

# PA106A Single and Three Phase Power Analyzer



The **Powertek PA106A** precision broadband **Power Analyzer** has a wide current range 1mA - 40A designed to offer the engineer the ability to measure low stand by power, power of a no load transformer or even power of a frequency inverter driving a large motor.

## LOW COST, HIGH PERFORMANCE

- Suitable for frequency inverter drivers
- Large and bright display for up to 10/40 values
- Scope function, Bar Charts, Harmonics 1-99
- DC-1MHz, 1.5 mA-40 A, 0.3 V-1000 V
- 0.1 % and 0.05 % accuracy
- IEEE-488, RS232, Analog outputs / inputs
- Windows Operating Software

The Powertek PA106A high performance Power Analyzers are available as single and three phase instruments. The PA106A is designed to cope with the extreme signals generated from frequency inverter drives and other electronically generated signals. Regardless of waveshape the PA106A will always provide precise and reliable measurements. The large and very bright monitor lets you read the display values from a distance of up to 4m.

## SIMPLE TO USE

From checking power of your TV on standby to determining the exact power parameters of a 3 phase frequency inverter system - is a simple task. All power parameters are displayed; in large or small characters, easily readable, even in dark rooms. The user menu makes operation easy. The measured values can be printed, sent to a PC via IEEE- or RS232 interface, or to a chart recorder via the analog outputs. All available options can be installed.

## EXTRAORDINARY FEATURES


Powertek has put much effort into the design of the PA106A Power Analyzer to give you highest performance at low cost:

The analyzer's inputs are all galvanically isolated with broadband DC-1MHz bandwidth, wide input range (0.3 V-1000V, 1.5 mA-40 A), and have an exceptional common mode rejection for use with power electronic systems. The accuracy is available with 0.1% or 0.05% precision. The bright LCD monitor displays up to 10 measured values in large 9mm high alpha-numeric characters. The Three Phase Power PA106A can display up to 40 measured values on the screen.

The Windows operating software lets you configure all parameters of the instrument. The user can control settings and therefore measurements from the Power Analyzer, this includes scaling and the analog inputs. Special software is available for motor and transformer testing, an extensive LabView driver is available.



# SPECIFICATIONS PA106A

<b>Voltage</b>	8 ranges: 0.3 V, 1 V, 3 V, 10 V, 30 V, 100 V, 300 V, 1000 V		
	Frequency range		DC, 0.1 Hz – 1 MHz
	Crest Factor		3:1 at 50 % full scale (fs)
	Input Impedance		1 MOhm
	Common Mode 50 Hz/100 kHz		160 dB/100 dB
	Standard accuracy 23°C; rms, mean, rectified mean; 0.3V typical 1 Hz-1 kHz $\pm(0.1 \% \text{ rdg} + 0.1 \% \text{ range})$ DC, 1 kHz-10 kHz $\pm(0.2 \% \text{ rdg} + 0.2 \% \text{ range})$ 10 kHz-100 kHz $\pm(0.3 \% \text{ range} + 0.04 \% / \text{kHz rdg})$ 100 kHz-300 kHz $\pm(0.3 \% \text{ range} + 0.04 \% / \text{kHz rdg})$ , typical		Improved accuracy $\pm(0.05 \% \text{ rdg} + 0.07 \% \text{ range})$
<b>Current</b>	13 ranges: 1.5 mA, 5 mA, 15 mA, 50 mA, 150 mA, 500 mA, 1.5 A, 5 A; 1, 3, 10, 30, 100 A.		Max. 1 A, 5 A, 30 A, resp.
	Frequency range		DC, 0.1 Hz-300 kHz / 1 MHz
	Crest Factor		3:1 at 50 % full scale (fs)
	Common Mode 50 Hz/100 kHz		160 dB/120 dB
	Standard accuracy 23°C; 1 A-, 5 A-, shunt input 30 A input		Lowest ranges 1.5 mA, 15 mA, 1 A: typical. Improved accuracy 1Hz-400 Hz $\pm(0.05 \% \text{ rdg} + 0.07 \% \text{ range})$
	1 Hz-1 kHz $\pm(0.1 \% \text{ rdg} + 0.1 \% \text{ rng})$ $\pm(0.1 \% \text{ rdg} + 0.1 \% \text{ rng})$ DC, 1 kHz-10 kHz $\pm(0.2 \% \text{ rdg} + 0.2 \% \text{ rng})$ $\pm(0.7 \% \text{ rdg} + 0.2 \% \text{ rng})$ 10 kHz-100 kHz $\pm(0.3 \% \text{ range} + 0.04 \% / \text{kHz rdg})$ $\pm(0.3 \% \text{ rng} + 0.5 \% / \text{kHz rdg})$ , typ 100 kHz-300 kHz $\pm(0.3 \% \text{ range} + 0.04 \% / \text{kHz rdg})$ , typical		
<b>Power</b>	104 ranges corresponding to the products V x A.		
	Frequency range		DC, 0.1 Hz-300 kHz
	45 Hz-65 Hz (0.1 % rdg + 0.01 % range) 1 Hz-1 kHz Add accuracy percentage figures of current and voltage, DC, 1 kHz-10 kHz +0.04 %/kHz PF 10 kHz-100 kHz		PF= 0 to $\pm 0.1$ PF= 0 to $\pm 1$ PF= 0 to $\pm 1$ PF=1
<b>Frequency</b>	0.1 Hz-400 kHz, V triggered; Accuracy $\pm 0.1 \%$ .		
<b>Computed Values</b>	Accuracy; Reactive Power, $\text{Var} = \pm(VA^2 - W^2)^{1/2}$ , Apparent Power: $VA = I_{\text{rms}} V_{\text{rms}}$ ; Power Factor: $\text{PF} = W/VA$ ; Crest Factor: $\text{CF} = A_p/I_{\text{rms}}$ , $V_p/V_{\text{rms}}$ ; Form Factor: $\text{FF} = A_t/I_{\text{rms}}$ , $V_t/V_{\text{rms}}$ ; Impedance: $Z = V_{\text{rms}}/I_{\text{rms}}$ ; Total Harm Dist: $\text{THD} = (I_{\text{rms}}^2 - I_{\text{fund}}^2)^{1/2}/I_{\text{rms}}$		Add accuracy percentage figures of values involved in computation.
<b>Integrator</b>	Energy, Charge; Accuracy Wh, Vah, Varh, Ah; Basic accuracy of integrated quantity.		
<b>Harmonic Analysis</b>	Frequency range of fundamental 2.5 Hz-100 kHz		
	Range of harmonic		1-99
	Accuracy, Harmonic current and voltage 2 Hz-1 kHz $\pm(0.1 \% \text{ rdg} + 0.1 \% \text{ range})$ 1 kHz-10 kHz $\pm(0.5 \% \text{ rdg} + 0.5 \% \text{ range})$ 10 kHz-100 kHz $\pm(0.7 \% \text{ range} + 0.1 \% / \text{kHz rdg})$ , typical		
<b>Display</b>	Blue liquid crystal graphic display with FL backlight 64x120 mm; 128 x 240 pixels		
<b>Power</b>	AC, 50-400 Hz; Fuse: Power		85 V-240 V; 2 A, 15 VA
<b>Dielectric Strength</b>	Inputs to case or power supply Line input to case Input to Input		2.5 kV/50 Hz/1 minute 1.5 kV/50 Hz/ 1 minute 4 kV/50 Hz/1 minute
<b>Dimensions</b>	H x W x D; Weight		150 x 235 x 320 mm; 4 kg
<b>Options</b>	IEEE-488-2, RS232, Centronics printer output 4 programmable analog outputs; single-, sum-, or average values 4 analog inputs 0- $\pm 5$ V, input impedance 200 k $\Omega$ 4 analog inputs, 0- $\pm 10$ V, input impedance 200 k $\Omega$ Rack Mounting Kit Windows Operating Software 95, 98, 2000, NT, XP; transformer-motor testing		0- $\pm 5$ V, accuracy 0.2 % 0- $\pm 5$ V, accuracy 0.2 % 0- $\pm 10$ V accuracy 0.2 %
	<b>1.5mA-1A Inp/ Shunt Input</b>	1 A input Hi against ILo Shunt Hi  Shunt Lo	1 A input, mA: 1.5, 5, 15, 50, 150, 500, 1500 Shunt input, mV: 60, 60 $\sqrt{10}$ , 600, 600 $\sqrt{10}$ , 6000, 6000 $\sqrt{10}$ Input impedance: 60k
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