High-Current Fault Loop Impedance Meters

MZC-330S / 320S

index: WMUSMZC330 / WMUSMZC320

MZC-330S

750 V

maximum network voltage

0.1 mΩ

maximum resolution

CAT IV 600 V

IP67

BLUETOOTH

Heavyweight for high-current measurements

Capabilities

- **Measurement of very low short circuit loop impedances (with resolution 0,1 mΩ) with a current of 130 A at 230 V; maximum 300 A at 690 V (500 V in MZC-320S).**
- **Measurement with a current of 24 A at 230 V, maximum 37 A at 690 V (maximum 27 A at 500 V in MZC-320S) with resolution 0,01 Ω.**
- Measurements in installations with rated voltages: 110/190 V, 115/200 V, 127/220 V, 220/380 V, 230/400 V, 240/415 V, 290/500 V and 400/690 V (MZC-330S only) and frequencies 45…65 Hz.
- Ability to perform measurements in short circuit system: phase-phase, phase-PE, phase-N.
- Differentiation between the phase voltage and the inter-phase voltage while calculating the short circuit current.
- Ability to change the length of test lead (measurement with 2p method).
- 4p (four-pole) method, test leads do not require calibration (measurement with current up to 300 A).
- Measurement of resistance (R_S) and reactance (X_S) components.

Additional features

- Touch voltage and touch shock voltage measurement with resistor 1 kΩ).
- AC voltage measurement in range 0…750 V (0...550 V in MZC-320S).
- Frequency measurement 45.0...65.0 Hz.
- Memory of 990 measurement results, ability to transfer the data to a PC via USB and Bluetooth.
- Power supply: rechargeable battery.

Reaching the areas unattainable to others

In direct vicinity of transformers or in transformer stations, where the circuits are equipped with a high current protection (fuse-links with the rating of several hundred amperes, motor circuit breakers), **fault currents may reach several hundreds of kilo-amps**. Measurement of fault loop impedance in such networks requires a **high-current meter**, which is capable of measuring Z_S values at the level of single milliohms. Our patented technical solution, which uses components not available in the commercial offer (unique fault resistor), enables us to offer the meter with perfect performance in such demanding conditions.

Measurements without compromise

Commercially available fault loop impedance meters perform the measurements asymmetrically, i.e. using half-wave current. This solution introduces the transitional constant and DC constant, which does not always result in a linear behaviour of the transformer during the tests. This in turn, affects the accuracy of the results.

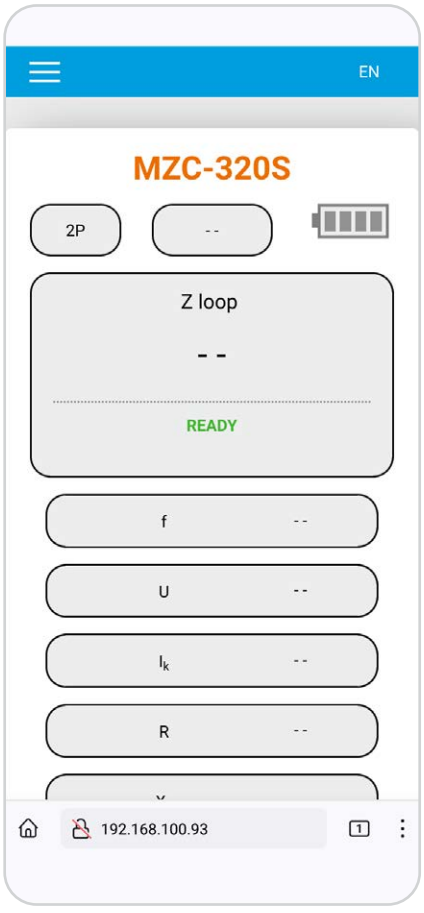
MZC-330S and MZC-320S high-current meters apply **symmetrical current** for measurements, which means that they use the full wave - thanks to the advanced design of the measuring system and fault circuit.

Applications

The instruments are used for measurements in networks with the following rated voltage:

- **up to 750 V**, where the prospective fault current may reach **95.8 kA**, as measured according to EN 61557 (**MZC-330S**),
- **up to 500 V**, where the prospective fault current may reach **69.4 kA**, as measured according to EN 61557 (**MZC-320S**).

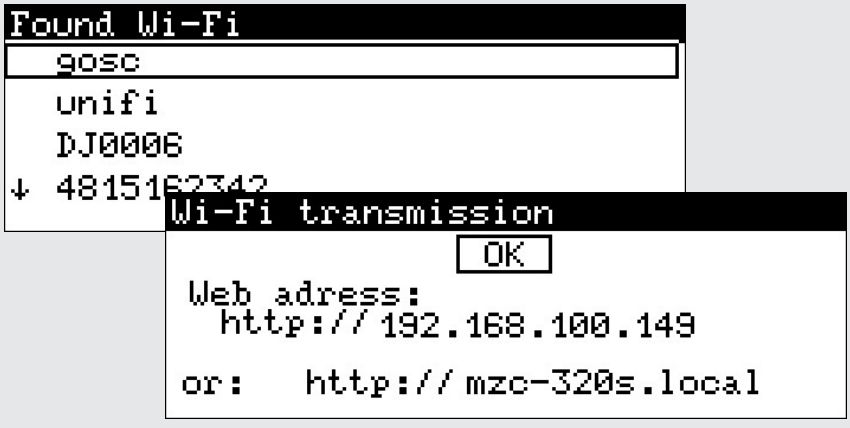
These parameters make the meters perfect for tests and measurements at wind farms, high-speed rail and in facilities controlled by power companies.



Remote working is always the best solution

The instrument can be controlled remotely - all that is required is for the meter to be logged into the same Wi-Fi network as the controlling device, i.e. **any device with a web browser**. After calling up the virtual control panel in the browser, the user will be able to start the measurement from a convenient distance and then read out the results.

By the same means, he will gain access to the stored measurement results. Importantly, he or she will also be able to download them in the classic manner, i.e. via a USB connection.



Technical specifications

Measurement functions	Measurement range	Display range	Resolution	Accuracy ±(% m.v. + digits)
Voltage	0 V...750 V | MZC-330S 0 V...550 V | MZC-320S	0 V...750 V | MZC-330S 0 V...550 V | MZC-320S	1 V	±(2% m.v. + 2 digits)
Frequency	45.0 Hz...65.0 Hz	45.0 Hz...65.0 Hz	0.1 Hz	±(0.1% m.v. + 1 digit)
Short-circuit loop parameters				
4p method - high current measurement maximum current 300 A	7.2 mΩ...1999 mΩ acc. to EN 61557	0.0 mΩ...1999 mΩ	from 0.1 mΩ	±(2% m.v. + 2 mΩ)
2p method - standard current measurement maximum current 37 A	from 0.13 Ω...199.9 Ω acc. to EN 61557	0.00 Ω...199.9 Ω	from 0.01 Ω	from ±(2% m.v. + 3 digits)
Short-circuit current readings				
4p method - high current measurement network voltage 115 V...690 V | MZC-330S network voltage 115 V...500 V | MZC-320S	up to 57.5 A...95.8 kA | MZC-330S up to 57.5 A...69.4 kA | MZC-320S acc. to EN 61557	115.0 A...690 kA | MZC-330S 115.0 A...500 kA | MZC-320S	from 0.1 A	Calculated on the basis of error for fault loop
2p method - standard current measurement	from 2.00 A...3.21 kA acc. to EN 61557	1.150 A...40.0 kA	from 0.001 A	Calculated on the basis of error for fault loop
Touch and shock voltage				
4p method - high current measurement	0 V...100 V	0 V...100 V	1 V	±(10% m.v. + 2 digits)

Safety and work conditions

Measuring category according to EN 61010	IV 600 V
Ingress protection	IP67
Type of insulation according to EN 61010-1 and EN 61557	double
Power supply	Li-Ion 7.2 V 8.8 Ah rechargeable battery
Dimensions	390 x 308 x 172 mm | 15.4" x 12.2" x 6.8"
Weight	ca. 6.5 kg | 14.3 lbs
Operating temperature	-10...+40°C | 14...104°F
Storage temperature	-20...+60°C | -4...140°F
Humidity	20...90%
Nominal temperature	23 ± 2°C
Reference humidity	40%...60%

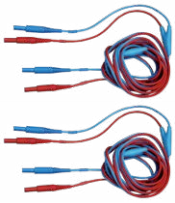
Memory and communication

Memory of measurement results	990 results
Data transmission	USB, Wi-Fi

Other information

Quality standard – development, design and production	ISO 9001
The product meets the EMC (emission for industrial environment) requirements according to standards	EN 61326-1 EN 61326-2-2

Standard accessories



Double-wire test lead 3 m (10 / 25 A)

U1 / I1
WAPRZ003DZBBU1I1

U2 / I2
WAPRZ003DZBBU2I2

Test lead 1.2 m (banana plugs) black / yellow

WAPRZ1X2BLBB
WAPRZ1X2YEBB

Pin probe 1 kV (banana socket) black / yellow

WASONBLOGB1
WASONYEOGB1

2x Kelvin clamp, 1 kV, 25 A

WAKROKELK06

4x crocodile clip 1 kV 32 A black

WAKROBL30K03

2x high-current pin probe 1 kV (banana sockets)

WASONSPGB1

Mains power cable IEC C7 plug

WAPRZLAD230US

Power supply Z19

WAZASZ19

USB cable

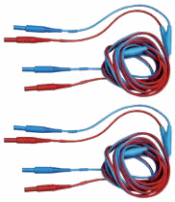
WAPRZUSB

L14 carrying case

WAFUTL14

Factory calibration certificate

Optional accessories



Double-wire test lead 6 m (10 / 25 A)

U1 / I1
WAPRZ006DZBBU1I1

U2 / I2
WAPRZ006DZBBU2I2

Test lead 5 / 10 / 20 m (banana plugs) yellow

WAPRZ005YEBB
WAPRZ010YEBB
WAPRZ020YEBB

L4 carrying case

WAFUTL4

Calibration certificate with accreditation