GOSSEN METRAWATT

MINITEST | MASTER | PRO | BASE
Testers per DIN VDE 0701-0702

3-349-357-03
7/1.11

Applications

Testing the electrical safety of electrical equipment
per **DIN VDE 0701-0702: 2008**
by measuring:

- protective conductor resistance
- insulation resistance
- protective conductor current – differential current method
- contact current – direct measurement method
- absence of voltage by means of current measurement

Features

Features of MINITEST | ... series	MINITEST 3P | MASTER	MINITEST | MASTER	MINITEST | PRO	MINITEST | BASE
Connection types				
Power supply via permanently connected mains cable	✘	✘	✘	✘
Tests on monophase DUTs	✘	✘	✘	✘
Tests on 3-phase DUTs via additional test sockets CEE 16A / CEE 32A	✘	–	–	–
Fusing devices				
Fuse for probe connection	✘	✘	✘	✘
RCCB in mains plug	–	✘	✘	–
Miniature circuit breaker	✘	–	–	–
Protocol functions				
Illuminated two-line LCD *	✘	✘	✘	–
Memory for 2,000 tests (10 measured values per test)	✘	✘	–	–
Key for transmission of measured values	✘	✘	✘	–
Key for storing measured values	✘	✘	–	–
Data interface (USB port)	✘	✘	✘	–
Barcode scanner connection (9 pin, subminiature plug) for reading ident. numbers in text form with a maximum of 24 characters as description of DUT	✘	✘	–	–

* as from series issued in March 2007

Convenient Connection

The test instrument is intended for testing and measuring repaired or modified devices. The device under test is connected to the test instrument's test socket to this end.
When testing protective conductor current and contact current (absence of voltage at exposed, conductive parts), the device under test is connected to the mains outlet on the test instrument.

Display Functions

Limit value violations are indicated optically by means of nine variously colored LEDs.
MINITEST | MASTER | PRO: All measured values are also clearly read out at a large, two-line digital display.

Rugged Mechanical Design

The handy instrument is furnished with a compact plastic housing with permanently connected mains cable. The respective measured quantity is selected by means of a rotary switch.

PC Analysis Software (not for MINITEST | BASE)

The measurement data can be transferred to a PC for onward processing with one of our software packages.

MINITEST | MASTER | PRO | BASE
Testers per DIN VDE 0701-0702

Selection of Operating Modes

– **Transmission Mode (MINITEST | MASTER | PRO)**

Individual measured values and results are transmitted to a PC via USB port upon keystroke.

– **Permanent Transmission Mode (MINITEST | MASTER | PRO)**

All measured values and results are being continuously transmitted to a PC via USB port.

– **Memory Mode (MINITEST | MASTER)**

A memory menu allows for selecting different settings:

Selecting any memory location for filing or requesting a test result, consecutive numbering of the memory location for filing the test results, displaying all measured values of a DUT in a consecutive, numerical manner in the order of their recording, deleting the data of a memory location, deleting complete device memory.

Report Functions

– **Measured Value Memory (MINITEST | MASTER only)**

The measured values and the result of each test can be stored upon keystroke to the internal device memory for subsequent read-out and processing at the PC via USB port.

– **Barcode Scanner Connection (MINITEST | MASTER only)**

A connected barcode scanner (B3261 only) allows for convenient acquisition of DUT data.

– **Data Interface (MINITEST | MASTER | PRO only)**

For establishing reports, the measured values are transmitted to the PC via a USB cable that has been connected to the USB port.

– **Software for Automatic Adoption of Measured Values and Report Fucntions (MINITEST | MASTER | PRO only)**

The measured values transferred to a PC can be processed with one of our software packages.

Applicable Regulations and Standards

IEC 61010-1 DIN EN 61 010-1 VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use – general requirements
DIN VDE 0404 Teil 1: 2002	Testing and measuring equipment for checking the electric devices– Part 1: Gerneral requirements
DIN VDE 0404 Teil 2: 2002	Testing equiment for tests after repair, change or in case of repeat tests
DIN EN 60529 VDE 0470, part 1	Test instruments and test procedures – degrees of protection provided by enclosures (IP code)
DIN EN 61326-1 VDE 0843-20-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

Regulations and Standards for the Use of the Test Instrument

DIN VDE 0701-0702	Inspection after repair, modification of electrical appliances – Periodic inspection on electrical appliances – General requirements for electrical safety
BGV A3 (VBG 4)	Trade association accident prevention regulations

Characteristic Values

Measured Quantity	Measuring Range	Resolution	$U_{no\text{-}load}$	R_i	I_K	I_N
Protective conductor resistance	0 … 1.30 Ω 1.0 … 99.9 Ω	10 mΩ 100 mΩ	< 5 V – < 5 V –			> 200 mA *
Insulation resistance	0 … 9.99 MΩ	10 kΩ	520 V –	approx. 50 kΩ	< 3.5 mA	> 1 mA
Contact current measurement (verification of absence of voltage)	0 … 9.99 mA ~	10 µA		1 kΩ		
Differential current **MINITEST | MASTER | PRO | BASE**	0.1 . . . 9.99 mA~	10 µA				
Differential current **MINITEST 3P | MASTER**	0.2 . . . 9.99 mA~	10 µA				

* With automatic polarity reversal

Intrinsic Uncertainty and Measuring Uncertainty

Measured Quantity	Intrinsic Uncertainty	Measuring Uncertainty
Protective conductor resistance	± (5% rdg. + 4 d)	± (10% rdg. + 6 d)
Insulation resistance	± (7% rdg. + 2 d)	± (10% rdg. + 5 d)
Contact current measurement (verification of absence of voltage)	± (5% rdg. + 4 d)	± (10% rdg. + 5 d)
Differential current **MINITEST | MASTER | PRO | BASE**	± (5% rdg. + 6 d)	± (10% rdg. + 6 d)
Differential current **MINITEST 3P | MASTER**	± (5% rdg. + 10 d)	± (10 % rdg. + 10 d)

Influencing Quantities and Influence Error

Influencing Quantity / Sphere of Influence	Designation per DIN VDE 0404	Influence Error ± … % of Measured Value
Change of position	E1	—
Change to test equipment supply voltage	E2	2.5
Temperature fluctuation 0 … 21 °C and 25 … 40 °C	E3	Specified influence error valid starting with temperature changes as of 10 K: 1 for protective conductor resistance 0.5 for all other measuring ranges
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
Waveshape of measured current	E8	
49 … 51 Hz		2 with capacitive load (for equivalent leakage current)
45 … 60 Hz		1 (for contact current)
		2.5 for all other measuring ranges

Reference Conditions

Ambient temperature	+23 °C ±2 K
Relative humidity	40 ... 60%
Line voltage	**MINITEST** | MASTER | PRO | BASE: 230 V±1 % **MINITEST 3P** | MASTER: 230 V/400 V ±1 %
Measured quantity frequency	50 Hz ±0.2 %
Measured quantity waveshape	Sine (deviation between effective and rectified value: ±0.5 %)

Ambient Conditions

Operating temperature range	0 to +40 °C
Storage temp. range	–20 to +70 °C
Humidity	max. 75 %, no condensation allowed
Elevation	to 2000 m

Power Supply

Line voltage	**MINITEST** | MASTER | PRO | BASE: 230 V 50 Hz **MINITEST 3P** | MASTER: 230 V/400 V 50 Hz
Throughput rating	**MINITEST** | MASTER | PRO | BASE: max. 3700 VA **MINITEST 3P** | MASTER: max. 38.4 kVA, depending upon load at the mains outlet

Electrical Safety

Safety class	I
Nominal line voltage	230 V
Test voltage	mains + PE (mains) to test socket, probe socket PE/I_C or R_{ISO} : 1.5 kV~ mains to PE (mains): 3 kV~
Measuring category	300 V CAT II
Pollution degree	2
Fuse	FF0,315H1000V or FF0,315H500V or FF0,315H250V **MINITEST 3P** | MASTER only: 3 x C16A
Residual current protective device	**MINITEST** | MASTER | PRO: 30 mA with undervoltage trigger and inhibiting of automatic restart

Electromagnetic Compatibility (EMC)

Interference emission	EN 61326-1:2006 class B
Interference immunity	EN 61326-1:2006

Mechanical Design

Dimensions / Weight
MINITEST | MASTER | PRO | BASE:
W x H x D: 200 x 150 x 77 mm
(without integrated outlets, grommets and rotary switch)
Weight approx. 1.5 kg
MINITEST 3P | MASTER
W x H x D: 350 mm x 160 mm x 125 mm
(without surface-type outlets, grommets, circuit breaker and rotary switch) (overall dimensions excluding cables)
Weight approx. 3.3 kg

Protection Housing: IP 44, connections: IP 20

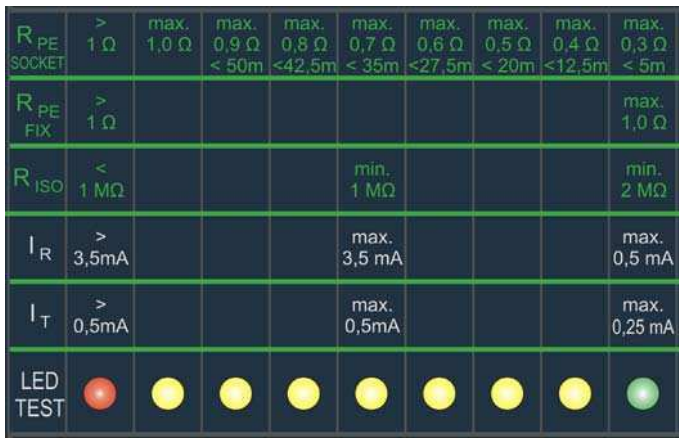
Table excerpt regarding significance of IP codes

IP XY (1st digit X)	Protection against foreign object entry	IP XY (2nd digit Y)	Protection against the penetration of water
2	≥ 12.5 mm dia.	0	not protected
4	≥ 1.0 mm dia.	4	splashing water

Display and Indicating Devices

LCD (not for MINITEST | BASE)
Dot matrix display, two lines of 20 characters each

LEDs
9 LEDs for indicating compliance with, or violation of limit values: 1 red, 7 yellow and 1 green



MINITEST | MASTER | PRO | BASE
Testers per DIN VDE 0701-0702

Standard Equipment

1 tester
Accessories, see table below

Standard equipment accessories of Serie MINITEST | ... series	MINITEST 3P | MASTER	MINITEST | MASTER	MINITEST | PRO	MINITEST | BASE
Probe cable with test probe	✘	✘	✘	✘
Adapter for earthing contact plug to CEE coupling 3P+N+PE 32 A-6h	✘	–	–	–
Adapter for plug 1P+N+PE 16 A to CEE coupling 3P+N+PE 32 A-6h	✘	–	–	–
Adapter for plug 3P+N+PE 16 A to CEE coupling 3P+N+PE 32 A-6h	✘	–	–	–
Adapter for plug 1P+N+PE 32 A to CEE coupling 3P+N+PE 32 A-6h	✘	–	–	–
USB connector cable	✘	✘	✘	–
Operating instructions	✘	✘	✘	✘

Accessories

Calibration Adapter SECU-cal 10

The calibration adapter is designed for testing the measuring safety of test instruments per DIN VDE 0701-0702/0751. As a rule, according to the requirements set forth in the accident prevention regulation BGV A3 (formerly VBG 4) and as part of a certification in accordance with the ISO 9000 quality standard, these test instruments must be inspected once a year.

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

Test adapter VL2 E

The VL2 E test adapter in addition to the test instrument allows for the measuring and testing of electrical devices and extension cables with CEE plug-and-socket devices.

Case Z740B

Outer dimensions:
W x H x D
394 x 294 x 106 mm

Universal Carrying Pouch F2000

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

Universal Carrying Pouch Big F2020

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

Order Information

Description	Type	Article Number
Basic instruments Instruments for electrical safety testing of electrical equipment per DIN VDE 0701-0702, indication of limit value violations with color LEDs		
Tester for monophase tests	**MINITEST** | BASE	M712C
Tester for monophase tests, with dot matrix display, with USB interface for data recording	**MINITEST** | PRO	M712D
Tester for monophase tests, with dot matrix display, with USB port for data recording and connection for barcode scanner, with memory for 2,000 tests	**MINITEST** | MASTER	M712U
Tester for monophase and three-phase tests, with dot matrix display, with USB port for data recording and connection for barcode scanner, with memory for 2,000 tests	**MINITEST 3P** | MASTER	M712X
PC Analysis Software		
For information on software, please refer to our website http://www.gossenmetrawatt.com (→ Products → Electrical Testing → Testing of Electr. Appliances → MINITEST) or http://www.gossenmetrawatt.com (→ Products → Software → Software for Testers)		
Accessories		
Barcode scanner, printer and RFID scanner see separate datasheet ID systems		
Probe for measuring protective conductor resistance, e.g. at rotating devices under test	Brush probe	Z745G
Calibration adapter for test instruments per DIN VDE 0701-0702/0751 (max. 200 mA)	SECU-cal 10	Z715A
Test adapter for electrical devices and extension cables with CEE plug-and-socket devices	VL2 E [D)]	Z745W
Case for **MINITEST** | MASTER, **MINITEST** | PRO or **MINITEST** | BASE	Case	Z740B
Universal carrying pouch for **MINITEST** | MASTER, **MINITEST** | PRO or **MINITEST** | BASE	F2000 [D)]	Z700D
Universal carrying pouch big for **MINITEST 3P** | MASTER	F2020	Z700F

[D)] Datasheet available

For additional information regarding accessories please see:

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

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