



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 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).



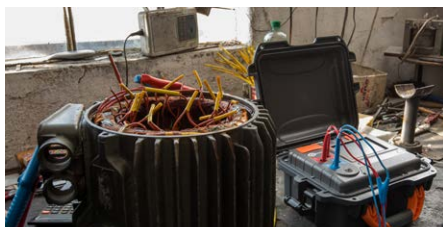
Device capabilities

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 μΩ	0.1 μΩ	10 A	±(0.2% m.v. + 2 digits)
1.0000...1.9999 mΩ	0.0001 mΩ		
2.000...19.999 mΩ	0.001 mΩ		
20.00...199.99 mΩ	0.01 mΩ	10 A / 1 A	
200.0...999.9 mΩ	0.1 mΩ	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 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



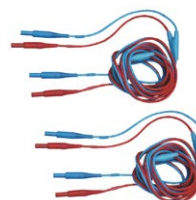
Double pin Kelvin probe (2 pcs.)

WASONKEL20GB



Kelvin crocodile (2 pcs)

WAKROKELK06



3 m double-wire cable (10 / 25 A)

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



Factory calibration certificate

Optional accessories



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

WAPRZ006DZBBU111
WAPRZ010DZBBU111
WAPRZ015DZBBU111



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

WAPRZ006DZBBU212
WAPRZ010DZBBU212
WAPRZ015DZBBU212



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

WAPRZ010DZBBKEL



Kelvin vice with cables

WAZACKEL1



Test lead 25 m for measuring low resistance and testing lightning protection of wind turbines

WAADAPRZ025BDP



Test lead 50 m / 75 m / 100 m for measuring low resistance and testing lightning protection of wind turbines

WAADAPRZ050BDP
WAADAPRZ075BDP
WAADAPRZ100BDP



D2 portable USB report / barcode printer (Sato)

WAADAD2



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

WANAKD2

ribbon for D2 printer (SATO)

WANAKD2BAR



ST-1 temperature probe

WASONT1



barcode scanner 2D (USB)

WAADACK2D



LAN cable (RJ45)

WAPRZRJ45



Calibration certificate with accreditation