GOSSEN METRAWATT

SECUTEST BASE(10) and PRO

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

3-349-753-03
9/2.15

- 8 pre-configured (freely adustable) test sequences per standard to perform standardized Tests
  for electrical, medical and welding instruments
  one freely configurable test sequence for special duties
- Automatic evaluation of executed test sequences
  in consideration of measuring uncertainty
- Pioneering operating concept with double rotary switch, direct selection keys and softkeys
- Revolutionary data management and storage concept
  for automated test sequences and single measurements
  in a database with memory for up to 50,000 data records
- Voltage measurement up to 300 V for testing SELV/PELV circuits
- Measurement of leakage current with a bandwidth of up to 1 MHz
- Individual measurements can be stored as manual test sequences
- R_{PE} measurement with rising test current on the active test socket (enables the testing of devices with built-in PRCDs)
- Quick export and import of the database (on USB or in ETC)
- Direct printout of test reports or test report management with free ETC report software

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

MADE IN GERMANY

product design award 2014

Features

- Compact, impact resistant housing with integrated rubber protector
- State-of-the-art, multi-channel measuring technology for fast measured value acquisition. Measured values are acquired via 16 channels simultaneously, so that all measured values are available at the same time.
- Active (direct) measurement of leakage current from the application part via the test probe with an option for selecting the phase angle to mains power.
- The test list view provides an outline of all executed tests along with their results and respective evaluations.
- Multiple measurement is a user-optimized measuring process which allows for convenient recording of several measuring points.
- Quick execution of the most important functions via “direct selection lists”

Standards for the Use of SECUTEST BASE(10) and PRO Test Instruments

	Testing after Repairs / Periodic Testing		
DUTs to be tested in accordance with the following standards	DIN VDE 0701-0702	IEC 62353:2007 DIN EN 62353:2008 (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
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(10) and PRO
Test Instruments for Measuring Electrical Safety of Devices

Overview of Features Included with SECUTEST BASE(10) 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**: 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	$I_{PE\sim}$	**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	$I_{T\sim}$	**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	$I_{E\sim}$	**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	$I_{A\sim}$	**Leakage current from the application part, RMS value**	Direct (P1) Alternative (P1) Permanent conn. (P1)
	U_A	Test voltage	
IP	$I_{P\sim}$	**Patient leakage current, RMS value**	Direct (P1) Permanent conn. (P1)
	$I_{P\sim}$	AC component	
	$I_{P=}$	DC component	
	U_{LN}	Test voltage	
U	$U_{\sim}$	**Probe voltage, RMS**	PE - P1 PE - P1 (with mains*) * polarity preset
	$U_{\sim}$	Alternating voltage component	
	$U_{=}$	Direct voltage component	
	$U_{\sim}$	**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**		Polarity preset
	I	Current between L and N	
	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)		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)
[3] Terminal for 2nd test probe for 2-pole measurement only with **SECUTEST PRO** (or device with Feature H01)
[4)] Measurement of time to trip not possible in IT systems

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) 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** 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.

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 ≤ 1.5 Ω
	No short-circuit (AC test)	R > 1.5 Ω
On test	On (passive DUT)	R < 250 kΩ
	Off (active DUT)	R > 300 kΩ
Special test	No probe	R > 2 MΩ
	Probe detected	R < 500 kΩ
Protection class detection (only for country-specific Schuko (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 Schuko (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

* applies to standard models M7050-V001, M7050-V002 as well as Feature B00

Application

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

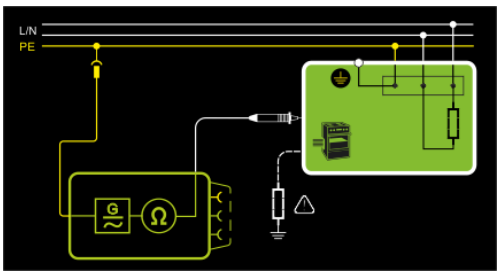
IEC/EN 61010-1:2010 VDE 0411-1:2011	Safety requirements for electrical equipment for measurement, control and laboratory use – General requirements
DIN VDE 0404, part 1: 2002	Test and measuring equipment for testing the electrical safety of electrical devices – General requirements
DIN VDE 0404, part 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(10) and PRO
Test Instruments for Measuring Electrical Safety of Devices

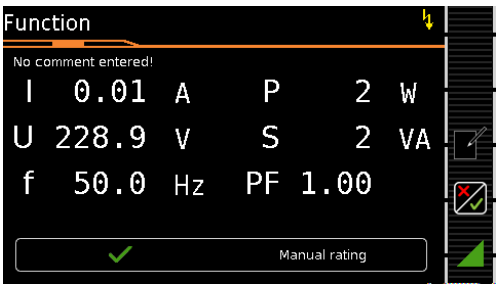
Backlit Multi-Display Samples

Single Test – Initial Screen with Parameters Display

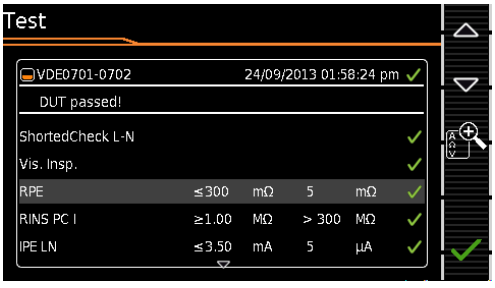
Help – Schematic and Wiring Diagram



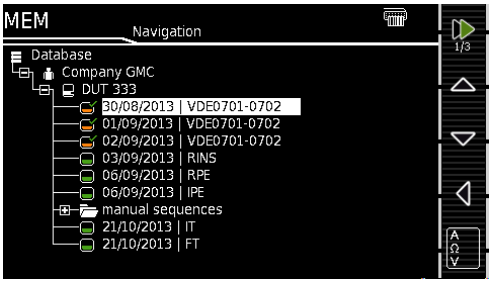
Test Function for Test Step in the Test Sequence



Results of a Test Sequence per VDE 0701-0702



Database Structure – List of Test Results



Scope of Delivery

Standard version (country-specific)

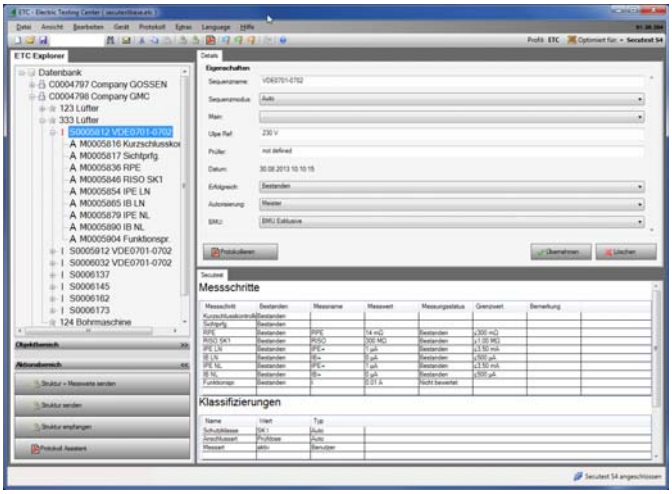
1 **SECUTEST BASE(10)** or **SECUTEST PRO** test instrument
1 Mains power cable
1 Test probe, 2 m, not coiled
1 USB cable, USB A to USB B, 1.0 m long
1 Plug-on alligator clip
1 KS17-ONE cable set for voltage measuring inputs (only with **SECUTEST PRO** or devices with Feature I01)
1 Calibration certificate
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**	000 … 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}	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 / 20 A	Cont. / 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	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 G01) or **SECUTEST PRO**
6 Only with **SECUTEST PRO** (Feature I01)
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.

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.

SECUTEST BASE(10) and PRO
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
For function test	Continuous max. 3600 VA, power is conducted through the instrument only, switching capacity ≤ 16 A, ohmic load

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**: 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 interface (e. g. external keyboard, barcode reader / RFID scanner), for USB stick for data backup, for USB stick for storing reports as bmp files, for printer

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** 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, Table Excerpt Regarding Significance of IP Codes

IP XY (1st digit X)	Protection Against Foreign Object Ingress	IP XY (2nd digit Y)	Protection Against Penetration by Water
2	≥ 12.5 mm dia.	0	Not protected
4	≥ 1.0 mm dia.	0	Not protected

Accessories (not included)

Z751A Barcode Reader

For connection to the USB master port at the **SECUTEST BASE(10)/PRO** 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 at distances of up to 20 cm. 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 **SECUTEST BASE(10)/PRO** test instrument, and for printing out test reports.

Barcode printer Z721D

For connection to the USB master port at the **SECUTEST BASE(10)/PRO** 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 PRO or devices with optional database expansion (Feature KB01) 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(10) and PRO
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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 / SECULOAD-N (Z745V/Z745R) Test Adapter

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

In combination with the **SECUTEST BASE(10)/PRO**, 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(10)/PRO testing instrument includes a test sequence for testing welding instruments with these adapters.

- **SECULOAD (Z745V):**
  The peak value of the open-circuit voltage is determined in the SECULOAD by means of a peak value rectifier with very fast diodes. As a result, the actual peak value of the open-circuit voltage is also issued for pulsed voltage sources with clock rates in the range of several 10 kHz, based upon the filter stipulated in the standard.
- **SECULOAD-N (Z745R):**
  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

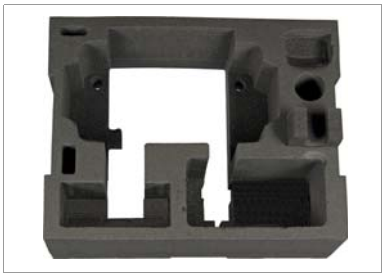
Operation is simple and safe. The test adapter is connected to a 3-phase 16 A mains outlet, and to the respective test instrument. Testing is performed without reversing polarity at the device under test, either automatically or manually, and is controlled by the test sequence of the utilized test instrument. 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 (Z503E)



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 and SECUTEST BASE(10) and SECUTEST PRO 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
SECUTEST BASE10	M7050-V002	same design as M7050-V001, however, with selectable protective conductor test current: 200 mA or 10 A
SECUTEST PRO	M7050-V003	same design as M7050-V002, additionally with touch screen, voltage measuring inputs, 2nd test probe and Datasync database
SECUTEST BASE CH	M7050-V021	same design as M7050-V001, however, with mains connection and test socket for Switzerland (CH)
SECUTEST BASE10 CH	M7050-V022	same design as M7050-V002, however, with mains connection and test socket for Switzerland (CH)

Order Information on Device Kits

Type	Designation	Starter Package	Master Package		Article Number		
Starter Package SECUTEST BASE	same standard equipment as for **SECUTEST BASE** (M7050-V001) plus additional accessories see below				M7050-V901		
Master Package SECUTEST BASE10	same standard equipment as for **SECUTEST BASE10** (M7050-V002) plus additional accessories see below				M7050-V902		
Accessories	For use in combination with the following testing packages:	**Starter Package**	**Master Package**				
SECUTEST BASE		■			M7050-V001		
SECUTEST BASE10			■		M7050-V002		
	1 Krokoclip	❑	❑				
EL1	Adapter for the testing of single-phase extension cables	■	■		Z723A		
SORTIMO L-BOXX	Plastic system case	■	■		Z503D		
Foam SORTIMO L-BOXX Secutest4	Foam insert for SORTIMO L-BOXX with compartment for SECUTEST BASE(10)	■	■		Z701D		
Brush Probe		■	❑		Z745G		
Barcode Scanner	Barcode scanner with USB connection for the following codes: Code 39, Code 128, EAN 13	❑	■		Z751A		
ETC report generating software for free download from our homepage							
		Key: ■ included ❑ optional					

Starter Package

Master Package

SECU**TEST** BASE(10) and PRO
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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 xx (see column „Complete order number“) can be freely selected.

Order example SECUTEST PRO:

M7050 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).

B03: test socket and mains plug for F, CZ and PL
C07: user prompting, keyboard layout and test sequences in Polish
P01: calibration certificate in D-GB-PL

SECUTEST BASE(10) and SECUTEST PRO (List of Features)

Testers / Features	Complete order number	Test instruments			Article Number/ Feature
SECUTEST BASE	M7050 Bxx Cxx E00 G00 H00 I00 KBxx Pxx	SECUTEST BASE			
SECUTEST BASE10	M7050 Bxx Cxx E00 G01 H00 I00 KBxx Pxx		SECUTEST BASE10		
SECUTEST PRO	M7050 Bxx Cxx E01 G01 H01 I01 KB01 Pxx			SECUTEST PRO	
					M7050
Connections – mains plug and test socket, each country specific					
	Deutschland	❑	❑	❑	B00
	UK	❑	❑	❑	B01
	CH	❑	❑	❑	B02
	FR/CZ/PL	❑	❑	❑	B03
	China	❑	❑	❑	B04
	USA	❑	❑	❑	B05
	AUS	❑	❑	❑	B06
	DK	❑	❑	❑	B07
	IT	❑	❑	❑	B08
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	✔	✔		E00
	with			✔	E01
R-PE test current for protective conductor measurement					
	200 mA	✔			G00
	10 A [1)]		✔	✔	G01
2nd test probe					
	without	✔	✔		H00
	with			✔	H01
Function DVM (digital voltmeter) with 2 additional measuring inputs COM–V					
	without	✔	✔		I00
	with			✔	I01
Database expansion					
	without	■	■		KB00
	with	❑	❑	■	KB01
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 ❑ can be ordered			

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)		
Data Storage / Report Generating Accessories		
Database expansion for SECUTEST BASE / BASE10 / PRO: data import, sequence import, multiprint	SECUTEST DB+	Z853R
Thermal printer for printing out test reports; inkl. manual on CD, Lithium-Batterie, power supply adapter, mains cable, USB cable, 1 role of Thermopaper	Z721S	Z721S
Thermo paper for Z721S; 10 roll of thermo paper, Ø 12/50mm, 30 m x 112 mm, coating outside	Z722S	Z722S
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
Barcode scanner for USB connection	Z751A	Z751A
See also separate ID systems data sheet regarding RFID scanners, barcode scanners and printers.		
Accessory Probes, Sensors, Adapters and Cables		
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
Pt100 temperature sensor for surface and immersion measurement, –40 to + 500 °C	Z3409	GTZ3409000R0001
Pt100 oven sensor, Pt100, –50 ... +550 °C	TF550	GTZ3408000R0001
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
Adapter for testing single-phase extension cables including earth contact and inlet plug inserts	EL1	Z723A
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
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, 1]	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
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
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
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
Additional Accessories		
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
Test adapter in combination with SECUTEST... for testing welding units per DIN EN 60974-4:2007. The peak value for open circuit voltage is determined in the SECULOAD by means of a peak value rectifier with very fast diodes. As a result, the actual peak value for open-circuit voltage is also read out for pulsed voltage sources with cycle rates within a range of several 10 kHz in consideration of the filter stipulated in the standard. Includes 4 measurement cables and 2 alligator clips.	SECULOAD	Z745V
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
Plastic system case	SORTIMO L-BOXX	Z503D
Foam insert for SORTIMO L-BOXX with divider for SECUTEST BASE(10)	Foam SORTIMO L-BOXX Secutest4	Z701D
Carrying pouch for SECUTEST BASE(10)	F2000 [D]	Z700D
Carrying pouch big for tester sets	F2020	Z700F

[D] Data sheet available
[1] only with **SECUTEST PRO** (Feature I01)

For additional information regarding accessories please refer to

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

SECUTEST BASE(10) and PRO
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