

AMPI-540

Multifunction electrical installation meters



A multifunction meter with a class S recorder and a 7-inch touchscreen

AMPI-540

Multifunction meter with power quality recorder

amperis

www.amperis.com

 C/ María Barbeito, 14
27003, Lugo, Spain

 Contact

T [+34] 982 20 99 20
info@amperis.com | www.amperis.com

Installation verification and three-phase power quality logging to EN 61000-4-30 class S in one device.

Product overview



The AMPI-540 with its 7-inch touch panel

Much more than a multifunction meter

The AMPI-540 measures every parameter of protection against electric shock — fault loop also in RCD circuits without tripping, RCD parameters, insulation, earth by four methods with soil resistivity, continuity, light intensity, phase sequence and motor rotation — and adds a three-phase recorder of power quality parameters in class S of EN 61000-4-30, with voltages up to 500 V, currents up to 3 kA, harmonics up to the 40th and THD.

Touch control and automated work

The 7-inch TFT touchscreen of 800×480 pixels shows built-in help diagrams, an oscilloscope view, phasor diagrams and live readings. Autotest sequences, the automatic RCD mode and the AutoISO-1000C adapter shorten the work, a voice note or photograph documents each result, and the removable microSD card together with USB, Bluetooth and Wi-Fi moves the data quickly from measurement to report.

Main features

- All shock protection measurements in a single instrument.
- Three-phase class S recorder to EN 61000-4-30 with harmonics and THD.
- 7-inch TFT touchscreen of 800×480 pixels with help screens.
- Autotest sequences and automatic RCD testing mode.
- Removable microSD card; voice notes and photos attached to results.
- USB, Bluetooth and Wi-Fi with an 11.1 V 3.4 Ah Li-Ion battery.



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Applications and design

Applications

- Verification of domestic and industrial installations to current regulations.
- Power quality logging and diagnostics of three-phase LV networks.
- Energy loss estimation with the built-in calculator.
- Documented measurement campaigns with fast reporting.

Robust and portable design

The IP51 housing of $288 \times 223 \times 75$ mm and about 2.5 kg carries a CAT IV 300 V measuring category and works from 0 to +45 °C; the rechargeable Li-Ion battery of 11.1 V and 3.4 Ah extends the operating time on site.



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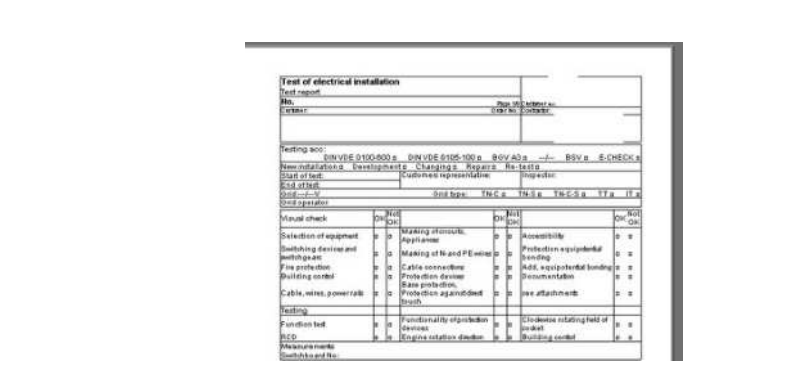
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Installation results become verification reports, and the recorded supply data is analysed in depth on the PC.

Software & applications



Time plots of the recorded voltages and currents with zoom over any interval



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

Downloads and installation reports

The results move from the microSD card of the AMPI-540 to the PC through USB, Bluetooth or Wi-Fi. The free reading software prints and exports them, and a documentation package builds the complete verification protocol of the installation — inspectors, circuits and test points — on any Windows computer.

The recorder, under analysis

The recordings of the built-in power quality logger open in the Amperis Analysis software: time plots of voltage, current, power and energy, harmonic analysis with THD, and dips, swells and interruptions listed with their waveforms. The report checks the recorded supply against the EN 50160 limits and exports data and charts to popular formats.

What the software provides

- Free reading software and report package for Windows.
- Interactive graphs and tables of every recorded parameter.
- EN 50160 compliance reports of the measured supply.
- Export of data and charts to popular formats.

AMPI-540 – TECHNICAL SPECIFICATIONS

Display	7-inch touchscreen, TFT 800 × 480 pixels
Fault loop	Also in RCD circuits, without tripping
RCD testing	RCD parameters; automatic mode and autotest
Insulation	Test voltages up to 1000 V; AutoISO-1000C
Earth	Four measuring methods plus soil resistivity
Continuity	Protective and equipotential bondings
Other functions	Light intensity, phase sequence, motor rotation
Recorder class	Three-phase, class S per EN 61000-4-30
Recording ranges	U up to 500 V; I up to 3 kA; 40...70 Hz
Power quality	P, Q, S, PF, cosφ; harmonics to 40th; THD
Memory	Removable microSD card (4 GB); voice notes, photos
Communication	USB, Bluetooth and Wi-Fi
Power supply	Li-Ion battery 11.1 V 3.4 Ah with charger
Measuring category	CAT IV 300 V / CAT III 500 V; IP51
Operating temperature	0...+45 °C
Dimensions and weight	288 × 223 × 75 mm; approx. 2.5 kg



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AMPI-540 – 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	$\pm(5\% \text{ m.v.} + 30 \text{ digits})$
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	0 ms...300 ms	0 ms...300 ms	1 ms	from $\pm(2\% \text{ m.v.} + 2 \text{ digits})$
t_A – selective RCDs	0 ms...500 ms	0 ms...500 ms	1 ms	from $\pm(2\% \text{ m.v.} + 2 \text{ digits})$
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	from $\pm(2\% \text{ m.v.} + 4 \text{ digits})$
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 ...4.99 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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AMPI-540 – 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.

Three-phase power quality recorder – EN 61000-4-30 class S

Parameter	Measuring range	Max. resolution	Accuracy
Alternating voltage (TRMS)	0.0...500 V	0.01% U_{nom}	$\pm 0.5\% U_{nom}$
Alternating current (TRMS)	depending on the clamp*	0.01% I_{nom}	$\pm 2\% \text{ m.v. (m.v.} \geq 10\% I_{nom}); \pm 2\% I_{nom} \text{ (m.v.} < 10\% I_{nom})$
Frequency	40.00...70.00 Hz	0.01 Hz	$\pm 0.05 \text{ Hz}$
Active, reactive, apparent and distortion power	depending on the configuration (transducers, clamps)	4 significant digits	depending on the configuration (transducers, clamps)
Active, reactive and apparent energy	depending on the configuration (transducers, clamps)	4 significant digits	as the power error
$\cos\phi$ and power factor (PF)	0.00...1.00	0.01	± 0.03
Voltage harmonics	as for voltage (TRMS)	as for voltage (TRMS)	$\pm 5\% \text{ m.v. (m.v.} \geq 3\% U_{nom}); \pm 0.15\% U_{nom} \text{ (m.v.} < 3\% U_{nom})$
Current harmonics	as for current (TRMS)	as for current (TRMS)	$\pm 5\% \text{ m.v. (m.v.} \geq 10\% I_{nom}); \pm 0.5\% I_{nom} \text{ (m.v.} < 10\% I_{nom})$
THD of voltage and current	0.0...100.0% (relative to RMS)	0.1%	$\pm 5\%$
Unbalance factor (U and I)	0.0...10.0%	0.1%	$\pm 0.15\%$ (absolute error)

* F-1A, F-2A, F-3A clamps: 0...3000 A AC (10 000 Ap-p); C-4A: 0...1000 A AC (3600 Ap-p); C-5A: 0...1000 A AC / 0...1400 A DC (3600 Ap-p); C-6A: 0...12 A AC (36 Ap-p); C-7A: 0...100 A AC (360 Ap-p). The current accuracy does not include the clamp error. Recorder for 64/110 V...290/500 V and DC networks, 50/60 Hz; single-phase, split-phase and three-phase wye or delta systems.

"m.v." – measured value.



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