

MPI-530-IT

Multifunction electrical installation meters



Full installation verification, also in isolated IT networks

MPI-530-IT

Multifunction meter for IT networks

amperis

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Loop, RCD, insulation, earth and continuity measurements, with RCD testing in IT systems.

Product overview



The MPI-530-IT ready for field work

A multifunction meter prepared for IT systems

The MPI-530-IT performs every verification measurement of an electrical installation and adds a distinctive capability: it tests general and selective RCDs from 10 to 1000 mA also in isolated IT networks, the earthing systems used where supply continuity is critical, such as hospital operating theatres, mines and certain industrial plants.

All the measurements of the family

Fault loop impedance is measured with 23 A (44 A phase-to-phase) in the 95...440 V range with 0.01 Ω resolution, or with 15 mA in RCD circuits without tripping. Insulation reaches 10 G Ω with test voltages of 50 to 1000 V and the AutoISO-1000C adapter, earth is measured by four methods plus Wenner soil resistivity, PE continuity uses ± 200 mA in both directions and a probe measures light intensity; the recorder logs harmonics up to the 40th and THD.

Main features

- RCD testing of 10 to 1000 mA also in isolated IT systems.
- Fault loop with 23 A (44 A phase-to-phase) and 0.01 Ω resolution.
- Insulation up to 10 G Ω at 50 to 1000 V; AutoISO-1000C adapter.
- Earth by four methods and Wenner soil resistivity.
- Bidirectional PE continuity with ± 200 mA and quick PE check.
- Tree memory with USB 2.0 and Bluetooth communication.



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Applications and design

Applications

- Verification of installations with IT earthing systems: hospitals, mining, industry.
- Electric shock protection measurements to IEC 61557 in LV installations.
- RCD testing, PE continuity and earth resistance surveys.
- Basic mains diagnostics with harmonics, THD and phase sequence.

Robust and autonomous design

With its IP54 housing, CAT IV 300 V category, 288 × 223 × 75 mm case and roughly 2.5 kg, the MPI-530-IT works from 0 to +50 °C powered by five LR14 cells or a 4.8 V 4.2 Ah NiMH battery, charged from the mains or a 12 V car socket.



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The measurements downloaded from the meter become complete verification protocols of the installation.

Software & applications

Reading the tree memory

The free PC reading software empties the tree memory of the MPI-530-IT — clients, objects and measuring points — through the USB 2.0 port or the Bluetooth link, shows every result on screen and prints it or exports it to popular formats on any Windows computer.

Documentation software

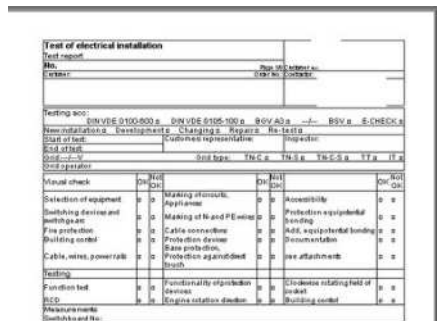
A documentation package turns the downloaded data into complete verification reports: it manages inspectors, owners of the installation, test points and fuses, attaches the measurements to each circuit and produces the protocol of the acceptance or periodic test, ready to print or to save as a PDF file.

What the software provides

- Free reading software plus a report generation package.
- Database of clients, objects, inspectors and test points.
- Verification protocols ready to print or export to PDF.
- Works with the results of all the meter functions.



The documentation software manages reports, inspectors, test points and downloaded data



Preview of a verification report of the installation, ready to print or export

MPI-530-IT – TECHNICAL SPECIFICATIONS

Standards	IEC 61557; RCD testing also in IT systems
IT networks	Loop and RCD measurements in isolated systems
Fault loop	Z L-PE, L-N, L-L: 0.13...1999.9 Ω ; 23 A (44 A ph-ph)
Loop with RCD	Without tripping: 0.50...1999 Ω with 15 mA
RCD testing	General and selective; 10...1000 mA; tA and IA
Insulation	50/100/250/500/1000 V; up to 10 G Ω ; AutoISO-1000C
Continuity	PE and bondings with ± 200 mA; 0.12...400 Ω
Earth	3p, 4p, 3p+clamp and 2 clamps; Wenner resistivity
Light intensity	With external probe; reading in lx or fc
Recorder	U up to 500 V; harmonics to 40th; THD
Memory	6000 cells and 10 000 records; tree structure
Communication	USB 2.0 and Bluetooth
Power supply	5 $\times$ LR14 cells or NiMH 4.8 V 4.2 Ah; charger
Measuring category	CAT IV 300 V / CAT III 600 V; IP54
Operating temperature	0...+50 $^{\circ}\text{C}$
Dimensions and weight	288 $\times$ 223 $\times$ 75 mm; approx. 2.5 kg



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MPI-530-IT – MEASUREMENT DATA (1/2)

Electrical installation measurements

Measurement function	Measuring range	Display range	Resolution	Accuracy
Fault loop impedance				
Z_{L-PE} , Z_{L-N} , Z_{L-L}	0.13 Ω ...1999.9 Ω (IEC 61557)	0.000 Ω ...1999.9 Ω	from 0.001 Ω	from $\pm(5\% \text{ m.v.} + 0.03 \Omega)$
Z_{L-PE} RCD (without tripping the RCD)	from 0.50 Ω ...1999 Ω (IEC 61557)	0.00 Ω ...1999 Ω	from 0.01 Ω	from $\pm(6\% \text{ m.v.} + 5 \text{ digits})$
RCD parameters – t_A at 0.5 / 1 / 2 / 5 $I_{\Delta n}$; I_A at 0.2...2.0 $I_{\Delta n}$				
t_A – general and short-time delay RCDs (TN/TT)	0 ms...300 ms	0 ms...300 ms	1 ms	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
t_A – general and short-time delay RCDs (IT mains)	0 ms...400 ms	0 ms...400 ms	1 ms	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
t_A – selective RCDs	0 ms...500 ms	0 ms...500 ms	1 ms	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
I_A – sinusoidal residual current (type AC)	3.3 mA...1000 mA	3.3 mA...1000 mA	from 0.1 mA	$\pm 5\% I_{\Delta n}$
I_A – unidirectional current, also with 6 mA DC bias (type A)	3.5 mA...700 mA	3.5 mA...700 mA	from 0.1 mA	$\pm 10\% I_{\Delta n}$
I_A – direct residual current (type B)	2.0 mA...1000 mA	2.0 mA...1000 mA	from 0.1 mA	$\pm 10\% I_{\Delta n}$
Earth resistance and soil resistivity				
3- and 4-pole method	from 0.50 Ω ...1.99 k Ω (IEC 61557-5)	0.00 Ω ...1.99 k Ω	from 0.01 Ω	from $\pm(2\% \text{ m.v.} + 3 \text{ digits})$
3-pole + clamp method	0.00 Ω ...1.99 k Ω	0.00 Ω ...1.99 k Ω	from 0.01 Ω	$\pm(8\% \text{ m.v.} + 4 \text{ digits})$
2-clamp method	0.00 Ω ...99.9 k Ω	0.00 Ω ...99.9 k Ω	from 0.01 Ω	from $\pm(10\% \text{ m.v.} + 4 \text{ digits})$
Soil resistivity	0.0 Ωm ...99.9 k Ωm	0.0 Ωm ...99.9 k Ωm	from 0.1 Ωm	depends on the accuracy of the R_E measurement
Insulation resistance				
$U_{ISO} = 50 \text{ V}$	50 k Ω ...250 M Ω (IEC 61557-2)	0 k Ω ...250 M Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
$U_{ISO} = 100 \text{ V}$	100 k Ω ...500 M Ω (IEC 61557-2)	0 k Ω ...500 M Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
$U_{ISO} = 250 \text{ V}$	250 k Ω ...999 M Ω (IEC 61557-2)	0 k Ω ...999 M Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
$U_{ISO} = 500 \text{ V}$	500 k Ω ...2.00 G Ω (IEC 61557-2)	0 k Ω ...2.00 G Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
$U_{ISO} = 1000 \text{ V}$	1000 k Ω ...9.99 G Ω (IEC 61557-2)	0 k Ω ...9.99 G Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$

"m.v." – measured value.



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MPI-530-IT – MEASUREMENT DATA (2/2)

Electrical installation measurements (continued)

Measurement function	Measuring range	Display range	Resolution	Accuracy
Continuity of protective conductors and equipotential bondings				
With ± 200 mA test current	0.12 Ω ...400 Ω (IEC 61557-4)	0.00 Ω ...400 Ω	from 0.01 Ω	$\pm(2\% \text{ m.v.} + 3 \text{ digits})$
Low-current measurement	0.0 Ω ...1999 Ω	0.0 Ω ...1999 Ω	0.1 Ω	$\pm(3\% \text{ m.v.} + 3 \text{ digits})$
Light intensity				
In lux (lx)	0 lx...399.9 klx	0 lx...399.9 klx	from 0.001 lx	from $\pm(2\% \text{ m.v.} + 5 \text{ digits})$
In foot-candles (fc)	0 fc...39.99 kfc	0 fc...39.99 kfc	from 0.001 fc	from $\pm(2\% \text{ m.v.} + 5 \text{ digits})$

Phase sequence indication: same direction (correct) / opposite direction (incorrect); U_{L-L} 95...500 V, 45...65 Hz.

Single-phase power quality recorder

Parameter	Measuring range	Max. resolution	Accuracy
Alternating voltage (TRMS)	0.0...500 V	0.1 V	from $\pm(2\% \text{ m.v.} + 2 \text{ digits})$
Alternating current (TRMS)	depending on the clamp*	0.1 mA	from $\pm(5\% \text{ m.v.} + 3 \text{ digits})$
Frequency	45.0...65.0 Hz	0.1 Hz	$\pm(0.1\% \text{ m.v.} + 1 \text{ digit})$
Active, reactive, apparent and distortion power	0...1.5 MW / Mvar / MVA	1 W / var / VA	from $\pm(7\% \text{ m.v.} + 3 \text{ digits})$
$\cos\phi$ and power factor (PF)	0.00...1.00	0.01	unspecified
Voltage harmonics	0.0...500 V	0.1 V	from $\pm(5\% \text{ m.v.} + 3 \text{ digits})$
Current harmonics	depending on the clamp*	as for current (TRMS)	from $\pm(5\% \text{ m.v.} + 3 \text{ digits})$
THD of voltage and current	0.0...999.9% (relative to the fundamental)	0.1%	$\pm 5\%$

* F-1A, F-2A, F-3A clamps: 0...3000 A AC (10 000 Ap-p); C-3: 0...1000 A AC (3600 Ap-p); C-6A: 0...12 A AC (36 Ap-p). The current accuracy does not include the clamp error. Recorder for 110/190 V...240/415 V single-phase mains, 50/60 Hz.

"m.v." – measured value.



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