

We **COMBI**ne safety
& innovation.

NEW



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COMBI521EV

Tester for checks on electric car
recharging stations and
verification of domestic and
industrial electric systems



We build the future since 1983

METEL HV0521EV

COMBI521EV

Multifunction instrument for electrical installation safety testing, power quality analysis and EVSE safety testing

AUTOMATIC EVSE SAFETY TEST SEQUENCE

- › Check of the output voltage value
- › Continuity check of the protective conductor
- › Insulation resistance measurement
- › Automatic safety test sequence on EVSE stations with check of the status
- › Global earth resistance measurement
- › Measurement of RCD tripping time (type A, type B and type DD 6mA)
- › OK and NOT OK results on each individual check and on the overall result of the automatic sequence

WiFi

AUTO
TEST

EVSE
TESTING

OK
CALIBRATION
REPORT



COMBI521EV with EV-TEST100

AUTOMATIC SEQUENCE OF TESTS FOR THE VERIFICATION OF EVSE STATIONS

- Check of the output voltage value
- Continuity check of the protective conductor
- Insulation resistance measurement
- Check of the status:
 - Standby (status A)
 - Vehicle detected (status B)
 - Mechanical interlock verification (status B)
 - Ready (charging) (status C) with ventilation (status D)
 - Fault simulation on the protective conductor (fault PE)
 - Fault on CP signal (fault E)
- Global earth resistance measurement
- Measurement of RCD tripping time (type A, type B and type DD 6ma)
- OK and NOT OK results on each individual check and on the overall result of the automatic sequence

COMBI521EV

ELECTRIC INSTALLATION SAFETY TESTING

- AUTOMATIC test (no-trip ground resistance, RCD tripping time, insulation resistance) in a sequence
- Continuity of protective conductors with 200mA
- Insulation resistance up to 1000V, with dielectric absorption ratio D.A.R. and polarization index P.I.
- Polarity test
- Type A, AC, B, B+ and F type, General and Selective RCD tripping time and current
- Line/Fault impedance, Phase-Phase, Phase-Neutral, Phase-PE (also at high resolution with optional accessory IMP57)
- Coordination of MCBs and fuses
- Global earth resistance
- Phase sequence and conformity measurement
- Measurement of leakage current
- Measurement of electrical parameters in single-phase installations (V, A, W, VAR, VA, PF)
- Measurement of environmental parameters through external probes (HT52/05 and HT53/05)
- Internal memory and PC connection
- Wi-Fi connection to Android and iOS smartphones and tablets



Standard Accessories

- › **C2033X**
Cable with banana green - black - blue shuko plug
- › **UNIVERSALKITCOMBI**
Set of 3 cables, 3 alligators and 3 test leads
- › **ZEROLOOP**
Loop measurement reset accessory
- › **EV-TEST100**
EVSE Adapter for Electric Vehicle Charger Testing
- › **SP-5100**
Set of straps to carry the instrument over the shoulder
- › **BORSA2051**
Carrying bag
- › **C2006**
PC connection cable
- › **TOPVIEW**
Windows PC software
- › Short user guide
- › Calibration report



Optional Accessories

- › **VA507**
COMBI521's carrying rigid case
- › **PR400**
Remote lead with test starting button
- › **IMP57**
Accessory for loop impedance measurement with high resolution
- › **HT4005K**
standard clamp for ac current
- › **HT96U**
Standard clamp with measuring range 1/100/1000A AC
- › **HT52/05**
Probe for air/humidity
- › **HT53/05**
Light meter probe class 1
- › **606-IECN**
Connector with magnetic terminal
- › **1066-IECN**
Black connector for extensions (4mm banana)

By using external probes (optional), **COMBI521EV** can measure environmental parameters such as air temperature/humidity, illuminance (Lux).

By using the optional **amperometric transducer** provided by HT, it is also possible to perform measurements of **LEAKAGE CURRENTS, COSPHI, POWER** and **HARMONICS**.



SEE THE TECHNICAL
DATA SHEET



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1. TECHNICAL SPECIFICATIONS

Accuracy is calculated as: $\pm[\% \text{reading} + (\text{no. of digits}) * \text{resolution}]$ at 23°C, <80%RH

AC TRMS VOLTAGE

Range (V)	Resolution (V)	Accuracy
15 ÷ 460	1	$\pm(3.0\% \text{ rdg} + 2\text{dgt})$

FREQUENCY

Range (Hz)	Resolution (Hz)	Accuracy
47.50 ÷ 52.50 / 57.00 ÷ 63.00	1	$\pm(0.1\% \text{ rdg} + 1\text{dgt})$

CONTINUITY OF PROTECTION CONDUCTORS WITH 200mA

Range (Ω)	Resolution (Ω)	Accuracy
0.00 ÷ 9.99	0.01	$\pm(5.0\% \text{ rdg} + 3\text{dgt})$
10.0 ÷ 99.9	0.1	
100 ÷ 1999	1	

Test current: >200mA DC up to 5 Ω (test leads included)
 Test current generated: 1mA resolution, range 0 ÷ 250mA
 Open-circuit voltage: 4 < V₀ < 24VDC
 Safety protection: error message for input voltage >10V

INSULATION RESISTANCE

DC test voltage (V)	Range (M Ω)	Resolution (M Ω)	Accuracy
50	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 49.9	0.1	
	50.0 ÷ 99.9		$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
100	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 99.9	0.1	
	100 ÷ 199	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
250	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 99.9	0.1	
	100 ÷ 249	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
500	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 199.9	0.1	
	200 ÷ 499	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
1000	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 199.9	0.1	
	200 ÷ 999	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$

Open-circuit voltage: rated test voltage -0% +10%
 Rated measuring current: >1mA with 1k Ω x V_{nom} (50V, 100V, 250V, 1000V), >2.2mA with 230k Ω @ 500V
 Short-circuit current: <6.0mA for each test voltage
 Safety protection: error message for input voltage >30V

LINE/LOOP IMPEDANCE P-P, P-N, P-PE – TT/TN SYSTEMS

Range (Ω)	Resolution (Ω) (*)	Accuracy
0.01 ÷ 19.99	0.01	$\pm(5.0\% \text{ rdg} + 3\text{dgt})$
20.0 ÷ 199.9	0.1	

(*) 0.1m Ω in range 0.1 ÷ 199.9 m Ω (by using the optional accessory IMP57)

Maximum test current: 3.31A (at 265V); 5.71A (at 457V)
 P-N/P-P Test voltage: (100V ÷ 265V) / (100V ÷ 460V); 50/60Hz \pm 5%
 Protection types: MCB (B, C, D, K), Fuse (aM, gG, BS882-2, BS88-3, BS3036, BS1362)



TEST ON RCD PROTECTION (MOLDED-CASE TYPE)

Differential protection type (RCD): AC(⌚), A/F(⌚), B/B+(⌚), CCID (⌚, ⌚ - USA country), General (G), Selective (S)
Single -phase systems (L-N-PE)
 Voltage range L-PE, L-N: 100V ÷265V RCD type AC, A/F, B/B+ and CCID (I_{ΔN} ≤100mA)
 190V ÷265V RCD type B/B+ (I_{ΔN} = 300mA)
 Voltage range N-PE: <10V
Split-phase systems (phase delay VL1-PE, VL2-PE = 180° or phase delay VL1-PE, VL2-PE = 120°)
 Voltage range L1-PE, L1-L2: 100V ÷265V RCD type AC, A/F, B/B+ and CCID (I_{ΔN} ≤100mA)
 Voltage range L2-PE: 0V÷265V RCD type AC, A/F
 0V÷min[(VL1-PE-100V) and (VL1-L2-100V)], RCD type B/B+ (I_{ΔN} ≤100mA)
 Rated tripping currents (I_{ΔN}): 5mA, 6mA, 10mA, 20mA, 30mA, 100mA, 300mA, 500mA, 650mA, 1000mA
 Frequency: 50/60Hz ± 5%

RCD tripping current (for General RCDs only)

Type RCD	I _{ΔN}	Range I _{ΔN} (mA)	Resolution (mA)	Accuracy
CCID	5mA, 20mA	(0.2 ÷ 1.3) I _{ΔN}	0.1 I _{ΔN}	- 0%, +10% I _{ΔN}
AC, A/F, B/B+	6mA, 10mA	(0.2 ÷ 1.1) I _{ΔN}		- 0%, +5% I _{ΔN}
AC, A/F, B/B+	30mA ≤ I _{ΔN} ≤ 300mA			
AC, A/F	500mA ≤ I _{ΔN} ≤ 650mA			

Measurement RCD tripping time – TT/TN systems

	x 1/2		x 1		x 5		AUTO		AUTO+		
	G	S	G	S	G	S	G	S	G	S	
5mA	AC										
	A/F										
	B/B+										
	CCID		999						310		
6mA	AC	999	999	999	999	50	150	✓	✓	310	✓
	A/F	999	999	999	999	50	150	✓	✓	310	✓
	B/B+	999	999	999	999					310	
	CCID									310	
10mA	AC	999	999	999	999	50	150	✓	✓	310	✓
	A/F	999	999	999	999	50	150	✓	✓	310	✓
	B/B+	999	999	999	999					310	
	CCID									310	
20mA	AC										
	A/F										
	B/B+										
	CCID			999						310	
30mA	AC	999	999	999	999	50	150	✓	✓	310	✓
	A/F	999	999	999	999	50	150	✓	✓	310	✓
	B/B+	999	999	999	999					310	
	CCID									310	
100mA	AC	999	999	999	999	50	150	✓	✓	310	
	A/F	999	999	999	999	50	150	✓	✓	310	
	B/B+	999	999	999	999					310	
	CCID									310	
300mA	AC	999	999	999	999	50	150	✓	✓	310	
	A/F	999	999	999	999	50	150	✓	✓	310	
	B/B+	999	999	999	999					310	
	CCID									310	
500mA 650mA	AC	999	999	999	999	50	150	✓	✓	310	
	A/F	999	999	999	999					310	
	B/B+										
	CCID										
1000mA	AC	999	999	999							
	A/F	999	999	999							
	B/B+										
	CCID										

Table with duration of tripping time measurement [ms] - Resolution: 1ms, Accuracy: ±(2.0%reading + 2digits)

Measurement RCD tripping time – IT systems

	x 1/2		x 1		x 5		AUTO		AUTO+		
	\	G	S	G	S	G	S	G	S	G	S
6mA	AC	999	999	999	999	50	150	✓	✓	310	
10mA	A/F	999	999	999	999	50	150	✓	✓	310	✓
30mA	B/B+	999	999	999	999					310	
100mA 300mA	AC	999	999	999	999	50	150	✓	✓	310	
	A/F	999	999	999	999	50	150	✓	✓	310	
	B/B+	999	999	999	999					310	
500mA 650mA	AC	999	999	999	999	50	150	✓		310	
	A/F	999	999	999	999			✓		310	
	B/B+										
1000mA	AC	999	999	999	999						
	A/F	999	999	999	999						
	B/B+										

Table with duration of tripping time measurement [ms] - Resolution: 1ms, Accuracy: ±(2.0%reading + 2digits)

TEST ON RCD TYPE DD PROTECTION

Differential protection type (RCD):	DD type (compliance with IEC62955 guideline), General (G)
Single -phase systems (L-N-PE)	
Voltage range L-PE, L-N:	100V ÷ 265V
Voltage range N-PE:	<10V
Split-phase systems (phase delay VL1-PE, VL2-PE = 180° or phase delay VL1-PE, VL2-PE = 120°)	
Voltage range L1-PE, L1-L2:	100V ÷ 265V
Voltage range L2-PE:	0V ÷ min[(VL1-PE-100V) and (VL1-L2-100V)]
Rated tripping currents (I _{ΔN}):	6Ma
Frequency:	50/60Hz ± 5%

Tripping current – (RCD DD type General)

RCD type	I _{ΔN}	Range (mA)	Resolution (mA)	Accuracy
DD	6mA	(0.2 ÷ 1.1) I _{ΔN}	≤ 0.1I _{ΔN}	- 0%, +10%I _{ΔN}

Tripping time – (RCD DD type General)

RCD type	I _{ΔN}	Range (ms)	Resolution (ms)	Accuracy
DD	6mA	10000	1	±(2.0% rdg + 2dgt)

FIRST FAULT CURRENT – IT SYSTEMS

Range (mA)	Resolution (mA)	Accuracy
0.1 ÷ 0.9	0.1	±(5.0% rdg + 1dgt)
1 ÷ 999	1	±(5.0% rdg + 3dgt)

Limit contact voltage (ULIM) : 25V, 50V

OVERALL EARTH RESISTANCE WITHOUT RCD TRIPPING

Voltage range P-PE, P-N:	100V ÷ 265V
Voltage range N-PE:	<10V
Frequency:	50/60Hz ± 5%

Overall earth resistance in systems with Neutral (3-wire) – (30mA or higher RCD)

Range (Ω)	Resolution (Ω)	Accuracy
0.05 ÷ 9.99	0.01	± (5.0% rdg + 8dgt)
10.0 ÷ 199.9	0.1	

Overall earth resistance in systems with Neutral (3-wire) – (6mA and 10mA RCD)

Range (Ω)	Resolution (Ω)	Accuracy
0.05 ÷ 9.99	0.01	± (5.0% rdg + 30dgt)
10.0 ÷ 199.9	0.1	



Overall earth resistance in systems without Neutral (2-wire) – (30mA or higher RCD)

Range (Ω)	Resolution (Ω)	Accuracy
0.05 ÷ 9.99	0.01	± (5.0% rdg + 8dgt)
10.0 ÷ 99.9	0.1	
100 ÷ 1999	1	

Overall earth resistance in systems without Neutral (2-wire) – (6mA and 10mA RCD)

Range (Ω)	Resolution (Ω)	Accuracy
0.05 ÷ 9.99	0.01	± (5.0% rdg + 30dgt)
10.0 ÷ 99.9	0.1	
100 ÷ 1999	1	

Contact voltage

Range [V]	Resolution [V]	Accuracy
0 ÷ Ut LIM	0.1	-0%, +(5.0%rdg + 3V)

PHASE ROTATION WITH 1 TEST LEAD

Voltage range P-N, P-PE[V]	Frequency range
100 ÷ 265	50Hz/60Hz ± 5%

Measurement is only carried out by direct contact with metal live parts (not on insulation sheath)

VOLTAGE DROP ON LINES ($\Delta V\%$)

Range [%]	Resolution [%]	Accuracy
0.0 ÷ 100.0	0.1	±(10.0%rdg + 4dgt)

ENVIRONMENTAL PARAMETERS (AUX)

Parameters	Range	Resolution	Accuracy
°C (Air)	-20.0°C ÷ 60.0°C	0.1 °C	±(2.0%rdg+2dgt)
°F (Air)	-4.0°F ÷ 140.0°F	0.1 °F	
Relative humidity [%RH]	0.0% ÷ 100.0%RH	0.1%HR	
DC Voltage	-1999.9mV ÷ -1.0mV 1.0mV ÷ 1999.9mV	0.1mV	
illuminance [Lux]	0.01Lux ÷ 20.00 Lux	0.01Lux	
	1Lux ÷ 2kLux	1Lux	
	1.00kLux ÷ 20.00kLux	0.01kLux	

Values lower to ±1mVDC are zeroed; Values lower to 0.1mVAC are zeroed

DC CURRENT WITH TRANSDUCER CLAMP (In1 input – STD clamp)

Range [mV]	Resolution [mV]	Accuracy
-1999.9 ÷ -1.0	0.1	±(5.0%rdg + 2dgt)
1.0 ÷ 1999.9		

Values lower to ±1mVDC are zeroed

AC TRMS CURRENT WITH TRANSDUCER CLAMP (In1 input – STD clamp)

Range [mV]	Frequenza [Hz]	Resolution [mV]	Accuracy
1.0 ÷ 2999.9	50/60Hz ±5%	0.1	±(5.0%rdg + 2dgt)

Values lower to 1mVAC are zeroed ; Max crest factor: 3

**DC/AC TRMS CURRENT WITH TRANSDUCER CLAMP (In1 input – STD clamp)**

FS clamp / Output ratio	Measurement range	Resolution
1A/1V AC	0.1mA ÷ 999.9mA AC	0.1mA AC
5A/1V AC	0.001A ÷ 4.999A AC	0.001A AC
10A/1V AC/DC	0.001A ÷ 9.999A AC/DC	0.001A AC/DC
30A/3V AC	0.01A ÷ 29.99A AC	0.01A AC
40A/400mV AC/DC	0.01A ÷ 39.99A AC/DC	0.01A AC/DC
100A/1V AC/DC	0.01A ÷ 99.99A AC/DC	0.01A AC/DC
200A/1V AC	0.01A ÷ 199.99A AC	0.01A AC
300A/3V AC	0.01A ÷ 299.99A AC	0.01A AC
400A/400mV AC/DC	0.1A ÷ 399.9A AC/DC	0.1A AC/DC
1000A/1V AC/DC	0.1A ÷ 999.9A AC/DC	0.1A AC/DC
2000A/1V AC	0.1A ÷ 1999.9A AC	0.1A AC
3000A/3V AC	0.1A ÷ 2999.9A AC	0.1A AC



MEASUREMENT OF NETWORK PARAMETERS AND HARMONICS (PQA)

DC Voltage

Range [V]	Resolution [V]	Accuracy
15.0 ÷ 265.0	0.1V	±(1.0%rdg + 1dgt)

Values lower 15V are zeroed

AC TRMS Voltage

Range [V]	Resolution [V]	Accuracy
15.0 ÷ 459.9	0.1V	±(1.0%rdg + 1dgt)

Values lower 15V are zeroed; Max crest factor: 1.5

Frequency

Range [Hz]	Resolution [Hz]	Accuracy
47.5 ÷ 63.0	0.01	±(2.0%rdg + 2dgt)

Allowed voltage range: 5.0 ÷ 459.9V ; Allowed current range: ≥5mVAC

DC Current with transducer clamp (in1 input – std clamp)

Range [mV]	Resolution [mV]	Accuracy
-1999.9 ÷ -1.0	0.1	±(5.0%rdg + 2 dgt)
1.0 ÷ 1999.9		

Values lower to ±1mVDC are zeroed

AC TRMS Current with transducer clamp (in1 input – std clamp)

Range [mV]	Frequency [Hz]	Resolution [mV]	Accuracy
1.0 ÷ 2999.9	50/60Hz ±5%	0.1	±(5.0%rdg + 2dgt)

Values lower to 1mVAC are zeroed ; Max crest factor: 3

DC/AC TRMS current with transducer clamp (In1 input – STD clamp)

FS clamp / Output ratio	Measurement range	Resolution
1A/1V AC	0.1mA ÷ 999.9mA AC	0.1mA AC
5A/1V AC	0.001A ÷ 4.999A AC	0.001A AC
10A/1V AC/DC	0.001A ÷ 9.999A AC/DC	0.001A AC/DC
30A/3V AC	0.01A ÷ 29.99A AC	0.01A AC
40A/400mV AC/DC	0.01A ÷ 39.99A AC/DC	0.01A AC/DC
100A/1V AC/DC	0.01A ÷ 99.99A AC/DC	0.01A AC/DC
200A/1V AC	0.01A ÷ 199.99A AC	0.01A AC
300A/3V AC	0.01A ÷ 299.99A AC	0.01A AC
400A/400mV AC/DC	0.1A ÷ 399.9A AC/DC	0.1A AC/DC
1000A/1V AC/DC	0.1A ÷ 999.9A AC/DC	0.1A AC/DC
2000A/1V AC	0.1A ÷ 1999.9A AC	0.1A AC
3000A/3V AC	0.1A ÷ 2999.9A AC	0.1A AC

DC Power

FS clamp	Range [kW]	Resolution [kW]	Accuracy
≤ 10A	0.015 ÷ 2.650k	0.001	±(2.0%rdg + 5 dgt)
10A ≤ FS ≤ 40	0.15 ÷ 10.60k	0.01	
40A ≤ FS ≤ 100	0.15 ÷ 26.50k	0.1	
100A ≤ FS ≤ 1000	1.5 ÷ 265.0k	1	



COMBI521

Rel. 1.01 of 06/09/22

Multifunctional instrument for safety measurements

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Active Power (@ 230V 1Ph systems, $\cos\phi=1$, $f=50/60\text{Hz}$)

FS clamp	Range [kW]	Resolution [kW]	Accuracy
$\leq 10\text{A}$	0.000 ÷ 9.999	0.001	$\pm(2.0\%\text{rdg} + 5 \text{ dgt})$
$10\text{A} \leq \text{FS} \leq 200$	0.00 ÷ 999.99	0.01	
$200\text{A} \leq \text{FS} \leq 1000$	0.0 ÷ 999.9	0.1	
$1000\text{A} \leq \text{FS} \leq 3000$	0 ÷ 9999	1	

Reactive Power (@ 230V 1Ph systems, $\cos\phi=0$, $f=50/60\text{Hz}$)

FS clamp	Range [kVAr]	Resolution [kVAr]	Accuracy
$\leq 10\text{A}$	0.000 ÷ 9.999	0.001	$\pm(2.0\%\text{rdg} + 5 \text{ dgt})$
$10\text{A} \leq \text{FS} \leq 200$	0.00 ÷ 999.99	0.01	
$200\text{A} \leq \text{FS} \leq 1000$	0.0 ÷ 999.9	0.1	
$1000\text{A} \leq \text{FS} \leq 3000$	0 ÷ 9999	1	

Apparent Power (@ 230V 1Ph systems, $\cos\phi=0$, $f=50/60\text{Hz}$)

FS clamp	Range [kVA]	Resolution [kVA]	Accuracy
$\leq 10\text{A}$	0.000 ÷ 9.999	0.001	$\pm(2.0\%\text{rdg} + 5 \text{ dgt})$
$10\text{A} \leq \text{FS} \leq 200$	0.00 ÷ 999.99	0.01	
$200\text{A} \leq \text{FS} \leq 1000$	0.0 ÷ 999.9	0.1	
$1000\text{A} \leq \text{FS} \leq 3000$	0 ÷ 9999	1	

Power factor (@ 230V 1Ph systems, $f=50.0\text{Hz}$, current $\geq \text{FS}$)

Range	Resolution	Accuracy
0.70c ÷ 1.00 ÷ 0.70i	0.01	$\pm(2.0\%\text{rdg} + 3\text{dgt})$

$\cos\phi$ (@ 230V 1Ph systems, $f=50.0\text{Hz}$, current $\geq \text{FS}$)

Range	Resolution	Accuracy
0.70c ÷ 1.00 ÷ 0.70i	0.01	$\pm(2.0\%\text{rdg} + 3\text{dgt})$

Voltage harmonics (@ 230V 1Ph systems, $f=50.0\text{Hz}$)

Range [%]	Resolution [%]	Order	Accuracy
0.1 ÷ 100.0	0.1	00, 02 ÷ 25	$\pm(5.0\%\text{rdg} + 5\text{dgt})$

Fundamental frequency: 50/60Hz $\pm 5\%$

Harmonics are zeroed in the followed conditions:

- > DC : if the DC value <0.5% fundamental value or if the DC value < 1.0V
- > 1° harmonic: if the value of 1°harmonic < 15V (not displayed)
- > 2nd ÷ 25th harmonics: if harmonic value <0.5% fundamental value or if the value < 1.0V

Current harmonics ($f=50/60\text{Hz}$)

Range [%]	Resolution [%]	Order	Accuracy
0.1 ÷ 100.0	0.1	00, 02 ÷ 25	$\pm(5.0\%\text{rdg} + 5\text{dgt})$

Harmonics are zeroed in the followed conditions:

- > DC : if the DC value <0.5% fundamental value or if the DC value < 5mV
- > 1° harmonic: if the value of 1°harmonic <5mV (not displayed)
- > 2nd ÷ 25th harmonics: if harmonic value <0.5% fundamental value or if the value <5mV



2. GENERAL SPECIFICATIONS

MECHANICAL CHARACTERISTICS

Dimensions (L x W x H):	225 x 165 x 75mm (9 x 6 x 3in)
Weight (batteries included):	1.2kg (42 ounces)
Mechanical protection:	IP40

MEMORY AND PC CONNECTIONS

Memory:	999 locations, 3 mark levels
PC connection:	optical/USB port

DISPLAY

Characteristics:	COG Black/white graphic LCD, 320x240pxl
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POWER SUPPLY

Battery type:	6x1.5V alkaline batteries type AA IEC LR06 or 6 x1.2V rechargeable NiMH type AA
Battery life:	> 500 tests for each function
Auto Power OFF:	after 5 minutes' idling (if activated)

ENVIRONMENTAL CONDITIONS FOR USE

Reference temperature:	23°C ± 5°C (73°F ± 41°F)
Operating temperature:	0°C ÷ 40°C (32°F ÷ 104°F)
Allowable relative humidity:	<80%RH
Storage temperature:	-10°C ÷ 60°C (14°F ÷ 140°F)
Storage humidity:	<80%RH
Max. operating altitude:	2000m (6562ft)

REFERENCE GUIDELINES

Safety:	IEC/EN61010-1, IEC/EN61010-2-030, IEC/EN61010-2-033 IEC/EN61010-2-034, IEC/EN61557-1
EMC :	IEC/EN61326-1
Technical documentation:	IEC/EN61187
Safety of accessories:	IEC/EN61010-031
Insulation:	double insulation
Pollution level:	2
Measurement category:	CAT IV 300V to earth, maximum 415V between inputs
RPE:	IEC/EN61557-4, BS7671 17th ed., AS/NZS3000/3017
MΩ:	IEC/EN61557-2, BS7671 17th ed., AS/NZS3000/3017
RCD:	IEC/EN61557-6 (only on Phase-Neutral-Earth systems)
RCD-DD:	IEC62955
RCD CCID:	UL2231-2
LOOP P-P, P-N, P-PE:	IEC/EN61557-3, BS7671 17th ed., AS/NZS3000/3017
Multifunction:	IEC/EN61557-10, BS7671 17th ed., AS/NZS3000/3017
Short-circuit current:	EN60909-0

This instrument satisfies the requirements of Low Voltage Directive 2014/35/EU (LVD) and of EMC Directive 2014/30/EU

This instrument satisfies the requirements of European Directive 2011/65/EU (RoHS) and 2012/19/EU (WEEE)

TECHNICAL SPECIFICATIONS

Technical characteristics:

Input voltage:	max 415V AC Phase-Phase, 50/60Hz \pm 5%
Connection to EVSE system:	integrated cable with Type 2 plug, length 60cm
Recharging stations:	charging modes 2 and 3
PP Simulation:	NC, 13A, 20A, 32A, 63A
CP Simulation:	status A, B, C, D, ventilation/not ventilation
Simulation EVSE fault:	Fault PE, Fault E
CP output signal:	PWM communication protocol, 12V
Allowed output load:	240V, 50/60Hz, max 10A AC
Protection fuse:	Fast type 250V/10A (5x20mm) (0.2x0.8in)

Mechanical characteristics:

Dimensions (L x W x H):	210 x 115 x 60mm (8 x 5 x 2in)
Weight (with integrated cable):	900g (32ounces)
Mechanical protection:	IP40

Reference guidelines:

Safety:	IEC/EN61010-1
EMC:	IEC/EN61326-1
Sector guidelines:	IEC/EN61851-1, IEC/EN60364-7-722
Insulation:	double insulation
Measurement category:	CAT III 300V
Pollution degree:	2

Environmental specifications:

Working temperature:	0°C \div 40°C (32°F \div 104°F)
Working humidity:	<80%RH
Storage temperature:	-10°C \div 60°C (14°F \div 140°F)
Storage humidity:	<80%RH
Max operating altitude:	2000m (6562ft)

This adapter complies with requirements of Low Voltage Directive 2014/35/EU (LVD) and of EMC Directive 2014/30/EU

This adapter complies with requirements of European Directive 2011/65/EU (RoHS) and 2012/19/EU (WEEE)

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