

AR6

Three-phase power and quality analyzers



Electrical Safety
600 V CAT IV

Electrical Safety
1000 V CAT III

Description

- Portable power analyzer for three-phase and single-phase electrical networks with simultaneous measurement of leakage current, power quality and recording of transients.
- AR6 is the best tool for visualizing and analyzing the network's problems regardless of whether it is a single-phase or three-phase network.
- It allows recordings of the most common electrical parameters and also those specifically related to supply quality such as overvoltages, swell, sags and transients.
- Thanks to the graphical display of harmonics, phasors and waveforms, the user can detect anomalies in the installation simply by connecting the device.
- Measurement of the main electrical parameters.
- True root mean square measure (TRMS).
- 5.7" colour graphic screen.
- Includes meter for energy consumed and generated.
- Has 5 voltage measurement inputs and 5 current channels.
- Configurable trigger menu via level and time trigger.
- Multiple languages (Spanish, English, French, German, Portuguese, Italian, Chinese, Russian).
- Recording of voltage-quality events (class B) via configurable menu.
- 600 CAT IV, 1000V CAT III (EN 61010).
- CE marking.
- Analysis of records via Power Vision plus PC software.
- Simple and intuitive menu for device configuration.

Features

AR6

Class 0.5 in the measurement
 Class B according to UNE-EN 61000-4-30
 Measurement and recording according to EN 50160

AR6 power supply

Voltage (external power supply)	100...240 Vac.
Current (external power supply)	3.33 A
Frequency	50 to 60 Hz
Maximum power	40 W

AR6

Nominal voltage	12 Vdc
Current	2 A
Maximum power	24 W
Consumption	30 VA
Operating temperature	0 to 50°C
Altitude	2000 m
Humidity without condensation	5...95 %
Contamination level	2

Current input features

Current inputs	I1 , I2 , I3 , IN , Leakage
Input voltage	0...2 V
Measurement margin	1 to 120 of In%
Maximum current	3In A
Input impedance	10 kΩ

Voltage input features

Voltage inputs	U1, U2, U3, UN, Earthing
Input voltage	10 to 800 Vrms neutral phase
Maximum voltage admissible	2,500 V
Bandwidth	3.2 kHz

Other features

Voltage measurement range	10 to 800 Vf-n
Current measurement range	0.01 to 1000 A (depending on clamp)
Transformation ratios	Programmable
Internal memory	1 Gb
Internal memory features	FAT 32

AR6

Three-phase power and quality analyzer



- List of detected disturbances in tables.
- Display of wave shapes of transients recorded.
- Manual or programmed PHOTO captures (wave shapes of 9 channels along with instantaneous values).
- Compatible with AR5-L pins.
- Automatic detection of clamps.
- Memory download via USB connection.
- Graphic display of phasors, harmonics and wave shapes.

Waveform

- With the waveform visualization, it is possible to detect any waveform defect.
- It is also possible to pause the image and zoom-in on the oscilloscope image any time in order to get a better definition of the image.

Photo

- The device captures the waveform of 9 channels measured together with the instantaneous values of the most important electric variables so that each photo allows a detailed analysis of the installation.
- The photo capture can be programmed with trigger (electrical parameters comparison) or can be taken manually.

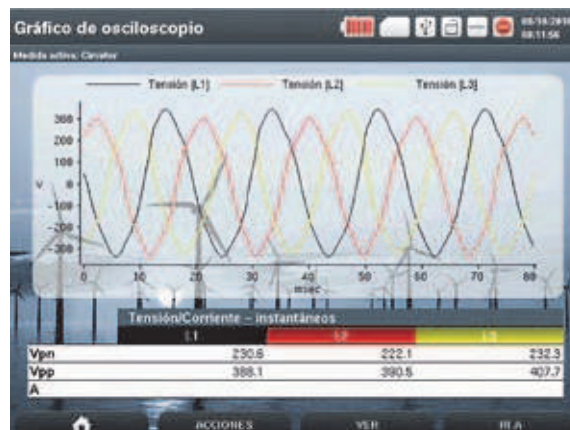
Current clamps

- The current clamps of the AR6 are built with amplifier included. This feature facilitates the transportation and specially the installation of the clamps to make measurements since they do not need extra supply or extra wiring

Features

Accuracy class	
Voltage	0.5% ±2 digits
Current	0.5% ±2 digits
Active power	0.5% ±2 digits
Reactive power	1% ±2 digits
Build features	
Enclosure	Double insulation
Keyboard	Movement and function keys
Screen	5.7" colour VGA
Dimensions	283 x 168 x 80 mm
Weight	1.640 kg
Communications	USB

Safety	Category III - 600 V, in accordance with 61010
	1000 V CAT III/600 V CAT IV for altitudes lower than 2000 m
	1000 V CAT III/600 V CAT III/300 V CAT IV above 2000 m
Standards	
EN 61000-6-4 (2002), Industrial emissions. EN 55011 (1994), Driven (EN 52022 – Class B) EN 55011 (1994), Radiated (EN 55022 – Class A)	
EN 61000-6-2 (2002), Industrial immunity EN 61000-4-2 (1995), Electrostatic discharge EN 61000-4-8 (1995), Rapid transient bursts	
EN 61000-6-1 (2002), Domestic immunity EN 61000-4-11 (1994), Power supply outages	
(*) Accuracy is given by the following measurement conditions: Exclusion of errors produced by the clamps and external voltage transformers, with a temperature range of 5 to 45°C and power factor 0 to 1	



AR6

Three-phase power and quality analyzer



Display

- 5,7" high resolution VGA colour screen allows graphical and numerical representation values showing the information in a clearer way.

Measurement channels

- The analyzer has 5 voltages inputs that corresponds to the 3 phases, neutral and ground, [U1, U2, U3, UN, UEARTH]]
- Has 5 current inputs that corresponds to the (3 phases, neutral and leak current simultaneously [I1, I2, I3, IN, ILeak].

Visualization

- Information on screen easy to understand and to read considering that the numerical information is represented in tables grouped under the measured variables and their corresponding phases. Moreover, each phase is shown with the colour selected by the user.
- The graphical screens provide the information on the graph on X / Y axes and autoscale for full representation of the measured variable.

Display

Panel size	5.7" (diagonal)
Active area of the LCD	Width 116.16 mm x Height 87.12 mm
No. of Pixels	Horizontal (640x3) x Vertical 480
Resolution type	VGA
Pixel size	Horiz. 0.1815 mm x Vert. 0.1815 mm
Pixel colour	RGB vertical lines
Display colour	White
No. of colours	262K
Back-lighting	LED

Measurement channels

5 voltages inputs that corresponds to the 3 phases, neutral and ground, (U1, U2, U3, UN, UEARTH)	
Inputs for voltage measurement	U1 U2 U3 UN Earth
Input margin	Un= 10 to 800 Vrms phase-neutral
Number of inputs	5
Peak voltage	2,500 V
Crest factor	1.0...1,875
Bandwidth	3.2 kHz
Input impedance	10 MΩ
Permanent overvoltage	1.000 Vrms
Transient overvoltage <1s	2,500 V
Absolute maximum voltage	6 kV
Consumption	≤0.04 VA
Maximum voltage in the voltage measurement circuit	1000 V CAT III/600 V CAT IV for altitudes lower than 2000 m 1000 V CAT II/600 V CAT III/300 V CAT IV for above 2000 m
Measurement margins	10.00 to 800.00 Vrms
Resolution	0.01 Vrms
Accuracy	± 0.5 % of Vnom
Has 5 current inputs that correspond to the (3 phases, neutral and leak current simultaneously (I1, I2, I3, IN, ILeak)	
Inputs for current measurement	I1 I2 I3 IN ILeak
Input voltage	0...2 V
Measurement margin	from 1 to 120% of In
Primary current measurement In	Depends on clamp
Allowable overload	3 In
Consumption	≤ 0.0004 VA
Special features	Leakage current measurement via low-pass filter option activated/deactivated
Input impedance	10 kΩ

AR6

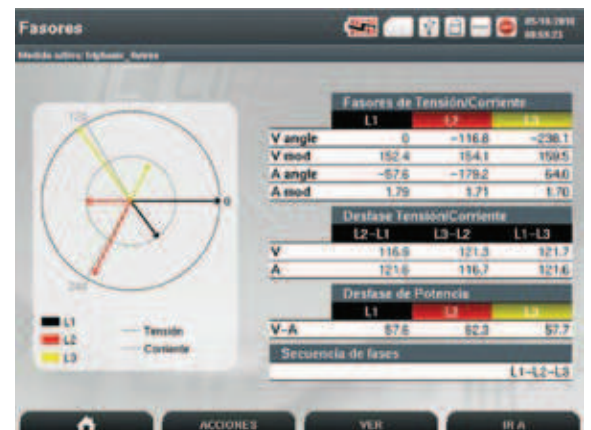
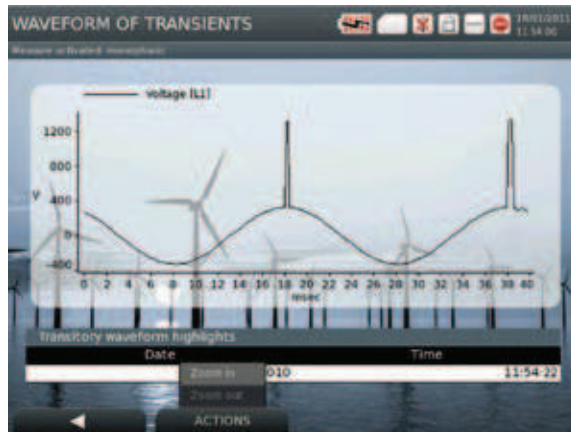
Three-phase power and quality analyzer

Easy configuration menu

- AR6 has an intuitive main menu and large icons that makes the equipment very easy to navigate and configure.

Quality

- It is possible to activate and configure the detection and registration of quality events such as over-voltages, swells, dips and transients. The events are shown in a table with the most important parameters of the event. The user can select any event and visualize the waveform and values of the event.



AR6

Three-phase power and quality analyzer

Autonomy

It is the only portable analyzer that ensures 8 hours of battery life.

Battery	NiMH (Nickel Metal Hydride)
Voltage	6 V
Capacity	4,200 mAh
Charge time	2 ...2,5 h
Battery life while in use	4hrs with LCD on 8hrs with LCD off

Memory

It has an internal memory that can be extended if the user needs it, but the analyzer is capable of recording for years.

SD	Standard specification 1.10 Capability up to 32 GB
SDHC	Specification 2.0 Class 4 Minimum transfer speed 4MB/s Capability up to 32 GB

Low-pass filter

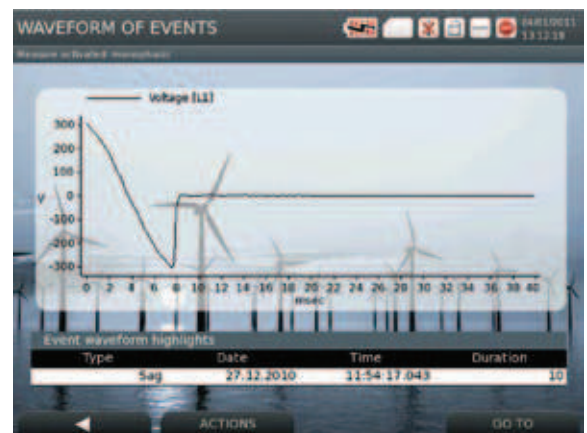
It includes the possibility of activating a low-pass filter to verify the difference in response and measurement between the immunized earth leakage relays and those that are not.

Photo capture

There is the possibility of activating the automatic photo capture. The photo records the waveforms of 9 channels and the instantaneous values of the main parameters.

To capture the photo, it's necessary to create trigger conditions comparing electrical values from one phase or all of them. It's possible to combine different conditions with "AND" and/or "OR" conditions to capture the photo.

After the configuration, the user can activate the conditions they require for every registration.



AR6

Three-phase power and quality analyzer



Customizable and configurable

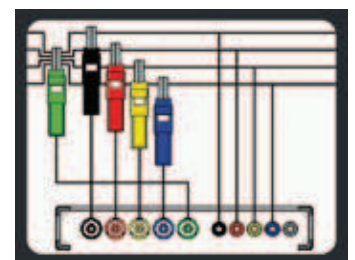
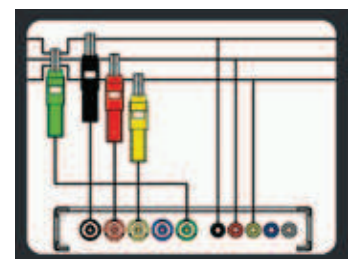
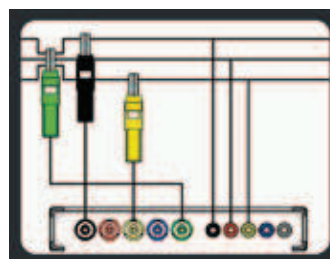
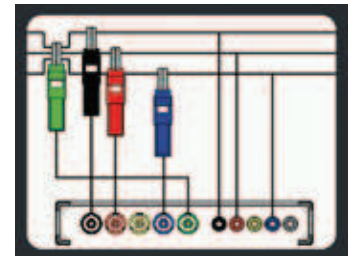
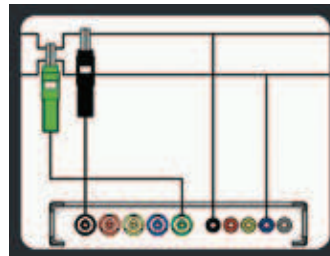
- The device allows the configuration of the number of decimals and units desired by the user for each variable.
- The user can select the background colour and colours for each phase according to regulations.

Multi circuit

- Allows the configuration for a number of networks. Also shows every way of installing the current sensors according to the network selected. The options are single-phase, two-phase, aron, three-phase and three-phase with neutral.

Harmonic graphs

- The harmonics screen displays the amplitude value information of each harmonic.
- The user can scroll to select the desired harmonic to display in the below table the most important values of this harmonic.



Application

- With the AR6 you can perform a full study of the electrical installation. It is possible to perform an analysis of consumption, load curves, voltage disturbances in the installation and to display waveshapes, study harmonics or measure flicker, as well as other options.

AR6

Three-phase power and quality analyzer



References

Analyzer	Type	Code
AR6	AR6, Portable single and three-phase power analyzer	M82511

AR6 kits

Analyzer	Type	Code
AR6, case kit	AR6 (M82511) + Trolley transport case Kit	M82512
AR6 case kit CP Clamps	AR6 case Kit (M82512) + 3 CP-5 + 3 CP-2000/200 clamps	M82541
AR6 Kit 3 clamps CPRG-500	AR6 case Kit (M82512) + 3 CPRG-500 clamps	M8252V
AR6 Kit 4 clamps CPRG-500	AR6 case Kit (M82512) +4 CPRG-500 clamps	M8252T
AR6 Kit 3 clamps CPRG-1000	AR6 case Kit (M82512) + 3 CPRG-1000 clamps	M8252R
AR6 Kit 4 clamps CPRG-1000	AR6 case Kit (M82512) + 4 CPRG-1000 clamps	M8252P
AR6 kit 3 AM54-flex	AR6 case Kit (M82512) + 3 AM54-flex flexible clamps with built-in power supply	M82522
AR6 kit 4 AM54-flex	AR6 case Kit (M82512) + kit with 4 AM54-flex flexible clamps with built-in power supply	M82523

AR6 Clamps

See page M.8-12

Accessories

See page M.8-38

Parameters measured

Parameter	L1	L2	L3	LN	LIII	LK	Max. / Min.
Phase-Neutral Voltage	Yes	Yes	Yes	Yes	Yes	-	Yes
Phase-Phase Voltage	Yes	Yes	Yes	-	Yes	-	Yes
Current	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Consumed Active Power	Yes	Yes	Yes	-	Yes	-	Yes
Consumed Inductive Power	Yes	Yes	Yes	-	Yes	-	Yes
Consumed Capacitive Power	Yes	Yes	Yes	-	Yes	-	Yes
Consumed Apparent Power	Yes	Yes	Yes	-	Yes	-	Yes
Consumed Power Factor	Yes	Yes	Yes	-	Yes	-	Yes
Cosine φ Consumed	Y	Yes	Yes	-	Yes	-	Yes
Generated Active Power	Yes	Yes	Yes	-	Yes	-	Yes
Generated Inductive Power	Yes	Yes	Yes	-	Yes	-	Yes
Generated Capacitive Power	Yes	Yes	Yes	-	Yes	-	Yes
Generated Apparent Power	Yes	Yes	Yes	-	Yes	-	Yes
Generated Power Factor	Yes	Yes	Yes	-	Yes	-	Yes
Cosine φ Generated	Yes	Yes	Yes	-	Yes	-	Yes
Crest factor	Yes	Yes	Yes	-	-	-	Yes
K - Factor	Yes	Yes	Yes	-	-	-	Yes
THD Voltage	Yes	Yes	Yes	Yes	-	-	Yes
THD Voltage even	Yes	Yes	Yes	Yes	-	-	Yes
THD Voltage odd	Yes	Yes	Yes	Yes	-	-	Yes
THD Current	Yes	Yes	Yes	Yes	-	-	Yes
THD Current even	Yes	Yes	Yes	Yes	-	-	Yes
THD Current odd	Yes	Yes	Yes	Yes	-	-	Yes
Flicker Inst. (WA)	Yes	Yes	Yes	Yes	-	-	-
PST Flicker	Yes	Yes	Yes	Yes	-	-	-
Frequency	Yes	-	-	-	-	-	Yes
Voltage Imbalance	-	-	-	-	Yes	-	Yes
Voltage Asymmetry	-	-	-	-	Yes	-	Yes
Current Imbalance	-	-	-	-	Yes	-	Yes
Current Asymmetry	-	-	-	-	Yes	-	Yes
Voltage Harmonics (1-50)	Yes	Yes	Yes	Yes	-	-	-
Current Harmonics (1-50)	Yes	Yes	Yes	Yes	-	-	-
Active Power Maximum Demand	-	-	-	-	Yes	-	-
Apparent Power Maximum Demand	-	-	-	-	Yes	-	-
Average current maximum demand	-	-	-	-	Yes	-	-
Maximum current demand L1, L2, L3	Yes	Yes	Yes	-	-	-	-
Active energy consumed	-	-	-	-	Yes	-	-
Consumed Inductive Energy	-	-	-	-	Yes	-	-
Consumed Capacitive Energy	-	-	-	-	Yes	-	-
Consumed Apparent Energy	-	-	-	-	Yes	-	-
Active energy generated	-	-	-	-	Yes	-	-
Generated Inductive Energy	-	-	-	-	Yes	-	-
Generated Capacitive Energy	-	-	-	-	Yes	-	-
Generated Apparent Energy	-	-	-	-	Yes	-	-
Wave shapes	Yes	Yes	Yes	Yes	Yes	Yes	-
Phasor representation	Yes	Yes	Yes	Yes	Yes	Yes	-

AR6

Three-phase power and quality analyzer

AR6 Clamps		
kit 3 AM54-FLEX	Kit with 3 AM54-FLEX flexible 100-1000-10000 A clamps	M82532
kit 4 AM54-FLEX	Kit with 4 AM54-FLEX flexible 100-1000-10000 A clamps	M82533

Clamps	CF-5	CF-10	CP-5	CP-100	CPR-500	CPR-1000	CP-2000/200
Measurement range (*)	0,01 ... 5 A	5 mA ... 10 A	50 mA ... 5A	1 ... 100 A	1 ... 500 A	1 ... 1000 A	1 ... 200 A 10 ... 2000 A
Nominal frequency	48...65 Hz	48...65 Hz	48...65 Hz	48...65 Hz	48...65 Hz	48...65 Hz	48...65 Hz
Output voltage	2 V ac	2 V ac	2 V ac	2 V ac	2 V ac	2 V ac	2 V ac
Dielectric rigidity	5200 V, 50 Hz, 1 min	5200 V, 50 Hz, 1 min	5200 V, 50 Hz, 1 min	5200 V, 50 Hz, 1 min	5200 V, 50 Hz, 1 min	5200 V, 50 Hz, 1 min	5200 V, 50 Hz, 1 min
Maximum conductor diameter	20 mm	100 mm	20 mm	20 mm	52 mm	52 mm	64 mm
Maximum busbar	1 - 50 x 5 mm or 4 - 30 x 5 mm	5 - 80 x 5 mm or 3 - 80 x 10 mm	20 x 5 mm	20 x 5 mm	1 - 50 x 5 mm or 4 - 30 x 5 mm	1 - 50 x 5 mm or 4 - 30 x 5 mm	5 - 125 x 5 mm or 3 - 100 x 10 mm
Description / Code	CFG-5 Code M810BD	CFG-10 Code M810BE	CFG-5 Code M810B1	CFG-100 Code M810B2	CFG-500 Code M810B3	CFG-1000 Code M810B4	CFG-2000/200 Code M810B5
Kit 3 Description / Code			3 CPG-5 Kit Code M810C1	3 CPG-100 Kit Code M810C2	3 CPG-500 Kit Code M810C3	3 CPG-1000 Kit Code M810C4	3 CPG-2000/200 Kit Code M810C5
Kit 4 Description / Code			4 CPG-5 Kit Code M810D1	4 CPG-100 Kit Code M810D2	4 CPRG-500 Kit Code M810D3	4 CPRG-1000 Kit Code M810D4	4 CPG-2000/200 Kit Code M810D5

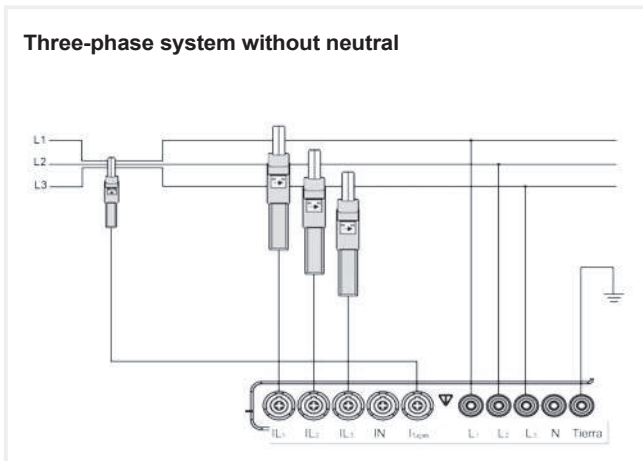
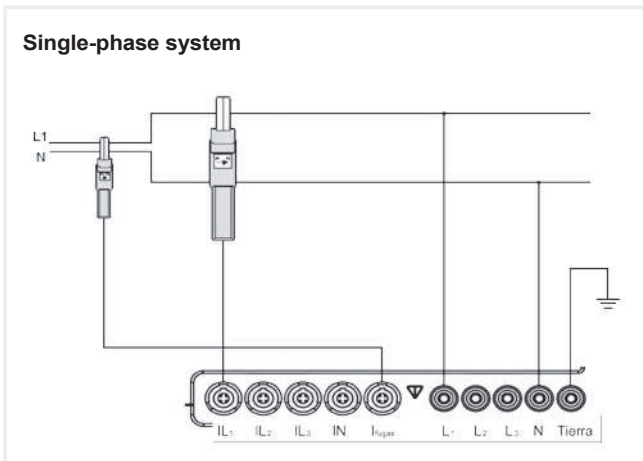
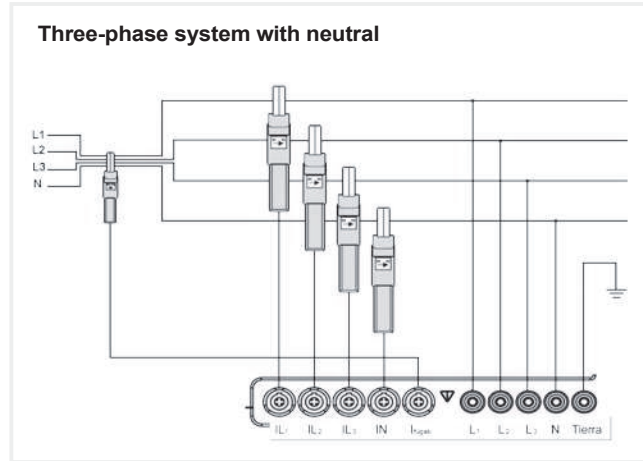
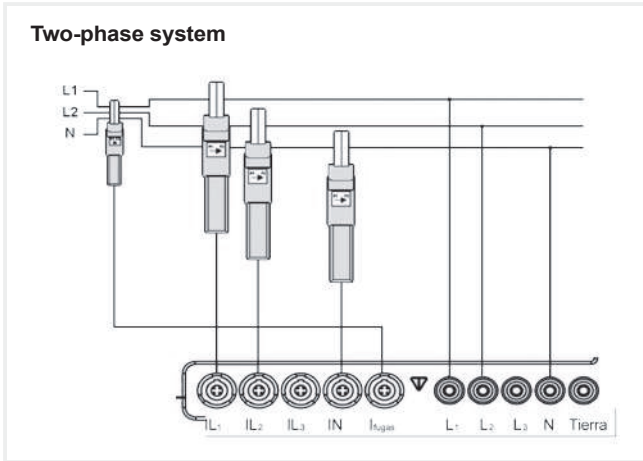
(*) Measurement range

Clamps	CFG-5	CFG-10	CPG-5	CPG-100	CPRG-500	CPRG-1000	CPG-2000/200	
							200 A	2000 A
Current	0,01 ... 100 mA	5 ... 100 mA	50 ... 500 mA	1 ... 10 A	1 ... 5A	1 ... 5 A	1 ... 3 A	10 ... 150 A
Tolerance	1 % + 0,4 mV	1,5 % + 0,4 mV	2 %	1 %	3 %	3 %	05 % + 70 mA	05 % + 250 mA
Phase	-	-	-	-	-	-	-	-
Current	0,1 ... 5 A	0,1 ... 1 A	0,5 ... 1 A	10 ... 100 A	5...50 A	5 ... 20 A	3...10 A	150...2000 A
Tolerance	0,5 %	1,5 %	1 %	0,5 %	0,7%	0,7%	05 % + 70 mA	05 % + 100 mA
Phase	10°	< 4°	3°	1,5°	-	-	5°	0,5°
Current		1 ... 10 A	1 ... 5 A		50 ... 500 A	20 ... 1000 A	10 ... 50 A	
Tolerance		1 %	1 %		0,7 %	0,7 %	05 % + 70 mA	
Phase		< 3°	1,7°		1°	1°	1,5°	
Current							50 ... 2000 A	
Tolerance							05 % + 70 mA	
Phase							1°	

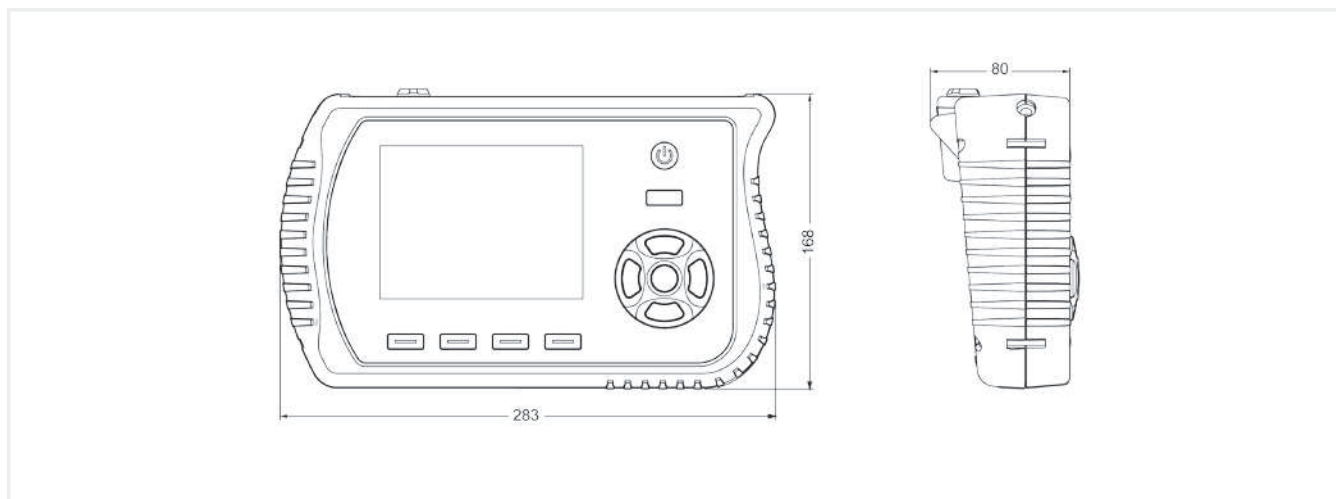
AR6

Three-phase power and quality analyzer

Connections



Dimensions



accesorios AR6

Kit with 4 flexible clamps

Description

- Kit with 4 **AM54-Flex** flexible clamps with 5 ties

Code M82533



Kit with 3 flexible clamps

Description

- Kit with 3 **AM54-Flex** flexible clamps with 5 ties

Code M82532



Flexible clamp

Description

- AM54-Flex** type flexible clamps with coloured clips

Code M82531



Crocodile clamps

Description

- Crocodile clamps for **AR6**

Code M89909



Voltage cables

Description

- Black (**UL**) voltage cables with 12 ties in 6 colours

Code M82501



AR6 case

Description

- Deep red **AR6** work cover

Code M82503



AR6 case

Description

- Transport case (trolley type) for **AR6**

Code M82504



Lexan front panel

Description

- Lexan front panel with phase colours

Code M82506



Power supply

Description

- Power supply for **AR6**

Code M82507



AR6 battery

Description

- Replacement for the internal battery of the **AR6** analyzer

Code M82508



Power Vision Plus

Description

- Software for the remote management and measurement of the information recorded by the **AR5-L** portable analyzers and other units manufactured by **CIRCUTOR**.

- It is a high-performance tool that increases the power of the information recorded by the units.

For more information, see M.9 Catalogue

Code M90411

