GOSSEN METRAWATT

SECUTEST BASE / PRO and SECULIFE ST BASE

Test Instruments for Measuring Electrical Safety of Devices per VDE 0701-0702, IEC 62353 and IEC 60974-43

3-349-753-03
16/12.16

- 8 preconfigured test sequences for quickly testing simple operating equipment
- One universal, adjustable test sequence
- One test sequence executed with individual measurements
- Suitable for use by instructed persons
- Enormous data maintenance and storage concept for automated test sequences and measurements for up to 50,000 data records
- Fast access to mesurement and test functions with double rotary switch, direct selection keys and softkeys
- High-resolution, brilliant 4.3" TFT color display
- Unique multiple measurement allows convenient recording of several measuring points.
- Automatic DUT connection and protection class detection
- Compact, impact resistant housing with integrated rubber protector
- Comprehensive, legally secure preparation of test reports
- Modern interfaces:
  for data entry (two USB A) and data exchange (one USB B)
- Extensive setting options for international use
  (language, keyboard, character set, date, time)
- Measurement of PRCDs of PRCD standard type, SPE-PRCD, PRCD-S and PRCD-K within test sequences in accordance with DIN VDE_0701-0702-PRCD.

MADE IN GERMANY

DAkkS German Accreditation Body D-K-15080-01-01
DAkkS Calibration Certificate as Standard Feature

optional

i-NOVO AWARDS 2015 DESIGN

product design award 2014

Additional Functions SECUTEST PRO

- **Remote control** via PC software possible (new as of version 1.6.0)
- **Additional database elements** for property, building, floor, room for a better structuring of data and additional fields for department and cost center
- **Multi-print** – read-out of all test reports which are available for a device under test with 1 finger tip (at a connected Z721S thermal printer)
- Design **user-created report templates** with „SequenceDesigner“ software (free available from myGMC)
- **RFID transponder**, read/write (Z751R,S,T), with SCANBASE RFID Z751E (UID or memory depending on how the reader is programmed)
- XML **data export** to a USB stick
- ETC or USB stick **data import** of all important data into the tester
- Design **user-created sequences** with “Report Designer” software (free available from myGMC)

Added Feature SECULIFE ST BASE

SECULIFE ST BASE corresponds to the range of functions offered by **SECUTEST PRO**, but is additionally endowed with antimicrobial properties. This is to curb the growth of germs, counteract microbial colonization or kill microorganisms.

Standards for the Use of SECUTEST BASE/PRO and SECULIFE ST BASE Test Instruments

	Testing after Repairs / Periodic Testing		
DUTs to be tested in accordance with the following standards	DIN VDE 0701-0702	IEC 62353 DIN EN 62353 (VDE 0751-1)	IEC 60974-4 DIN EN 60974-4 VDE 0544-4
Electric devices: e. g. Work devices Mains operated electronic devices Hand-held electric tools Extension cords Household appliances Data processing devices	•		
Electrical medical devices		•	
Arc welding units	•		•

Overview of Differences in Features

Feature	SECUTEST BASE	SECUTEST BASE10	SECUTEST PRO SECULIFE ST BASE
10 A RPE test current		•	•
Touch keyboard			•
2nd test probe			•
Voltage measuring inputs *			•
Database expansion			•

* for voltage measurements or connecting a WZ12C current clamp or AT3 adapter as well as for temperature measurement via RTD

SECU**TEST** BASE / PRO and SECU**LIFE ST** BASE
Test Instruments for Measuring Electrical Safety of Devices

Overview of Features Included with SECUTEST BASE and SECUTEST PRO Test Instruments

Switch Setting	Measuring Function, Test Current/Voltage		Measurement Type Connection Type
Single measurements, *rotary switch level: green*			
RPE	R_{PE}	**Protective conductor resistance**	PE(TS) - P1 passive PE(TS) - P1 active PE(Mains) - P1 PE(Mains) - P1 Clamp [2] P1 - P2 [3]
	I	Test current (200 mA) **SECUTEST BASE10/PRO**: und **SECULIFE ST BASE** 10 A [1] (Feature G01)	
RISO	R_{ISO}	**Insulation resistance**	LN(TS) - PE(TS) LN(TS) - P1 P1 - P2 [3] PE(Mains) - P1 PE(TS) - P1 LN(TS) - P1//PE(TS)
	U_{ISO}	Test voltage	
IPE	$I_{PE\simeq}$	**Protective conductor current, RMS value**	Direct Differential Alternative AT3-Adapter [2] Clamp [2]
	$I_{PE\sim}$	AC component	
	$I_{PE=}$	DC component	
	U_{LN}	Test voltage	
IB	$I_{T\simeq}$	**Touch current, RMS value**	Direct Differential Alternative (P1) Permanent connection Alternative (P1–P2)
	$I_{T\sim}$	AC component	
	$I_{T=}$	DC component	
	U_{LN}	Test voltage	
IG	$I_{E\simeq}$	**Device leakage current, RMS value**	Direct Differential Alternative AT3-Adapter [2] Clamp [2]
	$I_{E\sim}$	AC component	
	$I_{E=}$	DC component	
	U_{LN}	Test voltage	
IA	$I_{A\simeq}$	**Leakage current from the application part, RMS value**	Direct (P1) Alternative (P1) Permanent conn. (P1)
	U_A	Test voltage	
IP	$I_{P\simeq}$	**Patient leakage current, RMS value**	Direct (P1) Permanent conn. (P1)
	$I_{P\sim}$	AC component	
	$I_{P=}$	DC component	
	U_{LN}	Test voltage	
U	$U_{\simeq}$	**Probe voltage, RMS**	PE - P1 PE - P1 (with mains*) * polarity preset
	$U_{\sim}$	Alternating voltage component	
	$U_{=}$	Direct voltage component	
	$U_{\simeq}$	**Measurement Voltage RMS** [2]	V – COM V – COM (with mains)
	$U_{\sim}$	Alternating voltage component [2]	
	$U_{=}$	Direct voltage component [2]	
ta [4]	t_B	PRCD time to trip for 30 mA PRCDs	
	U_{LN}	Line voltage at the test socket	
P	**Function test at the test socket**		
	I	Current between L and N	Polarity preset
	U	Voltage between L and N	
	f	Frequency	
	P	Active power	
	S	Apparent power	
	PF	Power factor	
Probe measuring functions			
EL1	Extension cords with adapter: continuity, short-circuit, polarity (wire reversal [5])		EL1 adapter AT3-IIIE adapter VL2E adapter
EXTRA	Reserved for expansion during the course of software updates		
	°C	Temperature measurement [2)] with Pt100 / Pt1000	V – COM

[1] 10 A R_{PE} measurements are only possible with line voltages of 115/230 V and line frequencies of 50/60 Hz.
[2] Voltage mesurement inputs only with **SECUTEST PRO** (or device with Feature I01) and **SECULIFE ST BASE**
[3] Terminal for 2nd test probe for 2-pole measurement only with **SECUTEST PRO** (or device with Feature H01) and **SECULIFE ST BASE**
[4] Measurement of time to trip not possible in IT systems
[5] No checking for reversed polarity takes place when the EL1 adapter is used.

Key

Alternative	= alternative measurement (equivalent leakage current measurement)
Differential	= differential current measurement
Direct	= direct measurement
LN(TS)	= short-circuited conductors L and N of test socket
P1	= measurement with test probe P1
P1-P2	= 2-pole measurement with test probe P1 & P2
PE-P1	= measurement between PE and test probe P1
PE(TS)	= protective conductor of test socket
PE(Mains)	= protective conductor of mains terminal

Switch Setting	Standard	Measurement Type, Connection Type
Automated test sequences, *rotary switch level: orange*		
Preconfigured (freely configurable) test sequences – Delivery Status		
A1	**VDE 0701-0702**	Passive measuring method, test socket
A2	**VDE 0701-0702**	Active measurement type, test socket
A3	**VDE 0701-0702-IT**	Parameters configuration for EDP (active)
A4	**IEC 62353** (VDE 0751)	Passive measurement type
A5	**IEC 62353** (VDE 0751)	Active measurement type
A6	**IEC 60974-4**	Connection type: test socket
A7	**IEC 60974-4**	Connection type: AT16-DI/AT32-DI
A8	**VDE 0701-0702**	VDE 0701-0702, measurement type Extension Cord test (RPE, RISO), EL1/VL2E/AT3-IIIE adapter
AUTO	**VDE 0701-0702**	Active measurement type, test socket

Display with Selectable Language

The display panel consists of a backlit, color multi-display at which menus, setting options, measurement results, instructions and error messages, as well schematic and wiring diagrams appear.

The display and user prompting can be set to the desired language depending on the country in which the test instrument is used.

Data Entry

Data can be entered, for example, via a barcode reader connected to the USB port, a RFID scanner, a USB keyboard, or via the softkey keyboard when it appears at the display.

The touch screen of **SECUTEST PRO** (or devices with Feature E01) and **SECULIFE ST BASE** allows for the convenient entry of data and comments while menu control is still based on softkeys.

Creating a Database

A complete test structure with data regarding customers, buildings*, floors*, rooms* and test objects can be created in the test instrument. This structure makes it possible to assign single measurements or test sequences to devices under test belonging to various customers. Manual single measurements can be grouped together into a so-called “manual sequence”.

The **SECUTEST PRO** and **SECULIFE ST BASE** test instruments and those instruments with database expansion (Feature KB01) enable the user to prepare a test structure by means of the ETC (Electric Testing Center) software at the PC for subsequent transmission to the test instrument.

* only with **SECUTEST PRO** or with database expansion (Feature KB01) and **SECULIFE ST BASE**

Data Interfaces

Structures set up in, and measurement data saved to the test instrument can be imported to ETC report generating software via the USB slave port. Data can then be archived at the PC, comments can be added with the software and reports can be generated.

The following input and output devices can be connected to the two integrated USB master ports:

- An external keyboard and a barcode reader
- USB stick for data backup
- A printer

Software Update

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

Report Generating Functions

All of the values required for approval reports or device logbooks for electrical equipment (e.g. per ZVEH) can be measured with this instrument. The measured data can be documented and archived thanks to the measurement and test report that can be printed with a thermal printer connected to the USB port, or stored to a PC.

Automatic Detection of Measuring Point Changes

During protective conductor measurement, the test instrument recognizes whether or not the test probe is in contact with the protective conductor, which is indicated by means of two different acoustic signals. This function is very useful where several protective conductor connections need to be tested.

Mains Connection Analysis

Line voltage and frequency are measured and compared with the data specified in the setup menu. Momentary voltage or nominal voltage in accordance with the standard is required, for instance in order to extrapolate measured values for the leakage current measurement.

Automatic Detection of Mains Connection Errors

The device automatically recognizes mains connection errors if the conditions in the following table have been fulfilled. The user is informed of the type of error, and all measuring functions are disabled in the event of danger.

Type of Connection Error	Message	Condition	Measurements
Voltage at protective conductor PE to finger contact (**START**/STOP key)	Display at the instrument	Press **START**/STOP button U > 25 V Button → PE: < 1 MΩ [2]	All measurements disabled
Protective conductor PE & phase conductor L reversed and/or neutral conductor N interrupted		Voltage at PE > 100 V	Impossible (no supply power)
Line voltage < 180 V / < 90 V (depending on mains)		U_{L-N} < 180 V U_{L-N} < 90 V	Possible under certain circumstances [1]
Test on IT/TN system	Display at the instrument	Connection N → PE > 50 kΩ	Possible under certain circumstances

[1] 10 A R_{PE} measurements are only possible with line voltages of 115/230 V and line frequencies of 50/60 Hz.

[2] if the test person is highly insulated, the following error message may appear: „Interference voltage at PE of mains connection“

Analysis of DUT Connection and Condition

Depending on the measurement or how the DUT is connected, the following states are checked and displayed before measurement is begun.

Control Function		Condition
Short-circuit test	Short-circuit / starting current	R ≤ 2,5 Ω **
	No short-circuit (AC test)	R > 2,5 Ω **
Open-Circuit Voltage U_0 4.3 V, Short-Circuit Current I_K < 250 mA		
On test	On (passive DUT)	R < 250 kΩ
	Off (active DUT)	R > 300 kΩ
Open-Circuit Voltage U_0 230 V AC, Short-Circuit Current I_K < 1,5 mA		
Special test	No probe	R > 2 MΩ
	Probe detected	R < 500 kΩ
Protection class detection (only for country-specific (earth-contact) plug variant)*		
	Protective conductor exists: PC I	R < 1 Ω
	No protective conductor: PC II	R > 10 Ω
Safety shutdown		
Triggered at following residual current value (selectable)		> 10 mA / > 30 mA
Triggered at following residual current values (selectable)		
	During leakage current measurement	> 10 mA
	During protective conductor resistance meas.	> 250 mA
Connection test (only for country-specific (earth-contact) plug variant)*		
Checks whether the DUT is connected to the test socket.		
	Power line of DUT exists	R < 1 Ω
	No power line of DUT	R > 10 Ω
Insulation test		
	DUT set up in a well-insulated fashion	R ≥ 500 kΩ
	DUT set up in a poorly insulated fashion	R < 500 kΩ
PELine – PETestsocket: Open-Circuit Voltage U_0 500 V DC, I_K < 2 mA		
Overcurrent protection (shutdown)		
Shutdown in the event of a continuous flow of current via the test socket:		I > 16.5 A
Our test instruments SECUTEST BASE(10), PRO and **SECULIFE ST BASE** allow for the active testing of devices with a nominal current (load current) of up to 16 A. The test socket of the respective test instrument is equipped with 16 A fuses and the switching capacity of the internal relays also amounts to 16 A. Starting currents of up to 30 A are permissible. For devices under test which are expected to feature a starting current of more than 30 A, we strongly recommend the application of a test adapter for higher starting currents: e. g. test adapter of the AT3 series		

* applies to **M7050** with feature B00, B09 and B10

** applies as from version 1.7.0;
previous condition ≤ 1.5 Ω or > 1.5 Ω, respectively

Application

Regulations and standards in accordance with which the test instrument is manufactured and tested:

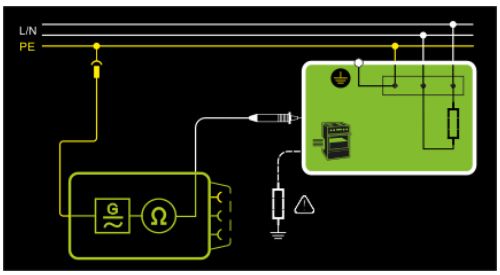
DIN EN 61010-1:2011 VDE 0411-1:2011	Safety requirements for electrical equipment for measurement, control and laboratory use – General requirements
DIN VDE 0404, part 1: 2002	Test and measuring equipment for testing the electrical safety of electrical devices – General requirements
DIN VDE 0404, part 2: 2002	– Equipment for testing after repairs and modifications, or periodic testing
DIN VDE 0404, part 3: 2005	– Equipment for periodic tests and tests prior to commissioning medical electrical devices or systems
DIN 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 laboratory use – EMC requirements – Part 1: General requirements
IEC 61557-16	Electrical safety in distribution systems up to 1000 V a.c and 1500 V d.c – Equipment for testing, measuring or monitoring of protective measures - Part 16: Equipment for testing the safety of electrical equipment and medical electrical equipment according to IEC 62638 and IEC 62353 (IEC 85/437/CD:2012)

SECUTEST BASE / PRO and SECULIFE ST BASE
Test Instruments for Measuring Electrical Safety of Devices

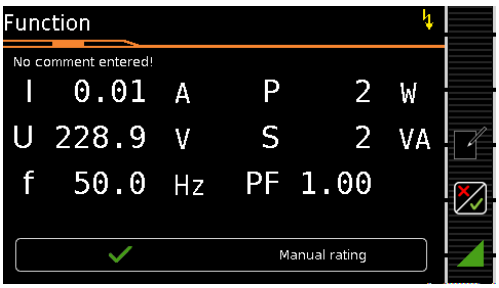
Backlit Multi-Display Samples

Single Test – Initial Screen with Parameters Display

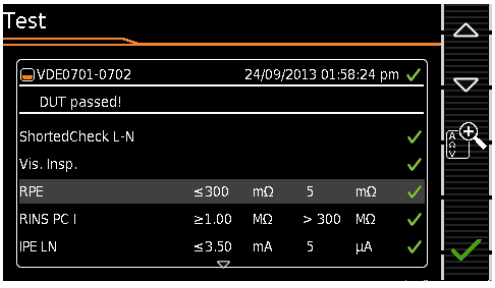
Help – Schematic and Wiring Diagram



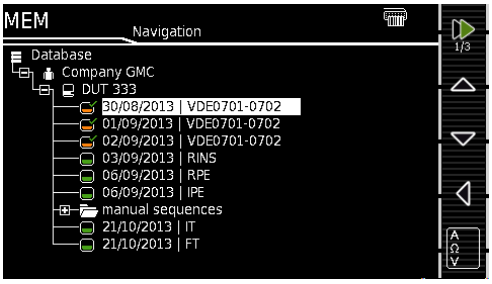
Test Function for Test Step in the Test Sequence



Results of a Test Sequence per VDE 0701-0702



Database Structure – List of Test Results



Scope of Delivery

Standard version (country-specific)

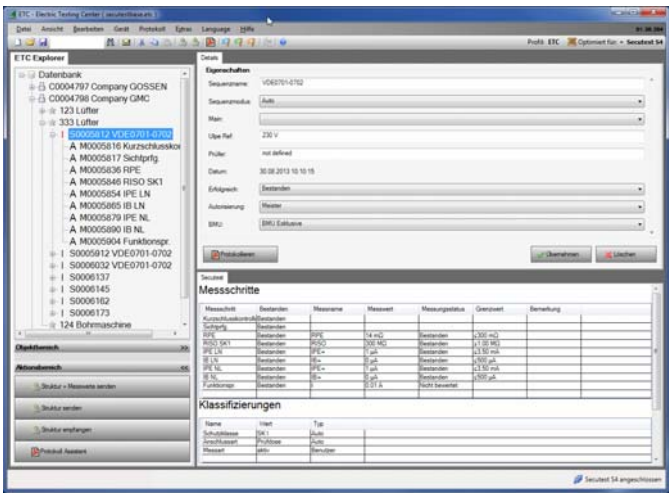
1 **SECUTEST BASE**, **SECUTEST PRO** or **SECULIFE ST BASE** test instrument
1 Mains power cable
1 Test probe, 2 m, not coiled
1 USB cable, USB A to USB B, 1.0 m long
1 Plug-on alligator clip
1 KS17-ONE cable set for voltage measuring inputs (only with **SECUTEST PRO** or devices with Feature I01) and **SECULIFE ST BASE**
1 Calibration certificate
1 Condensed operating instructions D, GB
1 Full operating instructions available on the Internet
1 ETC report software available on the Internet

The most up-to-date version of ETC can be downloaded free of charge from the **mygmc** page of our website as a ZIP file, if you have registered your test instrument:
http://www.gossenmetrawatt.com
→ Products → Software → Software for Testers → Report Software without Database → **ETC** → myGMC

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 data for reports.
- Test reports (ZVEH) can be generated automatically.
- Structures, once created, can be saved and loaded to the **SECUTEST PRO** test instrument or other instruments with Feature KB01 via USB connection.
- Data can be exported to Excel, CSV and XML formats.
- Device selection lists can be edited.



Characteristic Values

Function	Measured Quantity	Display Range / Nominal Range of Use	Resolution	Nominal Voltage U_N	Open-Circuit Voltage U_0	Nom. Current I_N	Short-Circuit Current I_K	Internal Resistance R_I	Reference Resistance R_{REF}	Measuring Uncertainty [1]	Intrinsic Error [1]	Overload Capacity Value	Overload Capacity Time
Tests, 62638 (DIN VDE 0701-0702) / IEC 62353 (VDE 0751)	Protective conductor resistance **RPE**	1 … 999 mΩ	1 mΩ	—	< 24 V AC or DC	—	>200 mA AC or DC >10 A AC [5]	—	—	±(15% rdg. + 10 D) > 10 D > 10.0 Ω : ±(10% rdg.+ 10 d)	±(10% rdg.+ 10 d) > 10 d	264 V 250 mA / 16 A [5]	Cont.
		1.00 ... 999 Ω	10 mΩ										
		10.0 … 30.0 Ω	100 mΩ										
	Insulation resistance [9] **RISO**	10 … 999 kΩ	1 kΩ	50 … 500 V DC	1.0 • U_N … 1.5 • U_N	> 1 mA	> 2 mA	—	—	±(5% rdg.+ 4 d) > 10 d	±(2.5% rdg.+2 d) > 10 d	264 V	Cont.
		1.00 … 9.99 MΩ	10 kΩ										
		10.0 … 99.9 MΩ	100 kΩ							≥ 20 MΩ: ±(10% rdg.+ 8 d)	≥ 20 MΩ: ±(5% rdg.+4 d)		
		100 … 300 MΩ	1 MΩ										
	Leakage current, alternative measurement [2] **IPE, IB, IG, IA**	0.0 ... 99 µA	1 µA	—	50 ... 250 V~ – 20/+10%	—	> 1.5 mA	> 150 kΩ	1 kΩ ±10 Ω	±(5% rdg.+ 4 d) > 10 d > 15 mA: ±(10% rdg.+ 8 d)	±(2% rdg.+2 d) > 10 d > 15 mA: ±(5% rdg.+ 4 d)	264 V	Cont.
		100 ... 999 µA	1 µA										
		1.00 ... 9.99 mA	10 µA										
		10.0 ... 30.0 mA	100 µA										
	Leakage current, direct measurement [3] **IPE, IB, IG, IA, IP**	Only Ip: 0.0 ... 99.9 µA	100 nA	—	—	—	—	1 kΩ ±10 Ω	—	±(5% rdg.+ 4 d) > 10 d	±(2.5% rdg.+2 d) > 10 d	264 V	Cont.
		0.0 ... 99 µA	1 µA										
		100 ... 999 µA	1 µA										
		1.00 ... 9.99 mA	10 µA										
		10.0 ... 30.0 mA	100 µA										
	Leakage current, differential current measurement [4] **IPE, IB, IG**	0 ... 99 µA	1 µA	—	—	—	—	1 kΩ ±10 Ω	—	±(5% rdg.+ 4 d) > 10 d	±(2.5% rdg.+2 d) > 10 d	264 V	Cont.
		100 ... 999 µA	1 µA										
		1.00 ... 9.99 mA	10 µA										
		10.0 ... 30.0 mA	100 µA										
Function test	Line voltage U_{L-N} [10]	100.0 … 240.0 V~	0.1 V	—	—	—	—	—	—	—	±(2% rdg.+2 d)	264 V	Cont.
	Load current I_L	0 … 16.00 A_{RMS}	10 mA	—	—	—	—	—	—	—	±(2% rdg.+2 d)	16 A	Cont.
	Active power P	0 … 3700 W	1 W	—	—	—	—	—	—	—	±(5% rdg.+10 d) > 20 d	264 V	Cont.
												20 A	10 min
	Apparent power S	0 … 4000 VA	1 VA	Calculated value, U_{L-N} • I_V							±(5% rdg.+10 d) > 20 d		
	Power factor PF with sinusoidal waveform: cosφ	0.00 … 1.00	0.01	Calculated value, P / S, display > 10 W							±(10% rdg.+5 d)		
Voltage measurement	Probe voltage (test probe P1 to PE) ⎓, ~ and ≂	0,0 … 99,9 V	100 mV	—	—	—	—	3 MΩ	—	—	±(2 % v.M.+2 D)	300 V ⎓, ~ and ≂	Cont.
	Measurem. voltage (sockets V–COM [6]) ⎓, ~ and ≂	100 ... 250 V	1 V					1 MΩ			±(2 % rdg. +2 d) > 45 Hz ... 65 Hz ±(2 % rdg.+5 d) > 65 Hz ... 10 kHz ±(5 % rdg. +5 d) > 10 kHz ... 20 kHz		
t_A PRCD	Time to trip	0.1 ... 999 ms	0.1 ms	—	—	30 mA	—	—	—	±5 ms			
I_{Clamp}	Current via current/voltage clamp transformer WZ12C [1 mA:1 mV] (sockets V–COM [6][7])	1 ... 99 mA ~	1 mA (1 mV)	—	—	—	—	—	—	—	±(2 % rdg.+2 d) > 10 D 20 Hz ... 20 kHz without clamp	253 V	Cont.
		0,1 ... 0,99 A ~	0,01 A (10 mV)										
		1,0 ... 9,9 A ~	0,1 A (100 mV)										
		10 ... 15 A ~	1 A (1 V)										
I_{Leak}	Leakage current via AT3-IIIE adapter Z745S [6][8]	0,00 ... 0,99 mA ~	0,01 mA	—	—	—	—	—	—	—	±(2 % rdg.+2 d) > 10 D without adapter	253 V	Cont.
		1,0 ... 9,9 mA ~	0,1 mA										
		10 ... 20 mA ~	1 mA										
Temp	Temperature with Pt100 sensor	– 200,0 ... +850,0 °C	0,1 °C	—	< 20 V –		1,1 mA	—	—	—	±(2 % rdg.+1 °C)	10 V	Cont.
	Temperature with Pt1000 sensor	– 150,0 ... +850,0 °C											

1 Specified values are only valid for the display at the test instrument. Data transmitted via the USB port may deviate from these values.
2 Known as equivalent leakage current or equivalent patient leakage current from previous standards
3 Protective conductor current, touch current, device leakage current, patient leakage current
4 Protective conductor current, touch current, device leakage current
5 Only with **SECUTEST BASE10** (Feature AA02), **SECUTEST PRO** and **SECULIFE ST BASE**
6 Only with **SECUTEST PRO** (Feature I01) and **SECULIFE ST BASE**
7) Measurment type IPE clamp and IG clamp
8) Measurement type IPE AT3 adapter and IG AT3 adapter
9 The measuring range upper limit depends on the selected test voltage.
10) Due to inrush current limiting components, the voltage at the test socket may be lower than the measured line voltage.

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

Test Times, Automated Sequence

The test times (parameter „Measurement duration ...“) can be adjusted in the sequence parameter setting menu for each rotary switch position separately. The test times are not tested and calibrated.

Emergency Shutdown During Leakage Current Measurement

As of 10 mA of differential current (can also be set to 30 mA), automatic shutdown ensues within 100 ms. This shutdown is not effected during leakage current measurement with clamp or adapter.

SECU**TEST** BASE / PRO and SECU**LIFE ST** BASE
Test Instruments for Measuring Electrical Safety of Devices

Influencing Quantities and Influence Error

Influencing Quantity / Sphere of Influence	Designation per DIN VDE 0404	Influence Error ± … % rdg.
Change of position	E1	—
Change to test equipment supply voltage	E2	2.5
Temperature fluctuation	E3	Specified influence error valid starting with temperature changes as of 10 K:
0 … 40 °C		2.5
Amount of current at DUT	E4	2.5
Low frequency magnetic fields	E5	2.5
DUT impedance	E6	2.5
Capacitance during insulation measurement	E7	2.5
Waveform of measured current	E8	
49 … 51 Hz		2 with capacitive load (for equivalent leakage current)
45 … 100 Hz		1 (for touch current)
		2.5 for all other measuring ranges

Reference Ranges

Line voltage 230 V AC ±0.2%
Line frequency 50 Hz ±2 Hz
Waveform
Sine (deviation between effective and rectified value < 0.5%)
Ambient temperature +23 °C ±2 K
Relative humidity 40 … 60%
Load resistance Linear

Nominal Ranges of Use

Nominal line voltage 100 V … 240 V AC
Nominal line frequency 50 Hz ... 400 Hz
Line voltage waveform Sinusoidal
Temperature 0 °C … + 50 °C

Ambient Conditions

Storage temperature – 20 °C … + 60 °C
Operating temperature – 5 °C … + 40 °C
Accuracy range 0 °C … + 40 °C
Relative humidity Max. 75%, no condensation allowed
Elevation Max. 2000 m
Deployment Indoors, except within specified ambient conditions

Power Supply

Electrical system TN, TT or IT
Line voltage 100 V … 240 V AC
Line frequency 50 Hz ... 400 Hz
Power consumption 200 mA test: approx. 32 VA
10 A test: approx. 105 VA
Mains to test socket (e. g. function test) Continuous max. 3600 VA, power is conducted through the instrument only, switching capacity ≤ 16 A, ohmic load; for currents > 16 A AC please use the adapter AT3-IIS32 (Z745X)

Electrical Safety

Protection class I per IEC 61010-1/EN 61010-1/ VDE 0411-1
Nominal voltage 230 V
Test voltage 2.3 kV AC 50 Hz or 3.3 kV DC (mains circuit / test socket to mains PE terminal, USB, finger contact, probe, test socket)
Measuring category 250 V CAT II
Pollution degree 2
Safety shutdown At DUT differential current of > 10 mA, shutdown time: < 100 ms, can also be set to > 30 mA with following probe current during:
– Leakage current meas.: > 10 mA~/< 5 ms
– Protective conductor resistance meas.: > 250 mA~/< 1 ms
Fuse links Mains fuses: 2 ea. FF 500V/16A
Probe fuse: M 250V/250mA
SECUTEST BASE10/PRO/ SECULIFE ST BASE:
Additionally (Feature G01) 1 ea. FF 500V/16A

Electromagnetic Compatibility

Product standard DIN EN 61326-1

Interference Emission		Class
EN 55011		B
Interference immunity	**Test value**	**Evaluation criterion**
EN 61000-4-2	Contact/atmos. – 4 kV/8 kV	A
EN 61000-4-3	3 V/m or 1 V/m	A
EN 61000-4-4	1 kV	B
EN 61000-4-5	1 kV or 2 kV	A
EN 61000-4-6	3 V/m	A
EN 61000-4-11	0.5/1/25 periods	A
	250 periods	C

USB Data Interface

Type USB slave for PC connection
Type 2 ea. USB master for data input devices* with HID-Boot interface, for USB stick for data backup, for USB stick for storing reports as bmp files, for printer*

* compatible devices see next page

As of firmware version 1.6.0: In the remote operating mode, the test instrument can be controlled via the USB slave data interface. Pertinent interface commands are available upon request.

Bluetooth® 2.1 + EDR Data Interface (Feature M01)

Type for remote control

Mechanical Design

Display 4.3" color display (9.7 x 5.5 cm), backlit, 480 x 272 pixels at 24 bit color depth (true color)
Touch screen with **SECUTEST PRO/SECULIFE ST BASE** or feature E01 (touch-sensitive user interface)
Dimensions W x H x D: 295 x 145 x 150 mm
Height with handle: 170 mm
Weight Approx. 2.5 kg
Protection Housing: IP 40
Test socket: IP 20 per DIN VDE 0470, part 1/EN 60529,
SECULIFE ST BASE: Housing with antimicrobial properties in accordance with the JIS-Standard Z 2801:2000

Accessories (not included)

Z751A Barcode Reader

For connection to the USB master port at the test instrument, and for reading in barcodes. This makes it possible to conveniently insert the ID numbers of DUTs into single measurements and test sequences.

This device is based upon the concept of an instinctive scanning distance and provides best possible reading performance. Green Spot technology provides a “good-read” projection directly on the code. The device is equipped with a USB port.

Z721S Thermal Printer

For connection to the USB master port at the test instrument, and for printing out test reports.

Barcode printer Z721D

For connection to the USB master port at the test instrument, and for printing out barcode labels.

SCANBASE RFID (Z751E) (RFID read / write)

Compact write/read device with USB interface for programming and reading of 13.56 MHz transponders per ISO 15693.

SECUTEST BASE/PRO/SECULIFE ST BASE enable the user to populate the RFID tags direcly from the test instrument with the help of the programmer.

CEE Adapter (Z745A) for Testing Single and 3-Phase Electrical Devices

The Z745A CEE adapter allows for quick and efficient testing of devices equipped with a CEE plug. The adapter is equipped with the following CEE flush-type socket outlets: 5-pole 16 A, 5-pole 32 A and 3-pole 16 A. Furthermore, the adapter includes five 4 mm safety sockets to which 3-phase devices without permanently attached plug or conventional measurement cables can be connected, e.g. by means of quick clamp terminals (not included).

The following tests can be performed on devices with CEE plugs with the help of the adapter:

- Testing of protective conductor continuity
- Insulation resistance, alternatively leakage current (equivalent leakage current)
- Function test (3-pole CEE outlet only)

The Z745A CEE adapter may also be used as an adapter for connecting devices with 3-pole CEE plugs to common earthing contact outlets.

VL2 E (Z745W)

Test adapter with single-phase and 3-phase plug connectors up to CEE 32A

AT16-DI (Z750A) 3-Phase 16 A Differential Current Adapter

Devices which are equipped with a 5-pole, 16 A / 6 h CEE plug can be quickly and efficiently tested with the AT16-DI CEE adapter.

The following tests can be performed on devices with CEE plugs with the help of the AT16-DI CEE adapter:

- Testing of protective conductor continuity
- Insulation resistance, alternatively leakage current (equivalent leakage current)
- Measurement of protective conductor resistance with the following methods: equivalent leakage current / differential current / direct
- Function test

This differential current adapter is also available in a variant with a 5-pole 32 A / 6 h CEE plug with the designation AT32-DI CEE adapter.

SECUTEST BASE / PRO and SECULIFE ST BASE
Test Instruments for Measuring Electrical Safety of Devices

SECU-cal 10 (Z715A) Calibration Adapter

The calibration adapter is used for testing the measuring uncertainty of test instruments in accordance with DIN VDE 0701-0702 / IEC 62353 (VDE 0751). As a rule, these instruments must be tested once each year, as well as for certification in accordance with the ISO 9000 quality standard, as set forth by accident prevention regulation DGUV provision 3 (previously BGV A3).

All limit values for the required tests per DIN VDE, as well as protective conductor resistance, insulation resistance, equivalent leakage current, differential and/or touch as well as housing leakage current, must be tested.

SECULOAD-N (Z745R) Test Adapter

Test Adapter for testing open-circuit voltage at welding units per IEC / EN 60974.

In combination with the test instrument, the test adapter is used for testing welding units in accordance with the IEC/EN 60974-4 standard. This standard stipulates that peak values for open-circuit voltage may not exceed the limit values, regardless of the utilized settings.

SECUTEST BASE/PRO/SECULIFE ST BASE testing instrument includes a test sequence for testing welding instruments with this adapter.

The peak value rectifier of the SECULOAD-N uses rectifier diode 1N 4007 recommended by the standard. This diode is a power rectifier diode and, due to its design principle, only suitable for voltage sources with a low clock rate in the line frequency range or for voltage sources with conventional transformers.

EL1 (Z723A) Adapter for Testing Single-Phase Extension Cables

AT3-III-E (Z745S) 3-phase Current Adapter

Test adapter for active and passive testing of Single and 3-Phase Electric Devices and Extension Cables in Combination with SECUTEST... Test Instruments

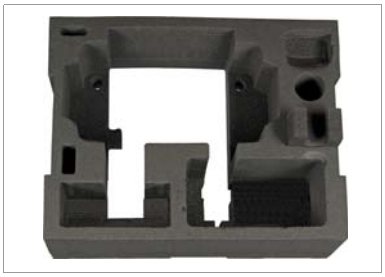
Operation is simple and safe. The test adapter is connected to a 3-phase 16 A mains outlet, and to the respective test instrument. Testing is performed without reversing polarity at the device under test, either automatically or manually, and is controlled by the test sequence of the utilized test instrument. Safety shutdown occurs if the factory preset residual current value is exceeded.

SORTIMO L-BOXX (Z503D)

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

Foam insert Z503E for tester and accessories, has to be ordered seperately, see below.

Foam insert for SORTIMO L-BOXX (Z701D)



F2000 Universal Carrying Pouch (Z700D)

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)

Order Information

SECUTEST BASE, SECUTEST PRO and SECULIFE ST BASE Standard Models

Standard Model	Article Number	Features
SECUTEST BASE	M7050-V001	Schuko variant (test socket and mains plug), selectable user interface language (default setting: German), protective conductor test current: 200 mA, calibration certificate in D/GB/F, printed condensed operating instructions in German (features differing from 00: AA01 V01)
SECUTEST PRO	M7050-V003	same design as M7050-V001, additionally with 10 A RPE test current, with touch screen, voltage measuring inputs, sockets für 2nd test probe and database expansion DB+ (features differing from 00: AA03 E01 G01 H01 I01 KB01 V01)
SECULIFE ST BASE	M7050-V101	same design as M7050-V003, additionally with antimicrobial housing (features differing from 00: A01 AA11 E01 G01 H01 I01 KB01 V01)

SECUTEST BASE

SECULIFE ST BASE

Order Information on Device Kits

Type	Designation						Article Number
Starter Package SECUTEST BASE	same standard equipment as for **SECUTEST BASE** (M7050-V001) plus additional accessories see below						M7050-V901
Master Package DB+	same standard equipment as for **SECUTEST BASE10** (M7050-V002) plus additional accessories see below						M7050-V912
Profi Package SECUTEST PRO	same standard equipment as for **SECUTEST PRO** (M7050-V003) plus additional accessories see below						M7050-V903
Welding Package SECUTEST PRO	same standard equipment as for **SECUTEST PRO** (M7050-V003) plus additional accessories see below						M7050-V904
Service Package SECUTEST PRO	same standard equipment as for **SECUTEST PRO** (M7050-V003) plus additional accessories see below						M7050-V905
Accessories	For use in combination with the following testing packages:	**Starter Package**	**Master Pack. DB+**	**Profi Package**	**Welding Package**	**Service Package**	
SECUTEST BASE	M7050 AA01, E00, G00, H00, I00, KB00, V01	■					M7050-V001
SECUTEST BASE10*	M7050 AA02, E00, G01, H00, I00, KB00, V01		■				M7050-V002
SECUTEST PRO	M7050 AA03, E01, G01, H01, I01, KB01, V01, X01, Z0n with n = 3, 4, or 5 depending on the package			**Z03** ■	**Z04** ■	**Z05** ■	M7050-V003
SORTIMO L-BOXX	Plastic system case	■	■	■	**2 x** ■	■	Z503D
Foam SORTIMO L-BOXX Secutest4	Foam insert for SORTIMO L-BOXX with compartment for SECUTEST BASE(10) or PRO	■	■	■	■	■	Z701D
FOAM SORTIMO L-BOXX-Adapter	Foam insert for SORTIMO L-BOXX with compartment for adapter				■		Z701E
EL1	Adapter for the testing of single-phase extension cables	■	■	■	❑	❑	Z723A
Brush Probe	Contact brush	■	❑	❑	❑	❑	Z745G
SECULOAD-N	Test adapter in combination with SECUTEST... for testing welding units per DIN EN 60974-4:2007.	❑	❑	❑	■	❑	Z745R
Adapter AT16-DI	3-Phase 16 A Current Adapter with Residual Current Logging	❑	❑	❑	■	❑	Z750A
SK2	Probe cable with test probe and 2 m probe cable (not coiled)	❑	❑	■	❑	❑	Z745D
SK5	5 m probe cable for protective conductor measurement,	❑	❑	❑	❑	■	Z745O
Adapter cable CEE16/CEE32	Adapter cable CEE 16 A to CEE 32 A	❑	❑	❑	■	❑	Z750F
Barcode scanner	Barcode scanner for USB connection	❑	■	■	❑	❑	Z751A
Thermal printer	Thermal printer for printing out test reports; inkl. manual on CD, Lithium-Batterie, power supply adapter, mains cable, 1 role of Thermopaper	❑	❑	❑	❑	■	Z721S
ETC report generating software for free download from our homepage							
		Key: ■ included ❑ optional					

* Database expansion DB+ included

SECU**TEST** BASE / PRO and SECU**LIFE ST** BASE
Test Instruments for Measuring Electrical Safety of Devices

Customizable Test Instruments

Please note:

When ordering via features, please do not fail to quote the complete order number (not the standard model).

Features with selection option ❑ „available“ can be freely selected. Only one selection is possible per feature character.

Order example SECUTEST PRO:

M7050 AA03 B03 C07 **E01 G01 H01 I01 KB01** P01

(highlighted features (printed in bold letters here, shaded in grey in the table) are part of the **SECUTEST PRO** standard equipment that cannot be modified. The other features can be freely selected).

AA02: Device Variant **SECUTEST BASE10**
C01: Language for user interface, keyboard layout and test sequences in Englisch
G01: R-PE test current for protective conductor measurement: 200 mA und 10 A

SECUTEST BASE and SECUTEST PRO (List of Features)

	Testers / Features	Selection Option	Article Number/ Feature
Device Variant			**M7050**
	SECUTEST BASE (M7050 AA01 E00 G00 H00 I00 KB00)	❑	**AA01**
	SECUTEST BASE10 (M7050 AA02 E00 G01 H00 I00 KB00)	❑	**AA02**
	SECUTEST PRO (M7050 AA03 E01 G01 H01 I01 KB01)	❑	**AA03**
Connections – mains plug and test socket, each country specific			
	Germany with connection and safety class recognition	❑	**B00**
	UK	❑	**B01**
	CH	❑	**B02**
	FR/CZ/PL	❑	**B03**
	China	❑	**B04**
	USA	❑	**B05**
	AUS	❑	**B06**
	DK	❑	**B07**
	IT	❑	**B08**
	CH with connection and safety class recognition	❑	**B09**
	FR/CZ with connection and safety class recognition	❑	**B10**
Language for preset user interface (preset language ex factory, can be changed subsequently to any of the languages listed below)			
	German	❑	**C00**
	English	❑	**C01**
	French	❑	**C02**
	Italian	❑	**C03**
	Spanish	❑	**C04**
	Czech	❑	**C05**
	Dutch	❑	**C06**
	Polish	❑	**C07**
Data entry via touch screen			
	without	■ **AA01, AA02**	**E00**
	with	■ **AA03**	**E01**
R-PE test current for protective conductor measurement			
	200 mA	■ **AA01**	**G00**
	10 A [1)]	■ **AA02, AA03**	**G01**
Connection for 2nd test probe			
	without	■ **AA01, AA02**	**H00**
	with	■ **AA03**	**H01**
Function DVM (digital voltmeter) with 2 additional measuring inputs COM–V			
	without	■ **AA01, AA02**	**I00**
	with	■ **AA03**	**I01**
Database expansion	without	■ **AA01, AA02**	**KB00**
	with	■ **AA03** ❑ **AA01, AA02**	**KB01**
Bluetooth®	without	■ **AA01, AA02, AA03**	**M00**
	with	❑ **AA01, AA02, AA03**	**M01**
DAkkS calibration certificate (language combination)			
	in German, English and French	❑	**P00**
	in German, English, Polish	❑	**P01**
	in German, English, Italian	❑	**P02**
DAkkS calibration certificate (recalibration)		❑	
		Key: ■ preset ❑ available	

[1] 10 A R_{PE} measurements are only possible with line voltages of 115/230 V and line frequencies of 50/60 Hz.

Order Information for Accessories

Designation	Type	Article number
PC analysis software		
Further information regarding software is available on the Internet at: http://www.gossenmetrawatt.com (→ Products → Software → Software for Testers)		
Mains power cable		
Cable set for connecting test instruments to the mains without using a an earthing contact outlet, and for connecting DUTs. Consists of coupling socket with 3 permanently connected cables, 3 measurement cables, 3 plug-on pick-up clips and 2 plug-on test probes.	KS13	GTY3624065P01
Adapter for testing 3-phase current consumers		
Adapter for connecting DUTs: 3-pole 16 A, 5-pole 16 A + 32 A, 5 ea. 4 mm socket – For all tests without line voltage at single and 3-phase electrical devices – for differential current measurements (direct or differential current method)	CEE Adapter	Z745A
16 A / 32 A 3-phase current adapter (test case) – For all tests without line voltage at single and 3-phase electrical devices – For tests at single and 3-phase extension cords – For differential current measurements (direct method) – für leakage current measurements in accordance with differential current method [1]	AT3-III-E [D]	Z745S
Test adapter for tests on devices with CEE16 and CEE32 connections (load rating of max 20 A)	AT3-IIS [D 1]	Z745T
same as AT3-II-S, however, with a load rating of 32 A	AT3-II S32 [D 1]	Z745X
3-phase 16 A differential current adapter	AT16-DI	Z750A
3-phase 32 A differential current adapter	AT32-DI	Z750B
Test adapter with single and 3-phase plug connectors up to CEE 32A – For all tests without line voltage at single and 3-phase electrical devices – For tests at single and 3-phase extension cords	VL2E	Z745W
Adapter cable CEE 16 A 5-pin plug red on CEE 32 A 5-pin coupling red, 0.5 m, 5 x 1.5 mm²	Adapter cable CEE16/CEE32	Z750F
Adapter for testing single-phase extension cables		
Adapter for testing single-phase extension cables including earth contact and inlet plug inserts	EL1	Z723A
Plug insert for using adapter EL1 in Switzerland	PRO-CH	GTZ3225000R0001
Adapter for testing welding units		
Test adapter in combination with SECUTEST... for testing welding units per DIN EN 60974-4:2007. The peak-value rectifier in the SECULOAD-N uses the 1N4007 rectifier diode recommended in the standard. This is a mains rectifier diode which, due to its design, is only suitable for voltage sources with low cycle rates within the range of the line frequency, or voltage sources with conventional transformer. Includes 4 measurement cables and 2 alligator clips.	SECULOAD-N	Z745R

Designation	Type	Article number
Calibration adapter		
Calibration adapter for test instruments per DIN VDE 0701-0702/IEC 62353 (VDE 0751) (max. 200 mA) **cannot be used for 10 A protective conductor test current**	SECU-cal 10	Z715A
Probe cable		
Probe cable with test probe and 2 m probe cable (not coiled), 300 V CAT II 16 A	SK2	Z745D
Probe cable with test probe and 2 m probe cable (coiled), 300 V CAT II 16 A	SK2W	Z745N
5 m probe cable for protective conductor measurement, 300 V CAT II 16 A	SK5	Z745O
Brush probe	Z745G	Z745G
Multiple probe connector for connecting 5 • 4 mm and 5 • 2 mm test probes to measure multiple touchable housing parts or application parts.	SV5	Z745J
Cable set (1 pair of measuring cables) 1.2 m, with VDE-GS sign 1000 V/CAT III 1 A, 600 V/CAT IV 1 A, 1000 V/CAT II 16 A*	KS17-2	GTY3620034P0002
2 each in plastic bag, diameter 4 mm, length 1.0 m, 1000 V CAT III, 19 A, blue	Cable set blue	Z746A
2 each in plastic bag, diameter 4 mm, length 1.0 m, 1000 V CAT III, 19 A, black/red	Cable set bw/rd	Z746B
Clip-on current sensor for SECUTEST PRO/SECULIFE ST BASE		
Clip-on current sensor, can be set to 1 mA to 15 A or 1 A to 150 A, frequency range: 45 … 65 …500 Hz, 1 mV/mA and 1 mV/A	WZ12C [D)]	Z219C
Leakage current clamp 0.1 mA ... 25 mA, 100 mV/mA	SECUTEST CLIP	Z745H
Temperature sensors for SECUTEST PRO/SECULIFE ST BASE		
Pt100 temperature sensor for surface and immersion measurement, –40 to + 500 °C	Z3409	GTZ3409000R0001
Pt1000 temperature sensor for measurement in gases and liquids, –50 ... +220 °C	TF220	Z102A
Pt100 oven sensor, Pt100, –50 ... +550 °C	TF550	GTZ3408000R0001
Sounding pipe oil temperature sensor, Pt1000 class B, –50...+500 °C, sensor 3 mm dia. x 810 mm length	TF400CAR	Z102C
Pouches and Cases		
Carrying pouch for SECUTEST BASE(10)/PRO	F2000 [D]	Z700D
Carrying pouch big for tester sets	F2020	Z700F
Universal carrying pouch with flexible divider and display protection for **SECUTEST BASE(10)/PRO/SECULIFE ST BASE**	F2010	Z700G
Plastic system case	SORTIMO L-BOXX	Z503D
Foam insert for SORTIMO L-BOXX with divider for SECUTEST BASE(10)/PRO	Foam SORTIMO L-BOXX Secutest4	Z701D
Foam insert for SORTIMO L-BOXX GM with divider for adapters	Foam SORTIMO L-BOXX Adapter	Z701E

SECU**TEST** BASE / PRO and SECU**LIFE ST** BASE
Test Instruments for Measuring Electrical Safety of Devices

Designation	Type	Article number
Data Storage		
Database expansion for **SECUTEST BASE(10)**: data import, sequence import, multi print	SECUTEST DB+	Z853R
Report Generating Accessories		
RFID-System		
RFID read/write for USB connection (frequency: 13.56 MHz)	SCANBASE RFID	Z751E
RFID tags per ISO 15693, dia. approx. 22 mm, self-adhesive, 500 pcs.	Z751R	Z751R
RFID tags per ISO 15693, dia. approx. 30 mm, thickness 2 – 3 mm with 3 – 4 mm hole 500 pcs.	Z751S	Z751S
RFID tags per ISO 15693, pigeon ring, dia. approx. 7.5 mm, 250 pcs.	Z751T	Z751T
Barcode reader		
Barcode scanner for USB connection	Z751A	Z751A
Barcode printer		
Barcode and label printer including software, for USB connection to the PC or test instrument SECUTEST BASE(10)	Z721D	Z721D
Label set for Z721D barcode and label printer (quantity x width: 3 x 24, 1 x 18, 1 x 9 mm, length: 8 m each)	Z722D	Z722D
Label set for Z721D barcode and label printer (qty. x width: 5 x 18 mm, 8 m long each)	Z722E	Z722E
Thermal printer		
Thermal printer for printing out test reports; incl. manual on CD, lithium battery, power supply adapter, mains cable, USB cable, 1 role of thermal paper	Z721S	Z721S
Thermo paper for Z721S; 10 roll of thermal paper, Ø 12/50mm, 30 m x 112 mm, coating outside	Z722S	Z722S
See also separate ID systems data sheet regarding RFID scanners, barcode scanners and printers.		

D data sheet available
1 only with SECUTEST PRO (Feature I01) or SECULIFE ST BASE

For additional information regarding accessories please refer to

- Measuring Instruments and Testers catalog
- www.gossenmetrawatt.com

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