PROFITEST INTRO

Érintésvédelmi műszer DIN VDE 0100-600/IEC 60364-6 szerinti mérésekre

3-349-838-03
7/1.24

- RLO, ZL-PE, ZL-N, RINS, RE, ΔU, fázissorrend és feszültség mérése
- Eltoláskezelés: RL-PE / RN-PE / RL-N
- A mérési funkciók közvetlenül a forgókapcsolóval választhatók ki
- A, AC, F, B, B+, A-EV, B-MI, G/R, SRCD, PRCD-k tesztelése
- Az elektromos rendszerek jóváhagyott biztosítéktípusainak kijelzése
- Fázissorrend mérés (beleértve a legmagasabb vonal-vonal feszültséget is)
- Érintési feszültség mérése ujjérintkezővel
- RFID-olvasó vagy vonalkód-leolvasó csatlakoztatása
- Egyedi mért érték memória és memóriastruktúra beállítása
- Súgó funkciók kapcsolási rajzokkal
- Kétirányú adatcsere USB-n, DDS-CAD-en és epINSTROM-on keresztül
- Mérési kategória: CAT III 600 V / CAT IV 300 V
- Nemzetközi uzenet (12 nyelven)
- ETC szoftver (Electrical Testing Center) többek között a ZVEH szerinti fastruktúrák és dokumentációk létrehozásához.

CAT III 600 V
CAT IV 300 V

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 ef ectiveness of safety measures in electrical systems as required by IEC 60364-6 (DIN VDE 0100-600) and other country-specif c standards, and as specif ed 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 V to 500 V and frequencies of 16 Hz to 400 Hz.

Loop and Line Impedance Measurement

Measurement of loop and line impedance can be performed in the 65 V 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 specif ed 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.

Insulation Resistance Measurement
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 V/ 50 V 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 f ow 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 touch voltage
- Testing for N-PE reversal
- Testing of RCCBS with the following nominal current values: ½ × $I_{\Delta N}$, 1 × $I_{\Delta N}$, 2 × $I_{\Delta N}$, (5 × $I_{\Delta N}$ up to 100 mA)
- Testing of selective S, SRCDs, PRCDs (Schukomat, Sidos and others), types G/R, AC, A and F; types B, B+ and A-EV, B-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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Test Instrument per DIN VDE 0100-600/IEC 60364-6

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 dif cult 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 f nger contact (by pressing the START key). The PE symbol appears at the display if a potential dif erence 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. Automatic shutdown of the test instrument when the batteries or NiMH rechargeable batteries (option) are depleted. Charging of battery packs listed as accessories with micropro- cessor controlled charging circuit to assure safe charging.

Data Entry at the RS-232 Port

Data can be read in via a barcode reader 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 f rmware which can be updated via the USB port. A software update is executed during the course of recalibration by our service department.

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 PC Software

ETC of ers 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 def ned.
- 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

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+, A-EV, B-MI
Testing for N-PEreversal
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/Umeasuring method
Measurement of equipotential bonding R_{LO} Automatic polarity reversal
Insulation resistance R_{INS} Variable or rising test voltage (ramp)
Voltage U_{L-N} / U_{L-PE} / U_{N-PE} / f
Special Measurements Phase Sequence
Earth leakage resistance $R_{E(INS)}$ Voltage drop (ΔU)
Features
Selectable user interface language
D, GB, I, F, E, P, NL, S, N, FIN, CZ, PL
Memory (database for up to 50,000 objects) RS-232 port for RFID/barcode reader
USB port for data transmission
ETC User PC Software
Measuring category: CAT III 600 V / CAT IV 300 V
Factory calibration certif cate

[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.

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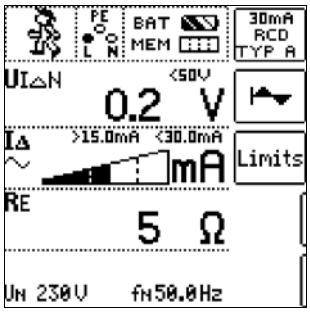
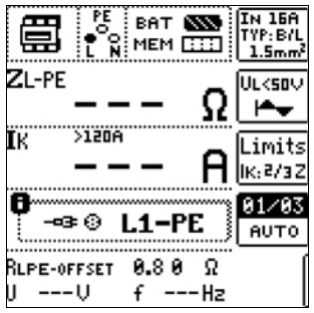
Sample Displays

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

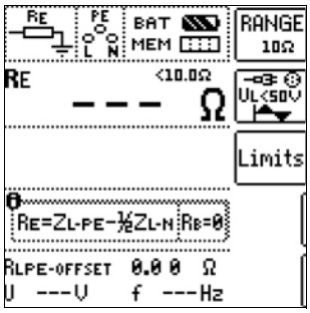
RCD Measurement Display



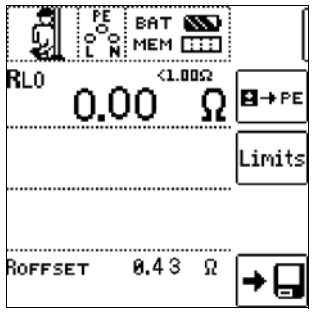
Loop Resistance Measurement Display



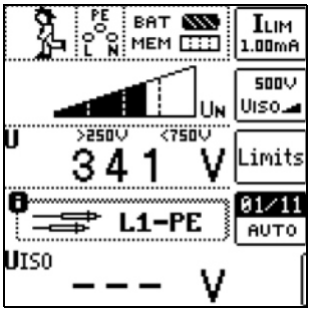
Earthing Resistance Measurement Display



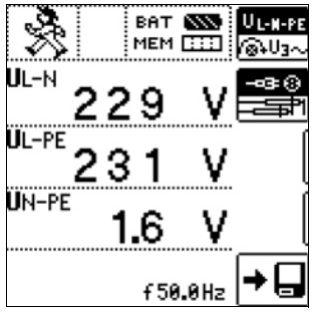
Low-Resistance Measurement Display



Insulation Measurement Display



Voltage Measurement Display



Applicable Regulations and Standards

IEC61010-1/ EN 61010-1/ VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements (IEC61010-1 + Cor. :2011) Part 31: Safety requirements for hand-held probe assemblies for electrical measurement and test (IEC 61010-031 + A1)
IEC 61557/ EN 61557/ VDE 0413	Part 1: General requirements (IEC 61557-1) Part 2: Insulation resistance (IEC 61557-2) Part 3: Loop resistance (IEC 61557-3) Part 4: Resistance of earth conductors, protective conductors and equipotential bonding conductors (IEC 61557-4) Part 5: Earthing resistance (IEC 61557-5) Part 6: Effectiveness of residual current devices (RCDs) in TT, TN and IT systems (IEC 61557-6) Part 7: Phase sequence (IEC 61557-7) 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)
EN 60529 VDE 0470, part 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 labo- ratory use – EMC requirements – Part 1: General requirements
IEC 60364-6 VDE 0100, part 600	Low-voltage electrical installations – Part 6: Tests
EN 50110-1 VDE 0105-1	Operation of electrical installations – Part 1: General requirements
IEC60364-7-710 VDE 0100, part 710	Low-voltage electrical installations – Requirements for special installations or locations – Part 710: Medical locations

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Test Instrument per DIN VDE 0100-600/IEC 60364-6

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 PROFITEST INTRO 2-pin	Connections PROFITEST INTRO 3-pin
U $I_{\Delta N}$ I_F	U_{L-PE} U_{N-PE}	0.0 V … 99.9 V 100 V to 600 V	0.1 V 1 V	5 MΩ	0.3 V … 600 V[1]	U_N = 120 V/230 V/ 400 V/ 500 V f_N = 16.7 Hz/50 Hz / 60 Hz / 200 Hz / 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 Hz … 420 Hz		±(0.2% rdg.+1d)	±(0.1% rdg.1d)			
	U_{3-}	0.0 V … 99.9 V 100 … 600 V	0.1 V 1 V		0.3 V … 600 V		±(3% rdg.+5d) ±(3% rdg.+1d)	±(2% rdg.+5d) ±(2% rdg.+1d)			•
	U_{L-N}	0.0 V … 99.9 V 100 … 600 V	0.1 V 1 V		1.0 V … 600 V[1]		±(3% rdg.+5d) ±(3% rdg.+1d)	±(2% rdg.+5d) ±(2% rdg.+1d)	•		•
	$U_{I\Delta N}$	0.0 V … 70.0 V	0.1 V	$0.3 \times I_{\Delta N}$	5 … 70 V	U_N = 120 V 230 V 400 V[2] f_N = 50 Hz / 60 Hz U_L = 25 V / 50 V $I_{\Delta N}$ = 6 mA 10 mA 30 mA 100 mA 300 mA 500 mA[2]	+13% rdg. + 1 d	+1 % rdg.–1 d … +9%rdg. + 1 d	•	•	
	R_E	10 Ω … 999 W 1.00 kΩ … 6.51 kW	1 Ω 0.01 kΩ	$I_{\Delta N}$ = 10 mA × 1.05	Calculated value from $R_E = U_{I\Delta N}/I_{\Delta N}$						
		3 Ω … 999 W 1 kΩ … 2.17 kW	1 Ω 0.01 kΩ	$I_{\Delta N}$ = 30 mA × 1.05							
		1Ω … 651 W	1Ω	$I_{\Delta N}$ = 100 mA × 1.05							
		0.3 Ω … 99.9 W 100 Ω … 217 W	0.1 Ω 1 Ω	$I_{\Delta N}$ = 300 mA × 1.05							
		0.2 Ω … 9.9 W 10 Ω … 130 W	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 mA … 130 mA	30 mA … 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		+10% rdg. + 1 d	+1 % rdg.–1 d … +9%rdg.+ 1d			
	U_A / U_L = 25 V	0.0 V … 50.0 V	0.1 V	Same as I_Δ	0 V … 50.0 V						
	t_A ($I_{\Delta N}$ × 1)	0 ms … 999 ms	1 ms	6 mA … 500 mA	0 ms … 999		±4 ms	±3 ms			
	t_A ($I_{\Delta N}$ × 2)	0 ms … 999 ms	1 ms	2 × 6 mA … 2 × 500 mA	0 ms … 999 ms						
	t_A ($I_{\Delta N}$ × 5)	0 ms … 40 ms	1 ms	5 × 6 mA … 5 × 300 mA	0 ms … 40 ms						
Z_{L-PE} Z_{L-N}	Z_{L-PE} (~) Z_{L-N}	0 mΩ … 999 mW 1.00 Ω … 9.99 W	1 mΩ 0.01 Ω 0.1 Ω	1.3 A_{AC} … 3.7 A_{AC} 0.5 A_{DC} / 1.25 A_{DC}	300 mΩ … 999 mW 1.00 Ω … 9.99 W	U_N = 120 V/230 V/ 400 V/ 500 V[1] f_N = 16.7 Hz / 50 Hz / 60 Hz	±(10%rdg. +30d)	±(5% rdg. +30d)	•	• Z_{L-PE}	
	Z_{L-PE} ⎓ + DC	0 mΩ … 999 mW 1.00 Ω … 9.99 W 10.0 Ω … 29.9 W			500 mΩ … 999 mW 1.00 Ω … 9.99 W	U_N = 120 V / 230 V f_N = 50 Hz / 60 Hz	±(18%rdg.+30d) ±(10% rdg.+3d)	±(6% rdg. +50d)			
	I_K (Z_{L-PE} ~ , Z_{L-PE} ⎓ + DC)	0.0 A … 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 V (108 V … 132 V) 230 V (196 V … 253 V) 400 V (340 V … 440 V) 500 V (450 V … 550 V)		Value calculated from Z_{L-PE}				
	Z_{L-PE} (15 mA)	0.5 Ω … 9.99 W	0.01 Ω	Display range only							
		10.0 Ω … 99.9 W 100 Ω … 999 W	0.1 Ω 1 Ω	15 mA_{AC}	10.0 Ω … 99.9 W 100 Ω … 999 W	U_N = 120 V / 230 V f_N = 16.7 Hz / 50 Hz / 60 Hz	±(10%rdg.+10d) ±(8%rdg.+2d)	±(2%rdg.+2d) ±(1%rdg.+1d)			
	I_K (15 mA)	100 … 999 mA 0.00 A … 9.99 A 10.0 A … 99.9 A	1 mA 0.01 A 0.1 A		Calculated value depends on U_N and Z_{L-PE}: $I_K = U_N/10\ \Omega$ … 1000 W		Value calculated from Z_{L-PE} (15 mA): $I_K = U_N/Z_{L-PE}$ (15 mA)				
R_E	R_E (~)	0 mΩ … 999 mW 1.00 Ω … 9.99 W 10.0 Ω … 99.9 W 100 Ω … 999 W 1 kΩ … 9.99 kW	1 mΩ 0.01 Ω 0.1 Ω 1 Ω 0.01 kΩ	1.3 A_{AC} … 3.7 A_{AC} 1.3 A_{AC} … 3.7 A_{AC} 400 mA_{AC} 40 mA_{AC} 4 mA_{AC}	300 mΩ … 999 mW 1.00 Ω … 9.99 W 10.0 Ω … 99.9 W 100 Ω … 999 W 1.00 kΩ … 9.99 kΩ	U_N = 120 V / 230 V U_N = 400 V[1] f_N = 50 Hz / 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)	•	•	
	R_E ⎓ +	0 Ω 999 mW 1.00 Ω … 9.99 W 10.0 Ω … 29.9 W	1 mΩ 0.01 Ω 0.1 Ω	1.3 A_{AC} … 3.7 A_{AC} 0.5 A_{DC} / 1.25 A_{DC}	500 mΩ … 999 mW 1.00 Ω … 9.99 W	U_N = 120 V / 230 V f_N = 50 Hz / 60 Hz	±(18%rdg.+30d) ±(10% rdg.+3d)	±(6% rdg. +50d) ±(4% rdg.+3d)			
	U_E	0 … 253 V	1 V	—	Calculated value						
Ub	Ub	Limit LED on		Reb = 100 kΩ	0 V … 440 V	U_N = 120 V / 230 V / 400 V f_N = 50 Hz / 60 Hz	45 V ± 15 V	45 V ± 5V	Finger contact		

Characteristic Values (continued)

Function	Measured Quantity	Display Range	Resolution	Input Impedance / Test Current	Measuring Range	Nominal Values	Measuring Uncertainty	Intrinsic Uncertainty	Connections PROFITEST INTRO	KS-PROFITEST INTRO[1] 2-pin	KS-PROFITEST INTRO 3-pin
R_{ISO}	R_{INS}, R_{EINS}	1 kΩ … 999 kW 1.00 MΩ … 9.99 MW 10.0 MΩ … 49.9 MW	1 kΩ 10 kΩ 100 kΩ	I_K = 1.5 mA	50 kΩ … 300 MW	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 kΩ … 999 kW 1.00 MΩ … 9.99 MW 10.0 MΩ … 99.9 MW	1 kΩ 10 kΩ 100 kΩ			U_N = 100 V I_N = 1 mA					
		1 kΩ … 999 kW 1.00 MΩ … 9.99 MW 10.0 MΩ … 99.9 MW 100 MΩ … 200 MW	1 kΩ 10 kΩ 100 kΩ 1 MΩ			U_N = 250 V I_N = 1 mA					
		1 kΩ … 999 kW 1.00 MΩ … 9.99 MW 10.0 MΩ … 99.9 MW 100 MΩ … 500 MW	1 kΩ 10 kΩ 100 kΩ 1 MΩ			U_N = 500 V U_N = 1000 V I_N = 1 mA					
	U	10 V_{DC} … 999 V_{DC} 1.00 kV… 1.19 kV	1 V 10		10 … 1.19 kV		±(3% rdg.+1d)	±(1.5% rdg. + 1 d)			
R_{LO}	R_{LO}	0.01 Ω … 9.99 W 10.0 Ω … 99.9 W 100 Ω … 99 W	10 mΩ 100 mΩ 1 Ω	$I_m \geq$ 200 mA $I_m <$ 200 mA	0.20 Ω … 4.00 Ω 4.01 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 × $I_{\Delta N}$ > 300 mA and 2 × $I_{\Delta N}$ > 300 mA and 5 × $I_{\Delta N}$ > 500 mA and I_f > 300 mA only up to $U_N \leq$ 230 V!
5× $I_{\Delta N}$ > 300 mA with U_N = 230 V only!

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

Reference Conditions

Line voltage	230 V ± 0.1 %
Line frequency	50 Hz ± 0.1 %
Measured qty. frequency	45 Hz … 65 Hz
Measured qty. waveform	Sine (deviation between RMS 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	16.7 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	
Line voltage	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 an optionally available battery pack (Z505U 2620 mAh)
Number of measurements (standard setup with illumination)	
– For R_{INS}	1 measurement – 25 s pause: approx. 1450 measurements with battery pack Z505U
– for R_{LO}	Auto polarity reversal / 1 Ω (1 measuring cycle) – 25 s pause: approx. 1600 measurements with battery pack Z505U
Battery test	Symbolic display of battery voltage BAT
Power Management	Display illumination can be switched of . The test instrument is switched of 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 of , or cannot be switched on.
Recharging socket	Inserted battery packs* can be charged directly with the Z502R charger by connecting it to the charging socket.
Charging time	Battery pack (optionally available, listed as accessory) with Z502R charger: approx. 2 hours**

* only optionally available battery packs, listed as accessories

** Maximum charging time with fully depleted 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 of by means of a thermostatic switch.)
R_{LO}	Electronic protection prevents switching on if interference voltage is present.
Protection with 2 f ne-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 G fuse-link ea. FF 3.15 A, 600 V 6.3 mm × 32 mm

Electromagnetic Compatibility (EMC)

Product standard EN 61326-1

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/rechargeable batteries/battery pack)
Relative humidity	max. 75%, (max. 85 % for storage/transport) no condensation allowed
Elevation	Max. 2000 m
Calibration interval	1 year (recommended)

Mechanical Design

Display	Multiple display with dot matrix 128 × 128 pixels backlit (transf ective), Dimensions: 65 mm × 65 mm
Dimensions	W × L × H = 225 mm ×130 mm ×140 mm
Weight	Approx. 1.5 kg with batteries/NiMH rechargeable NiMH batteries
Protection	Housing: IP 52 Measurement cables and connectors: IP40 per EN 60529

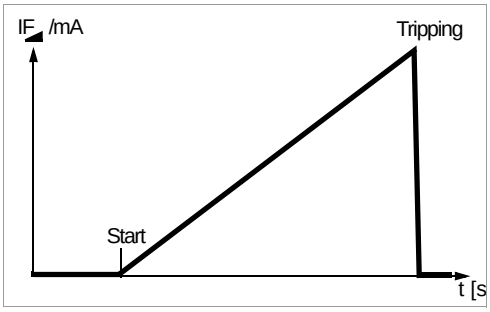
Data Interfaces

Type	USB (2.0; type B socket) for PC connection
Type	RS-232 for connecting barcode Reader or RFID scanner

Test Instrument per DIN VDE 0100-600/IEC 60364-6

Special Functions

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



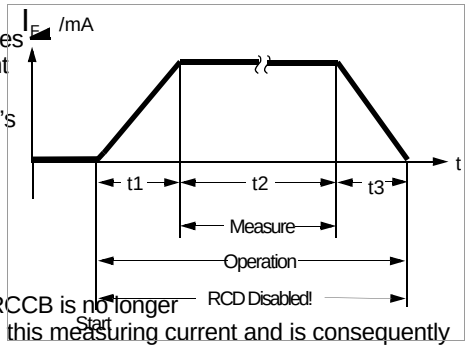
With the selector switch in the I_F position, slowly rising DC current f ows via N and PE. The momentary measured current value is continuously displayed. When the RCCB is tripped, the last measured current value is displayed. A greatly reduced rate of increase is used for delayed RCCBs (type S).

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 f ows via N and PE. Time to trip is measured for the RCCB and displayed.

Loop Resistance Measurement with Suppression of RCD Tripping

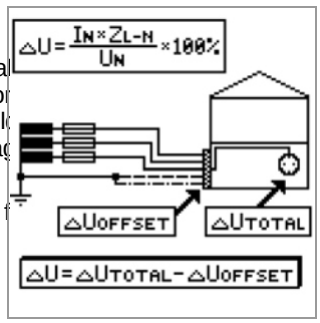
The test instruments make it possible to measure loop impedance in TN systems with type A, F and AC RCCBs (10 mA/30 mA/100 mA/300 mA/500 mA nominal residual current).



The respective test instrument gener- ates 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, part 600, voltage drop from the intersection of the distribution network and the consumer system to the point of connection of an electri- cal power consumer (electrical outlet or device connector termi- nals) should not exceed 4% of nominal line voltage.



Voltage drop calculation:

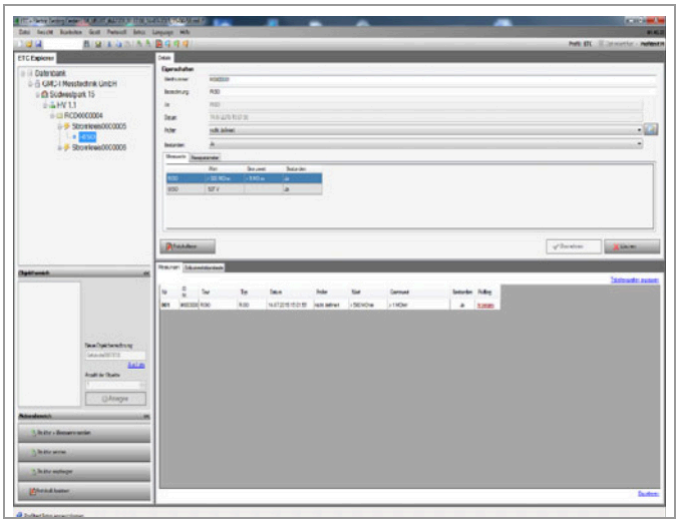
$\Delta U = Z_{L-N} \times$ nominal current of the f

ΔU as % = $\Delta U / U_{L-N}$

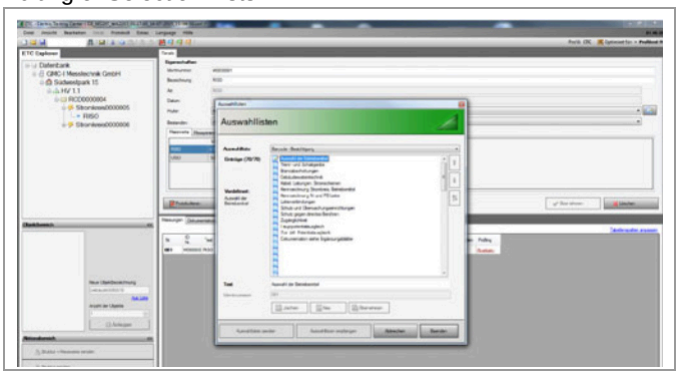
ETC User PC Software

(Download from our homepage at: https://www.gossenmetrawatt.de/en/products/software-and-accesso- ries/software/product-specif c-software/test-technology/etc/)

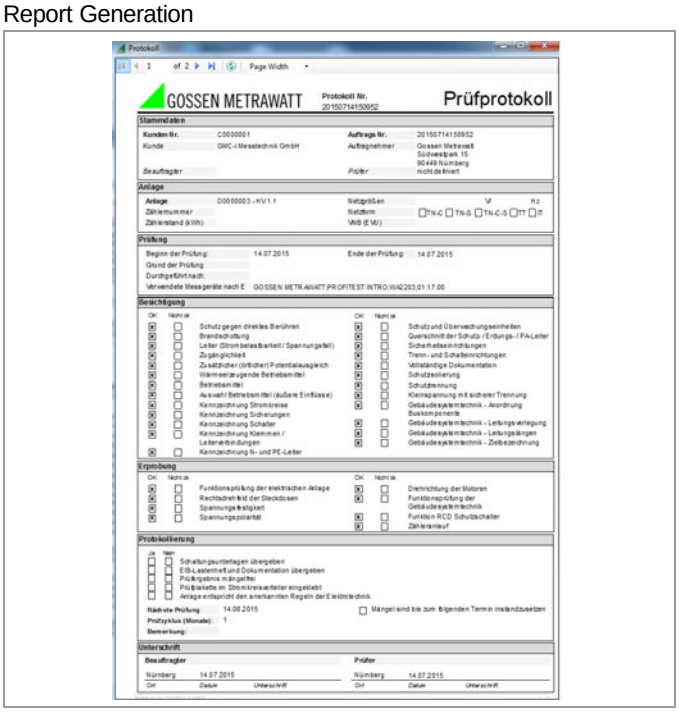
Creation of Individualized Test Structures at a PC and Transfer to the Test Instrument



Editing of Selection Lists



Report Generation



Accessories

Report Generating Accessories

See also separate “ID systems” data sheet.

Barcode reader for connection to the RS-232 port at the test instrument (Z502F) / PROFISCAN ETC (ring binder with barcodes) (Z502G)

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

SCANBASE RFID Reader for Connection to the RS-232 Port at the Tester (Z751G)

The SCANBASE RFID is used to identify tools and equip- ment: The RFID reader scans the code and forwards it to our test instruments in order to unequivocally assign the measured values and test results to a c

The Z751G RFID reader is pre-programmed to scan the fol- lowir

Orde r no.	Frequency	Standard	Layout	Quantity per Package
Z751R	13.56 MHz	ISO15693	Dia. approx. 22 mm, self-adhesive	500 pieces
Z751S	13.56 MHz	ISO15693	Dia. approx. 30 × 2 mm with 3mm hole	500 pieces
Z751T	13.56 MHz	ISO15693	Pigeon ring, dia. approx. 10mm	250 pieces

Power Supply Accessories

Battery pack (Z505U 2620 mAH)

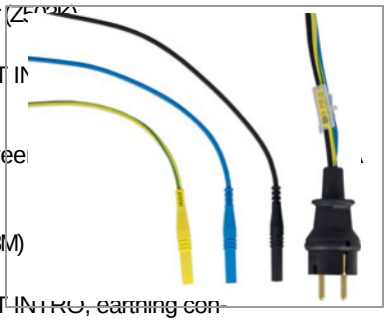
Charger METRISO/ PROFITEST (Z502R)

With Angled / Barrel Plug

Accessory Plug Inserts and Adapters

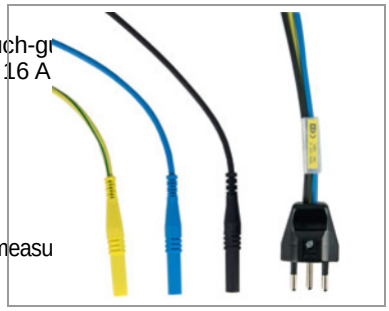
PRO-Schuko Measuring Adapter (Z

Single-phase measuring adapter for the PROFIT- EST IN tact plugs to three 4 mm touch-guarded safety plugs (black, blue, yellow- gree



PRO-CH Measuring Adapter (Z503M)

Single-phase measuring adapter for the PROFIT- EST INTRO, earthing con- tact plugs to three 4 mm safety plugs (black, blue, yellow-green), 230 V AC, touch-gr ing category: CAT III, 300 V, 16 A



PRO-JUMPER

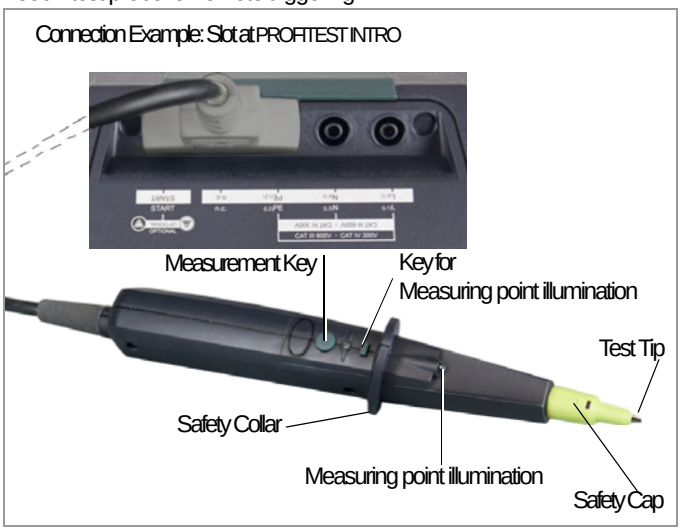
Touch-guarded short-circuit adapter for the PROFITEST INTRO for measu

D
Z503J
Z503P

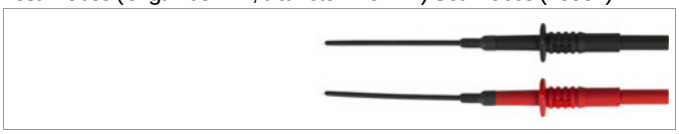
CH

Test Instrument per DIN VDE 0100-600/IEC 60364-6

Z550A test probe for remote triggering



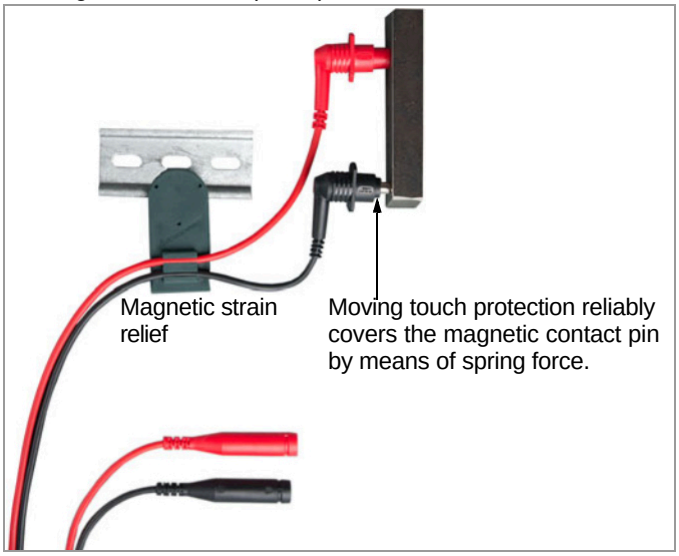
Test Probes (length: 68 mm, diameter: 2.3 mm)-Set Probes (Z503F)



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

Telescoping Rod TELEARM 120 (Z505C)

Magnetic Measuring Probes (patented)
with Magnetic Strain Relief (Z502Z)



1081 Floor Probe

The 1081 f oor probe makes it possible to measure the resistance of insulating f oors in accordance with IEC 60364-6 and EN 1081.

5-pole 3-phase adapter

3-phase adapters

- A3-16 (GTZ3602000R0001)
- A3-32 (GTZ3603000R0001)
- A3-63 (GTZ3604000R0001)

permit trouble-free connection of test instruments to 5-pole CEE outlets The three variants dif er 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 ef ectiveness of safety measures is conducted via f ve 4 mm sockets with touch protection.

7-pole 3-phase adapter

A3-16 Shielded (Z513A)

A3-32 Shielded (Z513B)

Shielded A3-16 and A3-32 three-phase adapters are used for trouble-free connection of test instruments to 7-pole CEE outlets.

The two variants dif er with regard to plug size, which corresponds respectively to 7-pole CEE outlets with current ratings of 16 and 32 A.

Testing the ef ectiveness of safety measures is conducted via seven 4 mm sockets with touch protection.

Test Instrument per DIN VDE 0100-600/IEC 60364-6

VARIO Plug Adapter Set (Z500A)

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 or Perilex sockets etc.
For example, the test probes also f t the square PE jacks on Perilex sockets. Maximum allowable operating voltage: 600 V per IEC 61010.

ISOCalibrator 1 (M662A)

Calibration adapter for rapid, ef - cient 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 reel. Connection to the inside end of the cable is made possible with two sockets integrated into the reel. The other end is equipped with a banana plug.

TR50II Cable Reel (Z503Y)

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

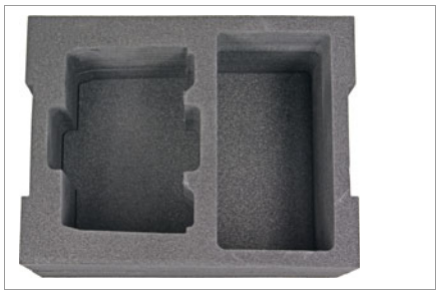
Accessory Cases and Pouches

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)

Test Instrument per DIN VDE 0100-600/IEC 60364-6

F2010 Universal Carrying Pouch (Z700G) for Measuring Instrument and Accessories

Scope of Delivery

1 Test instrument
1 Shoulder strap
1 Battery pack (8 batteries + holder)
1 KS-PROFiTEST INTRO (Z503L)
1 USB cable
1 Factory calibration certif cate
1 Condensed operating instructions
– 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)

Order Information

Test Instrument and Sets

When placing your order, you have the choice between the single test instrument with standard scope of delivery (see above) or instrument sets consisting of test instrument with standard scope of delivery and extended accessories.

Designation	Description / Scope of Delivery	Article Number
PROFITEST INTRO	Test instrument with standard scope of delivery	M520T
Starter Package PROFITESTINTRO	Test instrument with standard scope of delivery and – PRO-Schuko Measuring Adapter (Z503K) – PRO-Jumper (Z503J) – F2010 Universal Carrying Pouch (Z700G) – Battery pack (Z505U) – METRISO/PROFITEST Charger (Z502R)	M503A
Master Package PROFITESTINTRO	Test instrument with standard scope of delivery and – test probe with remote triggering (Z550A) – VARIO Plug Adapter Set (Z500A) – Probe Set (Z503F) – PRO-Schuko Measuring Adapter (Z503K) – PRO-Jumper (Z503J) – SORTIMO L-BOXX (Z503D) – Foam SORTIMO L-BOXX (Z503O) – Battery pack (Z505U) – METRISO/PROFITEST Charger (Z502R)	M503B

Power Supply Accessories

Designation	Description / Scope of Delivery	Article Number
Battery pack	8 rechargeable NiMH batteries (2620 mAh), sealed with two plastic caps to form one battery pack	Z505U
Charger METRISO/PROFITEST	– Broad-range charger for charging the battery pack inserted in the test instru- ment (Battery pack Z505U) Input: 100… 240 V AC; Output: 16.5 VDC, 1 A	Z502R

Accessory Plug – Inserts and Adapters

Designation	Description / Scope of Delivery	Article Number
PRO-Schuko measuring adapter	Country-specific, single-phase measuring adapter for the PROFITEST INTRO, earth-ing contact plug to three 4 mm safety plugs (black, blue, yellow-green), 230 VAC, touch-guarded, measuring category: CAT III, 300 V, 16 A	Z503K
PRO-CH measuring adapter	Country-specific, single-phase measuring adapter for PROFITEST INTRO, earthing contact plug to three 4 mm safety plugs (black, blue, yellow-green), 230 VAC, touch-guarded, measuring category CAT III, 300 V, 16 A	Z503M
KS-PROFiTEST INTRO	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	Z503L
PRO-JUMPER	Country-specific, touch-guarded short-circuit adapter for the PROFITEST INTRO for measurement cable compensation	Z503J

PROFITEST INTRO

Test Instrument per DIN VDE 0100-600/IEC 60364-6

Designation	Description / Scope of Delivery	Article Number
PRO-JUMPER-CH	Country-specific, touch-guarded short-circuit adapter for the PROFITEST INTRO for measurement cable compensation	Z503P
Test Tip for remote triggering METRISO-PROFITEST	Test probe with measurement key and an additional key for illuminating the measuring point, including shielded connector cable and test probe holder for the carry- ing strap	Z550A
Probe set	Set of test probes (red/black) CAT III 600 V, 1 A, test probe working range: 68 mm – diameter: 2.3 mm	Z503F
PRO-PEClip	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	Z503G
TELEARM 120[D)]	Telescoping rod for RLO and RINS measurements, CAT III 600 V / CAT IV 300 V, 1 A, retracted: 53.5 cm, extended: 120 cm, 190 g	Z505C
TELEARM 180[D)]	Telescoping rod for RLO and RINS measurements, CAT III 600 V / CAT IV 300 V, 1 A, retracted: 73.5 cm, extended: 180 cm, 250 g	Z505D
TELEARM case	Pouch for TELEARM 120/180 L × W: 920 × 170 mm	Z505E
Probe 1081	Triangular probe for floor measurements in accordance with EN 1081 and DIN VDE 0100	GTZ3196000R 0001
Set 3–magnetic test probes	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… +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	Z502Z
A3-16	5-pole 3-phase adapter for 16 A CEE outlets	GTZ3602000R 0001
A3-32	5-pole 3-phase adapter for 32 A CEE outlets	GTZ3603000R 0001
A3-63	5-pole 3-phase adapter for 63 A CEE outlets	GTZ3604000R 0001
A3-16 Shielded	7-pole 3-phase adapter shielded for 16 A CEE outlets, CAT III 300 V, 10 A	Z513A
A3-32 Shielded	7-pole 3-phase adapter shielded for 32 A CEE outlets, CAT III 300 V, 10 A	Z513B
Z500A	VARIO Plug Adapter Set	Z500A
ISOCalibrator 1	Calibration adapter for testing the accu- racy of measuring instruments for insula- tion resistance and low-value resistance	M662A

Accessories – Low-Resistance Measurement

Designation	Description / Scope of Delivery	Article Number
TR25II	Cable reel with 25 m measurement cable for low-resistance and earth measurements	Z503X
TR50II	Cable reel with 50 m measurement cable for low-resistance and earth measurements	Z503Y

Accessory – Cases and Pouches

Designation	Description / Scope of Delivery	Article Number
SORTIMO L-BOXX GM	Plastic system case	Z503D
Foam SORTIMO L-BOXX PROFITESTINTRO	Foam insert for SORTIMO L-BOXX GM with compartments for PROFITEST INTRO, METRISO INTRO/BASE/TECH/PRO/XTRA	Z503O
METRISO-PROFITEST Ever-Ready Case	Ever-ready case with external pocket for measurement cables for PROFITEST INTRO, METRISO INTRO/BASE/TECH/PRO/XTRA	Z550C
F2010	Large universal carrying pouch with flexible compartments and display protection, suitable for many different measuring and test instruments, 380 × 230 × 270 mm	Z700G

Report Generating Accessories

Designation	Description / Scope of Delivery	Article Number
Barcode Profiscanner RS 232	Barcode reader/scanner with laser, for test instruments with RS-232 port, with coiled cable, approx. 1 m	Z502F
Profiscan Brochure D	Ring binder with preprinted barcodes for scanning (German)	Z502G
SCANBASE RFID	RFID reader/writer	Z751G

Accessories – PC Software

Designation	Description / Scope of Delivery	Article Number
ETC	Report generating software with options for data acquisition and management as well as for the generation of test reports (scope of functions depends on the test instrument), for many different measuring and test instruments	ETC

For further information please refer to:

- in our Measuring Instruments and Testers catalog
- on the Internet at www.gossenmetrawatt.com

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