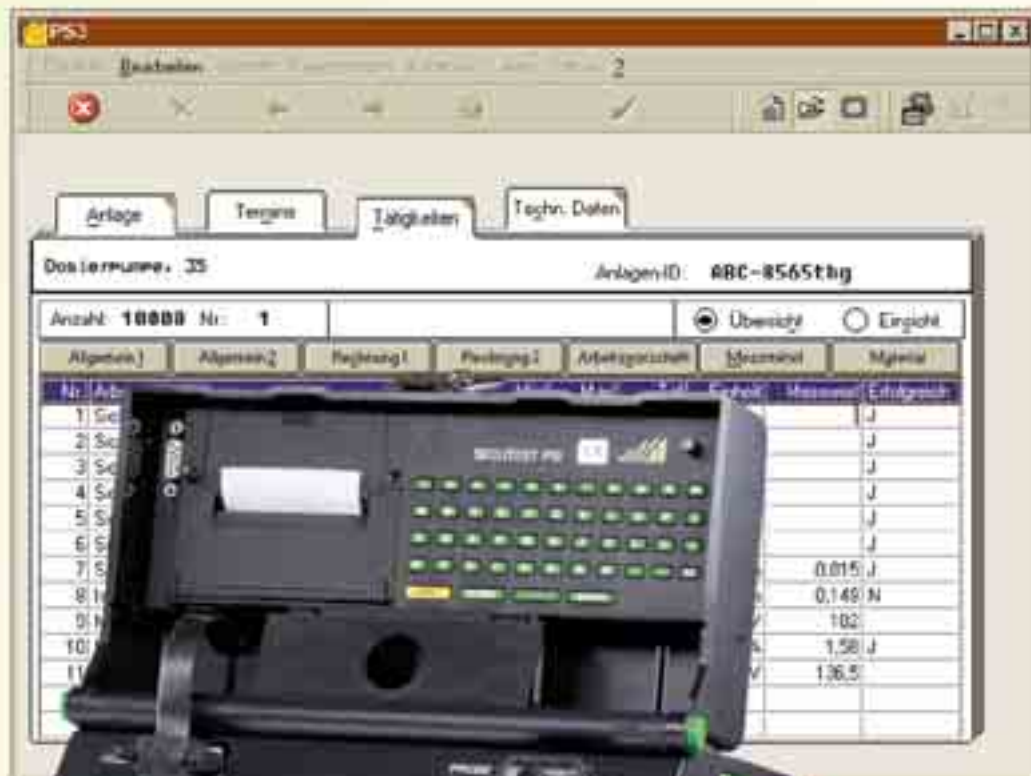# SECUTEST SII

Systematic Testing

- ❏ For portable electrical equipment
- ❏ For electrical medical devices and device components
- ❏ After repairs
- ❏ For periodic testing

Quality Management System

DQS Certified per
DIN EN ISO 9001 reg. no. 1262

SECUTEST SII

Automated, Systematic Testing …

▶ Acquiring equipment data …

… with the SECUTEST PSI module

… with a PC keyboard

… with a barcode printer

Master Data

Master Data

… with a barcode scanner

▶ Automatic test sequence and data storage

Test Data

▶ Transmission, display and management of test results, as well as equipment management and maintenance management with the following programs:

… Made Easy with Our Test Instruments!

PC.doc-win

For documentation with MS Office including automatic initialization of the respective programs

Microsoft WinWord

For complete documentation

or

Microsoft Access

Database program for complete test data management

PS3

Intelligent modular software for maintenance, equipment, service and test management

▶ Generation of:

- Reports
- Checklists
- Statistics

Laws and Regulations Made Easy

It is the responsibility of the electrical technician to test the electrical safety of equipment and devices.

Compliance with laws and standards must be substantiated.

SECUTEST test instruments provide the user with support in adhering to the following regulations which are essential for measuring procedures:

Trade Association Accident Prevention Regulations
BGV A2: electrical systems and equipment
GUV 2.10: community accident prevention regulation

Laws and Directives:
Equipment safety law
Workshop directive
Product liability law
Medical device legislation

DIN VDE Standards
SECUTEST test instruments are manufactured in accordance with
DIN VDE 0404:
Devices for technical safety testing of electrical equipment
DIN VDE 0411:
Safety requirements for electrical equipment for measurement, control and laboratory use

SECUTEST test instruments allow for automated test sequences in accordance with DIN VDE 0701:
Repair, modification and testing of electrical devices,
DIN VDE 0702:
Periodic testing of electrical devices
DIN VDE 0751:
Repair, modification and testing of electrical medical devices

Time consuming reading of applicable regulations is eliminated thanks to the SECUTEST concept including:
Selection of the appropriate regulation
Initialization of the test sequence
Reading the results

The integrated condensed operating instructions, including circuit diagrams and help texts, facilitate operation for use by lay persons.

Standard Accessories

SECUTEST PSI
with storage, text entry
and printing functions

Top: Calibration adapter for test instruments per DIN VDE 0701/0702
Middle: CEE adapter for testing three-phase power consumers: 16 A 3-pole
16 A, 5-pole, 32 A, 5-pole
Bottom: DA-II printer adapter, RS 232 – Centronics

Test instruments, the PSI module, recording chart paper etc. can be neatly stored and conveniently transported in the F2000 carrying pouch.

The K701 carrying case has additional space for barcode reader, clip-on ammeter, temperature sensor, calibration adapter, interface cable and measuring accessories.

Competence

GOSSEN-METRAWATT GMBH is certified in accordance with DIN EN ISO 9001:2000. Our calibration laboratory is accredited per DIN EN ISO/IEC 17025.

Our technical measuring expertise ranges from repair and seminars including practical experience, right on up to DKD calibration certificates.

Our offerings are rounded out with free test equipment management. As a full service calibration lab, we can calibrate instruments from other manufacturers as well.

The Future Oriented Test Instrument

- Periodic testing
- Testing after repairs
- Time saving and cost-effective
- User-friendly thanks to feature selection

Testing the electrical safety of electrical equipment in accordance with DIN VDE 0701/0702/0751

The SECUTEST SII assures quick, reliable testing and measurement of repaired or modified electrical devices in accordance with DIN VDE 0701, and periodic testing in accordance with DIN VDE 0702/0751.

The following quantities are measured in accordance with the regulations:

- Protective conductor resistance
- Insulation Resistance
- Protective conductor current for safety class I devices
- Contact current for safety class II devices
- Absence of voltage at accessible, conductive parts (contact current)
- Patient leakage current (AC + DC)

Measuring methods for leakage current:

- Equivalent leakage current measurement
- Direct measurement
- Differential current measurement

SECUTEST SII

Testing electrical devices after repairs and modification in accordance with DIN VDE 0701

- Part 1: General and special requirements per:
  - Appendix E, supplementary requirements for electrical tools
  - Appendix F, supplementary requirements for heaters
  - Appendix G, supplementary requirements for stoves, cookers ...
  - Appendix H, supplementary requirements for microwave ovens
- Limit values in accordance with the new DIN VDE 0701-1: 2000-09 standard
- Testing at data processing equipment and office machines per DIN VDE 0701, part 240
- Differential current, resolution: 1 µA
- Periodic testing per DIN VDE 0702
- Testing of electrical medial devices, including type B/BF and type CF application parts, in accordance with DIN VDE 051, and technical safety inspection per MPG (AC and DC components are measured separately).
- Fulfills DIN VDE 0404-2:2002-05

Easy Operation
Start key for safety testing with automated measuring sequence in accordance with applicable standards; the mains connection is tested at the same time for dangerous and/or faulty states. Measurement is interrupted automatically in the event of danger.
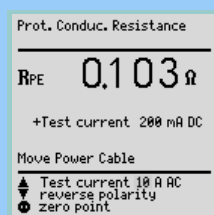

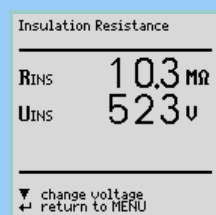**Sample displays for menu-driven operation:**
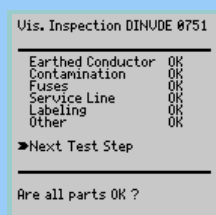
Visual Inspection
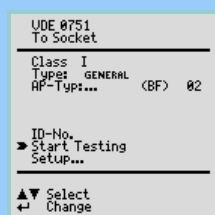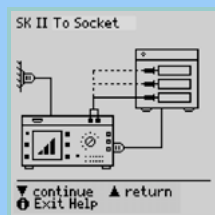

Selection Menu

Protective Conductor Test

Insulation Resistance Measurement

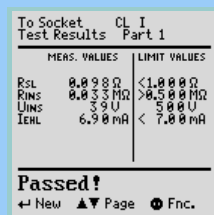**Sample displays from the help function:**
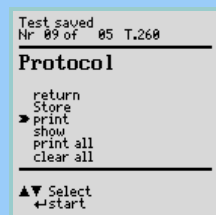

Menu-Driven Help Text

Wiring Diagram

Sample reports for measurement results:

Test Results with Limit Values

Report Print-Out

Large Dot Matrix Display
The illuminated display is easy to read – even where poor lighting conditions prevail. Texts for user assistance and parameters configuration, measuring and test results, wiring diagrams, help texts and error messages appear at the display in plain text. Foreign language versions can be installed subsequently with the appropriate software.

SECUTEST SII

Integrated Recording Chart Printer (optional)

Test results can be printed out on-site in the form of concise, documented reports which can be furnished with date, time and a text entered at the keypad.

Memory, Interface

Test results in accordance with DIN VDE 0701 and DIN VDE 0702 generated with the SECUTEST 0701/0702SII are transmitted and stored to the PSI module installed to the test instrument's lid via RS 232 interface and a ribbon cable.

All measured values for up to 250 test reports can be stored to this memory (depending upon text volume).

Data can be transferred to a PC via the RS 232 interface at the PSI module independent of the test instrument.

Function Selector Switch

Simply select the regulation which must be complied with and press the start key: the pass or fail message then appears after a brief period of time. In addition to DIN VDE regulations, individual measurements can be executed and settings can be changed with the selector switch in the MENU position.

Test Socket

Single-phase devices with plug can be connected to the test socket.

Test instrument variants for different countries are equipped with country-specific outlets.

Data transfer, display, management and documentation – our software does it all.

PC.doc-win

PC.doc-win is a report generating database program for SECUTEST test instruments based on Microsoft WinWord and Access.

Measurement results and data entered at the PSI module are inserted into report forms in accordance with DIN VDE 0701, or device lists per DIN VDE 0702 in WinWord.

Complete device and equipment management is made possible with Access, and master data and test data can be documented and administered as well.

- Standard forms and device lists
- Automatic initialization of WinWord and Access
- Easy generation of customer-specific documents
- Automatic generation of deadline lists for periodic testing schedules
- Import of files from PC.doc (DOS predecessor software)
- PC.doc remote:
  Remote control software for customer-specific test sequences

PS3 Software

PS3 reads in measurement data acquired with the test instruments and organizes them automatically according to activity, i.e. testing, maintenance and inspection.

Only a few quick work steps are required for the generation of ready-to-sign test reports and transfer reports.

Standard requirements, for example measurement data read-in and report printing, are accomplished by the basic module and the respective device module.

Other requirements such as maintenance management, following up on deadlines, test data history and the selection of desired data for the generation of lists, right on up to complete object management (equipment and buildings) including inventory management, work order generation and repairs, are handled by the add-on module and any required additional modules.
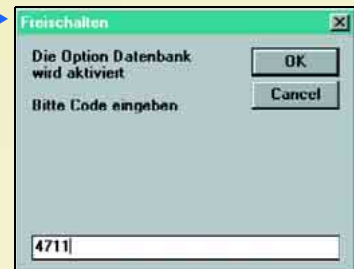
SECU

The experts are astonished …

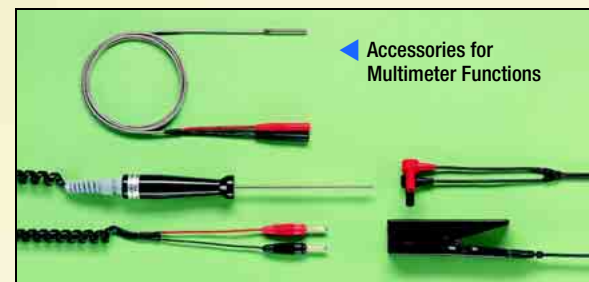at the standard features supplied by the market leader:
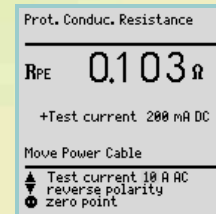
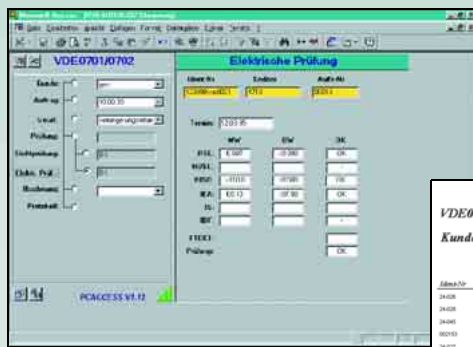◀ 200 mA test current for testing the protective conductor

Database for tests and test sequences included in the basic instrument. Measured values can be read out directly to an interconnected printer using report templates stored at the test instrument.

◀ 2 m probe cable for larger devices under test, additional 5 m cable with automatic measuring point indication.
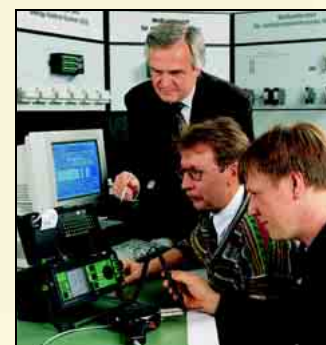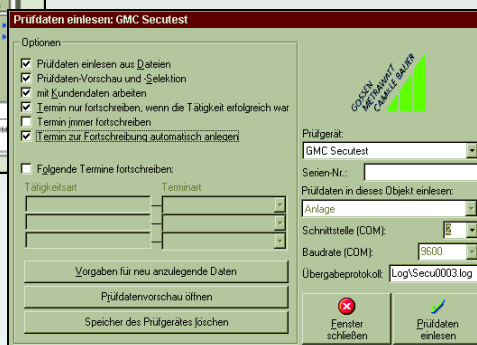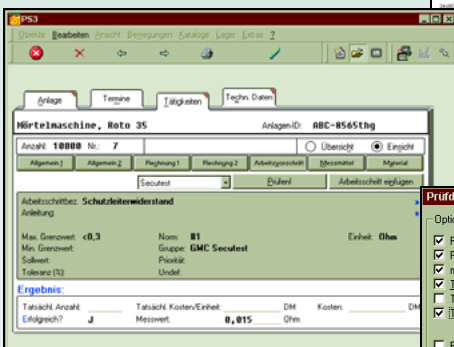

◀ **Accessories for Multimeter Functions**

◀ **In-House Training Department**
We offer seminars including practical experience covering "Measurements for Testing Safety Measures at Portable Electrical Devices, and for Medial Applications".

TEST S II

Testing the electrical safety of portable electrical equipment in industrial and household applications

Function Test with Power Analysis

A function test executed after safety testing allows for a complete analysis of the characteristic values of the device under test. Active and reactive power, as well as power factor and duty cycle are displayed in addition to differential current, operating voltage and load current.

Reports with the PSI Model and a PC

All test results can be transmitted via the RS 232 interface to the PSI module where they are stored, and from which they can be printed out on-site in report form at any time.

Data can be transmitted via the RS 232 interface at the PSI module or the test instrument to a PC, at which test reports can be generated with the help of analysis software.

Adaptable to Regulations and Limit Values

Limit values saved in accordance with valid DIN VDE standards can be changed at any time in order to accommodate stricter regulations.
Updating can be performed via the RS 232 interface if the limit values set forth in the regulations are changed.

Complete Measuring System

In combination with the SECUTEST PSI module, the SECUTEST 0701/0702 S II represents a complete measuring system for testing the safety of portable electrical equipment in accordance with DIN VDE 0701 and DIN VDE 0702. Extensive accessories such as software modules, barcode scanners and printers, clip-on ammeters, temperature sensors, extension cable adapters, test adapters and more transform it into a universal measuring instrument for service applications.

EL1 Adapter
For testing single-phase extension cables

AT3-III safety tester
For testing single and 3-phase power consumers, as well as extension cables

The user only needs to select either: testing after repair in accordance with DIN VDE 0701, or periodic testing in accordance with DIN VDE 0702.

Desired sequences can be established for the individual selector switch positions by means of function-specific setups.

The Most Important Characteristic Values

Function	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	Ref. Resistance R_{REF}	Measuring Error	Intrinsic Error	Overload Capacity Value	Overload Capacity Time
Tests: DIN VDE 0701/0702/0751	Device protective conductor resistance R_{SL}	0.000 ... 2.100 Ω	1 mΩ	–	4.5 ... 9 V DC	–	>200 mA DC	–	–	± (5% rdg. +10 d) > 10 d	± (2.5% rdg. +5 d) > 10 d	253 V	Cont.
		2.11 ... 31.00 Ω	10 mΩ										
	Insulation resistance R_{ISO}	0.050 ... 1.500 MΩ	1 kΩ	50 ... 500 V DC	1.0 · U_N ... 1.5 · U_N	>1 mA	<10 mA	–	–	± (5% rdg. + 10 d)	± (2.5% rdg. +5 d) > 10 d	253 V	Cont.
		1.01 ... 10.00 MΩ	10 kΩ										
		10.1 ... 310.00 MΩ	100 kΩ							± (10% rdg. +10 d)	± (10% rdg. +100 d)		
	Equivalent leakage current I_{EA} or I_{EGA}	0.00 ... 21.00 mA	10 µA	–	230 V ~ −20/ +10%	–	<3.5 mA	> 72 kΩ	1 kΩ	± (5% rdg. + 10 d)	± (2.5% rdg. + 5 d) > 10 d	253 V	Cont.
		0.00 ... 21.00 mA	10 µA										
		20.1 ... 120.0 mA	100 µA										
	Equivalent patient leakage current I_{EPA}	0.0 ... 310.0 mA	100 nA	–	230 V ~ −20/ +10%	–	<3.5 mA	> 72 kΩ	1 kΩ ± 10Ω	± (5% rdg. + 10 d)	± (2.5% rdg. + 5 d) > 10 d	253 V	Cont.
		0.000 ... 2.100 mA	1 µA										
		2.101 ... 11.00 mA	10 µA										
	Contact and device leakage current I_{probe} and I_{GA}	0.0 ... 310.0 µA	0.1 µA	–	–	–	–	1 kΩ	–	± (5% rdg. + 10 d)	± (2.5% rdg. +5 d) > 10 d	253 V	Cont.
		0 ... 3.500 mA	1 µA										
	Equivalent patient leakage current I_{PA} AC and DC components measured separately	0.0 ... 310.0 µA	100 nA	–	–	–	–	1 kΩ	–	± (5% rdg. + 10 d)	± (2.5% rdg. +5 d) > 10 d	253 V	Cont. [2] [5]
		0.000 ... 3.100 mA	1 µA										
		3.10 ... >15 mA	10 µA										
	Differential current ΔI between L and N [1]	0.000 ... 3.100 mA ~	1 µA	–	–	–	–	–	–	±(10% rdg. +10 d) > 10 d	± (5% rdg. + 5 d) > 10 d	[2]	[2]
		0.00 ... 31.00 mA ~	10 µA										
Function test	Line voltage U_{L-N}	207.0 ... 253.0 V ~	0.1 V	–	–	–	–	–	–	–	± (2.5% rdg. + 5 d)	253 V	Cont.
	Load current I_V	0 ... 16.00 A $_{RMS}$	10 mA	–	–	–	–	–	–	–	± (2.5% rdg. + 5 d)	20 A	10 min.
	Active power P	0 ... 3700 W [3]	1 W	–	–	–	–	–	–	–	± (5% rdg. + 10 d) > 20 d	253 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 LF with sinus. waveshape: cosφ	0.00 ... 1.00	0.01	Calculated value, P / S, display > 10 W							± (10% rdg. + 5 d)		
	Differential current ΔI between L and N per VDE 0702	0.00 ... 31.00 mA ~	10 µA	–	–		–	–	–	±(10% rdg. +10 d) > 10 d	± (5% rdg. + 5 d)	[2]	[2]
U_{probe}	Probe voltage (phase search)	0 ... 253.0 V ⚊, ~ and ⚌	0.1 V	–	–	–	–	–	–	–	± (2.5% rdg. + 5 d) > 10 d	253 V	Cont.
$U_{AC/DC}$ [4]	Voltage	0 ... 253.0 V ⚊, ~ and ⚌	0.1 V	–	–	–	–	–	–	–	± (2.5% rdg. +5 d) > 10 d	253 V	Cont.
	Extra-low voltage, SC III									± (5% rdg. + 10 d)			
R [4]	Resistance	0 ... 150.0 kΩ	100 Ω	–	<20 V		1.1 mA	–	–	–	± (1% rdg. +3 d)	253 V	Cont.
I_{clip} [4]	Current via Z3510 clip-on current-voltage transformer	0.000 ... 10.00 A ~	1 mA (1 mV)	–	–		–	1.5 MΩ	–	–	± (3% rdg. +10 d) > 10 d without clip	253 V	Cont.
		0 ... 100 A ~	1 A (1 mV)										
Temperature [4]	Temperature with Pt100 sensor	− 200 ... -50° C	1° C	–	<20 V		1.1 mA	–	–	–	± (2% rdg. +1° C)	10 V	Cont.
		− 50.1 ... + 300.0 °C	0.1 °C								± (1% rdg. +1° C)		
		+ 300 ... +850° C	1° C								± (2% rdg. +1° C)		

[1] For testing in accordance with DIN VDE 0751, device leakage current is determined by means of differential current measurement as part of the test sequence.

[2] As of 25 mA: shutdown via differential current measurement within 100 ms

[3] Measured value P and calculated value S are compared, and the smaller of the two is displayed

[4] With feature F01 only

[5] The measuring path becomes highly resistive, indication appears at the display

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

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