

# Multifunctional electrical installation tester MI 3155 EurotestXD

NEW

Electrical Installation Safety



MI 3155 EurotestXD is the newest flagship of Metrel's most advanced line of multi-functional measuring instruments and is designed specifically for testing in industry. What differentiates this instrument from the rest is its ergonomic design and an intuitive user interface, encompassing a memory organizer and fully programmable AUTO SEQUENCES, managed through a large colour touch screen display. It is fully compliant with functionality standards (e.g. IEC/EN 61557) and other reference standards for testing (e.g. IEC/EN/HD 60364-4-41,...) as is required for any instrument that performs TRMS current measurements, RCD tests, line and loop impedance tests with 3 (and 4) wires and earth resistance measurements. Besides those, the instrument supports a wide range of tests and measuring functions, including on-line voltage monitoring, phase sequence testing, varistor testing, PI/DAR calculation, luminance measurement, discharge time testing, ISFL measurements, IMD tests as well as functional and visual inspections.

## MEASURING FUNCTIONS

- **Live Transformer's Impedance Measurement with Four Wire Test;**
- Hi-precision Short Circuit Current evaluation with Calculated Hot factor;
- **3-wire test of PE (RPE function)** without extension lead conductor;
- **Autotest insulation function between L-N, N-PE and L-PE (R ISO ALL function);**
- **4 wire continuity test;**
- Insulation resistance with **DC voltage from 50 V to 2500 V** and **PI, DAR calculation;**
- **Varistor test;**
- Continuity of PE conductors with 200 mA DC test current with polarity change;
- Continuity of PE conductors with 7 mA test current without RCD tripping;
- **2-wire and 3-wire loop impedance (L-PE)** measurement with Trip Lock RCD function;
- **Touch voltage / Contact voltage** measurement with **external P/S probe.**
- **2-wire and 3-wire line impedance (L-L, L-N)** measurement;
- **1-phase / 3-phase TRMS voltage** and frequency measurements;
- **Line, loop and RCD** measurements at frequency range **16 ... 400 Hz;**
- Phase sequence;
- Power and THD measurement (up to the 12<sup>th</sup> harmonic);
- RCD testing (general and selective, type AC, A, F, B, B+, **MI RCD, EV RCD, PRCD, PRCD-K, PRCD-S**);

- Earth resistance (3-wire and 2-clamps method);
- Specific earth resistance with Ro-adapter (option);
- TRMS leakage and load currents (option);
- First fault leakage current (ISFL);
- Testing of Insulation Monitoring Devices (IMDs);
- **Machine mode support** with time discharge;
- Illumination (option);
- High resolution Loop impedance (mΩ) (option);
- **EVSE (Electrical Vehicle Supply Equipment) support** (option);
- Determining location of cables (option);
- QR and/or barcode scanner support (option).

## KEY FEATURES

- **Programmable AUTO SEQUENCES.** \*
- **Predefined profile dependent AUTO SEQUENCES.**
- **Predefined Automatic tests:**
  - Auto TT (U, ZIn, Zs, Uc);
  - Auto TN/RCD (U, ZIn, Zs, Rpe);
  - Auto TN (U, ZIn, Zlpe, Rpe);
  - Auto IT (U, ZIn, Isc, Isfl, IMD).
- **Functional inspections.**
- **Visual inspections.**
- **Custom inspections** (visual and functional) which may be incorporated into AUTO SEQUENCES.
- **EVSE AUTO SEQUENCES and function inspections;**

- **Machine functional and visual inspections;**
- **Built-in help screens** for referencing on site.
- **Built-in fuse tables** for automatic evaluation of the line / loop impedance result.
- **Monitoring of all 3 voltages** in real-time.
- **Automatic polarity reversal** on continuity test.
- **Automated RCD testing procedure (RCD AUTO).**
- **Automated Impedance testing procedure (Z AUTO).**
- **Measurement filtering according to the selected area group.**
- **Built-in charger** and rechargeable batteries as standard accessory.
- **BT communication with PC, Android tablets and smart phones** via built-in BT.
- **PC SW Metrel ES Manager** (structure and report creation, data upload/download). \*
- **Optional aMESM Android app** (structure and report creation, data upload/download). \*\*

\* Available with MESM PRO licence

\*\* Available with EU Set

## TECHNICAL SPECIFICATION

Function		Measuring range	Resolution	Accuracy
CONTINUITY	Test Current 7 mA 2-wire	0.00 Ω ... 19.99 Ω 20.0 Ω ... 1999 Ω	0.1 Ω 1 Ω	±(5 % of r. + 3 digits)
	Test Current 200 mA 2-wire, 4-wire	0.00 Ω ... 19.99 Ω 20.0 Ω ... 199.9 Ω 200.0 Ω ... 1999 Ω	0.01 Ω 0.1 Ω 1 Ω	±(3 % of r. + 3 digits) ±(5 % of r.) ±(5 % of r.)
INSULATION RESISTANCE	R iso, R iso all <sup>1</sup> Test Voltage 50/100/250 V	0.00 MΩ ... 19.99 MΩ 20.0 MΩ ... 99.9 MΩ 100.0 MΩ ... 199.9 MΩ	0.01 MΩ 0.1 MΩ 0.1 MΩ	±(5 % of r. + 3 digits) ±(10 % of r.) ±(20 % of r.)
	R iso, R iso all <sup>1</sup> Test Voltage 500/1000 V	0.00 MΩ ... 19.99 MΩ 20.0 MΩ ... 199.9 MΩ 200 MΩ ... 999 MΩ	0.01 MΩ 0.1 MΩ 1 MΩ	±(5 % of r. + 3 digits) ±(5 % of r.) ±(10 % of r.)
	R iso, R iso all <sup>1</sup> Test Voltage 2500 V	0.00 MΩ ... 19.99 MΩ 20.0 MΩ ... 199.9 MΩ 200 MΩ ... 999 MΩ 1.00 GΩ ... 19.99 GΩ	0.01 MΩ 0.1 MΩ 1 MΩ 0.01 GΩ	±(5 % of r. + 3 digits) ±(5 % of r.) ±(10 % of r.) ±(10 % of r.)
	DAR, PI	0.01 ... 9.99 10.0 ... 100.0	0.01 0.1	±(5 % of r. + 2 digits) ±(5 % of r.)
	Varistor test AC, DC <sup>2</sup>	0 V ... 1000 V (DC) 0 V ... 625 V (AC)	1 V	±(3 % of r. + 3 digits)
	RCD	RCD Uc	0.00 V ... 19.99 V 20.0 V ... 99.9 V	0.1 V
	RCD (t),	0.00 ms ... 40.0 ms 0.0 ms ... max. time	0.1 ms	±1 ms ±3 ms
	RCD I Ramp	0.2xIΔN ... 1.1xIΔN (AC, MI, EV a.c.) 0.2xIΔN ... 1.5xIΔN (A, IΔN ≥ 30 mA) 0.2xIΔN ... 2.2xIΔN (A, IΔN < 30 mA) 0.2xIΔN ... 2.2xIΔN (B, MI, EV d.c.)	0.05xIΔN	±0.1xIΔN
IMPEDANCE	Zline (L-L, L-N), Ipsc, Zline 4-wire <sup>3</sup>	0.00 Ω ... 9.99 Ω 10.0 Ω ... 99.9 Ω 100 Ω ... 999 Ω 1.00 kΩ ... 9.99 kΩ	0.01 Ω 0.1 Ω 1 Ω 10 Ω	±(5 % of r. + 5 digits) ±(10 % of r.)
	Zloop (L-PE), Ipf, Zloop 4-wire <sup>3</sup>	0.00 Ω ... 9.99 Ω 10.0 Ω ... 99.9 Ω 100 Ω ... 999 Ω	0.01 Ω 0.1 Ω 1 Ω	±(5 % of r. + 5 digits) ±(10 % of r.)
	Zs RCD <sup>4</sup>	1.00 kΩ ... 9.99 kΩ	10 Ω	
VOLTAGE	TRMS (0, 14 ... 500 Hz)	0 ... 550 V	1 V	±(2 % of r. + 2 digits)
	Frequency	0.00 Hz ... 9.99 Hz 10.0 Hz ... 499.9 Hz	0.01 Hz 0.1 Hz	±(0.2 % of r. + 1 digits)
CURRENT	TRMS, AC with A 1018, range=20 A	0.0 mA ... 99.9 mA 100 mA ... 999 mA 1.00 A ... 19.99 A	0.1 mA 1 mA 0.01 A	±(5 % of r. + 5 digits) ±(3 % of r. + 3 digits) ±(3 % of r.)
	TRMS, AC with A 1019, range=20 A	0.0 mA ... 99.9 mA 100 mA ... 999 mA 1.00 A ... 19.99 A	0.1 mA 1 mA 0.01 A	Indicative ±(5 % of r.) ±(3 % of r.)
	TRMS, AC/DC with A 1391, range=40 A	0.00 A ... 1.99 A 2.00 A ... 19.99 A 20.0 A ... 39.9 A	0.01 A 0.01 A 0.1 A	±(3 % of r. + 3 digits) ±(3 % of r.) ±(3 % of r.)
	TRMS, AC/DC with A 1391, range = 300 A	0.00 A ... 19.99 A 20.0 A ... 39.9 A 40.0 A ... 299.9 A	0.01 A 0.1 A 0.1 A	Indicative Indicative ±(3 % of r. + 5 digits)
EARTH RESISTANCE	3 wire <sup>5</sup>	0.00 Ω ... 19.99 Ω 20.0 Ω ... 199.9 Ω 200.0 Ω ... 9999 Ω	0.01 Ω 0.1 Ω 1 Ω	±(5 % of r. + 5 digits)
	2 clamp	0.00 Ω ... 19.99 Ω 20.0 Ω ... 30.0 Ω 30.1 Ω ... 39.9 Ω	0.01 Ω 0.1 Ω 0.1 Ω	±(10 % of r. + 10 digits) ±(20 % of r.) ±(30 % of r.)
	Specific earth resistance	0.0 Ωm ... 99.9 Ωm 100 Ωm ... 999 Ωm 1.00 kΩm ... 9.99 kΩm 10.0 kΩm ... 99.9 kΩm 100 kΩm ... 9999 kΩm	0.1 Ωm 1 Ωm 0.01 kΩm 0.1 kΩm 1 kΩm	±(5 % of r.) for Re 1 Ω ... 1999kΩ ±(10 % of r.) for Re 2 kΩ ... 19.99kΩ ±(20 % of r.) for Re > 20 kΩ
POWER	Power (P, S, Q)	0.00 W (VA, Var) ... 99.9 kW (kVA, kVar)		
	Power factor	-1.00 ... 1.00		
	Voltage THD	0.1 % ... 99.9 %		
HARMONICS	Voltage harmonics	0.1 V ... 500 V		
	Voltage THD	0.1 % ... 99.9 %		
	Current harmonics and Current THD	0.00 A ... 199.9 A		
FIRST FAULT LEAKAGE CURRENT (ISFL)	Isc1, Isc2	0.0 mA ... 19.9 mA	0.1 mA	±(5 % of r. + 3 digits)
IMD TEST	Threshold indicative insulation resistance	5 ... 640 kΩ	5 kΩ	Indicative values, up to 128 steps

Function		Measuring range	Resolution	Accuracy
ILLUMINANCE	Type B	0.01 lux ... 19.99 lux	0.01 lux	±(5 % of r. + 2 digits)
		20.0 lux ... 199.9 lux	0.1 lux	
		200 lux ... 1999 lux	1 lux	±(5 % of r.)
		2.00 klux ... 19.99 klux	10 lux	
	Type C	0.01 lux ... 19.99 lux	0.01 lux	±(10 % of r. + 3 digits)
		20.0 lux ... 199.9 lux	0.1 lux	
DISCHARGING TIME	Discharging time	0.0 s ... 10.0 s	0.1 s	±(5 % of r. + 2 digits)
	Peak voltage	0 V ... 550 V	1 V	±(5 % of r. + 3 digits)
GENERAL	Power supply	7.2 V (4400 mAh Li-Ion battery pack)		
	Overvoltage category	600 V CAT III; 300 V CAT IV		
	Protection class	double insulation		
	COM port	BT, USB, RS232		
	Weight	1.78 kg		
	Size ( l x h x w )	252 x 111 x 165 mm		

<sup>1</sup> Measuring current 1 mA ... 3 mA

<sup>2</sup> Threshold current 1 mA

<sup>3</sup> I<sub>test</sub> = 20 A @ 230 V; 16 ... 400 Hz

<sup>4</sup> I<sub>test MAX</sub> = 0.5 x I<sub>ΔN</sub>

<sup>5</sup> U<sub>OC</sub> < 30 V<sub>AC</sub>, I<sub>SC</sub> < 30 mA, f = 15 Hz

## STANDARDS

### Functionality

- EN 61557;
- DIN 5032

### Other reference standards for testing:

- IEC/EN/HD 60364-4-41;
- IEC/EN 61008;
- IEC/EN 61009;
- BS 7671;
- AS/NZ 3017;

### Electromagnetic compatibility (EMC):

- IEC/EN 61326-1

### Safety

- IEC/EN 61010-1;
- IEC/EN 61010-031;
- IEC/EN 61010-2-030;
- IEC/EN 61010-2-032

## APPLICATION

- Testing of TT, TN and IT systems;
- Testing of single and multiphase systems;
- Initial and periodic testing of domestic and industrial installations;
- LV Installation safety testing;
- Maintenance;
- Lightning installations;
- Testing on high and low frequency installations (industrial, aircraft, railway, mining, chemistry, ferry boat);
- Construction sites;
- Mobile LV Generator Units;
- Machine and switchboard testing;
- Medical installation testing;
- Fire brigades, ambulance, military and police vehicles;
- Mobile Video/Audio, Concert Halls, Fairs, Playgrounds;
- Electrical Vehicle Supply Equipment (EVSE) testing;
- Observation of insulation trends.



## OPTIONAL ACCESSORIES































Photo	Order No.	Acc. description
	A 1569	Power supply adapter 12 V / 3 A
	A 1567	4400mAh battery pack
	A 1568	8800mAh battery pack
	A 1551	Small carrying bag with Metrel logo
	A 1552	Large carrying bag with Metrel logo
	P 1101	BASIC to PRO licence key upgrade for Metrel ES Manager
	A 1401 BLK	Tip commander
	A 1018	Current clamp (low range, leakage)
	A 1019	Current clamp
	A 1391	AC/DC Current clamp
	A 1172	Luxmeter sensor, type B (PS/2)
	A 1173	Luxmeter sensor, type C (PS/2)
	A 1191	Receiver R10K
	A 1192	Selective probe for R10K
	A 1437	Test lead with Kelvin probe

Photo	Order No.	Acc. description
	S 2027	Earth test set, 3-wire, 50 m
	S 2058	Insulation test plates
	A 1012	Test lead, green, 4 m
	A 1154	Test lead, black, 4 m
	A 1026	Test lead, red, 20 m
	A 1153	Test lead, black, 20 m
	A 1164	Test lead, black, 50 m
	S 2012	Continuity test lead, 10 m, 2 pcs (red, black)
	S 2025	Test lead, 1.5 m, 2 pcs (black, red)
	A 1198	Magnetic contact probe
	A 1201	Insulated rod for CONTINUITY measurement
	A 1202	Additional extension part for A 1201
	A 1532	A 1532 EVSE adapter
	A 1199	Ro-adapter
	A 1143	Euro Z 290 A

## ORDERING INFORMATION



### Standard set MI 3155 ST

- Instrument MI 3155 EurotestXD
- 4400 mAh battery pack
- Power supply adapter 12 V / 3 A
- Plug commander, 1.5 m
- Test lead, 4-wire, 1.5 m
- Test lead, 3-wire, 1.5 m
- Test lead, 2-wire, 2,5 kV, 1.5 m
- Test probe, 4 pcs (black, blue, green, red)
- Crocodile clip, 6 pcs (black – 2 pcs, blue – 1 piece, green – 1 piece, red – 2 pcs)
- Earth set 20 m
- USB cable
- Soft carrying bag
- Soft carrying neck belt
- Metrel ES Manager BASIC license\*
- Short instruction manual
- Instruction manual (CD)
- Guide for testing and verification of Low voltage installations (CD)
- Calibration certificate
- Metrel ES Manager (program installation) A 1481 (CD)



### Euro set MI 3155 EU

- MI 3155 ST
- 8800 mAh battery pack instead of 4400 mAh battery pack
- Current clamp A 1018 (low range, leakage)
- Current clamp A 1019
- Metrel ES Manager PRO license\*
- Metrel aMESM Android app

\*Metrel ES Manager can be downloaded free of charge from Metrel Web server.

## METREL D.D.

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Note! Photographs in this catalogue may slightly differ from the instruments at the time of delivery. Subject to technical change without notice.

