



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:

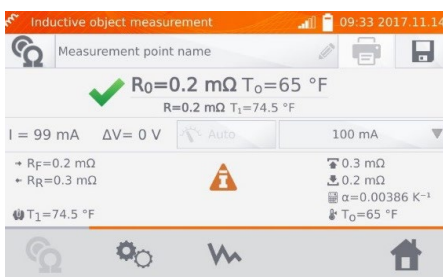
- windings of power transformers and motors,
- breakers, contacts,
- earthing conductors, equipotential bondings,
- welded and soldered connections,
- bolted connections,
- and other resistive and inductive objects.

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...999.9 $\mu\Omega$	0.1 $\mu\Omega$	10 A	$\pm(0.25\% \text{ m.v.} + 2 \text{ digits})$
1.0000...1.9999 m Ω	0.0001 m Ω		
2.000...19.999 m Ω	0.001 m Ω	10 A / 1 A	
20.00...199.99 m Ω	0.01 m Ω		
200.0...999.9 m Ω	0.1 m Ω	1 A / 0.1 A	
1.0000...1.9999 Ω	0.0001 Ω		
2.000...19.999 Ω	0.001 Ω	0.1 A	
20.00...199.99 Ω	0.01 Ω	10 mA	
200.0...1999.9 Ω	0.1 Ω	1 mA	

Technical specification

insulation type	double, according to EN 61010-1:2011	
measurement category	III 600 V acc. to EN 61010-2-030:2011	
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	approximately 3.5 hours	
number of measurements (of resistive objects) with 10 A current performed when powered from the battery pack	700...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)	
meter weight	approx. 3.5 kg	
operating temperature	-10°C...+50°C	
charger operating temperature	0°C...+45°C	
storage temperature	-20°C...+60°C	
humidity	20%...90%	
reference temperature	+23°C ± 2°C	
reference humidity	40%...60%	
altitude (above sea level)	<2000 m	
temperature coefficient	±0.01% of d.v./°C ± 0.1 digit/°C	
time to AUTO-OFF	5...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 and EN 61326-2-2	
compliance with FCC Rules	Class A digital device	

"d.v." - displayed value

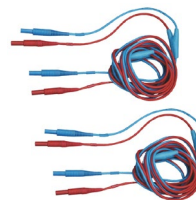
Standard accessories



Double pin Kelvin probe (2 pcs.)
WASONKEL20GB



Kelvin crocodile (2 pcs)
WAKROKELK06



3 m double-wire cable
U1/I1
WAPRZ003DZBBU111
U2/I2
WAPRZ003DZBBU212



temperature probe ST-3
WASONT3



Mains cable - IEC C13 plug
WAPRZ1X8BLIEC



L-11 carrying case
WAFUTL11



Li-Ion rechargeable battery 7.2 V
WAAKU27



USB cable
WAPRZUSB



Sonel Reader PC software
WAPRORREADER

Additional accessories



Kelvin vice with cables
WAZACKEL1



10 m double-wire test lead (Kelvin crocodile clip / banana plug)
WAPRZ010DZBKEL



25 m double-wire test lead (Kelvin crocodile clip / banana plug)
WAPRZ025DZBKEL



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



ST-1 temperature probe
WASONT1



LAN cable (RJ45)
WAPRZRJ45

