GOSSEN METRAWATT

PROFITEST INTRO
Tester, IEC 60364-6 / DIN VDE 0100-600

3-349-838-03
6/7.19

- Measurement of RLO, ZL-PE, ZL-N, RINS, RE, ΔU, phase sequence and voltage
- OFFSET Management RL-PE / RN-PE / RL-N
- Measuring functions can be selected directly via the rotary switch
- Testing of RCD types A, AC, F, B, B+, EV, MI and G/R, as well as SRCDs and PRCDs
- Display of approved fuse types for electrical systems
- Phase sequence measurement (including highest line-to-line voltage)
- Measuring of contact voltage by Finger contact
- Connection of an RFID reader or a barcode scanner
- Individual measured value memory and memory structure setup
- Help functions with wiring diagrams
- Bidirectional data exchange via USB, DDS-CAD and eplNSTROM
- Measuring category: CAT III 600 V / CAT IV 300 V
- International prompting (12 languages)
- ETC software (Electrical Testing Center) for, amongst other functions, creating tree structures and documentation per ZVEH



The **PROFITEST INTRO** provides professional electricians with a universal, compact and rugged, state-of-the-art measuring tool. The test instrument is capable of executing all measurements for testing the effectiveness of safety measures in electrical systems as required by IEC 60364-6 (DIN VDE 0100-600) and other country-specific standards, and as specified in the individual sections of DIN EN 61557 (VDE 0413). Thanks to its intelligent and ergonomic design, intuitive operation and an advanced technical concept, it's aligned consistently to routine daily tasks making it the ideal companion for any electrician.

Large Voltage and Frequency Ranges

A broad-range measuring device permits 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. Measuring error for the **PROFITEST INTRO** 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 voltage of 500, 250 or 100 V. A test voltage which deviates from nominal voltage, and lies within a range of 20/50 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.

Low-Resistance Measurement

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

Testing of Residual Current Devices (RCCBs)

- Testing of equipment and RCCBs with rising residual current including indication of tripping current and contact voltage
- Testing for N-PE reversal
- Testing of RCCBs with the following nominal currents: ½ • $I_{\Delta N}$, 1 • $I_{\Delta N}$, 2 • $I_{\Delta N}$, (5 • $I_{\Delta N}$ up to 100 mA)
- Selective [S], SRCDs, PRCDs (Schukomat, Sidos and others), types G/R, AC, A and F; types B, B+ and EV, MI
- Testing of RCCBs which are suitable for pulsating residual direct and alternating current; testing is conducted with positive or negative half-waves

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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:
D, GB, I, F, E, P, NL, S, N, FIN, CZ or PL

Operation

Device functions are selected directly with the help of a rotary selector switch. Softkeys allow for convenient selection of sub-functions and parameter settings. Unavailable functions and parameters are automatically prevented from appearing at the display.

Schematic diagrams, measuring ranges and help texts can be displayed for all basic functions and sub-functions.

An optional remote control (Z550A) can be connected for difficult to access locations, from which the RCD tripping function and all other measuring functions can be started.

Phase Tester

Protective conductor potential is tested after starting a test sequence and touching the contact surface for finger contact (by pressing the **START** key). 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 two 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 and the acoustic signal can be tested during the self-test. The test instrument is shut down automatically when the batteries or NiMH rechargeable batteries (option) are depleted. A microprocessor controlled charging circuit is used to assure safe charging of rechargeable NiMH 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.

USB 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 can always be 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.

Observance of International Standards

IEC/ DIN EN 61010; VDE 0411, IEC 60364 / DIN VDE 0100-600 / DIN VDE 0105-100, IEC/ DIN EN 61557; VDE 0413, CEI 64-8, ÖVE/ÖNORM 8001-6, NIV / NIN, CSN 33 2000-6, NEN 1010-6, IEC 60364-4-41; DIN VDE 0100-410

ETC User Software

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 0100-600.
- 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.

Overview of Included Features

PROFITEST INTRO (M520T)
Testing of residual current devices (RCDs)
U_B measurement without tripping the RCD
Tripping time measurement
Measurement of tripping current I_F
Selective, SRCDs, PRCDs, type G/R
AC/DC sensitive RCDs, types B and B+, EV, MI
Testing for N-PE reversal
Measurement of loop impedance Z_{L-PE} / Z_{L-N}
Fuse table for systems without RCDs
Without tripping the RCD, fuse table
With 15 mA test current[1], without tripping the RCD
Earth resistance R_E (mains operation) I/U measuring method
Measurement of equipotential bonding R_{LO} Automatic polarity reversal
Insulation resistance RINS Variable or rising test voltage (ramp)
Voltage U_{L-N} / U_{L-PE} / U_{N-PE} / f
Special measurements
Phase sequence
Earth leakage resistance $R_{E(ISO)}$
Voltage drop (ΔU)
Features
Selectable user interface language [2]
Memory (database for up to 50,000 objects)
RS 232 port for RFID/barcode reader
USB port for data transmission
ETC user software
Measuring category: CAT III 600 V / CAT IV 300 V
Factory calibration certificate

[1] The so-called live measurement is only advisable if there is no bias current within the system. Only suitable for motor protection switches with small nominal current values.

[2] Currently available languages: D, GB, I, F, E, P, NL, S, N, FIN, CZ, PL

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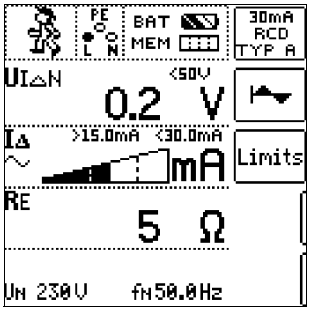
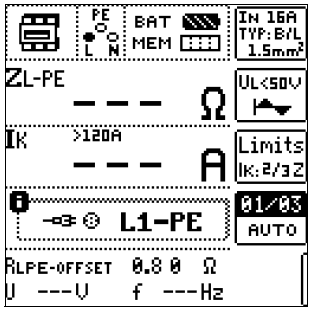
Sample Displays

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

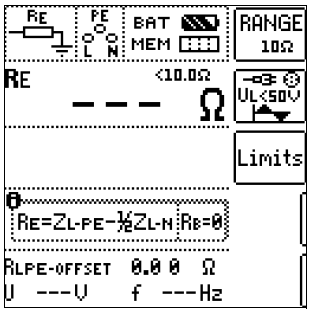
RCD Measurement Display



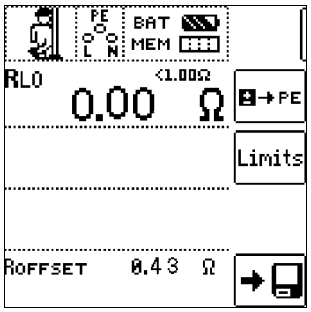
Loop Resistance Measurement Display



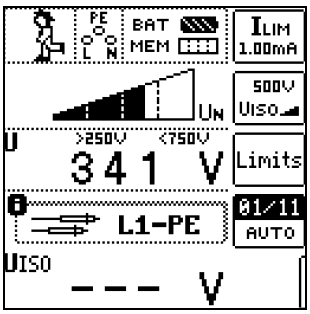
Earthing Resistance Measurement Display



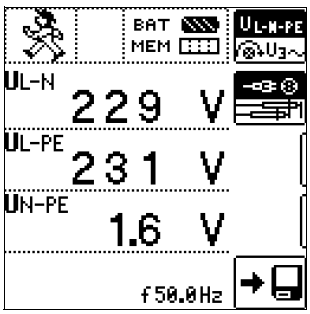
Low-Resistance Measurement Display



Insulation Measurement Display



Voltage Measurement Display



Applicable Regulations and Standards

IEC 61010-1/EN 61010-1/ VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements (IEC 61010-1:2010 + Cor. :2011) Part 31: Safety requirements for hand-held probe assemblies for electrical measurement and test (IEC 61010-031:2002 + A1:2008)
IEC 61557/ EN 61557/ VDE 0413	Part1: General requirements (IEC 61557-1:2007) Part 2: Insulation resistance (IEC 61557-2:2007) Part 3: Loop impedance (IEC 61557-3:2007) Part 4: Resistance of earth connection and equipotential bonding (IEC 61557-4:2007) Part 5: Resistance to earth (IEC 61557-5:2007) Part 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems (IEC 61557-6:2007) Part 7: Phase sequence (IEC 61557-7:2007) 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)
EN 60529 VDE 0470-1	Test instruments and test procedures Degrees of protection provided by enclosures (IP code)
DIN EN 61326-1 VDE 0843-20-1	Electrical equipment for measurement, control and laboratory use –EMC requirements – Part 1: General requirements
per IEC 60364-6 VDE 0100-600	Low-voltage electrical installations – Part 6: Tests
EN 50110-1 VDE 0105-1	Operation of electrical installations – Part 1: General requirements
IEC 60364-7-710 VDE 0100-710	Low-voltage electrical installations – Requirements for special installations or locations – Part 710: Medical locations

Characteristic Values

Nominal Ranges of Use

Voltage U_N	120 V	(108 … 132 V)
	230 V	(196 … 253 V)
	400 V	(340 … 440 V)
Frequency f_N	16⅔ Hz	(15.4 … 18 Hz)
	50 Hz	(49.5 … 50.5 Hz)
	60 Hz	(59.4 … 60.6 Hz)
	200 Hz	(190 … 210 Hz)
	400 Hz	(380 … 420 Hz)
Overall voltage range	65 … 550 V	
Overall frequency range	15.4 … 420 Hz	
Waveform	Sinusoidal	
Temperature range	0 °C … + 40 °C	
Battery voltage	8 … 12 V	
Line impedance angle	Corresponds to $\cos\varphi = 1 \ldots 0.95$	

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Characteristic Values

Function	Measured Quantity	Display Range	Resolution	Input Impedance / Test Current	Measuring Range	Nominal Values	Measuring Uncertainty	Intrinsic Uncertainty	Connections: PRO-CH PRO-GB adapter [1]	Connections: KS-PROFITEST INTRO 2-pin	Connections: KS-PROFITEST INTRO 3-pin
U $I_{\Delta N}$ I_F	U_{L-PE} U_{N-PE}	0.0 ... 99.9 V 100 ... 600 V	0.1 V 1 V	5 MΩ	0.3 ... 600 V [1]	U_N = 120/230/400/500 V f_N = 16⅔/50/60/200/400 Hz	±(2% rdg.+5d) ±(2% rdg.+1d)	±(1% rdg.+5d) ±(1% rdg.+1d)	●	●	●
	f	15.0 ... 99.9 Hz 100 ... 999 Hz	0.1 Hz 1 Hz		DC 15.4 ... 420 Hz		±(0.2% rdg.+1d)	±(0.1% rdg. + 1 d)			
	$U_{3\sim}$	0.0 ... 99.9 V 100 ... 600 V	0.1 V 1 V		0.3 ... 600 V		±(3% rdg.+5d) ±(3% rdg.+1d)	±(2% rdg.+5d) ±(2% rdg.+1d)			●
	U_{L-N}	0.0 ... 99.9 V 100 ... 600 V	0.1 V 1 V		1.0 ... 600 V [1]		±(3% rdg.+5d) ±(3% rdg.+1d)	±(2% rdg.+5d) ±(2% rdg.+1d)	●		●
	$U_{I\Delta N}$	0.0 ... 70.0 V	0.1 V	0.3 · $I_{\Delta N}$	5 ... 70 V	U_N = 120 V 230 V 400 V [2] f_N = 50/60 Hz U_L = 25/50 V $I_{\Delta N}$ = 6 mA 10 mA 30 mA 100 mA 300 mA 500 mA [2]	+13% rdg. + 1 d	+1% rdg. –1d +9% rdg. + 1 d	●	●	
	R_E	10 Ω ... 999 Ω 1.00 kΩ ... 6.51 kΩ	1 Ω 0.01 kΩ	$I_{\Delta N}$ = 10 mA · 1.05	Calculated value Off $R_E = U_{I\Delta N} / I_{\Delta N}$						
		3 Ω ... 999 Ω 1 kΩ ... 2.17 kΩ	1 Ω 0.01 kΩ	$I_{\Delta N}$ = 30 mA · 1.05							
		1Ω ... 651 Ω	1Ω	$I_{\Delta N}$ = 100 mA · 1.05							
		0.3 Ω ... 99.9 Ω 100 Ω ... 217 Ω	0.1 Ω 1 Ω	$I_{\Delta N}$ = 300 mA · 1.05							
		0.2 Ω ... 9.9 Ω 10 Ω ... 130 Ω	0.1 Ω 1 Ω	$I_{\Delta N}$ = 500 mA · 1.05							
	I_F ($I_{\Delta N}$ = 6 mA)	1.8 ... 7.8 mA	0.1 mA	1.8 ... 7.8 mA	1.8 ... 7.8 mA		±(7% rdg. + 2d)	±(3.5% rdg. + 2 d)			
	I_F ($I_{\Delta N}$ = 10 mA)	3.0 ... 13.0 mA		3.0 ... 13.0 mA	3.0 ... 13.0 mA						
	I_F ($I_{\Delta N}$ = 30 mA)	9.0 ... 39.0 mA		9.0 ... 39.0 mA	9.0 ... 39.0 mA						
	I_F ($I_{\Delta N}$ = 100 mA)	30 ... 130 mA	1 mA	30 ... 130 mA	30 ... 130 mA						
	I_F ($I_{\Delta N}$ = 300 mA)	90 ... 390 mA	1 mA	90 ... 390 mA	90 ... 390 mA						
	I_F ($I_{\Delta N}$ = 500 mA)	150 ... 650 mA	1 mA	150 ... 650 mA	150 ... 650 mA						
	$U_{I\Delta}$ / U_L = 25 V	0.0 ... 25.0 V	0.1 V	Same as I_Δ	0 ... 25.0 V		+10% rdg. + 1 d	+1% rdg. –1d +9% rdg.+ 1d			
	$U_{I\Delta}$ / U_L = 50 V	0.0 ... 50.0 V			0 ... 50.0 V						
	t_A ($I_{\Delta N}$ · 1)	0 ... 999 ms	1 ms	6 ... 500 mA	0 ... 999 ms		±4 ms	±3 ms			
	t_A ($I_{\Delta N}$ · 2)	0 ... 999 ms	1 ms	2 · 6 ... 2 · 500 mA	0 ... 999 ms						
	t_A ($I_{\Delta N}$ · 5)	0 ... 40 ms	1 ms	5 · 6 ... 5 · 300 mA	0 ... 40 ms						
Z_{L-PE} Z_{L-N}	Z_{L-PE} (∿) Z_{L-N}	0 ... 999 mΩ 1.00 … 9.99 Ω	1 mΩ 0.01 Ω 0.1 Ω	1.3 ... 3.7 A AC 0.5/1.25 A DC	300 ... 999 mΩ 1.00 … 9.99 Ω	U_N = 120/230 V 400/500 V [1] f_N = 16⅔/50/60 Hz	±(10% rdg.+30d) ±(8% rdg.+3d)	±(5% rdg.+30d) ±(3% rdg.+3d)	●	●	
	Z_{L-PE} ⎓ + DC	0 ... 999 mΩ 1.00 … 9.99 Ω 10.0 … 29.9 Ω			500 ... 999 mΩ 1.00 … 9.99 Ω	U_N = 120/230 V f_N = 50/60 Hz	±(18% rdg.+30d) ±(10% rdg.+3d)	±(6% rdg.+50d) ±(4% rdg.+3d)			
	I_K (Z_{L-PE} ∿, Z_{L-PE} ⎓ + DC)	0.0 ... 9.9 A 10 ... 999 A 1.00 ... 9.99 kA 10.0 ... 50.0 kA	0.1 A 1 A 10 A 100 A		120 (108 ... 132) V 230 (196 ... 253) V 400 (340 ... 440) V 500 (450 ... 550) V		Value calculated from Z_{L-PE}			● Z_{L-PE}	
	Z_{L-PE} (15 mA)	0.5 … 9.99 Ω	0.01 Ω	Display range only							
		10.0 … 99.9 Ω 100 … 999 Ω	0.1 Ω 1 Ω	15 mA AC	10.0 … 99.9 Ω 100 … 999 Ω	U_N = 120/230 V f_N = 16⅔/50/60 Hz	±(10% rdg.+10d) ±(8% rdg.+2d)	±(2% rdg.+2d) ±(1% rdg.+1d)			
	I_K (15 mA)	100 ... 999 mA 0.00 ... 9.99 A 10.0 ... 99.9 A	1 mA 0.01 A 0.1 A		Calculated value depends on U_N and Z_{L-PE}: $I_K = U_N/10...1000\Omega$		Value calculated from Z_{L-PE} (15 mA): $I_K = U_N/Z_{L-PE}$ (15 mA)				
R_E	R_E (∿)	0 ... 999 mΩ 1.00 … 9.99 Ω 10.0 … 99.9 Ω 100 … 999 Ω 1 kΩ ... 9.99 kΩ	1 mΩ 0.01 Ω 0.1 Ω 1 Ω 0.01 kΩ	1.3 ... 3.7 A AC 1.3 ... 3.7 A AC 400 mA AC 40 mA AC 4 mA AC	300 ... 999 mΩ 1.00 Ω ... 9.99 Ω 10.1 Ω ... 99.9 Ω 100 Ω ... 999 Ω 1.00 kΩ ... 9.99 kΩ	U_N = 120/230 V U_N = 400 V [1] f_N = 50/60 Hz	±(10% rdg.+30d) ±(5% rdg.+3d) ±(10% rdg.+3d) ±(10% rdg.+3d) ±(10% rdg.+3d)	±(5% rdg.+30d) ±(3% rdg.+3d) ±(3% rdg.+3d) ±(3% rdg.+3d) ±(3% rdg.+3d)	●	●	
	R_E DC+ ⎓	0 ... 999 mΩ 1.00 … 9.99 Ω 10.0 … 29.9 Ω	1 mΩ 0.01 Ω 0.1 Ω	1.3 ... 3.7 A AC 0.5/1.25 A DC	500 ... 999 mΩ 1.00 … 9.99 Ω	U_N = 120/230 V f_N = 50/60 Hz	±(18% rdg.+30d) ±(10% rdg.+3d)	±(6% rdg.+50d) ±(4% rdg.+3d)			
	U_F	0 ... 253 V	1 V	—	Calculated value						
Ub	Ub	Limit LED **on**		Reb = 100 kΩ	0 ... 440 V	U_N = 120/230/400 V f_N = 50/60 Hz	45 V ± 15 V	45 V ± 5 V	**Finger contact**		

Characteristic Values

Function	Measured quantity	Display Range	Resolution	Input Impedance / Test current	Measuring Range	Nominal Values	Measuring Uncertainty	Intrinsic Uncertainty	Connections: PRO-Schuko adapter [1]	Connections: KS-PROFITEST INTRO 2-pin	Connections: KS-PROFITEST INTRO 3-pin
RINS	RINS, $R_{E\ ISO}$	1 ... 999 kΩ 1.00 ... 9.99 MΩ 10.0 ... 49.9 MΩ	1 kΩ 10 kΩ 100 kΩ	I_K = 1.5 mA	50 kΩ ... 300 MΩ	U_N = 50 V I_N = 1 mA	kΩ range ±(6% rdg.+10d) MΩ range ±(6% rdg.+1d)	kΩ range ±(3% rdg.+10d) MΩ range ±(3% rdg.+1d)	●	●	
		1 ... 999 kΩ 1.00 ... 9.99 MΩ 10.0 ... 99.9 MΩ	1 kΩ 10 kΩ 100 kΩ			U_N = 100 V I_N = 1 mA					
		1 ... 999 kΩ 1.00 ... 9.99 MΩ 10.0 ... 99.9 MΩ 100 ... 200 MΩ	1 kΩ 10 kΩ 100 kΩ 1 MΩ			U_N = 250 V I_N = 1 mA					
		1 ... 999 kΩ 1.00 ... 9.99 MΩ 10.0 ... 99.9 MΩ 100 ... 500 MΩ	1 kΩ 10 kΩ 100 kΩ 1 MΩ			U_N = 500 V U_N = 1000 V I_N = 1 mA					
	U	10 ... 999 V– 1.00 ... 1.19 kV	1 V 10 V		10 ... 1.19 kV		±(3% rdg.+1d)	±(1.5% rdg. + 1 d)			
R_{LO}	R_{LO}	0.01 Ω ... 9.99 Ω 10.0 Ω ... 99.9 Ω 100 Ω ... 199 Ω	10 mΩ 100 mΩ 1 Ω	$I_m \geq$ 200 mA $I_m <$ 200 mA	0.20 Ω ... 6.00 Ω 6.01 Ω ... 99.9 Ω	U_0 = 4.5 V	±(5% rdg.+2d)	±(2% rdg.+2d)		●	

[1] U > 230 V with KS-PROFITEST INTRO only
[2] 1 · / 2 · IΔN > 300 mA and 5 · IΔN > 500 mA and If > 300 mA only up to $U_N \leq$ 230 V!
IΔN 5 · 300 mA where U_N = 230 V only

Key: d = digits, rdg. = measured value (reading)

Reference Conditions

Line voltage	230 V ± 0.1%
Line frequency	50 Hz ± 0.1%
Meas. quantity frequency	45 Hz … 65 Hz
Measured qty. waveform	Sine (deviation between effective and rectified value ≤ 0.1%)
Line impedance angle	cos φ = 1
Supply voltage	12 V ± 0.5 V
Ambient temperature	+22 °C ±3 K
Relative humidity	45% ±10%

Nominal Ranges of Use

Voltage U_N	120 V	(108 ... 132 V)
	230 V	(196 ... 253 V)
	400 V	(340 ... 440 V)
Frequency f_N	16⅔ Hz	(15.4 ... 18 Hz)
	50 Hz	(49.5 ... 50.5 Hz)
	60 Hz	(59.4 ... 60.6 Hz)
	200 Hz	(190 ... 210 Hz)
	400 Hz	(380 ... 420 Hz)
Overall voltage range U_Y	65 ... 550 V	
Overall frequency range	15.4 ... 420 Hz	
Waveform	Sinusoidal	
Temperature range	0 °C ... + 40 °C	
Supply voltage	8 ... 12 V	
Line impedance angle	Corresponds to cos φ = 1 ... 0.95	

Power Supply

Batteries, rechargeable NiMH batteries	8 each AA 1.5 V We recommend using the battery pack (article number: Z502H).
Number of measurements (standard setup with illumination)	
– For RINS	1 measurement – 25 s pause: Approx. 600 measurements
– For R_{LO}	Auto polarity reversal / 1 Ω (1 measuring cycle) – 25 s pause: approx. 800 measurements
Battery test	Symbolic display of battery voltage BAT
Power management	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 (U < 8.0 V), the instrument is switched off, or cannot be switched on.
Recharging socket	Installed, optional rechargeable batteries can be recharged directly by connecting a charger to the recharging socket: Z502R charger
Charging time	Z502R charger: approx. 2 hours *

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

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Overload Capacity

U_{L-PE}, U_{L-N}	600 V continuous
RCD, R_E	440 V continuous
Z_{L-PE}, 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.)
R_{LO}	Electronic protection prevents switching on if interference voltage is present.
Protection with 2 fine-wire fuses	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 600 V or CAT IV 300 V
Pollution degree	2
Fuses	
L and N terminals	1 cartridge fuse-link ea. FF 3.15A/600V 6.3 x 32 mm

Electromagnetic Compatibility (EMC)

Product standard EN 61326-1:2013

Interference emission		Class
EN 55022		A
Interference immunity	Test Value	Feature
EN 61000-4-2	Contact/atmos. – 4 kV/8 kV	
EN 61000-4-3	3 V/m	

Ambient Conditions

Accuracy	0 ... + 40 °C
Operation	–5 ... + 50 °C
Storage	–20 ... + 60 °C (without batteries)
Relative humidity	Max. 75% (max. 85% during storage/ transport) no condensation allowed
Elevation	Max. 2000 m
Calibration interval	1 year (recommended)

Mechanical Design

Display	Multiple display with dot matrix, 128 x 128 pixels, backlit (transflective), dimensions: 65 x 65 mm
Dimensions	W x L x D: 225 x 130 x 140 mm
Weight	Approx. 1.5 kg with batteries
Protection	Housing: IP 52, measurement cables and connectors: IP 40 per EN 60529/DIN VDE 0470-1, housing category 2

Excerpt from Table on the Meaning of IP Codes

IP XY (1st digit X)	Protection Against Foreign Object Ingress	IP XY (2nd digit Y)	Protection Against Penetration by Water
4	≥ 1.0 mm dia.	0	Not protected
5	Dust protected	2	Dripping (at 15° angle)

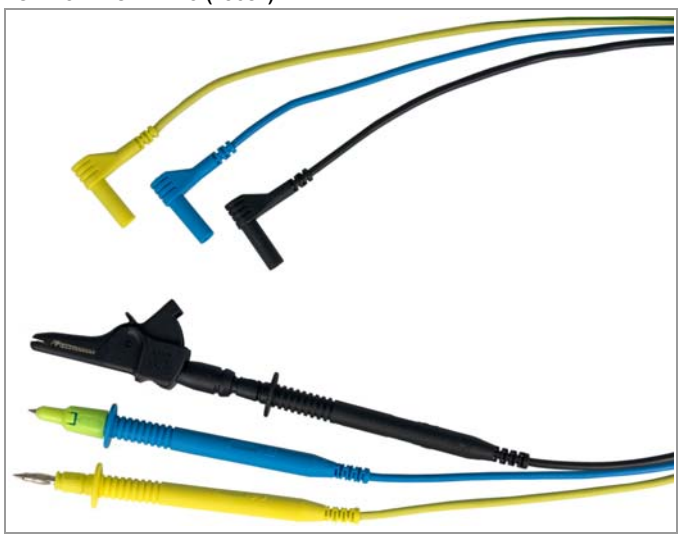
Data Interfaces

Type	USB slave for connection to a PC
Type	RS-232 for barcode and RFID readers

Scope of Delivery

1 Test instrument
1 Shoulder strap
1 Battery pack
1 KS-PROFiTEST INTRO (Z503L)
1 USB cable
1 Factory calibration certificate
1 Condensed operating instructions
1 Supplementary sheet with safety information
– Comprehensive operating instructions available on the Internet for download at www.gossenmetrawatt.com

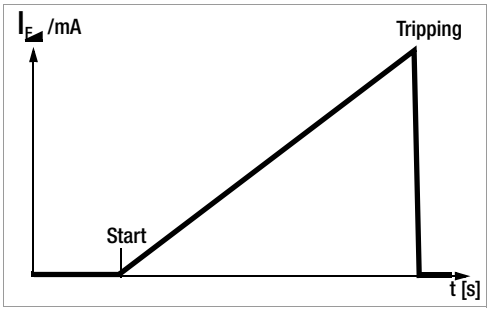
KS-PROFiTEST INTRO (Z503L)



Measurement cables (black, blue, yellow-green) with test probe and safety caps (CAT IV 300 V, CAT III 600 V), as well as alligator clips (CAT III 1000 V)

Special Functions

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



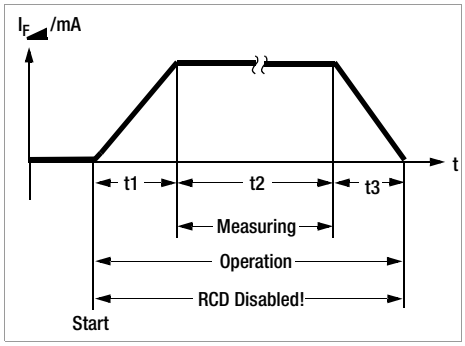
With the selector switch in the I_F position, slowly rising current flows via N and PE. The momentary measured current value is continuously displayed. When the RCCB is tripped, the last measured current value is displayed. A greatly reduced rate of increase is used for delayed RCCBs (type S).

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

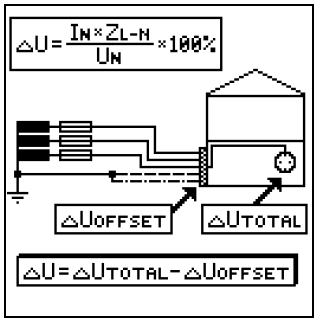
The test instruments make it possible to measure loop impedance in TN systems with type A, F and AC RCCBs (10, 30, 100, 300, 500 mA nominal residual current).



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.

Voltage Drop Measurement (at Z_{LN}) – ΔU Function

According to DIN VDE 100-600, voltage drop from the intersection of the distribution network and the consumer system to the point of connection of an electrical power consumer (electrical outlet or device connector terminals) should not exceed 4% of nominal line voltage.



Voltage drop calculation:

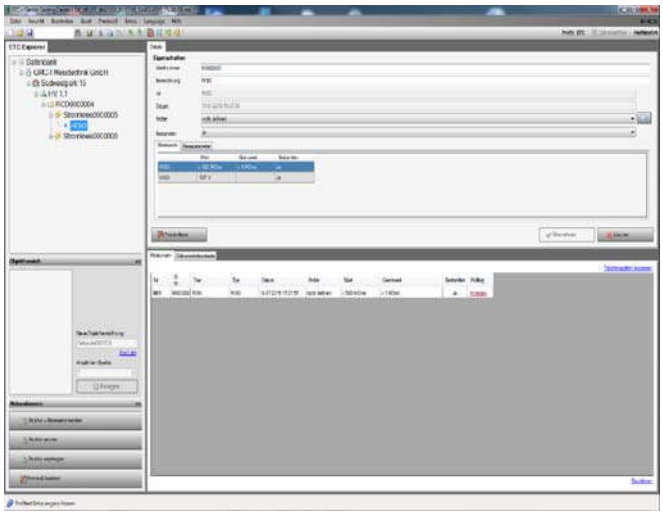
$\Delta U = Z_{L-N}$ • nominal current of the fuse

ΔU as % = $\Delta U / U_{L-N}$

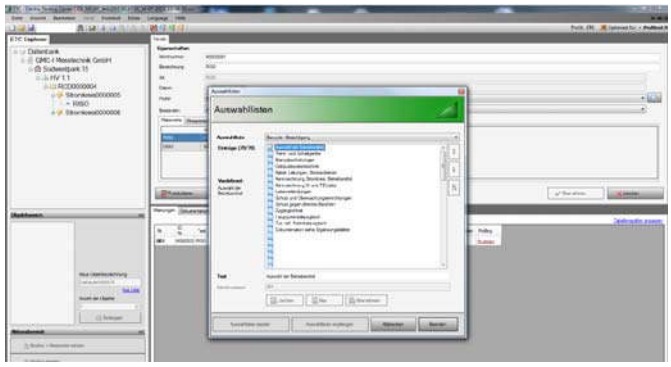
ETC User Software

(see page 16 for web addresses for downloading)

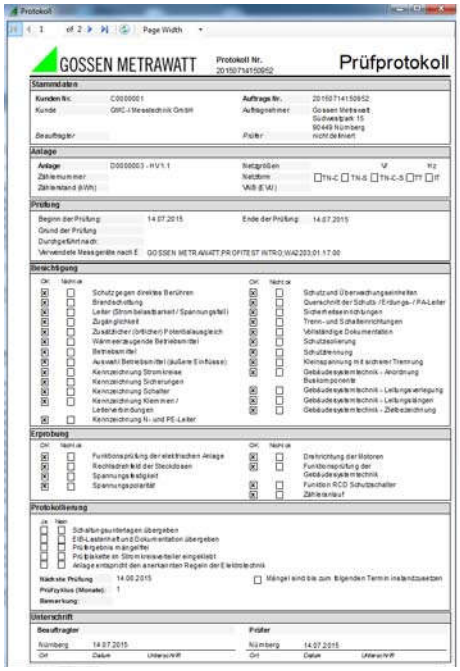
Creation of Individualized Test Structures at a PC and Transfer to the Test Instrument



Editing of Selection Lists



Report Generation



PROFITEST INTRO
Tester, IEC 60364-6 / DIN VDE 0100-600

Report Generating Accessories

See also separate ID systems data sheet regarding barcode scanners and printers, as well as RFID readers.

PROFISCAN ETC (ring binder with barcodes) – Z502G
Barcode scanner for connection to the RS-232 port at the tester – Z502F





Barcode and label printer for USB connection to a PC – Z721E

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 the RS-232 port at the tester – Z751G



The Z751G RFID reader is pre-programmed to scan the following RFD tags.

Order no.	Frequency	Standard	Type	Quantity per Package
Z751R	13.56 MHz	ISO 15693	Dia. approx. 22 mm, self-adhesive	500 pieces
Z751S	13.56 MHz	ISO 15693	Dia. approx. 30 x 2 mm with 3 mm hole	500 pieces
Z751T	13.56 MHz	ISO 15693	Pigeon ring, dia. approx. 10 mm	250 pieces

Power Supply Accessories

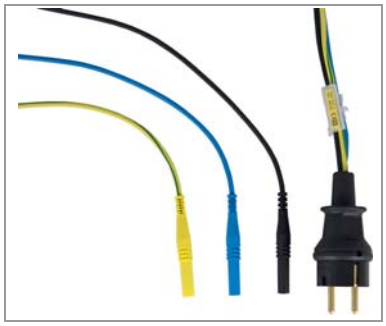
Z502H Master Battery Pack **Z502R Charger**



Accessory Plug Inserts and Adapters

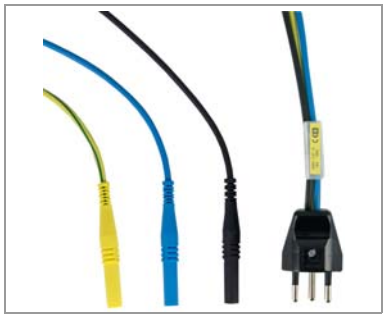
PRO-Schuko Measuring Adapter (Z503K)

Single-phase measuring adapter for the PROFITEST INTRO, earthing contact plugs to three 4 mm touch-guarded safety plugs (black, blue, yellow-green), 230 V AC, 300 V CAT III, 16 A



PRO-CH Measuring Adapter (Z503M)

Single-phase measuring adapter for the PROFITEST INTRO, earthing contact plugs to three 4 mm safety plugs (black, blue, yellow-green), 230 V AC, touch-guarded, measuring category: CAT III, 300 V, 16 A



PRO-GB Measuring Adapter (Z503N)

Single-phase measuring adapter for the PROFITEST INTRO, earthing contact plugs to three 4 mm safety plugs (black, blue, yellow-green), 230 V AC, touch-guarded, measuring category: CAT III, 300 V, 16 A



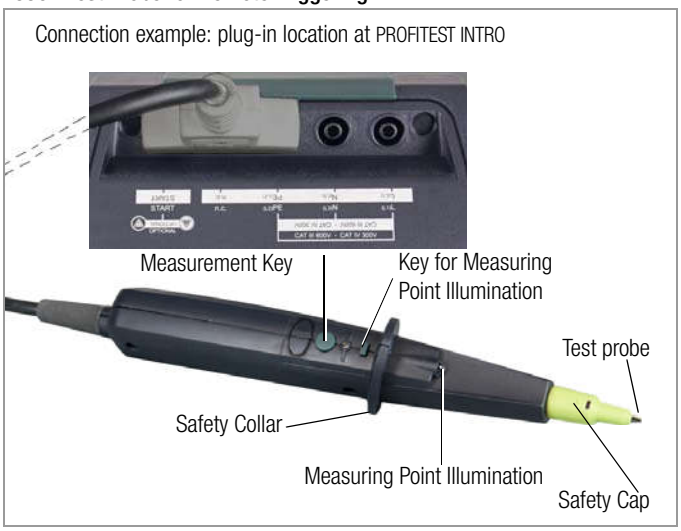
PRO-JUMPER

Touch-guarded short-circuit adapter for the PROFITEST INTRO for measuring cable compensation



D Z503J | CH Z503P | GB Z503R

Z550A Test Probe for Remote Triggering



Test Probes (length: 68 mm, diameter: 2.3 mm) Probe Set (Z503F)



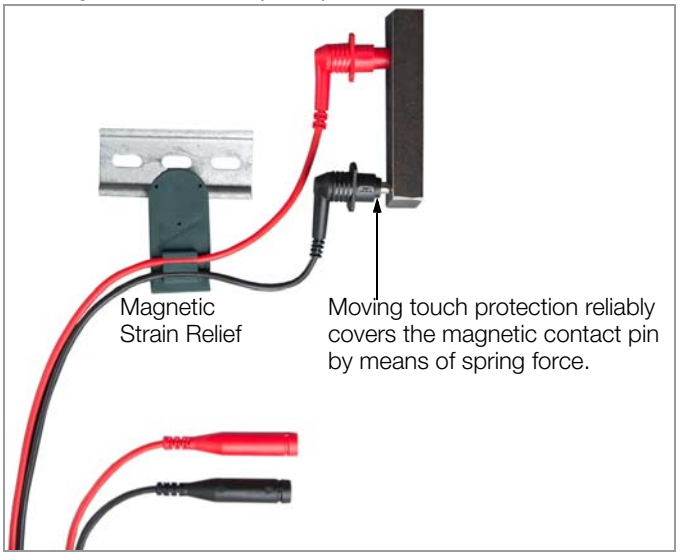
PRO-PE Clip – Flat Test Clip for Busbars (Z503G)



TELEARM 120 Telescoping Rod



Magnetic Measuring Probes (patented) with Magnetic Strain Relief (Z502U)



Floor Probe



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

3-Phase Current Adapter 5-pole



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 sockets with touch protection.

3-Phase Current Adapter 7-pole

A3-16 Shielded (Z513A)



A3-32 Shielded (Z513B)



A3-16 Shielded and A3-32 Shielded 3-phase adapters are used for trouble-free connection of test instruments to 7-pole CEE outlets. The two variants differ with regard to plug size, which corresponds respectively to 7-pole CEE outlets with current ratings of 16 and 32 A. Testing the effectiveness of safety measures is conducted via seven 4 mm sockets with touch protection.

PROFITEST INTRO
Tester, IEC 60364-6 / DIN VDE 0100-600

VARIO Plug Adapter Set



Three self-retaining test probes with touch protection for the connection of measurement cables with 4 mm banana plugs, or with touch 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.



ISO Calibrator 1

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

Accessories for Low-Resistance Measurement

TR25II Cable reel (Z503X)



25 m measurement cable coiled onto a plastic drum. Connection to the inside end of the cable is made possible with two sockets integrated into the drum. The other end is equipped with a banana plug.

TR50II Cable reel (Z503Y)



50 m measurement cable coiled onto a plastic drum. Connection to the inside end of the cable is made possible with two sockets integrated into the drum. The other end is equipped with a banana plug.

Accessory Cases and Pouches

SORTIMO L-BOXX GM (Z503D)



Plastic system case, outside dimensions:
W x H x D
450 x 255 x 355 mm

Z503O foam insert for test instrument and accessories must be ordered separately, see below.

Foam Insert for SORTIMO L-BOXX GM (Z503O)



METRISO-PROFITEST Ever-Ready Case (Z550C)



F2010 Universal Pouch (Z700G) for Instrument and Accessories



Order Information

Designation	Type	Article Number
Instrument for testing the effectiveness of safety measures in electrical systems per DIN VDE 0100-600 and VDE 0413, with integrated memory, RINS up to 1000 V, R LOW, Z L-PE, Z L-N, RE, as well as type A, AC, B, B+, F, EV and MI RCCBs See detailed overview of included features on page 2. See cope of delivery on page 6.	PROFITEST INTRO	M520T
Starter package PROFiTEST INTRO, consisting of PROFiTEST INTRO (M520T), PRO-Schuko-Measuring-Adapter (Z503K), PRO-Jumper (Z503J), Universal Carrying Pouch F2010 (Z700G), Battery Pack Master (Z502H) and charger (Z502R)	Starter package PROFITEST INTRO	M503A
Master package PROFiTEST INTRO, consisting of PROFiTEST INTRO (M520T), Test probe with remote release (Z550A), Vario-Plug-Set (Z500A), Set-Probes (Z503F), PRO-Schuko-Measuring-Adapter (Z503K), PRO-Jumper (Z503J), SORTIMO L-BOXX (Z503D), Foam SORTIMO L-BOXX (Z503O), Battery Pack Master (Z502H) and charger (Z502R)	Master package PROFITEST INTRO	M503B

Designation	Type	Article Number
Test Instrument Power Supply Accessories		
Compact Accu-Pack consisting of 8 rechargeable batteries 2000 mAh in two plastic caps for Profitest Master / INTRO, METRISO XTRA, SECULIFE IP	Compact Battery Pack	Z502H
Charger METRISO / PROFITEST / SECULIFE IP with 6,3 / 2,5 plug; with mains plug for EU, GB, automatic charging set for 4-8 NiCD/NiMH batterycells, wide range input 100 ... 240 V AC, output 4,8 ... 12 V	Charger METRISO / PROFITEST	Z502R
Accessory Plug Inserts and Adapters		
Country-specific single-phase measuring adapter for the PROFITEST INTRO, earthing contact plugs to three 4 mm safety plugs (black, blue, yellow-green), 230 V AC, touch-guarded, measuring category: CAT III, 300 V, 16 A	PRO-Schuko Measuring Adapter	Z503K
Country-specific single-phase, measuring adapter for the PROFiTEST INTRO, earthing contact plugs to three 4 mm safety plugs (black, blue, yellow-green), 230 V AC, touch-guarded, measuring category: CAT III, 300 V, 16 A	PRO-CH Measuring Adapter	Z503M
Country-specific single-phase measuring adapter for the PROFiTEST INTRO, earthing contact plugs to three 4 mm safety plugs (black, blue, yellow-green), 230 V AC, touch-guarded, measuring category: CAT III, 300 V, 16 A	PRO-GB Measuring Adapter	Z503N
Measurement cables (black, blue, yellow-green) with test probe and safety caps for 600 V CAT III / 300 V CAT IV, as well as alligator clips for 1000 V CAT III	KS-PROFiTEST INTRO	Z503L
Country-specific touch-guarded short-circuit adapter for the PROFITEST INTRO for measuring cable compensation	PRO-JUMPER	Z503J
Country-specific touch-guarded short-circuit adapter for the PROFITEST INTRO for measuring cable compensation	PRO-JUMPER-CH	Z503P
Country-specific touch-guarded short-circuit adapter for the PROFITEST INTRO for measuring cable compensation	PRO-JUMPER-GB	Z503R
Test probe with measurement key and an additional key for illuminating the measuring point, including shielded connector cable and test probe holder for the carrying strap	Test probe for remote triggering METRISO-PROFITEST	Z550A
Set of test probes (red/black) CAT III / 600 V, 1 A, test probe working range: 68 mm – diameter: 2.3 mm	Probe set	Z503F
Flat test clip for contacting busbars quickly and safely. Good contact at the front and back of the busbar thanks to time-tested contact blades. Rigid 4 mm socket in the handle, suitable for the insertion of spring-loaded 4 mm plugs with rigid insulating sleeve. 1000 V CAT IV/32 A	PRO-PE Clip	Z503G

PROFITEST INTRO
Tester, IEC 60364-6 / DIN VDE 0100-600

Designation	Type	Article Number
Telescoping rod for RLO and RISO measurement, CAT III 600 V / CAT IV 300 V, 1 A, retracted/extended 53,3 cm/120 cm, 190 g	TELEARM 120 [D]	Z505C
Telescoping rod for RLO and RISO measurement, CAT III 600 V / CAT IV 300 V, 1 A, retracted/extended 73,5 cm/180 cm, 250 g	TELEARM 180 [D]	Z505D
Case TELEARM for Telearm 120/ 180, 920 x 170 mm	Case TELEARM	Z505E
Triangular probe for floor measurements in accordance with EN 1081 and DIN VDE 0100	1081 Probe	GTZ3196000R0001
2 magnetic test probes with touch protection – set including magnetic holder, 5.5 mm measuring contact diameter, insulated, CAT III 1000 V / 4 A, temperature from -10 to 60 °C, holder power under standard conditions with flat head screws: 1200 g perpendicular to the contact surface; measuring instrument connection for PRO-A3-II via 4 mm sockets	Set 3–magnetic test probes	Z502Z
5-pole 3-phase adapter for 16 A CEE outlets	A3-16	GTZ3602000R0001
5-pole 3-phase adapter for 32 A CEE outlets	A3-32	GTZ3603000R0001
5-pole 3-phase adapter for 63 A CEE outlets	A3-63	GTZ3604000R0001
Three-phase adapter shielded, 7-pin for CEE socket outlets 16 A, CAT III 300 V – 10 A	A3-16 Shielded	Z513A
Three-phase adapter shielded, 7-pin for CEE socket outlets 32 A, CAT III 300 V – 10 A	A3-32 Shielded	Z513B
VARIO Plug Adapter Set	Z500A	Z500A
Calibration adapter for testing the accuracy of measuring instruments for insulation resistance and low-value resistors	ISO Calibrator 1	M662A
Accessories for Low-Resistance Measurement		
Cable reel for low-resistance and earth-resistance measurement, 25 m	TR25II	Z503X
Cable reel for low-resistance and earth-resistance measurement, 50 m	TR50II	Z503Y

Designation	Type	Article Number
Accessory Cases and Pouches		
Plastic System Case	SORTIMO L-BOXX GM	Z503D
Foam insert for SORTIMO L-BOXX GM with compartments for PROFITEST INTRO / METRISO INTRO, BASE, TECH, PRO, XTRA	Foam SORTIMO L-BOXX PROFITEST INTRO	Z503O
Ever-ready case for PROFITEST INTRO / METRISO INTRO / BASE / TECH / PRO / XTRA with external pocket for measurement cable	METRISO-PROFITEST Ever-Ready Case	Z550C
Universal carrying pouch with flexible compartments and display protection for PROFITEST INTRO, METRISO INTRO, BASE, TECH, PRO, XTRA, as well as SECUTEST BASE(10) and PRO	F2010	Z700G
Report Generating Accessories		
See separate data sheet for ID systems regarding barcode scanners and printers, as well as RFID readers.		
Barcode scanner for RS-232 connection with roughly 1 m coil cable	RS-232 Profiscanner for barcodes	Z502F
Ring binder with preprinted barcodes for scanning (German)	PROFISCAN ETC D	Z502G
RFID reader/writer	SCANBASE RFID	Z751G
PC Evaluation Software		
Additional information regarding software is available on the Internet at http://www.gossenmetrawatt.com (→ Software → Product specific Software → Software for Testers)		

[D] Data sheet available

For additional information regarding accessories please refer to: Measuring Instruments and Testers catalog

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