

# 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** high-current loop impedance (L-PE) measurement;
- **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 (m $\Omega$ ) (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).
- **High resolution colour touch screen, 4.3" TFT.**
- **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<br>20.0 Ω ... 1999 Ω   | 0.1 Ω<br>1 Ω                                   | ±(5 % of r. + 3 digits)   |
|                                    | Test Current 200 mA 2-wire, 4-wire                         | 0.00 Ω ... 19.99 Ω<br>20.0 Ω ... 199.9 Ω<br>200.0 Ω ... 1999 Ω  | 0.01 Ω<br>0.1 Ω<br>1 Ω                         | ±(3 % of r. + 3 digits)<br>±(5 % of r.)<br>±(5 % of r.)   |
| INSULATION RESISTANCE              | R iso, R iso all <sup>1</sup><br>Test Voltage 50/100/250 V | 0.00 MΩ ... 19.99 MΩ<br>20.0 MΩ ... 99.9 MΩ<br>100.0 MΩ ... 199.9 MΩ  | 0.01 MΩ<br>0.1 MΩ<br>0.1 MΩ                    | ±(5 % of r. + 3 digits)<br>±(10 % of r.)<br>±(20 % of r.)   |
|                                    | R iso, R iso all <sup>1</sup><br>Test Voltage 500/1000 V   | 0.00 MΩ ... 19.99 MΩ<br>20.0 MΩ ... 199.9 MΩ<br>200 MΩ ... 999 MΩ   | 0.01 MΩ<br>0.1 MΩ<br>1 MΩ                      | ±(5 % of r. + 3 digits)<br>±(5 % of r.)<br>±(10 % of r.)  |
|                                    | R iso, R iso all <sup>1</sup><br>Test Voltage 2500 V       | 0.00 MΩ ... 19.99 MΩ<br>20.0 MΩ ... 199.9 MΩ<br>200 MΩ ... 999 MΩ<br>1.00 GΩ ... 19.99 GΩ   | 0.01 MΩ<br>0.1 MΩ<br>1 MΩ<br>0.01 GΩ           | ±(5 % of r. + 3 digits)<br>±(5 % of r.)<br>±(10 % of r.)<br>±(10 % of r.)                                   |
|                                    | DAR, PI  | 0.01 ... 9.99<br>10.0 ... 100.0   | 0.01<br>0.1                                    | ±(5 % of r. + 2 digits)<br>±(5 % of r.)   |
|                                    | Varistor test AC, DC <sup>2</sup>                          | 0 V ... 1000 V (DC)<br>0 V ... 625 V (AC)   | 1 V  | ±(3 % of r. + 3 digits)   |
|                                    | RCD  | RCD Uc  | 0.00 V ... 19.99 V<br>20.0 V ... 99.9 V        | 0.1 V   |
| RCD (t),                           |  | 0.00 ms ... 40.0 ms<br>0.0 ms ... max. time   | 0.1 ms   | ±1 ms<br>±3 ms  |
| RCD I Ramp                         |  | 0.2xIΔN ... 1.1xIΔN (AC, MI, EV a.c.)<br>0.2xIΔN ... 1.5xIΔN (A, IΔN ≥30 mA)<br>0.2xIΔN ... 2.2xIΔN (A, IΔN <30 mA)<br>0.2xIΔN ... 2.2xIΔN (B, MI, EV d.c.) | 0.05xIΔN                                       | ±0.1xIΔN  |
| IMPEDANCE                          | Zline (L-L, L-N), Ipsc,<br>Zline 4-wire <sup>3</sup>       | 0.00 Ω ... 9.99 Ω<br>10.0 Ω ... 99.9 Ω<br>100 Ω ... 999 Ω<br>1.00 kΩ ... 9.99 kΩ  | 0.01 Ω<br>0.1 Ω<br>1 Ω<br>10 Ω                 | ±(3 % of r. + 3 digits)<br>±(10 % of r.)  |
|                                    | Zloop (L-PE), Ipf,<br>Zloop 4-wire <sup>3</sup>            | 0.00 Ω ... 9.99 Ω<br>10.0 Ω ... 99.9 Ω<br>100 Ω ... 999 Ω   | 0.01 Ω<br>0.1 Ω<br>1 Ω                         | ±(3 % of r. + 3 digits)<br>±(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<br>10.0 Hz ... 499.9 Hz   | 0.01 Hz<br>0.1 Hz                              | ±(0.2 % of r. + 1 digits)   |
| CURRENT                            | TRMS,<br>AC with A 1018, range=20 A                        | 0.0 mA ... 99.9 mA<br>100 mA ... 999 mA<br>1.00 A ... 19.99 A   | 0.1 mA<br>1 mA<br>0.01 A                       | ±(5 % of r. + 5 digits)<br>±(3 % of r. + 3 digits)<br>±(3 % of r.)  |
|                                    | TRMS,<br>AC with A 1019, range=20 A                        | 0.0 mA ... 99.9 mA<br>100 mA ... 999 mA<br>1.00 A ... 19.99 A   | 0.1 mA<br>1 mA<br>0.01 A                       | Indicative<br>±(5 % of r.)<br>±(3 % of r.)  |
|                                    | TRMS,<br>AC/DC with A 1391, range=40 A                     | 0.00 A ... 1.99 A<br>2.00 A ... 19.99 A<br>20.0 A ... 39.9 A  | 0.01 A<br>0.01 A<br>0.1 A                      | ±(3 % of r. + 3 digits)<br>±(3 % of r.)<br>±(3 % of r.)   |
|                                    | TRMS,<br>AC/DC with A 1391, range = 300 A                  | 0.00 A ... 19.99 A<br>20.0 A ... 39.9 A<br>40.0 A ... 299.9 A   | 0.01 A<br>0.1 A<br>0.1 A                       | Indicative<br>Indicative<br>±(3 % of r. + 5 digits)   |
| EARTH RESISTANCE                   | 3 wire <sup>5</sup>  | 0.00 Ω ... 19.99 Ω<br>20.0 Ω ... 199.9 Ω<br>200.0 Ω ... 9999 Ω  | 0.01 Ω<br>0.1 Ω<br>1 Ω                         | ±(5 % of r. + 5 digits)   |
|                                    | 2 clamp  | 0.00 Ω ... 19.99 Ω<br>20.0 Ω ... 30.0 Ω<br>30.1 Ω ... 39.9 Ω  | 0.01 Ω<br>0.1 Ω<br>0.1 Ω                       | ±(10 % of r. + 10 digits)<br>±(20 % of r.)<br>±(30 % of r.)   |
|                                    | Specific earth resistance                                  | 0.0 Ωm ... 99.9 Ωm<br>100 Ωm ... 999 Ωm<br>1.00 kΩm ... 9.99 kΩm<br>10.0 kΩm ... 99.9 kΩm<br>100 kΩm ... 9999 kΩm   | 0.1 Ωm<br>1 Ωm<br>0.01 kΩm<br>0.1 kΩm<br>1 kΩm | ±(5 % of r.) for Re 1 Ω ... 1999kΩ<br>±(10 % of r.) for Re 2 kΩ ... 19.99kΩ<br>±(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.)             |
|                  | Type C                   | 2.00 klux ... 19.99 klux                       | 10 lux     |                          |
|                  |                          | 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         | 200 lux ... 1999 lux                           | 1 lux      | ±(10 % of r.)            |
|                  | 2.00 klux ... 19.99 klux | 10 lux   |            |                          |
| GENERAL          | 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)  |
|                  | 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                                 |            |                          |
|                  | Display                  | Colour TFT display, 4.3 inch, 480 x 272 pixels |            |                          |
|                  | 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 = 125 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):

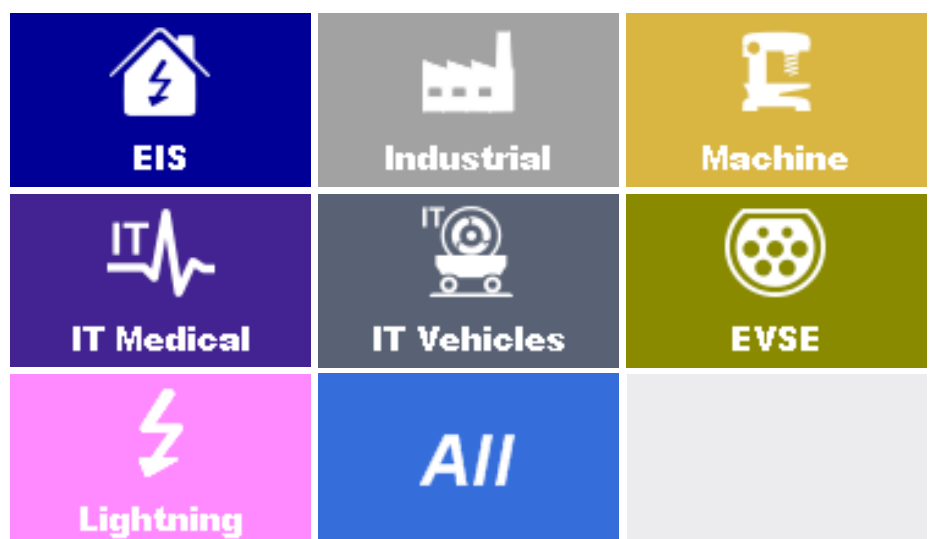
- IEC/EN 61326-1

### 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.

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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.

