

SECUTEST[®] SIII

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

3-349-112-03
11/11.06

The SECUTEST[®]SIII test instrument can be configured for international utilization. The test socket, user interface language and the desired test regulation can all be configured to this end.

Universal test instrument for testing the electrical safety of:

- **Electrical measuring control and laboratory devices** per EN 61010
- **Electrical equipment**
 - in accordance with DIN VDE 0701 -1:2000
 - in accordance with British Standard
- **Data processing devices and equipment**
 - in accordance with DIN VDE 0701, part 240
 - in accordance with DIN EN 60950
- **Periodic testing** per DIN VDE 0702: 2004
- **Electrical medical devices** per DIN VDE 0751-1:2001,
 - in accordance with EN 60601
 - for technical safety inspection in accordance with MPG ¹⁾

DKD certificate available upon request

Maximum safety for the user provided by built-in protective circuit-breaker

High-voltage test for:

British standard, EN 60950, EN 61010, EN 60335 and EN 60601



QUALITY MANAGEMENT SYSTEM



Features

The device under test can be connected:

- to the test socket with or without adapter for various types of mains connection
- to the connector jacks if the device under test does not have a mains plug
- with an adapter for extension cables with or without multiple outlet sockets
- connection for BE ²⁾ and FE ³⁾
- 10 application parts can be connected individually or in groups

Mains Plug Polarity Reversal

Mains plug polarity need not be reversed manually. Polarity reversal is accomplished internally during the test sequence.

Automatic Recognition

of mains connection errors and protection class (I or II). Measurement is automatically disabled in the event of danger.

Display

Menus, setting options, measurement results, instructions and error messages, as well as online help and schematic diagrams for test setups, can all be displayed at the backlit, dot matrix LCD.

¹⁾ MPG = German medical product law
²⁾ BE = Operational earth
³⁾ FE = Functional earth

Menu Driven Test Sequences

Fully automatic or manual

Protective Conductor Testing (4-pole Measurement)

With 200 mA, 10 A or 25 A test current

Insulation Test

By means of insulation resistance or equivalent leakage current measurement or high-voltage test

Leakage Current Test

With measurement of earth, housing or patient leakage current, patient auxiliary current, protective conductor current, contact current, verification of absence of voltage by means of current measurement or device leakage current

Basic Instrument and Expansion Features

The test instrument can be configured with specific features required for the given application (see table on page 6).

Data Interface for PC and Printer

Expandable

The SECUTEST[®]PSI option expands the basic instrument into a unique data logger with memory, printer and alphanumeric keypad for data entry.

All required reports can be generated, and data can be analyzed and managed with the help of user-friendly WINDOWS software.

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

Applications

Testing for the Electrical Safety of Electrical Equipment in Accordance with BGV A3

The test instrument can be utilized for quick and safe testing of repaired or modified electrical devices in accordance with DIN VDE 0701, as well as for periodic testing per DIN VDE 0702.

The following are measured in accordance with the standards:

- Protective conductor resistance
- Insulation resistance
- Protective conductor current for SC1 devices
- Contact current for SC2 devices
- Absence of voltage at exposed conductive parts (= contact current)

Measuring methods for leakage current measurements:

- Direct measurement
- Equivalent leakage current
- Residual current

Testing for the Electrical Safety of Electrical Medical Devices in Accordance with the German Medical Product Law (MPG) and the associated Operator's Regulations

The SECUTEST®SIII test instrument is used for quick and safe testing and measurement of repaired or modified electrical medical devices or their components (e.g. patient ports) in accordance with DIN VDE 0751 and EN 60601.

Observance of technical safety requirements allows the user of the test instrument to operate electrical medical devices in a hazard-free fashion. The safety of the patient is also assured through the use of tested electrical medical devices.

The following are measured in accordance with DIN VDE 0751 regulations:

- Protective conductor resistance
- Insulation resistance
- Equivalent device leakage current
- Equivalent patient leakage current
- Device leakage current
- Patient leakage current
(AC/DC portions are measured separately)

Measuring methods for leakage current measurements:

- Direct measurement
- Equivalent leakage current
- Residual current

A software upgrade (optional) allows for measurement in accordance with EN 60601 regulations, see features on page 6 (with the following single-fault conditions: voltage at application part, interrupted neutral and interrupted protective conductor, with automatic polarity reversal L-N)

- Protective conductor resistance
- Insulation resistance
 - L and N connected to protective conductor
 - Application parts connected to protective conductor
- Earth leakage current, housing leakage current, patient leakage current, patient auxiliary current

The following additional test conditions can be selected:

- Interrupted operational earth \perp and equipotential bonding ∇
- Housing to ground, application parts to ground

Function Test with Power Analysis

(also suitable for high power devices under test up to 16 A)

The device under test can be subjected to a function test with mains voltage via the integrated test socket.

The following are measured or automatically calculated during the function test:

- Line voltage
- Residual current
- Power consumption
- Active and apparent power
- Power factor
- Electrical energy
- On-time

Multimeter Functions

Extensive multimeter functions including temperature measurement expand measuring options for the user in a sensible fashion. The following individual measurements can be performed:

- Direct and alternating voltage
- Resistance
- Phase detection
- Current and protective conductor resistance with clip-on meter (accessory)
- Temperature with Pt100 or Pt1000 (accessory)

High-Voltage Test with Direct Voltage

The mains plug of the device under test (safety class I and II devices) is connected to the test socket at the test instrument.

The test instrument monitors the mains connection. Incorrect or dangerous mains connection is indicated, and measurement is disabled in the event of danger.

Use of the test instrument for high-voltage testing is trouble-free because DIN VDE 0104 does not apply. The high-voltage test is performed with direct voltage. In order to comply with requirements for alternating voltage, testing is performed with 1.5-fold direct voltage. This multiplying factor is applied automatically during testing.

This DC high-voltage test complies with EN 60601 3rd edition/EN 50106 (VDE 0700 part 500), as well as with other standards.

Report Functions

All values required for electrical equipment approval reports or device log books (e.g. for ZVEH) can be measured with the test instrument.

The optional SECUTEST®PSI module (printer with memory, integrated interface and keypad which can be mounted inside the lid of the test instrument) expands the applications range of the test instrument.

All measured data can be documented and archived with the measurement and test report, which can be printed out either directly from the SECUTEST®PSI module or via adapter DA-II to an external printer or else saved to memory and printed out from a PC.

The measurement and test report substantiates regular maintenance and testing for users of electrical devices.

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

The test instrument has been manufactured and tested in accordance with the following standards:

IEC/EN 61 010-1:2001 VDE 0411-1:2002	Safety requirements for electrical measurement, control and laboratory devices – General requirements
DIN VDE 0404 Part 1: 2002	Test and measuring equipment for testing the safety of electrical devices – General requirements
DIN VDE 0404 Part 2: 2002	– Testing equipment for tests after repair, change or in the case of repeat tests
DIN VDE 0404 Part 3: 2005	– Equipment for periodical tests and tests prior to commissioning medical electrical devices or systems
DIN EN 60 529/ VDE 0470 Part 1	Test instruments and test procedures, protection provided by enclosures (IP code)
DIN EN 61 326 VDE 0843 Part 20	Electrical equipment for measurement, control and laboratory use – EMC requirements

Regulations for the Use of the SECUTEST[®] SIII Test Instrument

Devices under test to be tested in accordance with the following regulations	Testing after Repairs			Periodic Testing		Type Tests and Routine Testing						
	DIN VDE 0701 Part 1	DIN VDE 0701 Part 240	DIN VDE 0751:2001	IEC 60601/DIN EN 60601	DIN VDE 0702:2004	British Standard	DIN VDE 0751:2001	IEC 60601/DIN EN 60601	DIN EN 60950	DIN EN 61010	DIN EN 60335/EN 50106	IEC 60601/DIN EN 60601
Electrical equipment												
Appliances and electric equipment	•											
Mains operated electronic devices												
Hand-held electric tools												
Extension cables	•											
Data processing devices		•										
Electrical medical devices, application parts			•	•			•	•				•

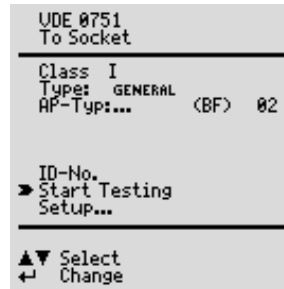
MPG	German medical product law Regulation for the setup and operation of active medical products
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Table: Individual Measurements and Regulations

Individual Measurements per Regulation	Test Current [A]	DIN VDE 0701 Part 1	DIN VDE 0701 Part 240	DIN VDE 0702	British Standard	DIN EN 60950	DIN EN 61010	DIN EN 60335	DIN VDE 0751	IEC 601/EN 60601
		Protective Conductor Resistance	0,2 10 25	• • •	• • •	• • •	• • •			
Insulation Resistance		•	•	•	•					
Equivalent Leakage Current		•	•	•						
High-Voltage Test					•	•	•	•		AC
Equivalent (Device) Leakage Current									•	•
Equivalent Patient Leakage Current									•	
Residual Current		•		•					•	
Contact Current		•		•						
Absence of Voltage (exposed conductive parts)			•							
Housing Leakage Current						•	•			•
Earth Leakage Current										•
Patient Leakage Current									•	•
Patient Auxiliary Current									•	•
Device Leakage Current									•	
Single Fault Conditions N PE							•	•		•
Mains at Application Part										•

Sample displays, menu-driven operation:

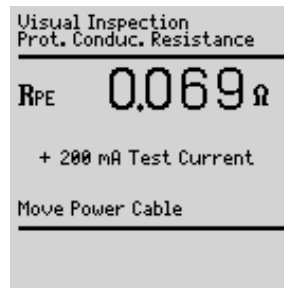
Test Sequence Setup



Visual Inspection



Protective Conductor Test

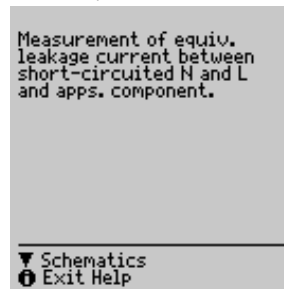


Leakage Current Measurement

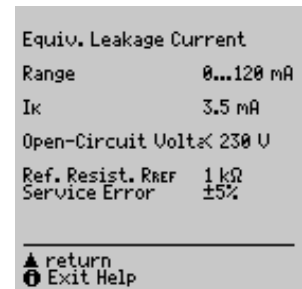


Sample displays, online help:

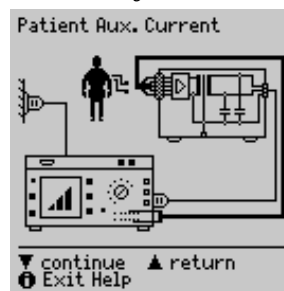
Online Help Texts



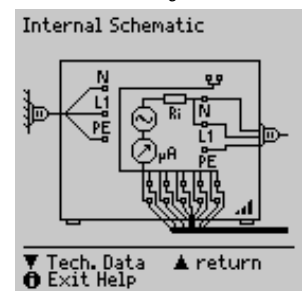
Technical Data



Schematic Diagrams

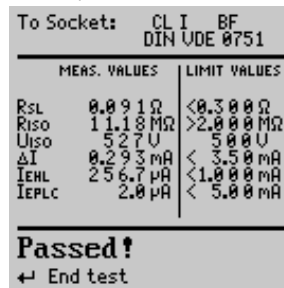


Internal Circuit Diagrams

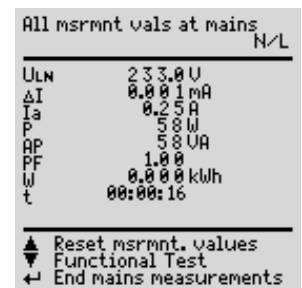


Sample reports with measurement results:

Test Sequence Results



Function Test Results



Characteristic Values

Refer to page 3 for assigning individual measurements to the regulations	Measured Quantity	Measuring Range/ Nominal Range of Use	Resolution	Nominal Voltage U_N	Open-Circuit Voltage U_0	Nominal Current I_N	Short-Circuit Current I_K	Internal Resistance R_I	Reference Resistance R_{REF}	Measuring Error	Intrinsic Error	Overload Value	Capacity Time	
	Device Protective Conductor Resistance R_{PE}	0.000 ... 2.100 Ω	1 m Ω	—	4.5 ... 9 V DC	—	> 200 mA DC	—	—	—	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$ > 10 d	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont.
		2.11 ... 31.00 Ω	10 m Ω	—	< 6 V AC	—	> 10 A AC ⁴⁾ > 5 s	—	—	—	—	—	no protection ⁵⁾	
	Insulation Resistance R_{ISO}	0.050 ... 1.500 M Ω	1 k Ω	—	50 ... 500 V DC	$1.0 \cdot U_N \dots 1.5 \cdot U_N$	> 1 mA	< 10 mA	—	—	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont.
		1.01 ... 10.00 M Ω	10 k Ω	$\pm(10\% \text{ rdg.} + 10 \text{ digits})$							$\pm(10\% \text{ rdg.} + 10 \text{ digits})$			
	Equivalent Leakage Current I_{EL}	0.00 ... 21.00 mA	10 μ A	—	230 V \sim -20/ +10 %	—	—	< 3.5 mA	> 72 k Ω	2 k Ω	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont.
		20.1 ... 120.0 mA	100 μ A	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$							$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits			
	Contact Current (Absence of Voltage) I_{probe}	0 ... 3.500 mA	1 μ A	—	—	—	—	—	2 k Ω	—	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont. ²⁾
	Residual Current ΔI between L and N	0.000 ... 3.100 mA \sim 3.00 ... 31.00 mA \sim	1 μ A 10 μ A	—	—	—	—	—	—	—	$\pm(10\% \text{ rdg.} + 10 \text{ digits})$ > 10 digits	$\pm(5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	1)	1)
	Equivalent Device and/or Patient Leakage Current I_{EDL} and/or I_{EPL}	0.0 ... 310.0 μ A	0.1 μ A	—	230 V \sim -20/ +10 %	—	—	< 3.5 mA	> 72 k Ω	1 k Ω $\pm 50 \Omega$	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont. 1) 3)
0.000 ... 2.100 mA		1 μ A												
2.101 ... 21.00 mA		10 μ A												
20.1 ... 120.0 mA		100 μ A												
Leakage Current I_L ²⁾	0.0 ... 310.0 μ A	100 nA	—	approx. line voltage ⁶⁾	—	—	—	1 k Ω	—	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$	$\pm(2.5\% \text{ rdg.} + 5 \text{ digit})$ > 10 digit	253 V	cont. 1) 3)	
All Leakage Current I_L	0.210 ... 3.600 mA	1 μ A												
	3.10 ... > 15.00 mA	10 μ A	—											

Function	Measured Quantity	Measuring Range / Nominal Range of Use	Resolution	Open-Circuit Voltage U_0	Short-Circuit Current I_K	Internal Resistance R_I	Measuring Error	Intrinsic Error	Overload Value	Capacity Duration
Functions Test	Nominal Voltage U_{L-N}	103.5 V ... 126.5 V 207.0 ... 253.0 V \sim	0.1 V	—	—	—	—	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$	253 V	cont.
	Load Current I_V	0 ... 16.00 A RMS	10 mA	—	—	—	—	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$	20 A	10 min
	Active Power P	0 ... 3700 W ⁷⁾	1 W	—	—	—	—	$\pm(5\% \text{ rdg.} + 10 \text{ digits})$ > 20 digits	253 V	cont.
	Apparent Power S	0 ... 4000 VA	1 VA	Calculated Value $U_{L-N} \cdot I_V$				$\pm(5\% \text{ rdg.} + 10 \text{ digits})$ > 20 digits	20 A	10 min
	Power Factor PF, sinusoidal: $\cos \phi$	0.00 ... 1.00	0.01	Calculated Value P / S, Display > 10 W				$\pm(10\% \text{ rdg.} + 5 \text{ digits})$		
	Residual Current ΔI between L and N	0.00 ... 31.00 mA \sim	10 μ A	—	—	—	$\pm(10\% \text{ rdg.} + 10 \text{ d})$ > 10 digits	$\pm(5\% \text{ rdg.} + 5 \text{ digits})$	1)	1)
$U_{AC/DC}$	Voltage	0 ... 253.0 V \sim , \sim and \sim	0.1 V	—	—	—	—	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont.
	Low-Voltage SC III						$\pm(5\% \text{ rdg.} + 10 \text{ d})$			
U_{probe}	Probe Voltage	0 ... 253.0 V \sim , \sim and \sim	0.1 V	—	—	—	—	$\pm(2.5\% \text{ rdg.} + 5 \text{ digits})$ > 10 digits	253 V	cont.
R	Resistance	0 ... 150.0 k Ω	100 Ω	< 20 V -	1.1 mA	—	—	$\pm(1\% \text{ rdg.} + 3 \text{ digits})$	253 V	cont.
I_{clip}	Current via Clip-On Current-Voltage Converter WZ12C	0.000 ... 10.00 A \sim	1 mA	—	—	1.5 M Ω	—	$\pm(3\% \text{ rdg.} + 10 \text{ digits})$ > 10 digits	253 V	cont.
		0 ... 100 A \sim	1 A	—	—	1.5 M Ω	—	$\pm(3\% \text{ rdg.} + 10 \text{ digits})$ without clip	253 V	cont.
Temp	Temperature with Pt100 / Pt1000 Sensor	-200 ... -50 $^{\circ}$ C	1 $^{\circ}$ C	< 20 V -	1.1 mA	—	—	$\pm(2\% \text{ rdg.} + 1 \text{ }^{\circ}\text{C})$	10 V	cont.
		-50.1 ... +300.0 $^{\circ}$ C	0.1 $^{\circ}$ C					$\pm(1\% \text{ rdg.} + 1 \text{ }^{\circ}\text{C})$	10 V	cont.
		+300 ... +850 $^{\circ}$ C	1 $^{\circ}$ C					$\pm(2\% \text{ rdg.} + 1 \text{ }^{\circ}\text{C})$	10 V	cont.

1) As of 25 mA: shutdown by residual current measurement within 100 ms

2) Except for earth leakage current: only 0.000 to 3.100 mA

3) Measuring circuit is highly resistive, indication at display

4) Measurement with AC test current is not possible at jacks (1) to (3); feature G01: > 25 A: Short-circuit current is less than 25 A if the SK5 special cable is used.

5) Test duration max. 40 s, protection against overheating: measurement cannot be restarted until a waiting period of 1 minute has elapsed.

6) Calculated value: max. 253 V

7) Measured value P and calculated value S are compared, and the smaller value is displayed.

Key: rdg. = reading, d = digits

I_L = patient, housing and earth leakage current, as well as patient auxiliary current

High Voltage Test (feature F02)

Transducer

Nominal Voltage, AC	U_N - adjustable in 10 V steps in 100 V steps	0.5 ... 0.99 kV 1 ... 4 kV $(U_N \cdot 1.5) \cdot 1.011 + 60 \text{ V}$
Open-Circuit Voltage, DC	U_0	$\pm 1.5\%$
Intrinsic Error, U_0	U_0	$\pm 1.5\%$
Nominal Current	per DIN VDE 0104	< 3.5 mA DC
Short-Circuit Current	discharge current from 6 x 2.7 nF	> 5 A at 5 kV
Resistance to Interference Voltage		none

Measuring

Measuring Range	Display Range	Intrinsic Error, U_0
0 ... U_{omax}	0.000 ... > 10.00 kV DC	$\pm 1.5\%$

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

Testing for Correct Mains Connection

The test instrument 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 Mains Connection Error	Message	Condition	Measurements
Voltage at protective conductor PE to finger contact	Text appears at LCD	Press key $U > 40 \text{ V}$	disabled
Protective conductor PE and phase conductor L reversed and/or neutral conductor N interrupted	lamp lights up	Voltage at PE $> 65 \text{ V}$	impossible (no supply power)
Contact voltage at protective conductor PE to neutral conductor N or phase conductor L	Text appears at LCD	$U > 25 \text{ V}$	disabled, although disabling can be deactivated (e.g. IT network)
Mains voltage too low	lamp lights up	$U_{L-N} < 90/180 \text{ V}$	possible under certain circumstances

Influencing Quantities and Influence Error

Influencing Quantity/ Sphere of Influence	Designation per DIN VDE 0404	Influence Error $\pm \dots \%$ of Measured Value
Position Change	E1	—
Change in Test Setup Supply Power	E2	2.5
Temperature Fluctuation	E3	Specified influence error applies per 10 K change in temperature: 1 in case of PE measurement 0.5 of all other measuring ranges
0 ... 21 °C and 25 ... 40 °C		
Current at Device Under Test	E4	2.5
Low-Frequency Magnetic Fields	E5	2.5
Impedance at Device Under Test	E6	2.5
Capacitance, Insulation Measurement	E7	2.5
Waveshape of Measured Current	E8	2 for capacitive load (for equivalent leakage current)
49 ... 51 Hz		1 (for contact current)
45 ... 100 Hz		2.5 for all other measuring ranges

Reference Ranges

Line Voltage	115/230 V \pm 0.2%
Line Frequency	50/60 Hz \pm 0.1%
Waveshape	sine (deviation between effective and rectified value < 0.5%)
Ambient Temperature	$+23 \text{ °C} \pm 2 \text{ K}$
Relative Humidity	40% ... 60%
Load Impedance	linear

Nominal Ranges of Use

Line Voltage	103.5 V ... 126.5 V or 207 V ... 253 V
Line Frequency	50 Hz or 60 Hz
Line Voltage	
Waveshape	sine
Temperature	0 °C ... + 50 °C

Ambient Conditions

Storage Temperature	- 20 °C ... + 60 °C
Operating Temp.	- 10 °C ... + 50 °C
Accuracy Range	0 °C ... + 50 °C
Relative Humidity	max. 75%, no condensation allowed
Elevation	max. 2000 m

Electromagnetic Compatibility

Product standard DIN EN 61326:2002

Interference Emission		Class
EN 55022		B
Interference Immunity	Test Value	Performance Feature
EN 61000-4-2	Contact/Air - 4 kV/8 kV	A
EN 61000-4-3	10 V/m	C
EN 61000-4-4	Mains Connection - 2 kV	B
EN 61000-4-5	Mains Connection - 1kV	A
EN 61000-4-6	Mains Connection - 3 V	A
EN 61000-4-11	0.5 Period / 100%	A

Power Supply

Line Voltage	103.5 V ... 126.5 V or 207 V ... 253 V
Line Frequency	50 Hz or 60 Hz
Power Consumption	approx. 30 VA
for 10 A test current	approx. 95 VA, test duration max. 40 s
for 25 A test current	approx. 180 VA, test duration max. 40 s
for function test	continuous max. 3600 VA, power is conducted through the instrument only, switching capacity \leq 16 A

RS 232 Data Interface

Type	RS 232C, serial, per DIN 19241
Format	9600, N, 8, 1
Connector	9-pin subminiature socket connector

Electrical Safety

Safety Class	I per IEC 61010-1/EN 61010-1/ VDE 0411-1
Nominal Voltage	115/230 V
Test Voltage	3.7 kV 50 Hz
Measuring Category	250 V CAT II
Contamination Level	2
Safety Shutdown	for residual current at device under test > 25 mA, disconnecting time < 100 ms probe current > 10 mA, < 1 ms

Mechanical Design

Display	multiple backlit dot matrix display, 128 x 128 pixels
Dimensions	test instruments without high-voltage module: LxWxH: 292 mm x 138 mm x 243 mm test instruments with high-voltage module: LxWxH: 292 mm x 138 mm x 300 mm
Weight	standard device: approx. 4.5 kg device with HV test: approx. 5.24 kg device with 25 A PE test: approx. 5.5 kg with 25 A PE and HV test.: approx. 5.9 kg
Protection	housing: IP 40, connections: IP 20 per DIN VDE 0470 Part 1/EN 60529,

Extract from table on the meaning of IP codes

IP XY (1 st digit X)	Protection against foreign object entry	IP XY (2 nd digit Y)	Protection against the penetration of water
0	not protected	0	not protected
1	$\geq 50.0 \text{ mm } \varnothing$	1	vertically falling drops
2	$\geq 12.5 \text{ mm } \varnothing$	2	vertically falling drops with enclosure tilted 15°
3	$\geq 2.5 \text{ mm } \varnothing$	3	spraying water
4	$\geq 1.0 \text{ mm } \varnothing$	4	splashing water

SECUTEST®SIII

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

Standard Equipment for SECUTEST®SIII Basic Instrument (all features = 00)

- | | |
|--|---|
| 1 SECUTEST®SIII test instrument | 1 operating instructions |
| 1 probe cable with test probe
depending upon test instrument features | 1 carrying strap |
| 1 plug-on alligator clip for test probes | 1 CD ROM (demo) PS3 data management PC software |
| 3 plug-on quick-connect terminals | 1 CD ROM (demo) PC.doc PC software for the generation of
reports and lists as well as test data management |
| 1 test report | |

Features and Options

List of possible options for the SECUTEST®SIII instrument series:

Feature		00	01	02	03	04	05	06	07	08	09	10	11	XX
Design	A	standard	OEM	UK										
Mains Connection for Country of Use	B	D	D + service socket	UK	F	I	DK	SA		China/AUS	CH		Adapter kit ²⁾	
User Interface Language	C	D	UK	F	I	E	CZ	NL						
Configuration of Test Sequence (Settings in Setup)	D	GMC							Hospital beds ⁵⁾					acc. to customer specifications
SECUTEST®PSI Printer Module	E	without	with											
High-Voltage Test HV DC	F	without		max. ⁴⁾ 6,126 kV DC (\cong 4 kV AC)										
AC Test Current 50/60 Hz for Protective Conductor Measurement	G	10 A ³⁾	25 A											
DC Test Current for Protective Conductor Measurement	H	200 mA ³⁾												
including Patient Ports	J	without	with											
Measurements per EN 60601 SECU 601 Option (Z853G)	KA	without	with											
Database	KB	without	with											
Remote Control SK5 Probe Cable (Z745K)	KD	without	with											
Direct Printing after each Measurement for Automatic Test Sequences ¹⁾ via RS232	KE	without	with											
Calibration Certificate per DKD	L	without	with											

¹⁾ Each measured value is documented in this case, as opposed to the results of a test sequence for which the poorest value for each given test is displayed. (via SECUTEST®PSI, via printer adapter DA-II to an external printer or via a PC)

²⁾ Adapter kit for international use (includes Feature B01)

³⁾ Standard, not dependent on feature

⁴⁾ Combining Feature F02 with B04 or B07 is not possible.

⁵⁾ Configured for safety class 2 hospital beds (preset) (including safety class 2, article number Z745D)

Enter the designation of the basic instrument to your order, i.e. **M7010**, and only those desired features which are other than 00!

Example of a complete type designation (= article number, = order designation) for a SECUTEST®SIII:

- with service socket and SECUTEST®PSI printer module as a test instrument for protective measures in accordance with DIN VDE 0701/0702: **M7010 B01 E01**
- with database and DA-II printer adapter for testing the electrical safety of electrical medical devices in accordance with DIN VDE 0751/DIN EN 60601 and MPG: **M7010 J01 KA01 KB01 KE01**

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

Features C00 ... C06: SE-L.med * Foreign Language Software (on enclosed PS | 3 CD-ROM)

User interface languages which are not included as a standard feature can be uploaded from our homepage (www.gossenmetrawatt.com). One language at a time can be uploaded to the test instrument.

Feature E01: SECUTEST®PSI

Values measured by the test instrument can be stored to and printed from the PSI module, and comments can be added with the alphanumeric keypad. The LCD at the test instrument is used as a display for the PSI module. Statistical analysis of measurement results can also be performed – percentage of successfully completed function tests. The PSI module is mounted inside the lid of the test instrument in a space-saving fashion.



Feature KA01: Tests per IEC 60 601/EN 60601

Measurements in accordance with this standard are made possible by uploading the appropriate software to the instrument with the help of a PC via the included interface cable. Special features:

- Patient ports can be assigned to groups
- Automatic sequence under all single-fault conditions

Feature KB01: Database

Test sequences can be configured on-site and performed in the appropriate selector switch position in accordance with the respective regulations. Configurations for various test sequences are stored to the test instrument and can be reactivated as required. The measured values acquired during these test sequences are also stored to the test instrument. These can be read out to a printer as required using report forms which have been stored to the test instrument.

Feature KD01: SK5 Remote Control (Recognition of Probe on Protective Conductor)

This additional feature consists of a 5 meter long cable with a test probe and includes a software extension. The protective conductor measurement is expanded to include the function: “automatic recognition of measuring point change”. During protective conductor measurement, the instrument recognizes whether or not the probe is in contact with the protective conductor, and indicates these two possible conditions by means of acoustic signals. This function is helpful if several protective conductor connections need to be tested.

Feature KE01: Direct Print-Out

After completion of each test (individual test or at the end of a test sequence), test results are read out directly via the RS 232 interface. If the SECUTEST®PSI has been connected, the results are printed directly to paper.

* Software Installation Requirements

Software: MS WINDOWS 98, ME, NT, 2000 or XP.

Hardware:

- IBM compatible WINDOWS PC, as from 200 MHz Pentium-CPU with at least 64 MB RAM
- SVGA monitor
- Hard disk with at least 20 MB available memory
- MICROSOFT compatible mouse

PC Analysis and Remote Control Software (Accessory)

Software for Maintenance and Repair Management PS3

Measurement data acquired with test instruments is transferred to PS3 and are then automatically assigned to activities such as testing, maintenance or inspection. Ready-to-sign test and work reports can thus be prepared with a minimum of effort.

The basic module and the device module are sufficient for standard requirements such as reading in measurement data and report printing.

Additional requirements such as following up on deadlines, test data history, data selection and list generation, right on up to complete object management (devices and buildings) with inventory management, errors indication, work orders and repairs are handled with the expansion module and with add-on modules.

An overview of all of the features included with this software is available in the PS3 brochure.

Generation of Reports and Lists with PC.doc-WORD™/EXCEL™

Requirement: Microsoft®WORD™ or Microsoft®EXCEL™

- **Import function:** The test results, data and comments which have been filed in the memory and input module are imported into PC.doc-WORD™/EXCEL™ by read-out of the module or by opening an existing memory file.
- **Selection of DUT:** The requested devices under test can be selected for onward procession.
- **Program Selection:** It is up to you to decide whether the data are inserted into test report templates (Microsoft®WORD™), entered in a new list (Microsoft®EXCEL™) or attached to an existing list. Function buttons are included in the generated test data table (Excel spreadsheet) which allow you to export the data either into WORD test reports or WORD lists.
- **Modification Options:** The test report or list forms can be supplemented and printed.
- **Acquisition of Master Data:** Master data (table without measured values) can be transferred from the test data table to another newly created table.
- **Clearer Presentation:** Only those forms are shown which correspond to the test standard which has been preset at the test instrument.

Test Data Management with PC.doc-ACCESS™

Prerequisite: Microsoft® ACCESS™

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

Data are represented in accordance with the respective test regulation. Data are displayed as lists or in data sheet format, and can be sorted and filtered in a variety of different ways. Complete test data management is thus made possible.

Reports and deadline lists can be printed out for selectable ID number ranges.

A separate data sheet gives you an overview of the features and functions of PC.doc-WORD™ and PC.doc-ACCESS™.

SECUTEST® SIII

Test Instrument for DIN EN 60601/60335/60950/61010, DIN VDE 0700/0701/0702/0751 and British Standard

Order Information

Designation	Type	Article Number
Basic device and features for subsequent installation		
Basic device with automatic test sequence, interface, German online instructions, earthing contact plug and socket, probe cable with test probe, plug-on alligator clip, 3 plug-on quick-connect terminals, test report, operating instructions. See table on page 6 for features and expansions.	SECUTEST®SIII	M7010 (all features: 00)
Standard type available from stock, M7010 with all basic features 00 (B00 to L00)	M7010-V010	M7010-V010
Standard type available from stock, M7010 with features B01 (service socket) and J01 (patient ports)	M7010-V001	M7010-V001
Feature E01: PSI module with languages D, GB, F, NL, I, E and CZ, 2 rolls of recording chart paper, 1 ink ribbon cartridge, batteries and operating instructions	SECUTEST®PSI ^{D)}	GTM 5016 000 R0001
Feature KA01: tests per IEC 601 with software upgrade ¹⁾	SECU 601	Z853G
Feature KD01: remote control, probe cable, 5 m long ^{1) 3)}	SK5	Z745K
PC Software		
Software for maintenance and electronic equipment management	PS 3	
Report generation and test data management of electrical devices and systems with SECUTEST®... test instruments	PS3-compact	Z530K
Basic module and device driver for reading out measured values from SECUTEST®... test instruments	PS3 GM	Z530E
Device modules, basic module and add-on module, supplemented by the following modules: – electronic equipment management – remote – repair management – barcode printing	PS3 AM	Z531N
PC software for the generation of reports and lists as accessory equipment for MS-Word/EXCEL, user language German/English/French/Finnish/Polish (Exception: EXCEL part only in German/English)	PC.doc-WORD™/ EXCEL™ ^{D)}	Z714A
PC software for test data management as accessory equipment for MS-Access, user language German/English	PC.doc-ACCESS™ ^{D)}	Z714B
Upgrade from PC.doc win/med... to PC.doc-WORD™	PC.doc upgrade	Z714C
Upgrade from PC.base ... to PC.doc-ACCESS™	PC.base upgrade	Z714D
Accessories		
Test probe and cable (no coil cord), 2 m, suitable for high-voltage test	SK2	Z745D
Pack of 10 rolls of recording chart paper SECUTEST®PSI (approx. 6.7 m per roll)	PS-10P	GTZ 3229 000 R0001
Pack of 10 ink ribbon cartridges for the SECUTEST®PSI	Z3210	GTZ 3210 000 R0001
Barcode scanner	B3261	GTZ 3261 000 R0001
Barcode and label printer and software	Z721D	Z721D
Label set for Z721D printer (quantity x width: 3x24/1x18/1x9 mm, length: 8 m each)	Z722D	Z722D

Designation	Type	Article Number
Label set for printer Z721D (5 tapes of 18 mm width and 8 m length each)	Z722E	Z722E
Printer adapter for direct connection to external printers with Centronics interface for SECUTEST®SIII as from manufacturing date 8/99	DA-II	Z745M
12 conductor patient connection cable, each conductor with 4 mm plug for test instruments with feature J01	PA4	Z745L
Pt100 temperature sensor for surface and immersion measurements, –40 .. +600°C	Z3409	GTZ 3409 000 R0001
Pt100 oven sensor, –50 ... +550°C	TF550	GTZ 3408 000 R0001
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
Shunt for measuring range matching when using the instrument with feature G01 in combination with WZ12C transformer	Z864A	Z864A
Adapter for testing single-phase extension cables including earthing contact and inlet plug inserts ³⁾	EL1	Z723
Plug insert for EL1 in Switzerland per SEV	PRO-CH	GTZ 3225 000 R0001
Plug insert for EL1 in Great Britain	PRO-GB	GTZ 3226 000 R0001
Plug insert for EL1 GB measurement	PRO-GB/ring	GTZ 3226 000 R0002
Plug insert for EL1 in Italy per IMQ	PRO-I	GTZ 3227 000 R0001
Plug insert for EL1 in Denmark	PRO-DK	GTZ 3219 000 R0001
Plug insert for EL1 in South Africa	PRO-RSA	Z501A
Plug insert for EL1 with 3 connector cables for any desired connection standards	PRO-UNI	GTZ 3214 000 R0003
Plug insert for EL1 with 10 m cable for PE measurements and the like	PRO-RLO	GTZ 3214 000 R0002
Plug insert Schuko or the like (replacement plug, included in EL1)	PRO-Schuko	GTZ 3228 000 R0001
Test adapter for tests on devices with CEE16 and CEE32 connections	AT3-II-S ^{D)}	Z745T
3-phase current adapter 16A/32A (test case) for connection to the test instrument for tests per DIN VDE 0701, 0702, 0751 and IEC 601	AT3-III-E ^{D)}	Z745S
Adapter for connecting devices under test: 3-pole 16 A, 5-pole 16 A and 32 A, 5 ea. 4 mm jack	CEE-Adapter	Z745A
Cable set ³⁾	KS13	GTY 3624 065 P01
Cable set (1 pair of measuring cables) 1.2 m, with VDE-GS sign1000 V/CAT III, 600 V/CAT IV 16 A	KS17-2	GTY 3520 034 P01
Calibration adapter for test instruments per DIN VDE 0701/0702/0751 (max. 200 mA) ⁴⁾	SECU-cal 10	Z715A
Pouch for all SECUTESTs w/o HV module	F2000 ^{D)}	Z700D
Carrying case for SECUTEST®SIII w/o HV	K2010	Z504L
Brush probe	Z745G	Z745G

¹⁾ Includes: 3½" floppy disk and Z3241 interface cable for RS232.

²⁾ Values for high-voltage test per part 260 are not transferred.

³⁾ Cannot be used for high-voltage test per part 260.

⁴⁾ Cannot be used for high-voltage test per part 260 or for 10 A PE test.

^{D)} Data sheet available

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GMC-I  GOSSEN METRAWATT

GMC-I Gossen-Metrawatt GmbH
Thomas-Mann-Str. 16-20
90471 Nürnberg • Germany

Phone +49-(0)-911-8602-111
Fax +49-(0)-911-8602-777
E-Mail info@gossenmetrawatt.com
www.gossenmetrawatt.com