Powertek

EN-2022

Datasheet

PAV1010A & PAV1010

Phase Angle Voltmeter

Measuring phase angles, Vrms, magnitudes, inphase, quadrature, freq, ratios, null meter and harmonics

info@powertekuk.com

www.powertekuk.com

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Company Profile

Powertek has two divisions; Powertek US Inc Holbrook NY USA, Powertek UK Ltd Reading United Kingdom. These offices support a network of worldwide service centers, distributors and representatives.

Powertek specializes in the design and manufacture of electrical power, voltage and current measuring instrumentation: Measurement Transducers, Current Probes, Wattmeters, Power Analyzers, phase measuring measurement equipment along with multifunction calibration standards. The Sensor Division offers a range of ac/dc current/voltage sensors, current shunts, wideband current probes, current transformers and ac/dc power related transducers. PC based software solutions allow the Powertek measuring instruments and transducers to be controlled via Ethernet, RS232, RS485 and IEEE-488 interfaces. Various display and storage options are available to suit the customer need. An “in house” software customization service is available.

Powertek’s customer base includes heavy industrial plants, avionics, positional control, military systems, power electronics & power conversion (inverters, switching power supplies, UPS, variable speed motor drives), single/three phase ac motors, ac generators, power transformers, electrical process control equipment, office and household appliance testing, electrical supply utilities and calibration.

All Powertek products are supplied CE marked with measurement uncertainties traceable to UKAS (UK) or NIST (USA) in accordance with ISO9001 2008. Our support includes application support, technical advice, servicing, repair and calibration. Flexible Current Sensing Rogowski coils with 5A output in accordance with ISO9001 2015, Z540, ISO/IEC 17025.

Powertek US Inc is a CAGE coded Military supplier, Cage code 4S5P4. Read more about our activities with US Defense on https://www.sam.gov

PAV1010A Phase Angle Voltmeter PAV

Highlights

- 1mV to 500Vpk, 1uV sensitivity
- 2 galvanically isolated channels
- 5Hz to 100kHz
- All PAV measurements including all ratio types
- Null meter, waveform display and THD
- Upgrade program for OEMs, from SD1000/Model 2000 to PAV1010A
- GPIB, Serial and USB, compatible with SD1000 and Model 2000
- Traceable to international standards via NIST (USA) and UKAS (UK)
- 2 year warranty

Description

Using Discrete Fourier Transform algorithms, the PAV1010A provides capability, performance and versatility not available with traditional PAVs. Targeted at the Synchro/Resolver and LVDT/RVDT marketplace, this instrument makes measurements of Phase Angle, In-Phase, Quadrature (90° component), Fundamental and Total Vrms very straightforward. All these measurements are displayed simultaneously on a bright multifunction display. Isolated inputs allow null, ratio (in-phase, quad, fund, total rms, sum+difference) and gain measurements of key parameters. The PAV1010A facilitates bridging measurements along with a sensitive null meter for precise nulling.

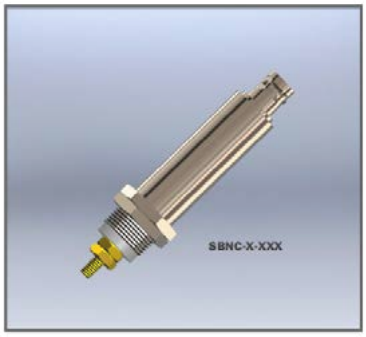
Typical applications for a phase angle voltmeters (PAVs) are found in the area of position sensing, motion and control. Devices like Resolvers, LVDT (Linear Variable Differential Transformers) and RVDT (Rotary Variable Differential Transformers), convert mechanical movement and position to electrical signals, feeding a control system. Position sensors are used in a variety of applications like aircraft instruments, aircraft control surfaces, inertial navigation, gyros, autopilot and weapon aiming systems.

PAV1010A phase angle meter applications

- Phase angle measurement
- Synchro, LVDT, RVDT positional sensors
- Phase sensitive null detection
- Transformer ratio and phase tests
- Current sensing for phase meters
- Phase angle indicators V-A / V-V
- Cos Phi indicators - Power factor meters
- Calibration of Wide-band Power Analyzers
- Current transformer calibration
- Current probe testing
- SCR phase control
- Accelerometer testing
- Phase angle fault testing in power transmission substations
- Current control in EV electric vehicles
- Phase angle controlled circuit breakers

PAV1010A Current measurement options 5Hz to 100kHz

WIDE BANDWIDTH - HIGH FREQUENCY - ULTRA LOW PHASE SHIFT
Used to enable PAV1010A phase angle voltmeter
measurements between voltages and currents (V-V, V-A, A-A)



Non-inductive shunt Model Series A Ultra low phase error 1A to 20A

Non-inductive shunt Option 02F/B,2A - 50A with insulated terminals

Non-inductive shunt Option 02F/B 0.1A - 10A with insulated terminals

PAV1010A Specifications

Channels/display	Bright LCD display with 3 digit phase resolution 0.001°, all measurement, null meter, ratio and waveform displays
Measurement	For CH1 and CH2 Vrms, magnitudes, in-phase, fundamentals, quadrature, ratios, nulling, frequency, phase angle, harmonics, THD
Null Meter	1uV sensitivity, 25uV total mode noise (variability) min range
Vrms, in-phase, fundamental, quadrature	1uV sensitivity on min range
Phase input range	0.000° to -360.000°, 0.000° to +360.000°, 0.000° to ±180.000° Resolution 0.001°
Frequency range	5Hz to 100kHz, (bandwidth 500kHz)
Common mode CMRR	0.5Hz to 999.99Hz : 126dB 1kHz to 5kHz: 110dB 5kHz to 32 kHz: 100dB 32kHz to 64kHz: 91dB
Harmonic Rejection	80dB (even and odd)
THD	±0.05%
Max input	±500Vpk
Input impedance	2M ohm 20pF
Ranging	Automatic or manual, DC coupled
Averaging	0.5, 1, 3 or 10 seconds depending on frequency. Averaging status display

PAV1010A Specifications

Voltage and phase accuracy			
Frequency	Voltage Rdg%+rng%	Phase angle Spec includes ranging and imbalance	Gain ratio
0.5Hz to 100Hz	±0.04% ±0.05%	±0.02° ± 1 digit	±0.02dB
>100Hz to 2kHz	±0.05% ±0.05%	±0.025° ± 0.005°/kHz ± 1 digit	±0.03dB
>2kHz to 10kHz	±0.08% ±0.08%	±0.035° ± 0.005°/kHz ± 1 digit	±0.04dB
>10kHz to 100kHz	±0.2% ±0.2%	±0.04° ± 0.005°/kHz ± 1 digit	±0.12dB
Phase repeatability		± 0.002°	

PAV1010A Specifications

Frequency	Range	0.5Hz to 500 kHz
Accuracy	±0.1% (23°C ± 5°C)	
Inputs	Sig and Ref voltage input (CH1 & CH2) Current ranges using Options 02F/B All voltage and current input combinations possible	1mV rms to 350V rms (500Vpk) 20mA - 2Arms range Opt. 02F/B 1R00 5Hz - 20kHz 1.0Arms to 20Arms range Opt. 02F/B 0R01 5Hz - 20kHz
Bandwidth	DC to 500kHz	
Isolation (inputs to ground)	2000V	
Impedance	2 Mohm and 20pF	
Operating	0°C to + 50°C, best accuracy 23°C ± 5°C	
Storage	-40°C to +70°C	
Humidity (non-condensing)	10% to 90% RH	
Dielectric Strength	Inputs to case or AC line input	2kV AC 50/60Hz 1 minute
Power supply to case	2kV AC 50/60Hz 1 minute	
Power Requirements	Line input voltage	110V or 220V AC ± 10% or 12-36Vdc
Line input frequency	50/60Hz	
Line input fuse	315mAT	
Line input conformance	IEC348 Class I; EN61000-3-2; EN61010 Class I; IEC801 Parts 1 to 4; EN55011	

Power consumption	25VA	
Mechanical	Weight	5kg (6kg in delivery packaging)
Dimensions (W x H x D)	215mm x 144mm x 390mm	
Insert ordering information:	PAV1010A: All PAV functions including complex measurements, THD and harmonics.	5PAV1010: Basic PAV functionality, excludes THD and harmonics
Specify:	110Vac or 230Vac	

Powertek

Powertek UK Ltd.
13b Southview Park,
Marsack Street,
Reading
Berkshire
RG4 5AF
United Kingdom

Tel: +44 1788 519911
Fax: +44 870 0940135
Email: info@powertekuk.com
Website: https://www.powertekuk.com

Powertek US Inc.
7 3rd Street,
Holbrook,
NY 11741
USA

US Tel: +1 631 615 6279
Email: info@powertekuk.com
Website: https://www.powertekuk.com