MI 3321 MultiservicerXA

NEW

IEC/ EN 60204 Ed.5

VDE 701 702

IEC/ EN 60439

The multifunctional portable test instrument MultiservicerXA is intended to perform all measurements for testing the electrical safety of portable electrical equipment, machines and switchboards.

The following tests can be performed:

- Earth bond / Continuity test,
- Insulation resistance,
- Substitute leakage current,
- Differential leakage current,
- Touch leakage current,
- IEC cord polarity test,
- Leakage and TRMS load currents with current clamp,
- Portable RCD test,
- Power test,
- Three phase voltage/ rotary field,
- Line and Loop impedance,
- RCD test,
- Discharging time,
- High voltage (Withstanding) test,
- Functional and Visual inspection,

The measurements are divided into four subgroups:

- Tests for testing portable DUTs acc. to **VDE 701 702**
- Tests for testing electrical safety of machines acc. to **IEC/EN 60204 Ed.5**
- Tests for testing safety of switchboards **IEC/ EN 60439**
- All tests. Because of the large set of functions the instruments is suitable also for safety testing (type testing, maintenance, routine testing) according to other product standards.

FEATURES

- Large graphic LCD display with resolution of 240 x 128 dots, with back-light,
- Powerful test data management system. Over 6000 memory locations for storing of test results, , parameters and
- Four communication ports (USB and 3 RS232C) for communication with PC, barcode reader/writer and printers,
- Soft touch keyboard with cursor keys,
- user-friendly manipulation
- Help menus - schematic diagrams for illustration of proper connection of DUT to the testing instrument.
- Built in real time clock,
- Pre-programmed test sequences,
- Fast testing with barcode identification systems,
- Test data can be uploaded from PC,
- Comparisons between old and new test results can be performed on site,
- Enables printing of test labels on site.
- Fully compatible with new METREL PATLink PRO PC software package.

STANDARDS

Electromagnetic compatibility (EMC)

- Electrical equipment for measurement, control and laboratory use EMC requirements
- EN 61326 - Class B (Portable equipment used in controlled EM

METREL®

Technical specifications

Withstanding voltage

Range	Resolution	Accuracy
0.00 - 3.00 kV	0.01 kV	(5 % of reading + 5 digit)

Withstanding current

Range	Resolution	Accuracy
0.0 - 99.9 mA	0.1 mA	(10 % of reading + 8 digit)

Output voltage: 1890 V (-0/+20 %), 2500 V (-0/+20 %), grounded
Trip out current (mA): 2, 5, 10, 20, 50, 100; (accuracy * 10 %)

Withstanding voltage

Range	Resolution	Accuracy
0.00 - 1.50 kV	0.01 kV	(5 % of reading + 5 digit)

Withstanding current

Range	Resolution	Accuracy
0.0 - 199.9 mA	0.1 mA	*(5 % of reading + 5 digit)
200 - 500 mA	1 mA	*(5 % of reading + 5 digit)

Output voltage / power: 1000 V -0 %,+20 % / 200 W at U_{mains} 230 V, grounded
Trip out current (mA): 5, 10, 20, 50, 100, 200; (accuracy *10 %)
Timer (s): 2, 3, 5, 10, 30. START/STOP button must be pressed for operation

Discharging time

Range	Resolution	Accuracy
0.0 - 9.9 s	0.1 s	*(5 % of reading + 3 digit)

Peak voltage

Range	Resolution	Accuracy
0.0 - 550 V	1 V	*(5 % of reading +5 digit)

Continuity 10 A

Range	Resolution	Accuracy
0.00 Ω - 1.99 Ω	0.01 Ω	(5 % of reading +3 digits)
Indication range: 2.00 Ω - 19.9 Ω		

Continuity 200 mA

Range	Resolution	Accuracy
0.00 Ω - 1.99 Ω	0.01 Ω	±(5 % of reading +3 digits)
Indication range: 2.00 Ω - 19.9 Ω		

Open circuit voltage: <9 V AC

Insulation resistance

Range	Resolution	Accuracy
0.000 MΩ - 0.500 MΩ	0.001 MΩ	±(10 % of reading +5 digits)
0.501 MΩ - 1.999 MΩ	0.001 MΩ	±(5 % of reading +3 digits)
2.00 MΩ - 19.99 MΩ	0.01 MΩ	
20.0 MΩ - 199.9 MΩ	0.1 MΩ	

Nominal voltages: 250 V DC, 500 V DC (-0 %, +10 %)
Short circuit current: max. 2.0 mA

Substitute leakage current

Range	Resolution	Accuracy
0.00 mA - 19.99 mA	0.01 mA	±(5 % of reading +5 digits)

Open circuit voltage: <50 V AC at rated mains voltage

Differential leakage current

Range	Resolution	Accuracy
0.00 mA - 9.99 mA	0.01 mA	±(5 % of reading +5 digits)

Apparent power

Range	Resolution	Accuracy
0.00 kVA - 4.00 kVA	0.01 kVA	±(5 % of reading +3 digits)

Touch leakage current

Range	Resolution	Accuracy
0.00 mA - 2.50 mA	0.01 mA	±(10 % of reading +5 digits)

Polarity test

Test voltage <50 V AC
Detects Pass, L-open, N-open, PE-open, L-N crossed, L-PE crossed, N-PE crossed, L-N shorted, L-PE shorted, N-PE shorted, multiple faults

Clamp current

Range	Resolution	Accuracy*
0.00 mA - 9.99 mA	0.01 mA	±(5 % of reading +10 digits)
10.0 mA - 99.9 mA	0.1 mA	±(5 % of reading +5 digits)
100 mA - 999 mA	1 mA	±(5 % of reading +5 digits)
1.00 A - 9.99 A	0.01 A	±(5 % of reading +5 digits)
10.0 A - 24.9 A	0.1 A	±(5 % of reading +5 digits)

Portable RCD trip-out time

Range	Resolution	Accuracy
0 ms - 300 ms(½xIΔN)	1 ms	± 3 ms
0 ms - 300 ms (IΔN)	1 ms	
0 ms - 40 ms (5 x IΔN)	1 ms	

Test currents (IΔN): 10 mA, 15 mA, 30 mA
Test current multipliers: ½xIΔN, IΔN, 5xIΔN
Start angle: 0°, 180°, both
Test modes: single, autotest

RCD testing (General data)

Nominal residual current (mA): 10, 30, 100, 300, 500, 1000
Test current options: 0.5xIΔN, IΔN, 2xIΔN, 5xIΔN
Test current shape: Sine-wave (AC), pulsed (A)
RCD type: G (non-delayed), S (time-delayed)
Test current starting polarity: 0° or 180°
Voltage range: 50 V - 264 V (45 Hz - 65 Hz)

Contact voltage RCD-Uc

Range	Resolution	Accuracy
0.0 - 19.9 V	0.1 V	(-0 % / +15 %) of reading ± 10 digits
20.0 - 99.9 V		(-0 % / +15 %) of reading

Test current: max. 0.5xIΔN
Limit contact voltage: 50 V

Trip-out time

Range	Resolution	Accuracy
0.0 - 40.0 ms	0.1 ms	±1 ms
0.0 - max. time (ms)	0.1 ms	±3 ms

Test current: ½xIΔN, IΔN, 2xIΔN, 5xIΔN

Trip-out current

Range	Resolution	Accuracy
0.2xIΔN - 1.1xIΔN (AC type)	0.05xIΔN	±0.1xIΔN
0.2xIΔN - 1.5xIΔN (A type, IΔN \30 mA)	0.05xIΔN	±0.1xIΔN
0.2xIΔN - 2.2xIΔN (A type, IΔN <30 mA)	0.05xIΔN	±0.1xIΔN

Trip-out time

Range	Resolution	Accuracy
0 - 300 ms	1 ms	±3 ms

Contact voltage

Range	Resolution	Accuracy
0.0 - 19.9 V	0.1 V	(-0 % / +15 %) of reading ±10 digits
20.0 - 99.9 V	0.1 V	(-0 % / +15 %) of reading

Zs (Fault loop impedance)

Range (Ω)	Resolution (Ω)	Accuracy
0.00 - 9.99	0.01	±(5 % of reading + 5 digits)
10.0 - 99.9	0.1	
100 - 999	1	±10 % of reading
1.00 k - 9.99 k	10	

Test current (at 230 V): 6.5 A (10 ms)
Nominal voltage range: 30 V - 500 V (45 Hz - 65 Hz)

Zs(rcd), Rs(rcd) (Fault loop impedance)

Measuring range (Ω)	Resolution (Ω)	Accuracy
0.00 - 9.99	0.01	±(5 % of reading + 10 digits)
10.0 - 99.9	0.1	
100 - 999	1	±10 % of reading
1.00k - 9.99k	10	

Nominal voltage range: 50 V - 500 V (45 Hz - 65 Hz)
No trip out of RCD.

High precision fault loop impedance Z m}L-Pe

Measuring range (mΩ)	Resolution (mΩ)	Accuracy
0.0 - 199.9	0.1	±(5 % + 1 mΩ)
200 - 1999	1	
2.00 - 19.99	10	5 %

Nominal voltage range: 100 V - 440 V
Nominal frequency: 50 Hz
Maximum test current (at 230 V): 154 A (10 ms)

Contact voltage

Measuring range (V)	Resolution (V)	Accuracy
0 - 100	1	±(10 % + 3 digits)

Line impedance

Measuring range (Ω)	Resolution (Ω)	Accuracy
0.00 - 9.99	0.01	±(5 % of reading +5 digits)
10.0 - 99.9	0.1	
100 - 999	1	±10 % of reading
1.00k - 9.99k	10	

Test current (at 230 V): 6.5 A (10 ms)

High precision line impedance

Measuring range (mΩ)	Resolution (mΩ)	Accuracy
0.1 - 199.9	0.1	±(5 % + 1 mΩ)
200 - 1999	1	
2.00 - 19.99	10	5 %

Nominal voltage range: 100 V - 440 V
Nominal frequency: 50 Hz
Maximum test current (at 400V): 267 A (10 ms)

Phase rotation

Result displayed	1.2.3 or 3.2.1

Nominal system voltage range: 100 V AC - 550 V AC
Nominal frequency range: 14 Hz - 500 Hz

Voltage, Frequency

Range	Resolution	Accuracy
0 - 550 V	1 V	±(2 % of reading +2 digits)

Range (Hz)	Resolution (Hz)	Accuracy
0.0, 14.0 - 499.9	0.1	±(0.2 % of reading +1 digit)

General data

Rated supply voltage: 110 V / 230 V AC
Frequency of supply voltage: 50 Hz, 60 Hz
Max. power consumption: 300 VA (without DUT)
Rated DUT: 16 A resistive, 1.5 kW motor

Overvoltage category
Instrument: CAT II/300 V
Test socket: CAT II/300 V
TP1 test socket: CAT III/300 V
Plug test cable: CAT II/300 V
Universal test cable:. CAT III/300 V

Protection classification
HV output: Class I
TP1 test socket: Class II, double insulation
Power supply: Class I
Pollution degree: 2
Degree of protection: IP 50 (closed and locked cover)
IP 20 main test socket
Case: shock proof plastic / portable

Display: 240*128 dots graphic matrix display with backlight

Dimensions (w×h×d): 33.5 cm × 16.0 cm × 33.5 cm
Weight (with standard accessories): 8.4 kg

Memory: 6000 memory locations

RS232 interfaces: 1200 bps - 115200 bps, 1 start bit, 8 data bits, 1 stop bit
PRINTER1 connector: customized for use with customized label printer
USB interface: 1200 bps - 115200 bps

Operation conditions
Working temperature range: -10 °C - +40 °C
Maximum relative humidity: 85 % RH (0 °C - 40 °C), non-condensing

Ordering information:

Standard set **Part No. MI 3321**

- Instrument MultiServicerXA
- HV test lead
- Plug test cable
- 3 wire test lead
- Test lead - black, 1.5 m
- Test lead - red, 1.5 m
- Test lead - red, 4 m
- Test lead - green, 1.5 m
- Test probe, black
- Test probe, red
- Test probe, green
- Test probe, blue
- Crocodile clip black, 3 pcs
- PC SW PAT Link PRO with RS232 and USB cable
- Protective bag for accessories
- Instruction manual
- Calibration certificate

METREL®
Measuring and Regulation Equipment Manufacturer
METREL d.d.
Ljubljanska 77
SI-1354 Horjul
Tel: + 386 (0)1 75 58 200
Fax: + 386 (0)1 75 49 226
E-mail: metrel@metrel.si
http://www.metrel.si