

IC-090

POWER NETWORK ANALYSER



This three-phase power network analyser up to 3000 A with harmonics measurement provides to the installers (no matter if basic or specialists) a rugged instrument with a great capacity of analysis. The **IC-090** is the perfect instrument for low voltage electrical networks installers. It is fitted with a big, backlitged display that shows all the network parameters as well as the measurements taken by the instrument: True RMS (for both voltage and current), power supply failures location, analysis of load profile and supply optimization. A very intuitive user interface together with an ergonomic design conform a very easy to use tool.

- ✓ Current probe input signal/ranges with selection:
Probe input signal voltage (ACV): 200 mV / 300 mV / 500 mV / 1 V / 2 V / 3 V.
Probe current ranges (ACA): 20 A / 200 A / 2000 A / 30 A / 300 A / 3000 A.
- ✓ Meter can be used with universal current probes.
- ✓ Includes a complete set of 4 Test Leads, 4 Alligator clips, 3 Clamp Probes, AC to DC 9 V adapter, 2 GB SD memory card and Carrying bag.
- ✓ Measurement: V (phase-to-phase), V (phase-to-ground), A (phase-to-ground) true power, kW / kVA / kVAR / PF (phase); kW (true power) / kVA / kVAR / PF (system); kWh / kVAh / kVARh / PFh (system); Phase angle
- ✓ Harmonics display (1-50th order).
- ✓ Simultaneous display of Harmonics and Wave form.
- ✓ Analysis of Total Harmonic Distortion (THD).
- ✓ Graphic Phase diagram with 3-Phase system parameters.
- ✓ 3 phase Voltage or Current Unbalanced Ratio (VUR, AUR) and Unbalanced Factor.
- ✓ Unbalanced Current calculated through Neutral Line (An).
- ✓ Capture of transient events (including Dip, Swell and Outage) with programmable threshold (%).
- ✓ Programmable CT ratio (1 to 600) and PT ratio (1 to 1000).
- ✓ ACV input impedance: 10 MΩ.
- ✓ Safety Standard: IEC 1010, CAT III 600 V.
- ✓ Built-in clock and Calendar, real time data record with SD memory card, sampling time set from 2 to 7200 seconds. Download to PC all the measured values with the time information (year, month, data, hour, minutes, seconds) directly into Excel and perform data analysis.
- ✓ Powered by 8 AA (UM-3) DC 1.5 V batteries (Alkaline type) or DC 9 V adapter.

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SPECIFICATIONS (GENERAL)	IC-090
Circuit	Custom one-chip of microprocessor LSI circuit.
Display	Dot Matrix LCD (320 X 240 pixels) with backlight. Size: 81.4 x 61 mm (3.2 x 2.4 inch).
Measurements	V (phase-to-phase), V (phase-to-ground), A (phase-to-ground); kW / kVA / kVAR / PF (phase); kW / kVA / kVAR / PF (system); kWh / kVAh / kVARh / PFh (system); Power factor, Phase angle, Frequency, Harmonics display.
Wire connections	1 P / 2 W, 1 P / 3 W, 3 P / 3 W, 3 P / 4 W.
Voltage ranges	10 ACV to 600 ACV, auto range.
Current probe input signal and range	Current probe input signal volage (ACV): 200 mV / 300 mV / 500 mV / 1 V / 2 V / 3 V Current probe input current range (ACA): 20 A / 200 A / 2000 A (1200 A) / 30 A / 300 A / 3000 A 60 A / 600 A / 6000 A. Meter can be used with universal current probes.
Safety standard	IEC1010 CAT III 600 V.
Input impedance	10 MΩ.
Range select	ACV (Auto range), ACA (Manual range).
Clamp frequency response	40 Hz to 1 kHz.
Specifications test frequency	45 to 65 Hz.
Overload protection	ACV: 720 ACV RMS ACA: 1300 ACA with clamp probe
Data hold	Freeze the display reading.
Data record	SD Card Record.
Sampling rate	Approx. 1 second.
Power ON / OFF	Manual power ON or power OFF by pressing this key.
Over range indicator	LCD display shows "OL" The data save into the SD card will show " 9999 " or " 999 "(overleap the decimal point).
Under range indicator	LCD display shows "UR" The data save into the SD card will show " 9999 " or " 999 " (overleap the decimal point).
Real time datalogger	Real time data logger, data is saved into the SD memory card: Measured values and the time information (year/month/data/hour/minute/second).
Data output (computer interface)	Connect a USB cable to the USB port. Connect a RS232 cable to the RS232 port.
Operating environmental conditions Temperature and humidity	0 to 50°C (32 to 122°F), < 80% R.H.
Power supply	8 x 1.5 V AA Alkaline batteries AC to DC 9V power adapter.
Power consumption	Meter: 270 DCmA; Clamp: 22 DCmA.
Clamp max conductor size	50 mm diameter for CP-1201 probe.
Mechanical features Dimensions	Meter: 225 x 125 x 64 mm (8.86 x 4.92 x 2.52 inch). Clamp: 210 x 64 x 33 mm (8.3 x 2.5 x 1.3 inch).
Weight	Meter: 1010 g (including battery). Clamp: 500 g (including cable).
Included accessories	1x Instruction manual; Set of 4x test leads (TL88-4AT); Set of 4x alligator clips (TL88-4 AC); 3x Clamp Probe (CP-1201); 1x AC to DC 9 V adapter; 1x SC card (2 GB) 1x Transport case

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SPECIFICATIONS	CURRENT PROBES FOR POWER ANALYSER
Range	20 A / 200 A / 1200 A
Output sensitivity	10 mV/A, 1 mV/A, 0.1 mV / A
Max. conductor size	Ø 40 mm (1,9") .
Operation frequency	50 Hz / 60 Hz

SPECIFICATIONS	IC-090	IC-090	RESOLUTION	ACCURACY
ACV 10 to 600 V (phase to neutral line) 10 to 600 V (phase to phase)	RESOLUTION	VAR Hour (Reactive power hour): QH 0 to 9.999 kVARH 0 to 99.99 kVARH 100 to 999.9 kVARH 1,000 to 9,999 MVARH		
	ACCURACY	0.001 kVARH 0.01 kVARH 0.1 kVARH 0.001 MVARH	± (2% + 0.008 kVARH) ± (2% + 0.08 kVARH) ± (2% + 0.8 kVARH) ± (2% + 0.008 MVARH)	
ACA 20 A 200 A 1200 A		Harmonics of AC voltage in magnitude (***) 1 to 20th 21 to 30th 31 to 50th		
	1 mA (< 10 A), 0.01 A (≥ 10 A) 0.01 A (< 100 A), 0.1 A (≥ 100 A) 0.1 A (< 1000 A), 1 A (≥ 1000 A)		0.1 V 0.1 V 0.1 V	± (0.5% + 0.1 A) ± (0.5% + 0.5 A) ± (0.5% + 5 A)
Power factor From 0.00 to 1.00 (*)	0.01	Harmonics of AC voltage in percentage (***) 1 to 20th 21 to 30th 31 to 50th		± 0.04
Φ (PHASE ANGLE) From -180° to 180°	0.1°	Harmonics of AC current in magnitude (***) 1 to 20th 21 to 30th 31 to 50th		± 1° * ACOS (PF)
Active (real) power From 0 to 9.999 kW From 10 to 99.99 kW From 100 to 999.9 kW From 1,000 to 9,999 MW	(**) 0.001 / 0.01 / 0.1 kW (**) 0.01 / 0.1 kW 0.1 kW 0.001 MW	Harmonics of AC current in percentage (***) 1 to 20th 21 to 30th 31 to 50th		± (1% + 0.008 kW) ± (1% + 0.08 kW) ± (1% + 0.8 kW) ± (1% + 0.008 MW)
		Peak value of ACV or ACA VCA (peak to peak) ACA (peak to peak)	0.1 V to 1 V 0.1 A to 1 A 0.1 A to 1 A	± (2% + 0.5 A) ± (4% + 0.5 A) reference
Frequency From 45 to 65 Hz	0.1 Hz	Crest factor of ACV or ACA 1,000 - 99.99		0.1 Hz
Apparent power From 0 to 9.999 kVA From 10 to 99.99 kVA From 100 to 999.9 kVA From 1,000 to 9,999 MVA	(**) 0.001 / 0.01 / 0.1 kVA (**) 0.01 / 0.1 kVA 0.1 kVA 0.001 MVA	Total harmonic distortion 0 to 20 % 20.1 to 100 %		± (1% + 0.008 kVA) ± (1% + 0.08 kVA) ± (1% + 0.8 kVA) ± (1% + 0.008 MVA)
		REACTIVE POWER From 0 to 9.999 KVAR From 10 to 99.99 KVAR From 100 to 999.9 KVAR From 1,000 to 9,999 MVAR		± (2% + 0.008 kVAH) ± (2% + 0.08 kVAH) ± (2% + 0.8 kVAH) ± (2% + 0.008 MVAH)
Watt hour (Active power hour): WH From 0 to 9.999 kWh From 10 to 99.99 kWh From 100 to 999.9 kWh From 1,000 to 9,999 MWh	0.001 kWh 0.01 kWh 0.1 kWh 0.001 MWh	VA HOUR (apparent power hour): SH From 0 a 9.999 kVAH From 10 a 99.99 kVAH From 100 a 999.9 kVAH From 1,000 a 9,999 MVAH		± (2% + 0.008 kWh) ± (2% + 0.08 kWh) ± (2% + 0.8 kWh) ± (2% + 0.008 MWh)
				± (2% + 0.008 kVAH) ± (2% + 0.08 kVAH) ± (2% + 0.8 kVAH) ± (2% + 0.008 MVAH)

(*) PFH : Long term power factor.
PFΣ :
For 3Φ 4W, 3Φ 3W : PFΣ = (PF1 + PF2 + PF3)/3
For 1Φ 3W : PFΣ = (PF1 + PF2)/2

(**) The resolution is changed according the different ACA range.

(***) Fundamental frequency 50 Hz, 60 Hz