

METRISO PRIME+

Digital High-Voltage Insulation Tester

Characteristic Values

Measuring Ranges:

Standard	DIN EN 61557-1:2007 DIN EN 61557-2:2008
VDE Regulation	VDE 0413-1:2007 VDE 0413-2:2008

Insulation Resistance

Display Range [Ω]	Measuring Range	Test Voltage	Intrinsic Uncertainty	Measuring Uncertainty
0.00 M ... 50.0 G	0.60 M ... 10.0 G	100 V ... 250 V	$\pm(7\% \text{ rdg.} + 6 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$
	> 10.0 G ... 50.0 G		$\pm(7\% \text{ rdg.} + 6 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$
0.00 M ... 250 G	0.40 M ... 50.0 G	> 250 V ... 1.00 kV	$\pm(7\% \text{ rdg.} + 6 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$
	> 50.0 G ... 250 G		$\pm(7\% \text{ rdg.} + 6 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$
0.00 M ... 999 G	0.40 M ... 200 G	> 1.00 kV ... 5.00 kV	$\pm(7\% \text{ rdg.} + 6 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$
	> 200 G ... 999 G		$\pm(7\% \text{ rdg.} + 6 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$

Test duration: automatic (until measured value is stable),
manual (1 to 120 s) or continuous measurement (lock function)

Polarization Index (PI), Absorption Ratio (DAR)

	t1 [min]	t2 [min]	Limit [min]
PI	00:00 ... 01:00 ... 99:50	00:00 ... 10:00 ... 99:50	0.10 ... 4.00 ... 9.80
DAR	00:00 ... 00:30 ... 99:50	00:00 ... 01:00 ... 99:50	0.10 ... 1.60 ... 9.80

PI and DAR are calculated values. The specifications of the insulation measurement are applicable.

Insulation Test Voltage

Nominal Values of Test Voltage	Variable Test Voltage	Nominal Current	Intrinsic Uncertainty
100 V, 250 V, 500 V, 1.00 kV		$\geq 1.0 \text{ mA}$	0 ... +25% rdg.
1.50 kV, 2.00 kV, 2.50 kV		$\geq 0.4 \text{ mA}$	$\pm 5\% \text{ rdg.}$
5.00 kV		$\geq 0.1 \text{ mA}$	$\pm 3.5\% \text{ rdg.}$
	100 V...1.00 kV	$\geq 1.0 \text{ mA}$	$\pm 15\% \text{ rdg.}$
	> 1.00 kV...2.50 kV	$\geq 0.4 \text{ mA}$	$\pm 5\% \text{ rdg.}$
	> 2.50 kV...5.00 kV	$\geq 0.1 \text{ mA}$	$\pm 3.5\% \text{ rdg.}$

Variable test voltages are adjustable in increments of 50 V
Short-circuit current up to 1.00 kV, test voltage $\leq 2 \text{ mA}$

Voltage Measurement

Measuring range	Frequency [Hz]	Impedance	Intrinsic Uncertainty	Measuring Uncertainty
test voltage dc	—	—	$\pm(2.5\% \text{ rdg.} + 5 \text{ d})$	$\pm(5\% \text{ rdg.} + 5 \text{ d})$
50 V ... 5.00 kV				
50 V ... 1.00 kV ac/dc	15 ... 500	1 M Ω	$\pm(2.5\% \text{ rdg.} + 2 \text{ d})$	$\pm(5\% \text{ rdg.} + 5 \text{ d})$
50 V ... 1.00 kV ac/dc	>500...1 k	1 M Ω	$\pm(10\% \text{ rdg.} + 2 \text{ d})$	$\pm(12.5\% \text{ rdg.} + 5 \text{ d})$

Frequency Measurement

Measuring Range	Impedance	Intrinsic Uncertainty	Measuring Uncertainty
15.0 Hz ... 1.00 kHz	1 M Ω	$\pm(0.5\% \text{ rdg.} + 2 \text{ d})$	$\pm(1\% \text{ rdg.} + 2 \text{ d})$

Voltage of measuring quantity: 50 V ... 1 kV

Breakdown Voltage

Parameters	Setting Range	Intrinsic Uncertainty	Measuring Uncertainty
Voltage range	100 ... 5000 V	$\pm(10\% \text{ rdg.} + 8 \text{ d})$	$\pm(15\% \text{ rdg.} + 10 \text{ d})$
Rise time	5 ... 300 s	—	—
Measuring time	1 ... 120 s / auto / cont. measurement	—	—

Capacitance Measurement

Display Range	Measuring Range	Test Voltage	Intrinsic Uncertainty	Measuring Uncertainty
0.00 ... 10.0 μF	0.10 ... 5.00 μF	100...450 V	$\pm(10\% \text{ rdg.} + 5 \text{ d})$	$\pm(15\% \text{ rdg.} + 8 \text{ d})$
		500...5 kV	$\pm(5\% \text{ rdg.} + 5 \text{ d})$	$\pm(10\% \text{ rdg.} + 8 \text{ d})$

Dielectric Discharge (DD)

	Limit
DD	0.10 ... 2.00 ... 9.80

Reference Conditions

Ambient temperature	+23 °C \pm 2 K
Relative humidity	40 ... 60%
Measured quantity frequency	50 Hz \pm 10 Hz (during voltage measurement)
Line voltage waveshape	Sinusoidal, deviation between RMS and rectified value < 1%

Power Supply METRISO PRIME+

Line voltage	207 V ... 253 V / 49 Hz ... 61 Hz or (depending on country-specific version) Feature A43: 108 V ... 132 V / 59 Hz ... 61 Hz
Power consumption	< 18 VA
Storage batteries	NiMH 9.6 V, 3 Ah, charging period 6 hours
Number of measurements at nominal current as per VDE 0413	700

Ambient Conditions

Accuracy	0 °C ... + 40 °C
Operating temperature	-5 °C ... + 40 °C
Storage temperature	-20 °C ... + 60 °C (without batteries)
Relative humidity	max. 75%, no condensation allowed
Elevation	to 2000 m
Deployment	indoors, outdoors: only in the specified ambient conditions

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Electrical Safety

Standard	IEC 61010-1: 2010 DIN EN 61010-1: 2011
VDE regulation	VDE 0411-1-1:2011
Pollution degree	2
Protection	IP 40

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Measuring category	Insulation measurement – 5000 V DC – no overvoltage Voltage measurement – 1000 V CAT II 600 V CAT III, 300 V CAT IV
Safety class	II

Electromagnetic Compatibility (EMC) METRISO PRIME+

Product standard	EN 61326-1:2006
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Interference Emission	
EN 55022	Class A
Interference Immunity	Test Value
EN 61000-4-2	Contact/Air - 4 kV/8 kV
EN 61000-4-3	10 V/m
EN 61000-4-4	Mains Connection - 2 kV
EN 61000-4-5	Mains Connection - 1 kV
EN 61000-4-6	Mains Connection - 3 V
EN 61000-4-11	0.5 Period / 100%

Mechanical Design METRISO PRIME+

Display	Multiple display with dot matrix 128 x 64 pixels
Dimensions	W x H x D: 255 mm x 133 mm x 240 mm
Weight	approx. 5 kg with batteries

Voltage applied to DUT during Insulation Resistance Test

Measuring voltage U on DUT as a function of its resistance R_x at nominal voltages of 100 V, 500 V, 1000 V, 2400 V and 5000 V:

