Testing of residual current devices (RCCBs)
- Measurement of contact voltage without tripping the RCCB. Contact voltage is measured with reference to nominal residual current using 1/3 of the nominal residual current value.
- Testing for N-PE reversal
- Tripping test with nominal residual current, trip time measurement
- Testing of equipment and RCCBs with rising residual current including indication of tripping current and contact voltage
- Testing of RCCBs with \( \frac{1}{2} \cdot I_{AN}, \frac{1}{1} \cdot I_{AN}, \frac{1}{2} \cdot I_{AN}, \frac{5}{1} \cdot I_{AN} \) to 100 mA nominal current

Testing of Special RCDs
- Testing of selective SRCDs, PRCDs (SCHUKOMAT, SIDOS or comparable), type G/R, type AC, type A; type B and B+ (except PROFITEST Mbase)
- Testing of RCCBs which are suitable for pulsating residual direct current; testing is conducted with positive or negative half-waves.

Intelligent data transfer
Bidirectional interface
to DDS-CAD electronic engineering

Large Voltage and Frequency Ranges
A broad-range measuring device allows for use of the test instrument in all alternating and 3-phase electrical systems with voltages from 65 to 500 V and frequencies of 16 to 400 Hz.

Loop and Line Impedance Measurement
Measurement of loop and line impedance can be performed in the 65 to 500 V range. Conversion to short-circuit current is based on the respective nominal line voltage, insofar as the measured line voltage is within the specified range. PROFITEST MASTER measuring error is also taken into account for conversion. Outside of this range, short-circuit current is calculated on the basis of momentary line voltage and measured impedance.

Measurement of Insulation Resistance Using Nominal Voltage, with Variable or Rising Test Voltage
Insulation resistance is usually measured with a nominal voltages of 500, 250 or 100 V. A test voltage which deviates from nominal voltage, and lies within a range of 50 to 1000 V, can be selected for measurements at sensitive components, as well as systems with voltage limiting devices. Measurement can be performed with a constantly rising test voltage in order to detect weak points in the insulation and determine tripping voltage for voltage limiting devices. Voltage at the device under test and any triggering/breakdown voltage appear at the test instrument’s display.

Standing-Surface Insulation Measurement
Standing-surface insulation measurement is performed with momentary line frequency and line voltage.

Low-Resistance Measurement
Bonding conductor resistance and protective conductor resistance can be measured with a test current of \( \geq 200 \) mA DC, automatic polarity reversal of the test voltage and selectable direction of current flow. If the adjustable limit value is exceeded, an LED lights up.

Earthing Resistance Measurement
In addition to earth resistance measurement, a selective earth resistance measurement is possible with the PROFITEST Mtech in combination with accessory current clamps.

Universal Connector System
The interchangeable plug inserts and 2-pole plug-in adapter – which can be expanded to 3-poles for phase sequence testing – allows for use of the test instrument all over the world.

Special Features
- Display of approved fuse types for electrical systems
- Energy meter start-up testing
- Measurement of biasing, leakage and circulating current of up to 1 A, as well as working current of up to 1000 A with current clamp sensor (available as an accessory)
- Phase sequence measurement (including highest line-to-line voltage)
Display with Selectable Language
The LCD panel consists of a backlit dot matrix at which menus, setting options, measurement results, tables, instructions and error messages, as well schematic diagrams appear.
The display can be set to the desired language depending on the country in which the test instrument is used.

Operation
Device functions are selected directly with the help of a rotary selector knob. Softkeys allow for convenient selection of sub-functions and parameter settings. Unavailable functions and parameters are automatically prevented from appearing at the display.
The start and RCD tripping functions included directly on the instrument are identical to the functions of the two keys located on the test plug, allowing for easy measurement at difficult to access locations.
Schematic diagrams, measuring ranges and help texts can be displayed for all basic functions and sub-functions.

Phase Tester
Protective conductor potential is tested after starting a test sequence and touching the contact surface for finger contact. The PE symbol appears at the display if a potential difference of more than 25 V is detected between the contact surface and the protective contact at the mains plug.

Error Indication
• The instrument automatically detects instrument-to-system connection errors, which are indicated in a connection pictograph.
• Errors within the electrical system (no mains or phase voltage, tripped RCD) are indicated at 3 LEDs and by means of pop-up windows at the tilting LCD panel.

Battery Monitoring and Self-Test
Battery monitoring is conducted while the instrument is subjected to an electrical load. Results are displayed both numerically and with a symbol. Test images can be called up one after the other, and LEDs can be tested during the self-test. The instrument is shut down automatically when the batteries are depleted. A microprocessor controlled charging circuit is used to ensure safe charging of rechargeable NiMH or NiCd batteries.

Data Entry at the RS 232 Port
Data can be read in via a barcode or RFID scanner connected to the RS 232 port, and comments can be entered with the help of the softkeys.

ETC User Software for PC
ETC offers a wide variety of support options for data acquisition and management.
• Amongst other things, the software acquires all important data for reports in accordance with DIN VDE 0100, part 600.
• Test reports (ZVEH) can be generated automatically.
• Distribution structures with electrical circuit and RCD data can be individually defined.
• Created structures can be saved to memory and loaded to the test instrument as required via the USB port.
• Data can be exported to Excel, CSV and XML formats.
• Device selection lists can be edited.

Overview of Features Included with PROFITEST Master

<table>
<thead>
<tr>
<th>Device Variants</th>
<th>Article number</th>
<th>MBASE M520M</th>
<th>MPRO M520N</th>
<th>MTECH M520O</th>
<th>MXTRA M520P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFITEST TEST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing of residual currents (RCDs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U₀ measurement without RCD tripping</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Tripping time measurement</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Measurement of tripping current I₀</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Selective, SRCDs, PRCDs, type G/R</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>AC/DC sensitive RCDs, type B, type B+</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Testing IMDs</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Testing of RCMs</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Testing for N-PE reversal</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Measurement of loop impedance Z_LPE / Z_LN</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>Fuse table for systems without RCDs</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Without tripping the RCD, fuse table</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>15 mA test current*, no RCD tripping</td>
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</tr>
<tr>
<td>Earthing resistance Rₚ (mains operation)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>I-U measuring method (2/3-wire measuring method via measuring adapter: 2-wire/2-wire + probe)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Earthing resistance Rₚ (battery operation)</td>
<td>3 or 4-wire measuring method via PRO-RE adapter</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Soil resistivity φₑ (battery operation)</td>
<td>(4-wire measuring method via PRO-RE adapter)</td>
<td>—</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>Selective earthing resistance Rₑ (mains operation)</td>
<td>with 2-pole adapter, probe, earth electrode and current clamp sensor (3-wire)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Selective earthing resistance Rₑ (battery operation)</td>
<td>with probe, earth electrode and current clamp sensor (4-wire measuring method via PRO-RE adapter and current clamp sensor)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Earth loop resistance R_LOOP (battery operation)</td>
<td>with 2 clamps (current clamp sensor direct and current clamp transformer via PRO-RE/2)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Measurement of equipotential bonding RₑD, automatic polarity reversal</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Insulation resistance RₑD, variable or rising test voltage (ramp)</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Voltage Uₑ,N / Uₑ,PE / Uₑ,PE / f</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Special measurements</td>
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<tr>
<td>Leakage current (clamp) iₑ,clamp</td>
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<td>✓</td>
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<tr>
<td>Phase sequence</td>
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<tr>
<td>Earth leakage resistance Rₑ(SO)</td>
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<td>✓</td>
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<td>Voltage drop</td>
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<tr>
<td>Standing-surface insulation Z_ST</td>
<td>✓</td>
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<tr>
<td>Meter start-up</td>
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<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Leakage current with PRO-AB adapter</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Residual voltage test</td>
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<tr>
<td>Features</td>
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<td>Selectable user interface language</td>
<td>✓</td>
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<tr>
<td>Database for up to 50,000 objects</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Automatic test sequence function</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>RS 232 port for RFID/barcode scanner</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>USB port for data transmission</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Bluetooth® interface</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>ETC User Software for PC</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>CAT III 500 V / CAT IV 300 V</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>DKD calibration</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

* So-called live measurement is only advisable if there is no bias current within the system.
Data Interface
Measurement data are transmitted to a PC via the integrated USB port, at which they can be printed in report form and archived.

Software update
The test instrument is always kept current thanks to firmware which can be updated via the USB port. Software is updated during the course of recalibration by our service department, or directly by the customer.

Sample Displays

**PROFITEST MASTER Test Instruments**
Softkeys allow for convenient selection of sub-functions and parameter settings. Unavailable sub-functions and parameters are automatically prevented from appearing at the display.

**RCD Measurement**

**Loop Resistance Measurement**

**Earthing Resistance Measurement**

**Low-Resistance Measurement**

**Insulation Measurement**

**Voltage Measurement**

### Applicable Regulations and Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>IEC 61010-1 / EN 61010-1 / VDE 0411-1</td>
<td>Safety requirements for electrical equipment for measurement, control and laboratory use</td>
</tr>
<tr>
<td>Part 1: General requirements</td>
<td>(IEC 61010-1:2010 + Cor. :2011)</td>
</tr>
<tr>
<td>IEC 61557/ EN 61557/ VDE 0413</td>
<td>Part 1: General requirements (IEC 61557-1:2007)</td>
</tr>
<tr>
<td>Part 3: Loop impedance (IEC 61557-3:2007)</td>
<td></td>
</tr>
<tr>
<td>Part 5: Resistance to earth (IEC 61557-5:2007)</td>
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</tr>
<tr>
<td>Part 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems (IEC 61557-6:2007)</td>
<td></td>
</tr>
<tr>
<td>Part 7: Phase sequence (IEC 61557-7:2007)</td>
<td></td>
</tr>
<tr>
<td>Part 10: Electrical safety in low voltage distribution systems up to 1000 V AC and 1500 V DC – Equipment for testing, measuring or monitoring of protective measures (IEC 61557-10:2000)</td>
<td></td>
</tr>
<tr>
<td>EN 60529</td>
<td>Test instruments and test procedures Degrees of protection provided by enclosures (IP code)</td>
</tr>
<tr>
<td>DIN EN 61 326-1 VDE 0843-20-1</td>
<td>Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements</td>
</tr>
<tr>
<td>IEC 60364-6-61 VDE 0100, part 600</td>
<td>Low-voltage electrical installations – Part 6: Tests</td>
</tr>
<tr>
<td>IEC 60364-6-62 EN 50110-1 VDE 0105, part 100</td>
<td>Operation of electrical installations – Part 100: General requirements</td>
</tr>
<tr>
<td>IEC 60364-7-710 VDE 0100, part 710</td>
<td>Erection of low-voltage installations – Requirements for special installations or locations – Part 710: Medical locations</td>
</tr>
</tbody>
</table>

### Characteristic Values

#### Nominal Ranges of Use

<table>
<thead>
<tr>
<th>Voltage $U_N$</th>
<th>120 V</th>
<th>(108 ... 132 V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230 V</td>
<td>(196 ... 253 V)</td>
<td></td>
</tr>
<tr>
<td>400 V</td>
<td>(340 ... 440 V)</td>
<td></td>
</tr>
<tr>
<td>Frequency $f_N$</td>
<td>$16 \text{ Hz}$</td>
<td>(15.4 ... 18 Hz)</td>
</tr>
<tr>
<td></td>
<td>$50 \text{ Hz}$</td>
<td>(49.5 ... 50.5 Hz)</td>
</tr>
<tr>
<td></td>
<td>$60 \text{ Hz}$</td>
<td>(59.4 ... 60.6 Hz)</td>
</tr>
<tr>
<td></td>
<td>$200 \text{ Hz}$</td>
<td>(190 ... 210 Hz)</td>
</tr>
<tr>
<td></td>
<td>$400 \text{ Hz}$</td>
<td>(380 ... 420 Hz)</td>
</tr>
</tbody>
</table>

| Overall voltage range | 65 ... 550 V |
| Overall frequency range | 15.4 ... 420 Hz |

#### Waveform

- Sine

#### Temperature range

- 0 °C ... + 40 °C

#### Battery voltage

- 8 ... 12 V

#### Line impedance angle

- Corresponds to $\cos \phi = 1 \ldots 0.95$

#### Probe resistance

- < 50 kΩ
**PROFITEST | MbASe MTECH**  
**DIN VDE 0100/IEC 60364-6 Testers**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Display Range</th>
<th>Resolution</th>
<th>Input Impedance/Current Test Current</th>
<th>Measuring Range</th>
<th>Nominal Values</th>
<th>Measuring Uncertainty</th>
<th>Intrinsic Uncertainty</th>
<th>Plug-In Port</th>
<th>2-Pole Adapter</th>
<th>3-Pole Adapter</th>
<th>Probe</th>
<th>Clamps</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U</strong></td>
<td>0 ... 99.9 V</td>
<td>0.1 V</td>
<td>0.1 V</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>•••</td>
<td>•</td>
<td>••</td>
<td></td>
<td></td>
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<tr>
<td><strong>ICM</strong></td>
<td>0 ... 99.9 V</td>
<td>0.1 V</td>
<td>0.1 V</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>•••</td>
<td>•</td>
<td>••</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IE</strong></td>
<td>0 ... 99.9 V</td>
<td>0.1 V</td>
<td>0.1 V</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
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<td>•</td>
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<td></td>
<td></td>
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<tr>
<td><strong>IN</strong></td>
<td>0 ... 99.9 V</td>
<td>0.1 V</td>
<td>0.1 V</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
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<tr>
<td><strong>UN</strong></td>
<td>0 ... 70.0 V</td>
<td>0.1 V</td>
<td>0.1 V</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
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<tr>
<td><strong>RC</strong></td>
<td>0 ... 99.9 mA</td>
<td>0.1 mA</td>
<td>0.1 mA</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
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<td>•</td>
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<td><strong>RZ</strong></td>
<td>0 ... 99.9 mA</td>
<td>0.1 mA</td>
<td>0.1 mA</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
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<tr>
<td><strong>RI</strong></td>
<td>0 ... 99.9 mA</td>
<td>0.1 mA</td>
<td>0.1 mA</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>ZM</strong></td>
<td>0 ... 99.9 mΩ</td>
<td>0.1 mΩ</td>
<td>0.1 mΩ</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>•••</td>
<td>•</td>
<td>••</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ZC</strong></td>
<td>0 ... 99.9 mΩ</td>
<td>0.1 mΩ</td>
<td>0.1 mΩ</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>•••</td>
<td>•</td>
<td>••</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RP</strong></td>
<td>0 ... 99.9 mA</td>
<td>0.1 mA</td>
<td>0.1 mA</td>
<td>5 Ω</td>
<td>90 ... 600 V</td>
<td>±(2% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>±(1% + rgd. + 1d)</td>
<td>•••</td>
<td>•</td>
<td>••</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GMC-I Messtechnik GmbH
DIN VDE 0100/IEC 60364-6 Testers

### Reference Conditions

- **Line voltage**: 230 V ± 0.1 %
- **Line frequency**: 50 Hz ± 0.1 %
- **Meas. quantity frequency**: 45 Hz to 65 Hz
- **Measured qty. waveform**: Sine (deviation between effective and rectified value ≤ 0.1 %)
- **Line impedance angle**: \( \cos \varphi = 1 \)
- **Probe resistance**: ≤ 10 \( \Omega \)
- **Supply power**: 12 V ± 0.5 V
- **Ambient temperature**: +23\(^\circ\)C ± 2 K
- **Relative humidity**: 40% to 60%
- **Finger contact**: For testing potential difference to ground potential
- **Standing surface insulation**: Purely ohmic

### Overload Capacity

- **Overload capacity**:
  - \( R_{SO} \) = 1200 V continuous
  - \( U_{LPE} \), \( U_{L-N} \) = 600 V continuous
  - \( R_{CD}, R_{E}, R_{F} \) = 440 V continuous
  - \( Z_{LPE}, Z_{L-N} \) = 550 V (Limits the number of measurements and pause duration. If overload occurs, the instrument is switched off by means of a thermostatic switch.)

- **Fusing**: 1200 V continuous
- **Fuse protection**: FF 3.15 A 10 s, fuses blow at > 5 A

### Electrical Safety

- **Protection class**: II per IEC 61010-1/EN 61010-1/ VDE 0411-1
- **Nominal voltage**: 230/400 V (300/500 V)
- **Test voltage**: 3.7 kV 50 Hz
- **Measuring category**: CAT III 500 V or CAT IV 300 V
- **Pollution degree**: 2
- **Fusing, L and N terminals**: 1 cartridge fuse-link ea.

### Power Supply

- **Rechargeable batteries**: 8 each AA 1.5 V, we recommend only using the battery pack included in the standard equipment (pack of rechargeable batteries eneloop type AA HR6, 2000 mAh: article no. Z502H)
- **Number of measurements (standard setup with illumination)**:
  - For \( R_{SO} \): 1 measurement – 25 s pause: Approx. 1100 measurements
  - For \( R_{LO} \): Automatic polarity reversal / 1 \( \Omega \) (1 measuring cycle) – 25 s pause: Approx. 1000 measurements
- **Battery test**: Symbolic display of battery voltage
- **Batteriesaver circuit**: Display illumination can be switched off. The test instrument is switched off automatically after the last key operation. The user can select the desired on-time.
- **Safety shutdown**: If supply voltage is too low, the instrument is switched off, or cannot be switched on.

---

1. \( U > 253 \text{ V}, \) with 2 or 3-pole adapter only
2. \( U_{L-N} = 500 \text{ mA}, \) max. \( U_{N} = 250 \text{ V} \)
3. The measuring range respectively the transformation factor selected at the clamp \( i_{\text{lin}}: 1 \text{ mA} \ldots 15 \text{ A} / \text{Out}: 1 \text{ mV} / \text{mA} \) or \( i_{\text{amp}} = 1 \ldots 150 \text{ A} / 1 \text{ mV} / \text{A} \) must be set in the "TYPE" menu with the selector switch in the SENSOR position.
4. The measuring range respectively the transformation factor selected at the clamp \( \Delta = \text{digits, rdg.} = \text{measured value (reading)}
5. at \( R_{\text{sel/total}}/R_{\text{ogem}} < 100 \)

---

### Connections

- **Charging time**: Installed rechargeable batteries can be recharged directly by connecting a charger to the recharging socket:
  - **MBASE/Mtech**: Z502P
  - **MBASE/Mtech charger (Z502P)**: Approx. 4 hours *

* Maximum charging time with fully depleted rechargeable batteries. A timer in the charger limits charging time to no more than 4 hours.

---

### Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Measured Quantity</th>
<th>Display Range</th>
<th>Resolution</th>
<th>Input Impedance/Test Current</th>
<th>Measuring Range</th>
<th>Nominal Values</th>
<th>Measuring Uncertainty</th>
<th>Intrinsic Uncertainty</th>
<th>Plug Input</th>
<th>2-Pole Adapter</th>
<th>3-Pole Adapter</th>
<th>Probe</th>
<th>Clamps</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEN-SOR</td>
<td>( i_{\text{amp}} )</td>
<td>0 ... 99.9 mA</td>
<td>0.1 mA</td>
<td>5 ... 1000 mA</td>
<td>( \pm(10% \text{ rdg.} + 8%) )</td>
<td>( i_{\text{lin}} = 1 \text{ mA} \ldots 15 \text{ A} / \text{Out}: 1 \text{ mV} / \text{mA} )</td>
<td>10 ( % \text{ rdg.} ) + 8 ( % )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ... 999 mA</td>
<td>1 mA</td>
<td>5 ... 150 A</td>
<td>( \pm(10% \text{ rdg.} + 16%) )</td>
<td>( i_{\text{lin}} = 0.05 \ldots 10 \text{ A} )</td>
<td>10 ( % \text{ rdg.} ) + 16 ( % )</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 ... 99.9 A</td>
<td>0.1 A</td>
<td>0.05 \ldots 10 A</td>
<td>( \pm(10% \text{ rdg.} + 25%) )</td>
<td>0.1 A</td>
<td>10 ( % \text{ rdg.} ) + 25 ( % )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ... 999 A</td>
<td>1 A</td>
<td>5 ... 1000 A</td>
<td>( \pm(10% \text{ rdg.} + 50%) )</td>
<td>1 ( \text{mA} )</td>
<td>10 ( % \text{ rdg.} ) + 50 ( % )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 ... 99.9 A</td>
<td>0.1 A</td>
<td>0.05 \ldots 10 A</td>
<td>( \pm(10% \text{ rdg.} + 16%) )</td>
<td>0.1 A</td>
<td>10 ( % \text{ rdg.} ) + 16 ( % )</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ... 999 A</td>
<td>1 A</td>
<td>5 ... 150 A</td>
<td>( \pm(10% \text{ rdg.} + 25%) )</td>
<td>1 ( \text{mA} )</td>
<td>10 ( % \text{ rdg.} ) + 25 ( % )</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ... 999 A</td>
<td>1 A</td>
<td>5 ... 1000 A</td>
<td>( \pm(10% \text{ rdg.} + 50%) )</td>
<td>1 ( \text{mA} )</td>
<td>10 ( % \text{ rdg.} ) + 50 ( % )</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 ... 99.9 A</td>
<td>0.1 A</td>
<td>0.05 \ldots 10 A</td>
<td>( \pm(10% \text{ rdg.} + 25%) )</td>
<td>0.1 A</td>
<td>10 ( % \text{ rdg.} ) + 25 ( % )</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 ... 99.9 A</td>
<td>0.1 A</td>
<td>0.05 \ldots 10 A</td>
<td>( \pm(10% \text{ rdg.} + 50%) )</td>
<td>0.1 A</td>
<td>10 ( % \text{ rdg.} ) + 50 ( % )</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 ... 99.9 A</td>
<td>0.1 A</td>
<td>0.05 \ldots 10 A</td>
<td>( \pm(10% \text{ rdg.} + 75%) )</td>
<td>0.1 A</td>
<td>10 ( % \text{ rdg.} ) + 75 ( % )</td>
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</tbody>
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**Key**: D = digits, rdg. = measured value (reading)
Electromagnetic Compatibility (EMC)

<table>
<thead>
<tr>
<th>Interference emission</th>
<th>Class</th>
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<tr>
<td>EN 61326-1:2006</td>
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</table>

<table>
<thead>
<tr>
<th>Interference immunity</th>
<th>Test Value</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 61000-4-2</td>
<td>Contact/atmos. – 4 kV/8 kV</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-3</td>
<td>10 V/m</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-4</td>
<td>Mains connection – 2 kV</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-5</td>
<td>Mains connection – 1 kV</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-6</td>
<td>Mains connection – 3 V</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-11</td>
<td>0.5 period / 100%</td>
<td></td>
</tr>
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</table>

Ambient Conditions

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>0 to + 40 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>−5 to + 50 °C</td>
</tr>
<tr>
<td>Storage</td>
<td>−20 to + 60 °C (without batteries)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>Max. 75%, no condensation allowed</td>
</tr>
<tr>
<td>Elevation</td>
<td>Max. 2000 m</td>
</tr>
</tbody>
</table>

Mechanical Design

<table>
<thead>
<tr>
<th>Display</th>
<th>Multiple display with dot matrix, 128 x 128 pixels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>W x L x D: 260 x 330 x 90 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>MBASE/MTECH: approx. 2.3 kg with batteries</td>
</tr>
<tr>
<td>Protection</td>
<td>Housing: IP 40, test probe: IP 40 per EN 60529/DIN VDE 0470, part 1</td>
</tr>
</tbody>
</table>

Data Interfaces

<table>
<thead>
<tr>
<th>Type</th>
<th>USB slave for PC connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>RS 232 for barcode and RFID scanners</td>
</tr>
</tbody>
</table>

Scope of delivery:

1. Test instrument
2. Earthing contact plug insert (country-specific)
3. 2-pole measuring adapter and 1 cable for expansion into a 3-pole adapter (PRO-A3-II)
4. Alligator clips
5. Shoulder strap
6. Set of rechargeable batteries (2502H)
7. Battery charger: MBASE/MTECH (2502P)
8. Condensed operating instructions
9. Operating instructions (on CD ROM)
10. DKD calibration certificate
11. ETC user software for PC (see page 7)
12. USB cable

Special Functions with PROFITEST MTECH

Tripping Test for Type B, AC/DC Sensitive RCDs with Rising DC Residual Current and Measurement of Tripping Current

With the selector switch in the IF position, slowly rising current flows via N and PE. The momentary measured current value is displayed. A greatly reduced rate of increase is used for delayed RCCBs (type B).

Tripping Test for Type B, AC/DC Sensitive RCDs with Constant DC Residual Current and Measurement of Tripping Time

With the selector switch set to the respective nominal residual current, twice the selected nominal current flows via N and PE. Time to trip is measured for the RCCB and displayed.

Loop Resistance Measurement with Suppression of RCD Tripping

The test instrument makes it possible to measure loop impedance in TN systems with type A and type AC RCCBs (10, 30, 100, 300, 500 mA nominal residual current). The respective test instrument generates a DC residual current to this end, which saturates the RCCB’s magnetic circuit. The test instrument then superimposes a measuring current which only demonstrates half-waves of like polarity. The RCCB is no longer capable of detecting this measuring current, and is consequently not tripped during measurement.

Selective Earthing Resistance Measurement (mains powered)
ETC User Software for PC (scope of delivery)

Creation of Individualized Test Structures at a PC and Transfer to the Test Instrument

Editing of Selection Lists

Report Generating Accessories

PROTOKOLLmanager Professional

Report generating software for documenting electrical tests in accordance with BGV A3, VDE 0100 and VDE 0701-0702 with unlimited customer management.

ELEKTROmanager

Software for measurement and documentation of electrical devices and electrical installations. ELEKTROmanager represents a new generation of software for data logging and data management, as well as for controlling test sequences used by electricians concerned with effectiveness, technical competence and legal security. Use is easy to learn and self-explanatory to a great extent. All common measuring instruments supplied by other manufacturers can be interconnected, i.e. after purchasing a new GMC-I Messtechnik GmbH instrument the customer can continue using an older instrument from another manufacturer.

PS3 Software for Test Instruments

PS3 reads in measurement data acquired with test instruments and organizes them automatically according to activity, i.e. testing, maintenance and inspection. Only a few quick work steps are required for the generation of ready-to-sign test reports and handover reports.

Standard requirements, for example reading in measurement data and report printing, are fulfilled with the basic module and the device module. Other requirements including following up on deadlines, test data history and selection of any desired data for generating lists, right on up to complete object management (equipment and buildings), are handled by the add-on module and any required additional modules.

Data can be exported from PS3 to the test instrument.

An overview of PS3’s performance features can be accessed at our website.

Report and List Generation with PC.doc-WORD™/EXCEL™

Prerequisite: Microsoft® WORD™ or Microsoft® EXCEL™

PC.doc-WORD™/EXCEL™ inserts test results and data entered at the test instrument input module into report or list forms. These can then be supplemented and printed out with Microsoft® WORD™ or Microsoft® EXCEL™.

Test Data Management with PC.doc-ACCESS™

Prerequisite: PC.doc-ACCESS™

PC.doc-ACCESS™ manages device, machine, equipment, master and test data. Available test data are automatically entered to master data and test data lists which are assigned to individual customers.

Data are represented in accordance with the respective test regulation. Data are displayed as lists or in data sheet format, and can be sorted and filtered in a variety of different ways. Complete test data management is thus made possible. Reports and deadline lists can be printed out for selectable ID number ranges and dates.
PROFISCAN ETC (ring binder with barcodes) – Z502G
Barcode scanner for connection to RS 232 port at tester – Z502F

Barcode and label printer for USB connection to a PC – Z721D
Barcode/label printer for connection to a PC, for self-adhesive, smudge-proof barcode labels, for identifying devices and system components. Devices and system components can be logged by our test instruments, and acquired measured values can be allocated to them with the scanner.

SCANBASE RFID reader for connection to RS 232 port at tester – Z751G
The Z751G RFID reader is preprogrammed to scan the following RFID tags.

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Frequency</th>
<th>Standard</th>
<th>Type</th>
<th>Quantity per Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z751R</td>
<td>13.56 MHz</td>
<td>ISO 15693</td>
<td>approx. 22 mm dia., self-adhesive</td>
<td>500 pieces</td>
</tr>
<tr>
<td>Z751S</td>
<td>13.56 MHz</td>
<td>ISO 15693</td>
<td>approx. 30 x 2 mm dia. with 3 mm hole</td>
<td>500 pieces</td>
</tr>
<tr>
<td>Z751T</td>
<td>13.56 MHz</td>
<td>ISO 15693</td>
<td>Pigeon ring, approx. 10 mm dia.</td>
<td>250 pieces</td>
</tr>
</tbody>
</table>

Power Supply Accessories
Z502H Master Battery Pack

Scanbase Mtech Charger (Z502P)
With Plug Connector

See separate ID systems data sheet regarding barcode scanners and printers, as well as RFID readers.
Accessory Plug Inserts and Adapters

**PRO-RLO-II Plug Insert**

**PRO-UNI-II Plug Insert**

3-Phase Current Adapters

A3-16, A3-32 and A3-63 3-phase adapters are used for trouble-free connection of test instruments to 5-pole CEE outlets. The three variants differ with regard to plug size, which corresponds respectively to 5-pole CEE outlets with current ratings of 16, 32 and 63 A. Phase sequence is indicated with lamps at all three variants. Testing the effectiveness of safety measures is conducted via five 4 mm contact protected sockets.

Variable Plug Adapter Set

Three self-retaining, contact protected test probes for the connection of measurement cables with 4 mm banana plugs, or with contact protected plugs for sockets with an opening of 3.5 mm to 12 mm, e.g. CEE, Perilex sockets etc. For example, the test probes also fit the square PE jacks on Perilex sockets. Maximum allowable operating voltage: 600 V per IEC 61010.

KS24 Cable Set

The KS24 cable set includes a 4 m long extension cable with a permanently attached test probe at one end and a contact protected socket at the other end, as well as an alligator clip which can be plugged onto the test probe.

ISO Calibrator 1

Calibration adapter for rapid, efficient testing of the accuracy of measuring instruments for insulation resistance and low-value resistors

Telearm1 Telescoping Rod

Floor Probe

The 1081 floor probe makes it possible to measure the resistance of insulating floors in accordance with DIN VDE 0100, part 600, and EN 1081.

WZ12C

Current clamp sensor for leakage current, selectable measuring ranges: 1 mA to 15 A, 3% and 1 A to 150 A, 2%

Transformation ratios:

- 1 mV/mA, 1 mV/A

METRAFLEX P300

Flexible current clamp sensor for selective earthing resistance measurement

3/30/300 A, 1 V/100 mV/10 mV/A

Z3S12A

AC Current Sensor Clamp

Switchable measuring ranges:

- 1 mA to 1/100/1000 A~

Transformation ratios:

- 1 V/A, 100mV/A, 10 mV/A, 1 mV/A
PROFITEST | MBASE MTECH

DIN VDE 0100/IEC 60364-6 Testers

Earthing Resistance Measurement Accessories

TR25 Reel

TR50 Drum with 50m Measurement Cable

50 m measurement cable coiled onto a metal drum. Connection to the inside end of the cable is made possible with a socket integrated into the drum. The other end is equipped with a banana plug. The drum axle with handle can be removed for space saving storage. Cable resistance can be compensated for with the rotary selector switch in the RL0 position.

SP350 Earth Drill

E-Set 3 Earth Tester Set

Accessory Cases and Trolleys

Instrument Master Case (Z502A)

Stackable case with inserts for instrument and accessories
Outside dimensions: W x H x D
395 x 320 x 295 mm

Earthing Master Case (Z502B)

Stackable case with inserts and accessories for earthing measurements, as well as two current clamp meters
Outside dimensions: W x H x D
395 x 160 x 295 mm

E-CHECK Case (Z502M)

Outside dimensions: H x W x D
390 x 590 x 230 mm

Sample Contents
**PROFTEST | MBASE Mtech**

**DIN VDE 0100/IEC 60364-6 Testers**

### F2000 Universal Carrying Pouch

Test instrument, plug inserts, measuring adapters, replacement batteries, recording charts etc. can be stored in a clear-cut fashion and conveniently transported in the F2000 carrying pouch. Outside dimensions: 380 x 310 x 200 mm (without buckles, handle and carrying strap)

### F2020 Large Universal Carrying Pouch

Outside dimensions: W x H x D 430 x 310 x 300 mm (without buckles, handle and carrying strap)

### Trolley for E-CHECK Case (Z502N)

Folded-up dimensions: 395 x 150 x 375 mm

### Order Information

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
<th>Article Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROFTEST MASTER Instrument Variants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal protective measure test instruments for DIN VDE 0100 per EN 61557, parts 1, 2, 3, 4, 5, 6, 7 and 10 with integrated memory and insulation measurement up to 1000 V, mains powered earthing resistance measurements. See page 2 for a detailed overview of performance features and page 6 for scope of delivery.</td>
<td>PROFTEST Mbase</td>
<td>M520M</td>
</tr>
<tr>
<td><strong>Basic Instrument</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same as basic instrument plus the following special functions:</td>
<td>PROFTEST Mpro *</td>
<td>M520N *</td>
</tr>
<tr>
<td>- Battery powered measurements:</td>
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<td></td>
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<tr>
<td>Earthing resistance (3/4-wire)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil resistivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selective earthing resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earth loop resistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic test sequence function</td>
<td></td>
<td></td>
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<tr>
<td>Same as basic instrument plus the following special functions:</td>
<td>PROFTEST Mtech</td>
<td>M5200</td>
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<tr>
<td>- Tripping test for AC/DC sensitive RCDs and loop impedance measurement without tripping the RCD</td>
<td>PROFTEST Mixtra *</td>
<td>M520P *</td>
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<tr>
<td>- Testing of IMFs</td>
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<tr>
<td>- Testing of RCMs per EN 61557, part 11</td>
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<tr>
<td>- Battery powered measurements:</td>
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<tr>
<td>Earthing resistance (3/4-wire)</td>
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<tr>
<td>Soil resistivity</td>
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<tr>
<td>Selective earthing resistance</td>
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<tr>
<td>Earth loop resistance</td>
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<tr>
<td>Leakage current measurement</td>
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<tr>
<td>Residual voltage test</td>
<td></td>
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<tr>
<td>Intelligent ramp</td>
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<tr>
<td>Automatic test sequence function</td>
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<tr>
<td>Bluetooth® interface</td>
<td></td>
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<tr>
<td><strong>Test Instrument Power Supply Accessories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 LSD NiMH rechargeable batteries with reduced self-discharging (AA) (eneloop®/Sanyo), 2000 mAh with sealed cells</td>
<td>MASTER Battery Set</td>
<td>Z502H</td>
</tr>
<tr>
<td>Broad-range charger for charging batteries included in the PROFITEST MBASE MTECH</td>
<td>PROFITEST MBASE MTECH Charger</td>
<td>Z502P</td>
</tr>
</tbody>
</table>

### Accessory Plug Inserts and Adapters

- Earth contact plug insert (Schuko): D, A, NL, F etc. PRO-Schuko GTZ3228000000001
- Plug insert for SEV-CH PRO-CH GTZ3225000000001
- Plug insert for South Africa PRO-RSA Z501A
- 2/3-pole measuring adapter for 3-phase and rotating-field systems, 300 V / 16 A CAT IV PRO-A3-II Z5010
- With 10 m cable based on 2-wire measuring technology for PE and similar measurements, 300 V / 16 A CAT IV PRO-RLO-II Z501P
- With 3 connector cables for any connection standards, 300 V / 16 A, CAT IV PRO-UNI-II Z501R
- 5-pole 3-phase adapter for 16 A CEE outlets A3-16 GTZ3602000000001
- 5-pole 3-phase adapter for 32 A CEE outlets A3-32 GTZ3603000000001
## PROFITEST | Mbase Mtech

### DIN VDE 0100/IEC 60364-6 Testers

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
<th>Article Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-pole 3-phase adapter for 63 A CEE outlets</td>
<td>A3-63</td>
<td>GTZ3604000R0001</td>
</tr>
<tr>
<td>Variable Plug Adapter Set</td>
<td>Z500A</td>
<td>Z500A</td>
</tr>
<tr>
<td>Calibration adapter for testing of the accuracy of measuring instruments for insulation resistance and low-value resistors</td>
<td>ISO Calibrator 1</td>
<td>M662A</td>
</tr>
</tbody>
</table>

### Accessories

- **Extension cable, 4 m**
  - Type: KS24
  - Article Number: GTZ2301000R0001

- **Telescoping rod for PE measurement**
  - Type: Telearm 1
  - Article Number: GTZ3232000R0001

- **Triangular probe for floor measurements in accordance with EN 1081 and DIN VDE 0100**
  - Type: 1081 Probe
  - Article Number: GTZ3196000R0001

- **Current clamp sensor for leakage current, switchable: 1 mA to 15 A, 3% and 1 A to 150 A, 2%**
  - Type: WZ12C
  - Article Number: Z219C

- **Flexible AC current sensor, 3, 30, 300 A, 1 V, 100 mV, 10 mV/A, with batteries, probe length: 45 cm**
  - Type: METRAFLEX P300
  - Article Number: Z502E

- **Current clamp sensor for selective earth measurement and as clamp meter for 2-clamp measuring method (ground loop measurement), switchable measuring ranges: 0 to 1 / 100 / 1000 A – AV – (0.7% to 0.2%)**
  - Type: Z3512A
  - Article Number: Z225A

### Earthing Resistance Measurement Accessories

- **Reel with 25 m measurement cable**
  - Type: TR25 Reel
  - Article Number: GTZ3303000R0001

- **Drum with 50 m measurement cable**
  - Type: TR50 Drum
  - Article Number: GTY1040014E34

- **Earth drill, 35 cm long, for earth measurement**
  - Type: SP350 Earth Drill
  - Article Number: GTZ3304000R0001

- **Earth tester set: artificial leather pouch with two reels, 2 measurement cables (25 m ea.), 1 measurement cable (40 m), 2 measurement cables (3 m ea.), 4 earth spikes (cinc plated, 2 spike pullers, 1 hammer**
  - Article Number: E-Set 3
  - Article Number: GTZ3301005R0001

- **Earth tester set: artificial leather pouch with two reels, 2 measurement cables (25 m ea.), 1 measurement cable (40 m), 2 measurement cables (3 m ea.), 4 earth drills**
  - Article Number: E-Set 4
  - Article Number: Z590A

### Accessory Cases and Trolleys

- **Stackable case, empty, with inserts for PROFITEST MASTER and accessories**
  - Type: Instrument Master Case
  - Article Number: Z502A

- **Stackable case with inserts and accessories for earth measurements and 2 clamp meters**
  - Type: Master Case, Earth
  - Article Number: Z502B

- **Aluminum case for test instrument and accessories**
  - Type: E-Check Case
  - Article Number: Z502M

- **The E-CHECK case can be mounted to the trolley.**
  - Type: Trolley for E-Check Case
  - Article Number: Z502N

- **Universal carrying pouch**
  - Type: F2000
  - Article Number: Z700D

- **Large universal carrying pouch**
  - Type: F2020
  - Article Number: Z700F

### Starter Packages

- **Consisting of PROFITEST Mbase, variable plug adapter set and F2000 universal carrying pouch**
  - Type: BASE Starter Package
  - Article Number: M500M

- **Consisting of PROFITEST Mtech, variable plug adapter set and F2000 universal carrying pouch**
  - Type: TECH Starter Package
  - Article Number: M500N

- **Consisting of PROFITEST Mtech, variable plug adapter set and E-CHECK case**
  - Type: E-CHECK Set
  - Article Number: M500U

- **Consisting of PROFITEST Mtech, VARIO-STECKER-Set, F2000 universal carrying pouch, MASTER Battery Set and MPRO MIXTRA Charger**
  - Type: XTRA Starter Package
  - Article Number: M500V

- **Consisting of PROFITEST Mtech, VARIO-STECKER-Set, Profi Case, PRO-RLD-II, MASTER Battery Set and MPRO MIXTRA Charger**
  - Type: XTRA Master Package
  - Article Number: M500W

- **Consisting of PROFITEST Mtech, VARIO-STECKER-Set, Profi Case, leakage current measuring adapter PRO-AB, MASTER Battery Set and MPRO MIXTRA Charger**
  - Type: XTRA Med Package
  - Article Number: M500X

### Report Generating Accessories

- **Barcode scanner for RS 232 connection with roughly 1 m coil cable**
  - Type: RS 232 Profiscanner for Barcodes
  - Article Number: Z502F

- **Ring binder with preprinted barcodes for scanning (German)**
  - Type: PROFISCAN ETC D
  - Article Number: Z502G

- **RFID reader/writer**
  - Type: SCANBASE RFID
  - Article Number: Z751G

### PC analysis software

Further information regarding software is available on the Internet:

- [http://www.gossenmetrawatt.com](http://www.gossenmetrawatt.com)

Or

- [http://www.gossenmetrawatt.com](http://www.gossenmetrawatt.com)
- [http://www.gossenmetrawatt.com](http://www.gossenmetrawatt.com) (→ Products → Software → Software for Testers)

*Data sheet available*