

TOUCH
SCREEN

IP67

closed housing



IP54

open housing



CAT III



600 V



CAT IV



300 V

Measure winding resistance and low resistance with MMR-650

Product features

- measurement of winding resistance (inductive objects including amorphous core transformers)
- measurement of very low resistance
- transformer core demagnetization function
- automatic temperature compensation function (temperature probe)
- function of determining the temperature of a motor under load
- high immunity to disturbances



Application

The MMR-650 winding resistance and low resistance meter is designed to measure very low very low resistance of both windings - including amorphous core transformers - and resistive objects. This product is made to be used in power plants, railways and maintenance companies to measure resistance of:

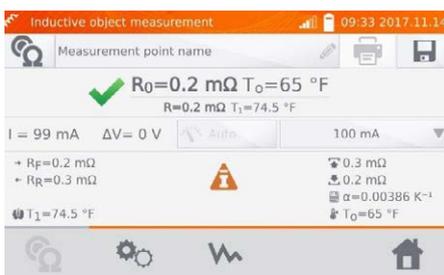
- windings of power transformers and motors,
- breakers, contacts,
- earthing conductors, equipotential bondings,
- welded and soldered connections,
- bolted connections,
- and other resistive and inductive objects.

MMR-650 can be also utilized on production lines (eg. at the final production control stage).



Device capabilities

The MMR-650 winding resistance and low resistance meter provides an innovative combination of a high-performance measuring device with a modern user interface and advanced data management system. Wireless data transmission, enhanced system of 2D codes and ability to print labels to identify test items, all contribute to bringing new quality of work and allow the user to perform a wide range of measurements.



Easy readout

The MMR-650 winding resistance and low resistance meter is equipped with a readable colour touchscreen that, due to its 800 x 480 pixel resolution, provides both high comfort of interacting with the interface and high readability of the measurement results.



Durable and practical casing

In response to the customers needs the MMR-650 microohmmeter has been designed to operate in difficult environmental conditions. A unique casing with the IP67 ingress protection rating ensures that the device is both waterproof and dustproof.

Resistance measurement

Range	Resolution	Test current	Accuracy
0 to 999.9 $\mu\Omega$	0.1 $\mu\Omega$	10 A	$\pm(0.2\% \text{ m.v.} + 2 \text{ digits})$
1.0000 to 1.9999 m Ω	0.0001 m Ω		
2.000 to 19.999 m Ω	0.001 m Ω	10 A / 1 A	
20.00 to 199.99 m Ω	0.01 m Ω		
200.0 to 999.9 m Ω	0.1 m Ω	1 A / 0.1 A	
1.0000 to 1.9999 Ω	0.0001 Ω		
2.000 to 19.999 Ω	0.001 Ω	0.1 A	
20.00 to 199.99 Ω	0.01 Ω	10 mA	
200.0 to 1999.9 Ω	0.1 Ω	1 mA	

Technical specification

insulation type according to EN 61010-1	double,	
measurement category acc. to EN 61010-2-030	III 600 V	
ingress protection according to EN 60529	with closed housing	IP67
	with open housing, powered from the battery pack, installed plugs	IP54
	with open housing, powered from mains and/or without plugs	P40
protection against external voltage	up to 600 V AC for 10 s	
power supply to battery charger	90 V...265 V 50 Hz...60 Hz 2 A	
battery charging time	ca. 3.5 h	
number of measurements (of resistive objects) with 10 A current performed when powered from the battery pack	700 to 800 depending on the ambient temperature	
maximum wire resistance for 10 A current	300 mΩ	
accuracy of measuring current setting	±10%	
time of performing the resistance measurement	with selected resistive object type and bidirectional current flow	3 s
	with selected inductive object type, dependent on the resistance and inductance of the object	5 s or more
dimensions	318 x 257 x 152 mm 12.5" x 10.1" x 6.0"	
meter weight	ca. 3.5 kg ca. 7.7 lbs	
operating temperature	-10°C...+50°C 14°F...122°F	
charger operating temperature	0°C...45°C 32°F...113°F	
storage temperature	-20°C...+60°C -4°F...+140°F	
humidity	20%...90%	
reference temperature	23°C ± 2°C 73.4°F ± 3.6°F	
reference humidity	40%...60%	
temperature coefficient	±0.01% of ^{d.v.} /°C ± 0.1 digit/°C	
time to AUTO-OFF	5 to 45 minutes or option not active, depending on the setting	
TFT graphic display	800 x 480 pixels	
interface standard	USB, LAN, Wi-Fi	
quality standard	design and manufacturing are ISO 9001 compliant	
the product meets the EMC requirements (emission for industrial environment) according to	EN 61326-1:2013 and EN 61326-2-2:2013	
compliance with FCC Rules	Class A digital device	

Standard accessories



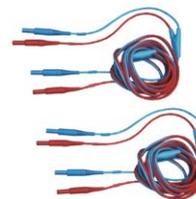
Double pin Kelvin probe (2 pcs.)

WASONKEL20GB



Kelvin crocodile (2 pcs)

WAKROKEL06



10 ft (3 m) double-wire cable U2I2

U1/I1
WAPRZ003DZBBU111

U2/I2
WAPRZ003DZBBU212



temperature probe ST-3

WASONT3



IEC C13 power plug

WAPRZ1X8BLIECUSA



L-11 carrying case

WAFUTL11



Li-Ion rechargeable battery 7.2 V

WAAKU27



USB cable

WAPRZUSB



Factory calibration certificate

Optional accessories



**Double-wire cable (10 / 25 A) U1/ I1
6 m / 10 m / 15 m**

WAPRZ006DZBBU111
WAPRZ010DZBBU111
WAPRZ015DZBBU111



33 ft (10 m) double-wire test lead (Kelvin crocodile clip / banana plug)

WAPRZ010DZBKEL



Kelvin vice with cables

WAZACKEL1



**Double-wire cable (10 / 25 A) U2 / I2
6 m / 10 m / 15 m**

WAPRZ006DZBBU212
WAPRZ010DZBBU212
WAPRZ015DZBBU212



82 ft (25 m) double-wire test lead (Kelvin crocodile clip / banana plug)

WAPRZ025DZBKEL



ST-1 temperature probe

WASONT1



D2 portable USB report / barcode printer (Sato)

WAADAD2



label roll – black on white for D2 printer (SATO)

WANAKD2

ribbon for D2 printer (SATO)

WANAKD2BAR



barcode scanner 2D (USB)

WAADACK2D



LAN cable (RJ45)

WAPRZRJ45



Calibration certificate with accreditation