

# SECUTEST Lemongreen (M708E)

## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

3-447-201-03  
1/7.23

- Integrated test sequences for quickly testing operating equipment (preconfigured standards-compliant series of individual tests with subsequent documentation)
- Suitable for use by trained persons
- Quick access to measuring and test functions via the double rotary switch, direct selection keys and softkeys
- Automatic detection of DUT connection and protection category
- Unique multiple measurement permits convenient recording of several measuring points.
- Testing of various types of PRCDs such as PRCD-S and PRCD-K via integrated test sequences (including protective conductor resistance measurement for variants with switched PE as well)
- Comprehensive, legally secure preparation of test reports
- Extensive data management and storage concept for test results and single measurements (up to 50,000 data records\*) – allocation of measurements/tests to devices and customers
- USB interfaces for data entry and transmission
- High-resolution, brilliant 4.3" TFT color display
- Compact, impact resistant housing with integrated rubber protector
- Extensive setting options for international use (language, keyboard, character set, date, time)



**IQ** Optimized for IZYTRONIQ



product  
design award  
2014

i-NOVO  
AWARDS  
2015

DESIGN



### SECUTEST DB+ database expansion

- **Remote control** via PC (IZYTRONIQ) is possible.
- Up to **24 user-defined test sequences** (up to a total of 1200 test steps) can be created in IZYTRONIQ and uploaded to the test instrument.
- **Additional database elements:**
  - Property, building, floor and room for better structuring of large data sets
  - Department and cost center
  - Individual test interval for each **test object**
- Multi-print – **print out several/all test reports** (to a connected Z721S thermal printer) which are available for a device under test by pressing just one key
- Create user-defined **report templates** and manage them in the test instrument, including company logo
- **Export** all data (master data and measured value) as a file to a USB flash drive
- **Import** all test object master data (no measured values) to the test instrument from IZYTRONIQ, or from a USB flash drive

### Database expansion SECUTEST SECUTEST DB COMFORT

- **Additional database elements:**
  - **Medical test object** for medical DUTs, with extended entry options
  - Individual test interval for each **test object**
- Searches started with the **“Search All”** - softkey scan the new “UDI” field (unique device identification) for medical devices as well.
- **QuickEdit** – when setting up a new DUT, not only can the ID be entered – all other fields can also be filled in at the same time as well.
- **Auto-Store** – results of automatic test sequences are saved immediately under the selected test object.
- **Push-Print** – send data directly to the PC (IZYTRONIQ) (data are not stored at the instrument).
- **AutoPrint** – Automatic printing of test reports after completion of a test or when storing a test in the database.

\* 1 data record = 1 DUT or location node or customer or individual measurement

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## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

### Included Features

#### Measuring Functions

Switch Position	Measuring Functions Test Current/Voltage	Measurement type Connection type
<b>Single measurements, rotary switch level: green</b>		
RPE	$R_{PE}$ <b>Protective conductor resistance</b>	PE(TS) - P1
	I Test current (200 mA)	Active: PE(TS) - P1 PE(mains) - P1
RINS	$R_{INS}$ <b>Insulation resistance (PC I/PC II)</b>	LN(TS) - PE(TS)
	$U_{INS}$ Test voltage	LN(TS) - P1 PE(mains) - P1 PE(TS) - P1 LN(TS) - P1/PE(TS)
IPE	$I_{PE\approx}$ <b>Protective conductor current, RMS</b>	Direct Differential Alternative
	$I_{PE\sim}$ AC component	
	$I_{PE=}$ DC component	
	$U_{LN}$ Test voltage	
IT	$I_{T\approx}$ <b>Touch current, RMS</b>	Direct Differential Alternative (P1) Permanent connection
	$I_{T\sim}$ AC component	
	$I_{T=}$ DC component	
	$U_{LN}$ Test voltage	
IE	$I_{E\approx}$ <b>Device leakage current, RMS</b>	Direct Differential Alternative
	$I_{E\sim}$ AC component	
	$I_{E=}$ DC component	
	$U_{LN}$ Test voltage	
IA	$I_{A\approx}$ <b>Leakage current from the applied part, RMS</b>	Direct (P1) Alternative (P1) Perm. conn. (P1)
	$U_A$ Test voltage	
IP	$I_{P\approx}$ <b>Patient leakage current, RMS</b>	Direct (P1) Perm. conn. (P1)
	$I_{P\sim}$ AC component	
	$I_{P=}$ DC component	
	$U_{LN}$ Test voltage	
U	$U_{\approx}$ <b>Probe voltage, RMS</b>	PE - P1 PE - P1 (with mains*) * Polarity setting
	$U_{\sim}$ Alternating voltage component	
	$U_{=}$ Direct voltage component	
tPRCD <sup>1)</sup>	ta PRCD time to trip for 30 mA PRCDs	
	$U_{LN}$ Line voltage at the test socket	
P	<b>Function test at the test socket</b>	
	I Current between L and N	Polarity setting
	U Voltage between L and N	
	f Frequency	
	P Active power	
	S Apparent power	
	PF Power factor	
<b>Special measuring functions</b>		
EL1	Extension cord with adapter: Continuity, short-circuit, polarity (wire reversal <sup>2)</sup> )	EL1 adapter EL1 adapter (continuity only)
EXTRA	Reserved for expansion within the framework of software updates	

#### Key:

Alternative = alternative measurement (equivalent leakage current measurement)  
 Differential = differential current measurement  
 Direct = direct measurement  
 LN(TS) = short-circuited L and N conductors at test socket  
 P1 = measurement with test probe P1  
 PE-P1 = measurement between PE and test probe P1  
 PE(TS) = protective conductor at the test socket  
 PE(mains) = protective conductor at the mains connection

#### Integrated Test Sequences

The test instrument includes preconfigured, integrated test sequences. The integrated test sequences can be used to comply with the following standards:

- VDE 0701-0702 / ÖVE E 8701 / SNR 462638  
Inspection after repair, modification of electrical appliances –  
Periodic inspection on electrical appliances
- IEC 62353 / EN 62353 / VDE 0751-1  
Medical electrical equipment –  
Recurrent test and test after repair of medical electrical equipment
- IEC 60974-4 / EN 60974-4 / VDE 0544-4  
Arc welding equipment  
Part 4: Periodic inspection and testing
- EN 50678 / VDE 0701  
General Procedure for Verifying the Effectiveness of the  
Protective Measures of Electrical Equipment After Repair
- EN 50699 / VDE 0702  
Recurrent Test of Electrical Equipment
- IEC 62368 / EN 62368 / VDE 0868-1  
Audio/video, information and communication technology  
equipment
- IEC 62911 / EN 62911 / VDE 0868-911  
Audio, video and information technology equipment – Routine  
electrical safety testing in production

The integrated test sequences are run in the orange rotary switch position. They're freely assignable, i.e. they can be individually assigned to the rotary switch positions (because there are more integrated test sequences than rotary switch positions).

The test instrument is preconfigured upon delivery and its configuration depends on numerous factors. Due to the great variety of possible combinations, listing them would go beyond the scope of this data sheet and has therefore been omitted.

<sup>1)</sup> Measurement of time to trip isn't possible in IT systems.

<sup>2)</sup> No checking for reversed wires when the EL1 adapter is used.

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## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

### 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 calculate 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 Mains Connection Error	Message	Condition	Measurements
Voltage at protective conductor PE to finger contact (START/STOP key)	Display	Press <b>START/STOP</b> key $U > 25 \text{ V}$ key $\rightarrow$ PE; $< 1 \text{ M}\Omega^2$	All measurements disabled
Protective conductor PE and phase conductor L reversed and/or neutral conductor N interrupted		Voltage at PE $> 100 \text{ V}$	Not possible (no supply power)
Line voltage $< 180 \text{ V} / < 90 \text{ V}$ (depending on mains)		$U_{L-N} < 180 \text{ V}$ $U_{L-N} < 90 \text{ V}$	Possible under certain circumstances <sup>1</sup>
Test for IT/TN system	Display	Connection $N \rightarrow PE > 20 \text{ k}\Omega$	Possible under certain circumstances

<sup>1</sup> 10/25 A  $R_{PE}$  measurements are only possible with line voltages of 115/230 V and line frequencies of 50/60 Hz.

<sup>2</sup> If the user of the test instrument is too well insulated, the following error message may appear: "Interference voltage at PE"

### 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:

Test Function	Condition
<b>Short-circuit test L-N</b>	Short-circuit / DUT starting current
	No short-circuit (AC test)
Open-circuit voltage $U_0$ 4.3 V, short-circuit current $I_K < 250 \text{ mA}$	
<b>Short-circuit test LN-PE</b>	Short-circuit
	No short-circuit (AC test)
Open-circuit voltage $U_0$ 230 V AC, short-circuit current $I_K < 1.5 \text{ mA}$	
<b>On test</b>	On (DUT passive)
	Off (DUT active)
Open-circuit voltage $U_0$ 230 V AC, short-circuit current $I_K < 1.5 \text{ mA}$	
Switchable control	Mains power switched on automatically
	Pop-up (switch off DUT first)
<b>Probe test</b>	No probe
	Probe detected
<b>Protection Class Detection</b> (only with country specific variant)	
	Protective conductor found: PC I
	No protective conductor: PC II
<b>Safety shutdown</b>	
Triggered at following residual current value (selectable)	

Test Function	Condition
Triggered at following probe current values	$> 30 \text{ mA}$
For leakage current measurement	
During protective conductor resistance measurement	$> 250 \text{ mA}$
<b>Connection test</b> (only with country specific variant)	
Checks whether the DUT is connected to the test socket.	
	DUT power cable found
	No DUT power cable
<b>Insulation test</b>	DUT set up in a well-insulated fashion
	DUT set up in a poorly insulated fashion
PE mains – PE socket: Open-circuit voltage $U_0$ 50 V DC, $I_K < 2 \text{ mA}$	
<b>Overcurrent protection</b>	
Shutdown in the event of a continuous flow of current via the test socket at:	
Our SECUTEST ST BASE10 test instruments permit active testing of devices with nominal current (load current) of up to 16 A. The test socket on the respective test instrument is equipped with 16 A fuses to this end, and the switching capacity of the internal relays is also 16 A. Starting current of up to 30 A is permissible. In the case of test objects for which a starting current of greater than 30 A can be expected, we urgently recommend the use of a test adapter for larger starting currents, e.g. a test adapter from the AT3 series.	
	$I > 16.5 \text{ A}$

### Features

#### 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.

#### Creating a Database

A test structure with data regarding customers and test objects can be created in the test instrument. This structure makes it possible to save 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".

Medical devices can be entered as test objects (Medical Device) with the SECUTEST DB COMFORT database expansion and individual test dates can be assigned to all test objects.

The SECUTEST DB+ database expansion extends the structure to include buildings, floors and rooms. Furthermore, the test structure can be set up conveniently at a PC with the help of IZYTRONIQ software (see "IZYTRONIQ Software" on page 4), and subsequently transferred to the test instrument.

#### Logging Functions

All of the values required for approval reports or device logbooks for electrical DUTs (e.g. per ZVEH) can be measured and stored with the test instrument. A due date for the next test is also determined.

Measurement data can be documented and archived thanks to the measurement and test report that can be printed with a thermal printer which has been connected to the USB port, or stored to a USB flash drive as an HTML report (see "Data Interfaces" on page 4).

Alternatively, stored measurement data can be transferred to IZYTRONIQ software (see "IZYTRONIQ Software" on page 4) in order to archive the data, add comments and create reports.

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### IZYTRONIQ Software

This software IZYTRONIQ facilitates test organization and the management of test data from a broad range of test instruments. It also provides extended functions such as remote control in connection with the respective test instrument – support for extended functions depends on the test instrument and its order features or enabled extensions (activations).

Detailed information can be found on our website:

[www.gmc-instruments.de/en/products/software-and-accessories/software/](http://www.gmc-instruments.de/en/products/software-and-accessories/software/)



### 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 schematics and wiring diagrams appear. Sample screenshots are shown on the next page.

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 via a displayed softkey keyboard. The menu is controlled via softkeys.

Compatible barcode readers, RFID scanners, USB keyboards and printers can also be connected via USB.

### Data Interfaces

The test instrument is equipped with USB interfaces which can be used for various purposes:

- Structures set up in, and measurement data saved to the test instrument can be transferred to IZYTRONIQ database software. Data can then be archived in the program, comments can be added and reports can be generated.
- Connection of compatible external input and output devices (see "Data Entry" on page 4)
- Data backup and restore with USB flash drive
- Report printing to USB flash drive or external printer

### Updates

The test instrument is future-proof because firmware/software updates are released on a regular basis.

### Scope of Delivery

1	SECUTEST ST BASE 10	
1	F2000 carrying pouch	Z700D
1	Barcode Scanner	
1	IZYTRONIQ Business Professional	S103S
1	Registration card for IZYTRONIQ Business Professional software	Z956D
1	EL1 adapter for testing single-phase extension cables	Z723A

### Barcode Scanner

For reading 1D codes. This makes it possible to conveniently insert the ID numbers of DUTs into single measurements and test sequences.

The device is connected via USB.

### EL1 Adapter for Testing Single-Phase Extension Cords (Z723A)



### F2000 Universal Carrying Pouch (Z700D)



Outside dimensions:  
W x H x D  
380 x 310 x  
200 mm  
(without buckles, handle or carrying strap)

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## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

### Backlit Multi-Display Samples

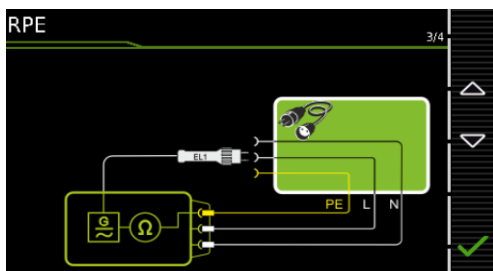
Single Test – Initial Screen with Parameters Display



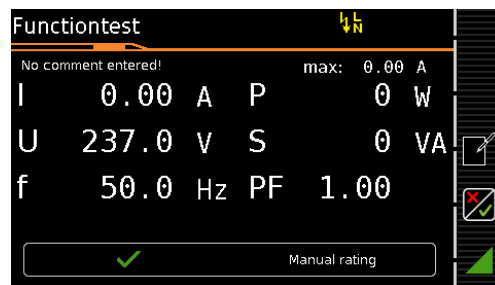
Test Sequence – Start (EN 50678 / VDE 0701)



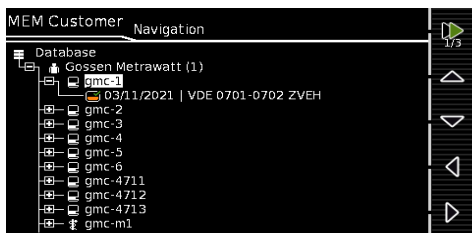
Help – Schematic and Wiring Diagram



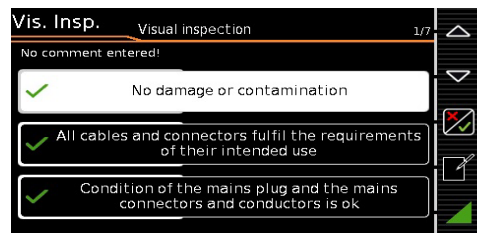
Test Sequence – Function Test



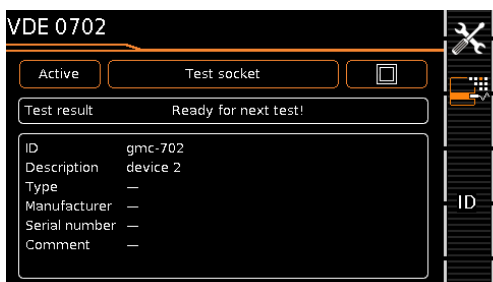
Database Structure – Customer List



Test Sequence – Visual Inspection



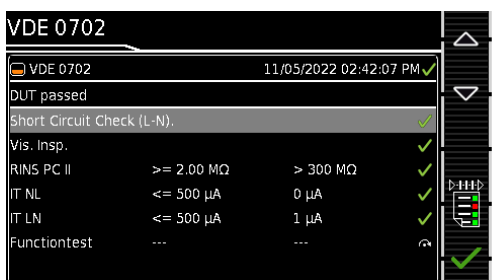
Test Sequence – Start (EN 50699 / VDE 0702)



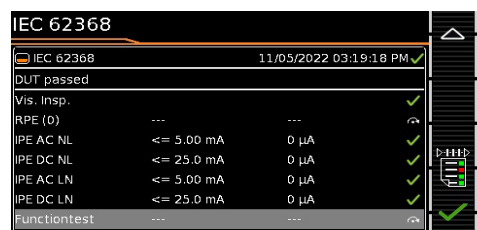
Test sequence – IPE Measurement (IEC 62368/EN 62368/VDE 0868-1)



Test Sequence – Test Results (EN 50699 / VDE 0702)



Test Sequence – Test Results (IEC 62368 / EN 62368 / VDE 0868-1)



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### Characteristic Values

Function	Measured Quantity	Display Range/ Nominal Range of Use <sup>6</sup>	Reso- lution	Nominal Voltage $U_N$	Open- Circuit Voltage $U_0$	Nomi- nal Current $I_N$	Short- Circuit Current $I_{SC}$	Internal Resis- tance $R_I$	Refer- ence Re- sistance $R_{REF}$	Measuring Uncertainty	Intrinsic Uncertainty	Overload Capacity		
												Value	Time	
Tests	Protective conduc- tor resistance <b>RPE</b>	1 ... 999 mΩ	1 mΩ	—	< 24 V AC or DC	—	> 200 mA AC / DC > 10 AAC	—	—	$\pm(15\% \text{ rdg.} + 10 \text{ d})^7$ > 10.0 Ω: $\pm(10\% \text{ rdg.} + 10 \text{ d})^7$	$\pm(10\% \text{ rdg.} + 10 \text{ d})^7$	264 V	Cont.	
		1.00 ... 9.99 Ω	10 mΩ									250 mA		
		10.0 ... 27.0 Ω	100 mΩ									16 A		
	Insulation resis- tance <sup>4</sup> <b>RINS</b>	10 ... 999 kΩ	1 kΩ	50 ... 500 V DC	1.0 × $U_N$ ... 1.5 × $U_N$	> 1 mA	< 2 mA	—	—	$\pm(5\% \text{ rdg.} + 4 \text{ d})^7$  $\geq 20 \text{ M}\Omega$ : $\pm(10\% \text{ rdg.} + 8 \text{ d})^7$	$\pm(2,5\% \text{ rdg.} + 2 \text{ d})^7$  $\geq 20 \text{ M}\Omega$ : $\pm(5\% \text{ rdg.} + 4 \text{ d})^7$	264 V	Cont.	
		1.00 ... 9.99 MΩ	10 kΩ											
		10.0 ... 99.9 MΩ	100 kΩ											
		100 ... 300 MΩ	1 MΩ											
	Leakage current alternative measurement <sup>1</sup> <b>IPE, IT, IE, IA</b>	0 ... 99 μA	1 μA	—	50 ... 250 V~ -20/+10%	—	< 1.5 mA	> 150 kΩ	1 kΩ $\pm 10 \text{ W}$	$\pm(5\% \text{ rdg.} + 4 \text{ d})^7$ > 15 mA: $\pm(10\% \text{ rdg.} + 8 \text{ d})^7$	$\pm(2\% \text{ rdg.} + 2 \text{ d})^7$ > 15 mA: $\pm(5\% \text{ rdg.} + 4 \text{ d})^7$	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 measure- ment <sup>2</sup> <b>IPE, IT, IE, IA, IP</b>	$I_p$ only: 0.0 ... 99.9 μA	100 nA	—	—	—	—	1 kΩ $\pm 10 \text{ W}$	1 kΩ	$\pm(5\% \text{ rdg.} + 4 \text{ d})^7$	$\pm(2,5\% \text{ rdg.} + 2 \text{ d})^7$	264 V	Cont.	
		0 ... 99 μA	1 μA											
		100 ... 999 μA	1 μA											
		1.00 ... 9.99 mA	10 μA											
	Leakage current differential cur- rent measure- ment <sup>3</sup> <b>IPE, IT, IA</b>	0 ... 99 μA	1 μA	—	—	—	—	—	—	$\pm(5\% \text{ rdg.} + 4 \text{ d})^7$	$\pm(2,5\% \text{ rdg.} + 2 \text{ d})^7$	264 V	Cont.	
100 ... 999 μA		1 μA												
1.00 ... 9.99 mA		10 μA												
10.0 ... 30.0 mA		100 μA												
Function Test at the Test Socket	Line voltage $U_{L-N}$ <sup>5</sup>	100.0 ... 240.0 V~	0.1 V	—	—	—	—	—	—	—	$\pm(2\% \text{ rdg.} + 2 \text{ d})$	264 V	Cont.	
	Load current $I_L$	0 ... 16.00 A <sub>RMS</sub>	10 mA	—	—	—	—	—	—	—	$\pm(2\% \text{ rdg.} + 2 \text{ d})$	16 A	Cont.	
	Active power P	0 ... 1000 W	1 W	—	—	—	—	—	—	—	—	$\pm(5\% \text{ rdg.} + 10 \text{ d})^8$	264 V	Cont.
		1.00 ... 3.70 kW	10 W	—	—	—	—	—	—	—	—	$\pm(5\% \text{ rdg.} + 10 \text{ d})^8$	20 A	10 min.
	Apparent power S	0 ... 1000 VA	1 VA	Calculated value, $U_{L-N} \times I_V$								$\pm(5\% \text{ rdg.} + 10 \text{ d})^8$	264 V	Cont.
		1.00 kVA ... 4.00 kVA	10 VA											
	Power factor PF with sinusoidal waveform: $\cos\phi$	0.00 to 1.00	0.01	Calculated value, P / S, display > 10 W								$\pm(10\% \text{ rdg.} + 5 \text{ d})$	264 V	Cont.
Line frequency f	0 ... 420.0 Hz	0.1 HZ	—	—	—	—	—	—	—	—	$\pm(2\% \text{ rdg.} + 2 \text{ d})$	264 V	Cont.	
<b>t</b> PRCD	Time to trip	0.1 ... 999.0 ms	0.1 ms	—	—	30 mA	—	—	—	$\pm 5 \text{ ms}$	—	264 V	Cont.	

<sup>1</sup> Known as equivalent leakage current or equivalent patient leakage current from previous standards

<sup>2</sup> Protective conductor current, touch current, device leakage current, patient leakage current

<sup>3</sup> Protective conductor current, touch current, device leakage current

<sup>4</sup> The upper range limit depends on the selected test voltage.

<sup>5</sup> Voltage at the test socket may be lower than measured line voltage due to components which limit inrush current.

<sup>6</sup> Display range hysteresis: Under certain circumstances, the display range may be changed only if the value has fallen below the hysteresis range.

<sup>7</sup> Specification is only valid as of a display value of >10 digits, for example as of a display value of 10 mΩ in the display range 1...999 mΩ and as of a display value of 0.1 Ω in the display range 1.00 ... 9.99 Ω.

<sup>8</sup> Specification is only valid as of a display value of >20 digits, for example as of a display value of 20 mΩ in the display range 1...999 mΩ and as of a display value of 0.2 Ω in the display range 1.00 ... 9.99 Ω.

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

### Testing Times, Automatic Sequence

Testing times ("measurement duration ..." parameter) can be set separately for each rotary switch position during configuration of the sequence parameters. Testing times are neither tested nor 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 500 ms. This shutdown does not take place during leakage current measurement with adapter.

### Influencing Quantities and Influence Error

Influencing Quantity / Sphere of Influence	Designation per IEC 61557-16	Influence error ± ... % rdg.
Change of position	E1	—
Change to test equipment supply voltage	E2	2.5
Temperature fluctuation	E3	Specified influence error valid per 10 K temperature change
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
Measured current waveform	E8	2 with capacitive load (for equivalent leakage current)
49 ... 51 Hz		1 (for touch current)
45 ... 100 Hz		2.5 for all other measuring ranges

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### Reference Ranges

Line voltage	230 V AC $\pm 0.2\%$
Line frequency	50 Hz $\pm 2$ Hz
Line voltage	Sine (deviation between RMS and rectified values $< 0.5\%$ )
Ambient temperature	$+23$ °C $\pm 2$ K
Relative humidity	40 ... 60%
Load resistors	Linear

### Nominal Ranges of Use

Nominal line voltage	90 V ... 264 V AC
Nominal line frequency	50 ... 400 Hz
Line voltage waveform	Sinusoidal
Temperature	0 °C ... $+ 40$ °C

### Ambient Conditions

Storage temperature	$- 20$ °C ... $+ 60$ °C
Relative humidity	Max. 75%, no condensation allowed
Elevation	Max. 2000 m
Place of use	Indoors, except within specified ambient conditions

### Power Supply

Supply network	TN, TT or IT
Line voltage	90 V ... 264 V AC
Line frequency	50 Hz ... 400 Hz
Power consumption	200 mA DUT: Approx. 32 VA 10 A DUT: Approx. 105 VA

Mains to test socket (e.g. during function test) Continuous max. 3600 VA, power is conducted through the instrument only, Switching capacity  $\leq 16$  A, ohmic load

### Electrical Safety

Protection class	I per EN 61140
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 Designed for 300 V CAT II (but reduced to 250 V CAT II through the use of fuses for increased user safety. The user-friendly fuses are replaceable and replacements are easily obtainable).

Pollution degree 2

Safety shutdown At DUT differential current of  $> 10$  mA, shutdown time:  $< 500$  ms, can also be set to  $> 30$  mA with following probe current during:  
– Leakage current measurement:  $> 30$  mA  $\sim$   $< 500$  ms  
– Protective conductor resistance measurement:  $> 250$  mA  $\sim$   $< 1$  ms  
in case of continuous current  $I > 16.5$  A

Fuse links Mains fuses: 2 ea. FF 500V/16A  
Probe fuse: M 250V/250mA  
10 A RPE test current (feature G01 only): 1 ea. FF 500V/16A

### Electromagnetic Compatibility

Product standard	DIN EN 61326-1 DIN EN 61326-2-2
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Interference Emission		Class
EN 55011		B
IEC 61000-3-2		B
IEC 61000-3-3		B
Interference Immunity	Test Value *	Evaluation Criterion
EN 61000-4-2	Contact/atmos. – 4 kV/8 kV	B
EN 61000-4-3	10 V/m (80 MHz ... 1 GHz)	A
EN 61000-4-4	Mains Connection – 2 kV	B
EN 61000-4-5	Mains connection – 1 kV (LN), 2 kV (LPE)	B
EN 61000-4-6	Mains Connection – 3 V	A
EN 61000-4-8	30 A/m	A
EN 61000-4-11	0%: 1 period	B
	0%: 250/300 periods	C
	40%: 10/12 periods	C
	70%: 25/30 periods	C

### USB Data Port

Type	USB slave for PC connection / remote control
Type	2 x USB master for data entry devices* with HID boot interface, for USB flash drive for data backup, for USB flash drive for saving reports as HTML files, for printers*

\* See the following page for compatible devices

### Mechanical Design

Display	4.3" multi-display (9.7x 5.5 cm), backlit, 480x 272 pixels at 24-bit color depth (true color)
Dimensions	W x H x D: 295 x 145 x 150 mm Height with handle: 170 mm
Weight	SECUTEST ST BASE 10: approx. 2.5 kg
Protection	Housing: IP 40 (protection against ingress of solid foreign objects $\geq 1.0$ mm diameter, no protection against ingress of water) Test socket: IP 20 (protection against ingress of solid foreign objects $\geq 12.5$ mm diameter, diameter, no protection against ingress of water) (per EN 60529)

### Database

Number of data records	50000 (1 data record = 1 DUT or location node or customer or individual measurement)
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### Regulations and standards in accordance with which the test instrument is manufactured and tested:

EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements
EN 60529/	Test instruments and test procedures Degrees of protection provided by enclosures (IP code)
EN 61326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
EN 61326-2-2	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-2: Particular requirements – Test configurations, operational conditions and performance criteria for sensitive test and measurement equipment for EMC unprotected applications
EN 61557-16	Electrical safety in low voltage distribution systems up to 1000 V AC and 1500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 16: Devices for testing the effectiveness of protective measures of electrical devices and/or electrical medical devices

# SECUTEST Lemongreen (M708E)

## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

### Accessories

The accessories listed below are not included in the scope of delivery.

#### Barcode Printer (Z721E)

For printing barcode labels: Code39, Code128, EAN13, text, QR Code\*, Micro QR Code, DataMatrix, Aztec.

The device is connected via USB.



#### Thermal Printer (Z721S)

For printing test reports on thermal paper (accessory Z722S).

The device is connected via USB.



#### SCANBASE RFID (Z751E) (RFID reader/writer)

Compact device for reading and writing RFID tags (13.56 MHz transponder in accordance with ISO 15693).

The device is connected via USB.



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

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 attachment 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, alternative 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 and 3-phase plug connectors up to CEE 32A for the performance of measurements and tests at electrical devices and extension cords with CEE plug connectors.



#### 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, alternative leakage current (equivalent leakage current)
- Measurement of protective conductor resistance with the following methods: equivalent leakage current/residual 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 Lemongreen (M708E)

## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

### SECULOAD-N Test Adapter (Z745R)

Test adapter for testing open-circuit voltage at welding units per IEC 60974-4 / EN 60974-4 / VDE 0544-4.

In combination with a test instrument, the test adapter is used for testing welding units per IEC 60974-4 / EN 60974-4 / VDE 0544-4. This standard stipulates that peak values for open-circuit voltage may not exceed the limit values, regardless of the utilized settings.

A test sequence for testing welding units with the help of this adapter is integrated into the test instrument.

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 for voltage sources with conventional transformer.



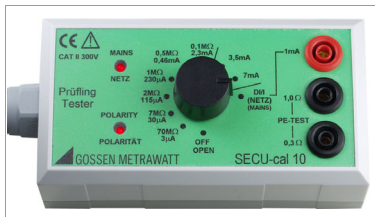
### F2030 System Soft-Case (Z700H)



Outside dimensions:  
W x H x D  
393 x 275 x 248 mm  
(without handle and carrying strap)

### SECU-cal 10 Calibration Adapter (Z715A)

The calibration adapter is used for testing the measuring uncertainty of test instruments in accordance with DIN EN 61557-16 / VDE 0413-16 (previously DIN VDE 0404). 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 DGUV accident prevention regulation 3. All limit values for the required tests per DIN VDE such as protective conductor resistance, insulation resistance, equivalent leakage current, differential and/or touch as well as housing leakage current, must be tested.



### F2010 Universal Carrying Pouch (Z700G)



Outside dimensions:  
W x H x D  
380 x 230 x 270 mm  
(without carrying strap)

### SORTIMO L-BOXX (Z503D)

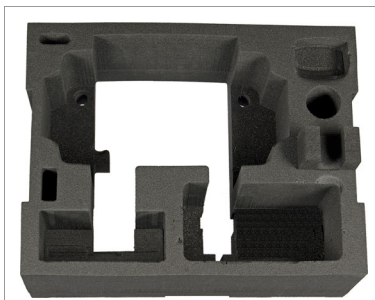
Plastic system case, outside dimensions:  
W x H x D  
450 x 255 x 355 mm

Z701D foam insert for test instrument and accessories must be ordered separately (see below).



### Foam Insert for SORTIMO L-BOXX (Z701D)

Foam insert for test instrument and accessories.



# SECUTEST Lemongreen (M708E)

## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

### F2020 Universal Carrying Pouch (Z700F)



Sample Content

Outside dimensions:  
W x H x D  
430 x 310 x 300 mm  
(without buckles, handle or carrying strap)

Further information regarding accessories can be found:

- In our Measuring Instruments and Testers catalog
- On the Internet at [www.gossenmetrawatt.com](http://www.gossenmetrawatt.com)



### Accessories

Designation	Type	Article Number
<b>Mains cable</b>		
Cable set for connecting test instruments to the mains without using 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
<b>Adapter for Testing 3-Phase Current Consumers</b>		
Adapter for connecting DUTs: 3-pole 16 A, 5-pole 16 A + 32 A, 5 ea. 4 mm socket – For all tests without mains voltage For single and 3-phase electrical devices – For leakage current measurement, direct or differential current method	CEE adapter	Z745A
3-phase 16 A differential current adapter	AT16-DI	Z750A
3-phase 32 A differential current adapter	AT32-DI	Z750B
Test adapter with single and 3-phase plug connectors up to CEE 32A – For all tests without mains voltage For single and 3-phase electrical devices – For tests at single and 3-phase extension cords	VL2E	Z745W
Adapter cable, red CEE 5-pole 16 A plug to red CEE 5-pole 32 A coupling, 0.5 m, 5 x 1.5 mm <sup>2</sup>	CEE16/CEE32 adapter cable	Z750F
<b>Adapter for Testing Single-Phase Extension Cords</b>		
Adapter for testing single-phase extension cords including earth contact and inlet plug inserts	EL1	Z723A
Plug insert for using the EL1 adapter in Switzerland	PRO-CH	GTZ3225000R0001
<b>Adapter for Testing Welding Units</b>		
Test adapter in combination with SECUTEST ST... for testing welding units in accordance with IEC 60974-4 / EN 60974-4 / VDE 0544-4. 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 for voltage sources with conventional transformer. Includes 4 measurement cables and 2 alligator clips.	SECULOAD-N	Z745R

# SECUTEST Lemongreen (M708E)

## Test Instrument Set with SECUTEST ST BASE 10 for Testing the Electrical Safety of Devices

Designation	Type	Article Number
<b>Calibration Adapter</b>		
Calibration adapter for test instruments per DIN EN 61557-16 / VDE 0413-16 (previously DIN VDE 0404) (max. 200 mA) <b>not for use with 10 A protective conductor test current</b>	SECU-cal 10	Z715A
<b>Probe Cables</b>		
Probe cable with test probe and 2 m probe cable (not coiled), 300 V CAT II 16 A	PC2	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	PC5	Z745O
Brush probe	Z745G	Z745G
Distributor for connecting five 4 mm and five 2 mm test probes for measuring multiple, accessible housing parts or applied parts	SV5	Z745J
<b>Pouches and Cases</b>		
Carrying pouch for the test instrument	F2000 <sup>D</sup>	Z700D
Large carrying pouch for test instrument sets	F2020	Z700F
Universal carrying pouch with flexible compartments and display guard for the test instrument	F2010	Z700G
System soft-case	F2030	Z700H
Plastic system case	SORTIMO L-BOXX	Z503D
Foam insert for SORTIMO L-BOXX with compartments for test instrument and accessories	Foam SORTIMO L-BOXX Secutest4	Z701D
Foam insert for SORTIMO L-BOXX GM with compartment for adapter	Foam SORTIMO L-BOXX adapter	Z701E
<b>Report Generating Accessories</b>		
<b>RFID system</b>		
RFID reader/writer for USB connection (frequency: 13.56 MHz)	SCANBASE RFID	Z751E
RFID tag per ISO 15693, dia. approx. 22 mm, self-adhesive, 500 pcs.	Z751R	Z751R
RFID tags per ISO 15693, dia. approx. 30 mm, 2 mm thick with hole, dia. 3 mm, 500 pcs.	Z751S	Z751S
RFID tag per ISO 15693, pigeon ring, dia. approx. 7.5 mm, 250 pcs.	Z751T	Z751T
<b>Barcode Scanner</b>		
Barcode scanner 1D/ 2D for USB connection	Z751A	Z751A
<b>Barcode Printer</b>		
Barcode and label printer including software with USB connection for PC or test instrument Encryption: Code39, Code128, EAN13, Text, QR Code, Micro QR Code, DataMatrix, Aztec	Z721E	Z721E
Label set for Z721D barcode and label printer (qty. × width: 3 × 24 / 1 × 18 / 1 × 9 mm, 8 m long)	Z722D	Z722D
Label set for Z721D barcode and label printer (qty. × width: 5 × 18 mm, 8 m long)	Z722E	Z722E

Designation	Type	Article Number
<b>Thermal Printer</b>		
Thermal printer for printing test reports including user manual on CD-ROM, lithium battery, power pack and mains cable, USB cable, 1 roll of thermal paper	Z721S	Z721S
Thermal paper for Z721S, 10 rolls of thermal paper, 12/50 mm dia., 30 m × 112 mm, coating on outside	Z722S <sup>D</sup>	Z722S
See also separate ID systems data sheet for RFID scanner, barcode reader and printer		

<sup>D</sup> Data sheet available

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Gossen Metrawatt GmbH  
Südwestpark 15  
90449 Nürnberg • Germany

Phone +49 911 8602-0  
Fax +49 911 8602-669  
E-Mail info@gossenmetrawatt.com  
www.gossenmetrawatt.com