit count selection function (5 digits/ 4 digits), automatic power supply frequency settings (AUTO/50Hz/60Hz), scaling, judgment sound setting, auto hold, averaging, panel store/panel load
Memory storage	N/A
Communication interfaces	[Only RM3544-01] Select from RS-232C, PRINTER (RS-232C), or USB Remote function, communications monitor function, data output function
Power supply	100 to 240 V AC, 50/60 Hz, Rated power consumption: 15 VA
Dimensions and mass	215 mm (8.46 in) W × 80 mm (3.15 in) H × 166 mm (6.54 in) D mm [RM3544] 0.9 kg (31.7 oz), [RM3544-01] 1.0 kg (35.3 oz)
Accessories	[RM3544] Power cord ×1, Clip type lead L2101 ×1, Instruction manual ×1, Spare fuse ×1 [RM3544-01] Power cord ×1, Clip type lead L2101 ×1, Male EXT I/O connector ×1, Instruction manual ×1, Application disc ×1, USB cable (A-to-B type) ×1, Spare fuse ×1

*The L2101 is bundled with the RM3544 series

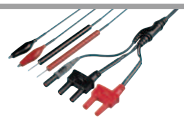
Measurement Lead / Input scanner

CLIP TYPE LEAD L2101
For RM3544s/3545s, B:83 mm (3.27 in), L:1.5 m (4.92 ft)



PIN TYPE LEAD L2102
For RM3544s/3545s, B:178 mm (7.01 in), L:1.5 m (4.92 ft)

PIN TYPE LEAD L2103
For RM3544s/3545s, B:176 mm (6.93 in), L:1.5 m (4.92 ft)

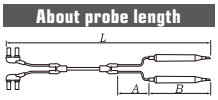


4 -TERMINAL LEAD L2104
For RM3544s/3545s, B:118 mm (4.65 in), L:1.5 m (4.92 ft)

TEMPERATURE SENSOR Z2001
For RM3544s/3545s, 1.75 m (5.74 ft)

LED COMPARATOR ATTACHMENT L2105
For RM3544s/3545s/3548, 2 m (6.56 ft)

About probe length



A: From junction to probe
B: Probe part
L: Whole length

Note: The L2101 to L2104 leads can be separated into two units, length A is not noted

PC Communication

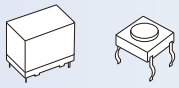
*For the RM3544-01

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

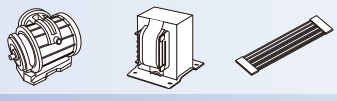
Applications

■ Small-signal contacts **RM3545**



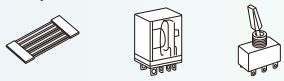
■ Compact fuses, airbag inflator, compact magnetic components (EMC filters, ferrite beads) **RM3545**

■ Multi-contact resistance measurement (motor and transformer windings) **RM3545-02**



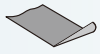
■ Motors, solenoids, choke coils, transformers, wire harnesses **RM3545** **RM3544** **RM3548**

■ Contacts, wire harnesses, relay contacts, switches **RM3545** **RM3544** **RM3548**

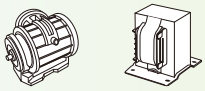


■ Fuses, resistors, heaters, wires, welds **RM3545** **RM3544** **RM3548**

■ Conductive rubber, paint **RM3545** **RM3544** **RM3548**

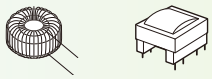


■ Large motors, large transformers **RM3548**



■ Vehicle grounding lines, conductivity of aircraft fuselages **RM3548**

■ Temperature rise tests (motors, choke coils, transformers) **RM3548**



Super-high accuracy and multi-channel capabilities

High-accuracy bench-top meter

High-accuracy portable resistance meter

Resistance Meter for Ultra-low and Low Shunt Resistance

RESISTANCE HiTESTER **RM3543**

GP-IB
RM3543-01
RS-232C
CE

- Advanced enough to measure 0.1 mΩ shunts with room to spare at ±0.16% accuracy & 0.01μΩ resolution performance
- Superb repeatable measurement accuracy
- Advanced contact-check, comparator, and data export functions
- Intuitive user interface and strong noise immunity are ideal for automated systems

Order Code: **RM3543** (basic model)
RM3543-01 (with GP-IB interface)

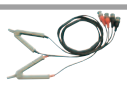
Test fixtures are not supplied with the unit. Select an optional test fixture when ordering.

■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Measurement method	Four-terminal, constant-current DC
Resistance range	10 mΩ (Max. 12.00000 mΩ, 0.01 μΩ resolution) to 1000 Ω range (Max. 1200.000 Ω, 1 mΩ resolution), 7 steps
Display	Monochrome graphic LCD 240 × 64 dot, white LED backlight
Measurement accuracy	[at 10 mΩ range, with SLOW mode, average 16 times settings] ±0.060 % rdg. ±0.001 % f.s.
Testing current	[at 10 mΩ range] 1 A DC to [at 1000 Ω range] 1 mA DC
Open-terminal voltage	20 V DC max. *Note: Voltage when not measuring is 20 mV or less, with current mode set at PULSE and Contact Improver Setting set at OFF/PULSE (measured with a voltmeter having 10 MΩ)*
Sampling rate	FAST, MEDIUM, SLOW, 3 settings
Integration time	[at 10 mΩ range, default value] FAST 2.0 ms, MED 5.0 ms, SLOW 1 PLC, Setting range: 0.1 ms to 100.0 ms, or 1 to 5 PLC at 50 Hz, 1 to 6 PLC at 60 Hz *Note: PLC = one power line cycle (mains wave-form period)*
Other functions	Comparator (compare setting value with measurement value), Delay, OVC (offset voltage compensation), Average, Measurement fault detection, Probe short-circuit detection, Improve contact, Current mode setting (A pulse application function that applies current only during measurement), Auto-memory, Statistical calculations, Settings monitor (when using two instruments, a difference in settings causes warning notification), Retry, Trigger function. etc,.
Interfaces	External I/O, RS-232C, Printer, GP-IB (Model RM3543-01)
External I/O	Trigger, Hold input, Comparator output, Settings monitor terminal, Service power output +5V, +12V, etc.
Power supply	100 to 240 V AC, 50/60 Hz, 40 VA max.
Dimensions and mass	260 mm (10.24 in) W × 88 mm (3.46 in) H × 300 mm (11.81 in) D, 3.0 kg (105.8 oz)
Accessories	Power cord ×1, EXT I/O male connector ×1, Instruction manual ×1, Operation guide ×1

Probe and Test fixtures

4-TERMINAL PROBE 9500
For RM3543, the 3532-80, DC to 1 MHz, 1 m (3.28 ft) length



4-TERMINAL PROBE 9140
DC to 100 kHz, impedance characteristics of 75 Ω, 4-terminal configuration

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: ø0.3 (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions:1 mm (0.04 in) to 10 mm (0.39 in)

PC communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Measure in as little as 0.9 ms, Optimized for Automated Systems

RESISTANCE HiTESTER **RM3542**

GP-IB
RM3542-01
RS-232C
CE

- High speed and accuracy maximize productivity in automated systems
- Multiple checking functions ensure proper contact for reliable measurements
- Low-power resistance mode measures chip inductors and EMC suppression components
- Supports sample inspections during the manufacturing process

Order Code: **RM3542** (basic model)
RM3542-01 (with GP-IB interface)

Test fixtures are not supplied with the unit. Please select an optional test fixture when ordering.

■ Basic specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

Resistance range	[at Low Power OFF] 100 mΩ range (Max. 120.0000 mΩ, 0.1 μΩ resolution) to 100 MΩ range (Max. 120.0000 MΩ, 100 Ω resolution), 10 steps [at Low Power ON] 1000 mΩ range (Max. 1200.000 mΩ, 1 μΩ resolution) to 1000 Ω range (Max. 1200.000 Ω, 1 mΩ resolution), 4 steps
Display	Monochrome graphic LCD 240 × 64 dot, white LED backlight
Measurement accuracy	[with SLOW mode, at 100 mΩ range] ±0.015 % rdg. ±0.002 % f.s. [with SLOW mode, at 1000 Ω range] ±0.006 % rdg. ±0.001 % f.s. (the best case)
Testing current	[at 100 mΩ range] 100 mA DC to [at 100 MΩ range] 100 nA DC
Open-terminal voltage	20 V DC max.
Sampling rate	FAST, MEDIUM, SLOW, 3 settings
Measurement times	[at 100 Ω /1000 Ω ranges, with Low Power OFF] FAST: 0.9 ms, MED: 3.6 ms, SLOW: 17 ms (minimum time)
Integration time	0.1 ms to 100.0 ms, or 1 to 5 PLC at 50 Hz, 1 to 6 PLC at 60 Hz *Note: PLC = one power line cycle (mains wave-form period)*
Other functions	Comparator (compare setting value with measurement value), Delay (set to allow for mechanical delay of trigger input and probing, or set to allow for measurement object response), OVC (offset voltage compensation), Measurement fault detection, Probe short-circuit detection, Improve contact, Auto-memory, Statistical calculations, Settings monitor (when using two instruments, a difference in settings causes warning notification), Retry, Trigger function. etc,.
Interfaces	RS-232C, Printer, GP-IB (Model RM3542-01)
External I/O	Trigger, Hold input, Comparator output, Settings monitor terminal
Power supply	100 to 240 V AC, 50/60 Hz, 30 VA max.
Dimensions and mass	260 mm (10.24 in) W × 88 mm (3.46 in) H × 300 mm (11.81 in) D, 2.9 kg (102.3 oz)
Accessories	Power cord ×1, EXT I/O male connector ×1, Instruction manual ×1, Operation guide ×1

Other options: refer to the detailed catalog

Probe and Test fixtures

4-TERMINAL PROBE 9140
DC to 100 kHz, impedance characteristics of 75 Ω, 4-terminal configuration

TEST FIXTURE 9262
Direct connection type, DC to 5 MHz, measurable conductor diameter: ø0.3 (0.01 in) to 2 mm (0.08 in)

SMD TEST FIXTURE 9263
Direct connection type, DC to 5 MHz, Test sample dimensions:1 mm (0.04 in) to 10 mm (0.39 in)

PC communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

RS-232C CABLE 9638
For the PC, 9pin - 25pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length