

MINITEST | PRO and MINITEST | BASE Testers per DIN VDE 0701 and 0702

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Applications

Testing the electrical safety of electrical equipment per
DIN VDE 0701-1: 2000 and DIN VDE 0702: 2004
by measuring:

- Protective conductor resistance
- Insulation resistance
- Protective conductor current – differential current method
- Contact current – direct measurement method

And per **DIN VDE 0701, part 240**, by testing for:

- Absence of voltage by means of current measurement



Features

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 in accordance with DIN VDE 0701, part 240), the device under test is connected to the mains outlet on the test instrument.

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.

Display functions

Limit value violations are indicated optically by means of nine variously colored LEDs.

MINITEST | PRO: All measured values are also clearly read out at a large, digital display.

Safety Features

The probe cable is protected by means of a fuse link.

MINITEST | PRO: An RCCB is integrated into the plug on the mains cable.

Data Interface with MINITEST | PRO

A USB port allows for convenient, cost-effective measured value reports. Measured data are transmitted to the PC via a USB cable which is connected to the USB port.

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 0470, part 1	Test instruments and test procedures – degrees of protection provided by enclosures (IP code)
DIN EN 61 326 VDE 0843, part 20	Electrical equipment for control technology and laboratory use – EMC requirements

Regulations and Standards for the Use of the Test Instrument

DIN VDE 0701 Part 1: 2000-9 Part 240	Repair, modification and testing of electrical devices, general requirements, information technology devices
DIN VDE 0702: 2004	Periodic testing of electrical devices
BGV A3 (VBG 4)	Trade association accident prevention regulations

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Testers per DIN VDE 0701 and 0702

Characteristic Values

Measured Quantity	Measuring Range	Resolution	U _{no-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 –	Prox. 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	0.1 ... 9.99 mA~	10 μA				

* With automatic polarity reversal

Intrinsic Error and Measuring Error

Measured Quantity	Intrinsic Error	Measuring Error
Protective conductor resistance	± (5% rdg. + 4 d)	± (10% rdg. + 6 d)
Insulation resistance 0 ... 19.99 MΩ	± (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	± (5% rdg. + 6 d)	± (10% rdg. + 6 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	2 with capacitive load (for equivalent leakage current) 1 (for contact current) 2.5 for all other measuring ranges
49 ... 51 Hz		
45 ... 60 Hz		

Electromagnetic Compatibility (EMC)

Generic standard EN 61326-1: 1997
EN 61326: 1997/A1: 1998

Reference Conditions

Ambient temperature +23° C ±2 K
Relative humidity 40 ... 60%
Line voltage 230 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 230 V / 50 Hz
Throughput rating Max. 3700 VA, 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_T or R_{ISO}: 1.5 kV~
Mains to PE (mains): 3 kV~
Measuring category 300 V CAT II
Fouling factor 2
Fuse FF0,315H1000V or FF0,315H500V

MINITEST | PRO:

Residual current protective device 30 mA with undervoltage trigger and inhibiting of automatic restart

Mechanical Design

Dimensions W x H x D: 200 x 150 x 77 mm (without integrated outlets, grommets and rotary switch)
Weight Approx. 1.5 kg
Protection Housing: IP 44, connections: IP 20

Table excerpt regarding significance 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
2	≥ 12.5 mm dia.	0	not protected
4	≥ 1.0 mm dia.	4	splashing water

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Display and Indicating Devices

LCD included with MINITEST | PRO

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

R_{PE} SOCKET	> 1 Ω	max. 1,0 Ω	max. 0,9 Ω	max. 0,8 Ω	max. 0,7 Ω	max. 0,6 Ω	max. 0,5 Ω	max. 0,4 Ω	max. 0,3 Ω
R_{PE} FIX	> 1 Ω								max. 1,0 Ω
R_{ISO}	< 1 M Ω			min. 1 M Ω					min. 2 M Ω
I_R	> 3,5 mA				max. 3,5 mA				max. 0,5 mA
I_T	> 0,5 mA				max. 0,5 mA				max. 0,25 mA
LED TEST									

"MINITEST" PC software (with MINITEST | PRO only)

The software is included with the instrument on CD ROM and includes the following functions:

- Remote Control of the MINITEST | PRO:
 - Start test
 - Display measurement results
 - Save test results



One of four different layouts can be selected.

- Transmit Measurement Results to a Word Processing Program
Test report per VDE 0701 or VDE 0702 with Microsoft® Word™, Microsoft® WordPad™, Open Office or user-defined processing, printing and storage:

Test report for periodic tests of electrical devices per DIN VDE 0702			
Order Number:		Contractor:	
Ordering party (Client): Firma Gut und Günstig Sparweg 6z Irgendwo 44241 <i>Responsible: Mal wieder keiner</i>		Willy Wichtig Unter dem fließendem Strom 3 24568 Entenhausen <i>Tester: Paul</i>	
Device category:	Manufacturer:	Type:	
Fabr. No.:	Safety class.: I	Year of manufacture:	
Nominal current (A):	Nominal voltage (V):	Nominal power (W):	
Received / delivered on:		Returned / collected on:	
Periodic test per DIN VDE 0702			
Visual inspection:			
<input type="checkbox"/> Protective conductor in faultless condition (only for Safety Class I) <input type="checkbox"/> Housing and mechanical parts in faultless condition <input type="checkbox"/> Insulated parts in faultless condition <input type="checkbox"/> Device connector cables including plug connectors in faultless condition <input type="checkbox"/> Labelling provided for and/or completed, serial plate correct <input type="checkbox"/> Miscellaneous			
Measurement	Measured value	Limit value	Test
Protective conductor resistance	> 99,9 Ohm	<= 1 Ohm	not OK
Insulation resistance	> 99,9 Ohm	>= 1 MOhm	OK
Differential current	1,73 mA	<= 3,5 mA	OK
Contact current	0,50 mA	<= 0,5 mA	OK
Assessment:			
<input type="checkbox"/> Functional and safety test passed without complaints <input type="checkbox"/> Device is beyond repair			
Device shows serious safety-related defects involving			
<input type="checkbox"/> risk of fire <input type="checkbox"/> risk due to electric shock <input type="checkbox"/> mechanical hazards			
In conformity with Accident Prevention Rule BGV A3 (formerly VBG4):			
Test interval: 6 months		Date of next test: 4/3/2006	
Measuring instruments used:			
Make: GOSSEN-METRAWATT		Type: MINITEST II USB F:33205 028	
Signatures:			
Tester:		Company owner/director in charge:	
Place: _____		Place: _____	
Date: 5/9/2005		Date: 5/9/2005	

- Customer Data Administration

Customer	Address	Postal	City/Town	Telephone	Person in charge
Hans Hugo AG	Da hinten 5a	93845	Schallhausen	0150-6636693	Keiner
Firma Gut und Günstig	Sparweg 6z	44341	Irgendwo	0378-96382521	Mal wieder keiner

Company :	Telephone :
Address :	Person :
City/Town :	Insert Tiset Import

Save Abort Change New customer Delete customer

- Other Functions
 - Select either DIN VDE 0701 or 0702
 - Specify the test cycle
 - The contractor's data are automatically entered to the test report

MINITEST | PRO and MINITEST | BASE

Testers per DIN VDE 0701 and 0702

Included

- 1 test instrument
- 1 probe cable
- 1 set operating instructions

Additionally with the MINITEST | PRO

- 1 USB cable
- 1 CD ROM with "MINITEST" software

Accessories

Case Z740B



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.



Order Information

Description	Type	Article Number
Basic Instruments		
Instrument for electrical safety testing of electrical equipment per DIN VDE 0701 and DIN VDE 0702 with dot matrix display and indication of limit value violations with color LEDs, extensive safety features, USB port for data logging	MINITEST PRO	M712F
Instrument for electrical safety testing of electrical equipment per DIN VDE 0701 and DIN VDE 0702, indication of limit value violations with color LEDs	MINITEST BASE	M712E
Accessories		
Case for MINITEST PRO and MINITEST BASE	Case	Z740B
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	Z745W

For additional information regarding accessories please see:

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