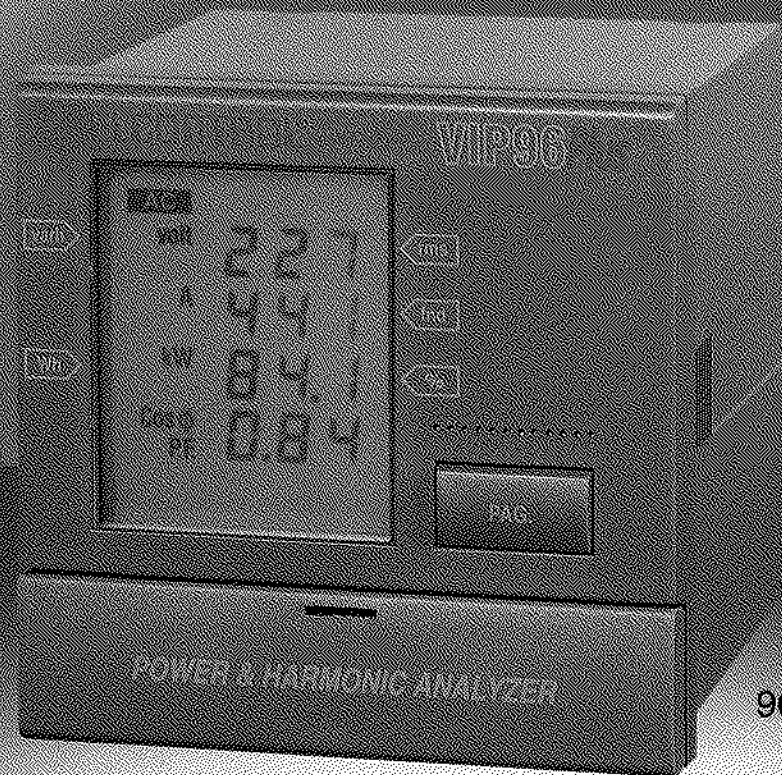


ENGLISH  
03/98

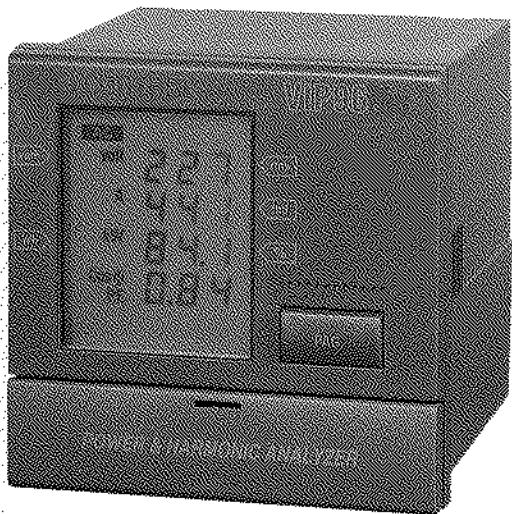
More than 100 measures in single and three-phase balanced systems

- Volt
- Amp. True RMS
- P.F.
- cos $\phi$
- kW
- kVA
- Peak kW
- Peak kVA
- kVAr
- Hz
- $\pm$  kWh import/export
- $\pm$  kvarh COG4 option
- Thd
- Harm 1+24
- C.F.



96 x 96 mm

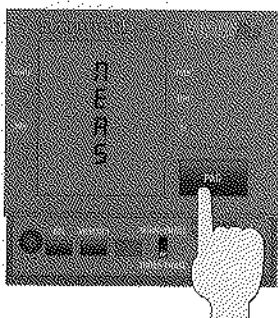
VIP96 PLUS  
DIGITAL, POWER AND HARMONIC ANALYZERS



## SUPERB PERFORMANCE IN A COMPACT PACKAGE

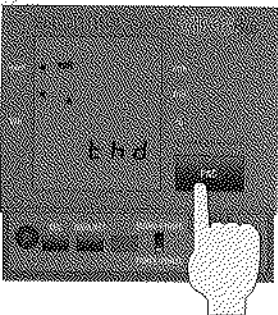
### For single-phase and balanced three-phase systems

The VIP96 PLUS is a DIN 96 panel instrument capable of measuring over 100 fundamental parameters for display via a large high-contrast LCD. The product of many years R & D by the ELCONTROL ENERGY laboratories, it makes serious power quality analysis more affordable than ever before.



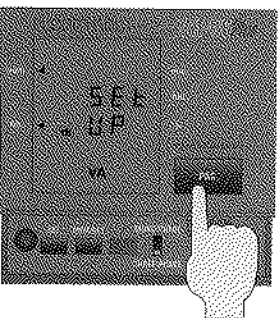
#### INSTANTANEOUS MEASUREMENTS

Volt, Amps, W, P.F., kvar, kVA, Hz,  $\pm$  kWh (import/export),  $\pm$  kvarh (inductive/capacitive), kW, kVA, kvar average and peak values. Accuracy is 1% (IEC1036).



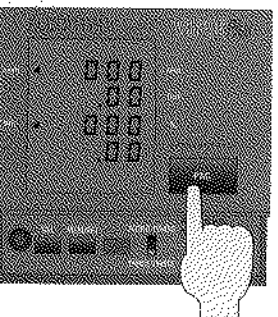
#### HARMONICS MEASUREMENTS

- Measurement of harmonic values of V & I (1st to 24th) expressed as absolute and percentage values, plus their displacement values.
- Total Harmonic Distortion (THD) of V & I as a percentage of the fundamental and total RMS value.
- Crest factor for V & I expressed as absolute and percentage values.



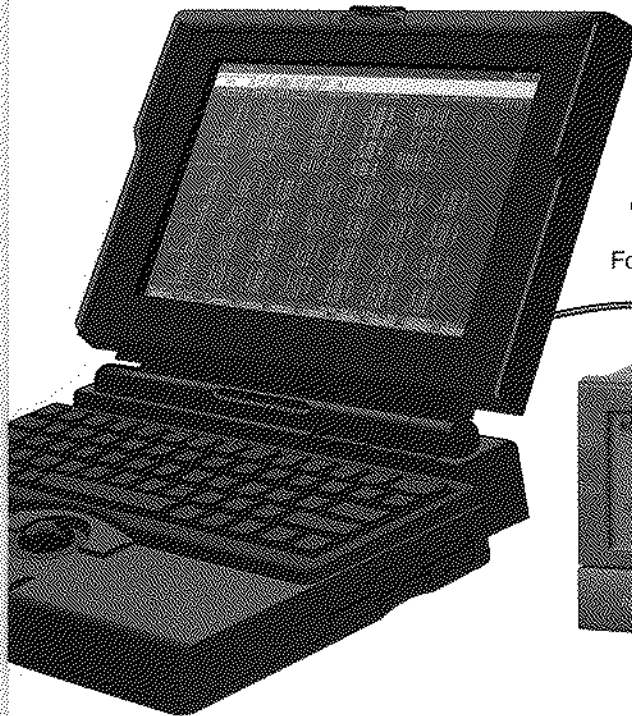
#### SET-UP OPTIONS

- Fully programmable for any CT and PT.
- Standard or co-generation energy metering.
- 50/60Hz fundamental selection for harmonics analysis.
- Integration time selection: 1', 2', 5', 10', 15', 20', 30', 60' (for average and peak power values)
- RS485 parameter set-up for multipoint serial communication to PC (up to 247 units): 19200 / 9600 / 4800 / 2400 / 1200 baud, 7/8 data, 1/2 stop bit, no / even / odd.
- Pulse and analogic output versions available (programmable dual parameters output).



#### RESET OPTIONS

- Reset of energy meters.
- Reset of Peak kW and Peak kVA.
- Reset of average kW, kVA, kvar.



## PC SOFTWARE

The VIP96 PLUS is fully compatible with both **VIPLINK/VIPLoad** and **VIPVIEW** networking software. These packages allow up to 247 instruments to be connected to a central PC via a single cable for automatic data acquisition and realtime viewing of measured values.

*Note: VIPLINK/VIPLoad and VIPVIEW do not support the harmonic measurement capability of the VIP96 PLUS.*

For realtime data transmission from a single instrument to a local PC **VIP96 LINK** is a DOS utility providing:

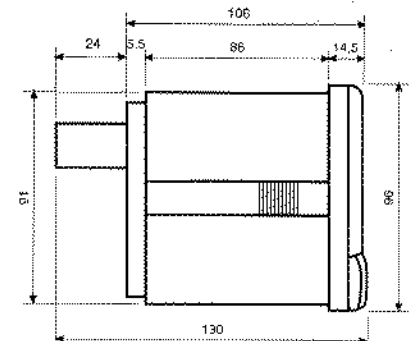
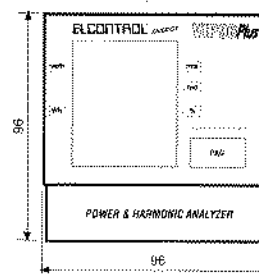
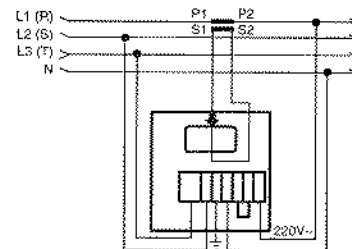
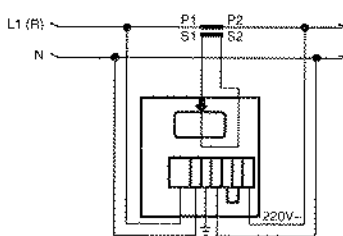
- Display of all measurements and instrument status (RMS, Harmonics and THD).
- Automatic data collection with fully programmable sampling rate.
- Automatic storage to standard TXT file.
- Runs in background in Windows™ if desired.

## CONNECTION DIAGRAMS

## DIMENSIONS (in mm)

On a single-phase system

On a three-phase system



## VIP96 Power meter



### 9 MEASUREMENT FUNCTIONS IN 1

- Volt (rms), Amp (rms), P.F.  $\cos\phi$ , kW, kvar, kVA, Hz.
- Storage of average Active and Apparent Power Peaks.
- Single-phase and three-phase (balanced loads) measurements.
- Measurements from 200 mW (7.5V 23 mA) to 3.9 MW (7.50 V 3 KA).
- Measurements as true RMS value.
- Automatic voltage and current scale change.
- Measurements with external CT (selectable from 5/5 to 3000/5A) or directly with internal CT up to 5 A max (VIP96).
- Direct measurement up to 30 A (VIP96 - 30A).
- High accuracy (Class 1 IEC1036).
- Very user-friendly.
- Backlit display.
- Signal outputs: available in a number of versions and with various configurations for expansion of VIP96 functions even up to industrial control level.

**GENERAL TECHNICAL DATA**

- **Inputs:** Voltmeter: (L1-N) max 600 Vrms up to 600 Hz.  
Ammeter: 5 Arms up to 600 Hz.
- **Number of scales:** 3 voltage scales; 3 current scales.
- **Automatic scale change:**  
Scale change response time: 1 sec. max  
Passage to the scale above takes place at 105% of the scale in use. Passage to the scale below takes place at 20% of the scale in use.
- **Instrument dimensions:** 96x96x130 mm.
- **Instrument weight:** 1 Kg.
- **Protection degree:** instrument: IP20; front panel: IP30.

**SERVICE AND TESTING CONDITIONS**

- **Ambient operating conditions:**  
Ambient temperature range: from -10°C to +50°C.  
Relative humidity range (R.H.): from 20% to 80%.
- **Storage temperature:** from -20°C to +60°C.
- **Condensation:** not permitted.
- **Reference standards:** IEC 348, VDE 411 class 2, for operating voltages ≤ 600 VAC rms, IEC 1010 600 V CAT III, EMC: EN50081-1, EN 50082-2, EN55022

**POWER SUPPLY**

- **Mains:** 220V~ ±10% / 110V~ ±10%, 50/60 Hz.
- **Instrument consumption:** 4 VA.

**MEASUREMENT OF THE PRIMARY PARAMETERS**

- **Measuring method:**  
with fixed sampling and analogic/digital conversion
- **Sampling frequency:** 2.5 kHz.
- **Number of samples per phase:** 250 (100 msec)
- **Measuring frequency:** ~0,5 sec.
- **Zero self-correction:** every minute.

**MEASURING ACCURACY FOR PRIMARY PARAMETERS**

- **Measuring error in ambient from 18°C to 25°C (after 10' warm-up):** (see table)
- **Measuring error outside this temperature range:**  
± 0,02% F.S for every °C outside the range.
- **Voltage measurement accuracy and sensitivity**  
Direct input with max voltage = 600 Vrms at Full Scale.  
Input voltage crest factor ≥ 1,6  
Input impedance ≥ 4MΩ.
- **Voltage and current measurement accuracy in relation to frequency:** for signal frequencies in the range 20-90 Hz no error apart from those indicated in the tables.
- **Measuring precision of secondary parameters:**  
Measurements of active power, cosφ,  
active energy: IEC 1036 class 1.
- **Measurements of the other secondary parameters:**  
the error is expressed by the formula which defines the parameter, in relation to V and I.

Ac voltage sensitivity, Full Scale and accuracy

Nominal Range	Sensitivity	Full Scale	ε from 20% F.S. to 100% F.S.
			VIP96
37 Vrms	24 mV	37.0 V	0.5% F.S. + 0.5% Rdg
174 Vrms	111 mV	174 V	0.3% F.S. + 0.3% Rdg
750 Vrms	480 mV	750 V	0.3% F.S. + 0.3% Rdg

**Sensitivity and precision in current measurements:**

Direct input with max. 5 Arms at Full Scale.  
Crest Factor of input current ≥1.6.

Alternating current sensitivity, Full Scale and accuracy

Nominal Range	Sensitivity	Full Scale	ε from 20% F.S. to 100% F.S.
			VIP96
0.25 A	0.16 mA	0.25 A	0.5% F.S. + 0.5% Rdg
1.16 A	0.7 mA	1.16 A	0.3% F.S. + 0.3% Rdg
5A	3.2 mA	5.00 A	0.3% F.S. + 0.3% Rdg

**SIGNAL OUTPUT**

- **Pulses:** 2 terminal outputs 280 VAC 100 mA insulated (insulation 1500 Vrms). Selectable frequency 1 imp./Wh or 20 imp./Wh (referred to the CT secondary).
- **Analog:** 2 terminal outputs 0-1 VDC (10 mA max). Accuracy ±1% F.S., linearity ±0.5% F.S. at 25 °C. Voltage range selection 750 V / 250 V.
- **RS232:** Isolated serial output, 9 poles male connector, only TX every 0.5 sec., 2400 baud, 8 data bits, 1 stop bit, no parity.
- **OF:** HFBR type HP connector, up to 70 m (plastic optic fibre), glass optic fibre up to 500 m, only TX every 0.5 sec., 2400 baud, 8 data bits, 1 stop bit, no parity.
- **RS485:** Isolated serial output for shielded twisted pair cable up to 1.2 Km, JBUS/MODBUS ASCII protocol. Up to max 247 slave instruments.  
19200 / 9600 / 4800 / 2400 / 1200 baud, 7/8 data bit, 1/2 stop bit / no / even / odd / parity.

**CHOICE OF THE MODELS**

- **VIP96:** standard version - 9 measurements.
- **VIP96 - RS232C:** RS232C serial output for PC connection.
- **VIP96 - OF:** fibre optic output for remote processing of data with the PC.
- **VIP96 - APQ:** 2 analog outputs proportional to Active (P) and Reactive (Q) Power.
- **VIP96 - APS:** 2 analog outputs proportional to Active (P) and Apparent (S) Power.
- **VIP96 - ASQ:** 2 analog outputs proportional to Apparent (S) and Reactive (Q) Power.
- **VIP96 - RPQ:** 2 pulse outputs proportional to Active (P) and Reactive (Q) Power.
- **VIP96 - RPS:** 2 pulse outputs proportional to Active (P) and Apparent (S) Power.
- **VIP96 - RSQ:** 2 pulse outputs proportional to Apparent (S) and Reactive (Q) Power.
- **VIP96 PLUS:** standard version - More than 100 measurements.
- **VIP96 PLUS 485:** RS485 serial output for energy monitoring networks.
- **VIP96 PLUS APQS:** 2 analog outputs proportional to 2 of 3 Active (P), Reactive (Q), Apparent (S) Powers. Keyboard selection.
- **VIP96 PLUS RPQS:** 2 pulse outputs proportional to 2 of 3 Active (P), Reactive (Q), Apparent (S) Powers. Keyboard selection.

**Note: 30 Amp models available.**

WARNING - ELCONTROL ENERGY declines all liability for any damage to people or property caused by unsuitable or incorrect use of its products. Elcontrol reserves the right to change product specifications without prior notice.



advanced technology for electrical installations

Via Vizzano 44 - 40044 Pontecchio Marconi (Bologna) Italy  
Tel. ++39 51 6782006 - Fax ++39 51 845544  
<http://www.elcontrol-energy.it> - E-Mail: [sales@elcontrol-energy.it](mailto:sales@elcontrol-energy.it)

