

2400 Series Wideband Spectrum Power Analyzers

Single and Three-Phase Performance

The Valhalla 2400 Series Wideband Spectrum Power Analyzers provide a high-precision wattmeter, oscilloscope, and power analyzer in one unit. Offered in both single and three-phase configurations, the user can simultaneously monitor voltage and current measurements while displaying application-specific power parameters. Our instruments provide clear, consistent data points while coping with extreme, electronically generated signals.

- Suitable for stand-by, low power factor, and frequency inverter drivers
- IEEE, USB, RS-232, Ethernet, and Analog interfaces available
- Bright LCD with up to 10 measured values and wave form, bar graph, and trend plot visualizations
- Windows Operating Software
- 0.1% and 0.05% accuracy
- Optional harmonics analysis (1-99) of current, voltage, and power
- Built-in integrator
- Full control via membrane keys or LabVIEW Software
- Frequency measurements from 0.1Hz to 500kHz

With a goal of providing the highest performance at the lowest price, our power analyzers offer unmatched customization options ensuring the perfect fit for any application. Along with a variety of accuracy levels and harmonics; we can configure the instruments with RS-232, IEEE, USB, Ethernet, sensor modules, and additional software for testing motors and/or transformers. Each analyzer input is galvanically isolated and covers a wide .3V to 1000V, 1.5mA to 40A range. All test parameters of the instrument are configured through the Windows Operating Software. Additional accessories include current clamps, shunts, test leads, and rack mounts.



Voltage	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	
	Standard accuracy 23°C; rms, mean, rectified mean; 0.3V typical		Improved accuracy	±(0.05 % rdg + 0.07 % range)
Current	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	
	Standard accuracy 23°C; 1 A-, 5 A-, shunt input		30 A input	Lowest ranges 1.5 mA, 15 mA, 1 A: typical.
	1 Hz-1 kHz		±(0.1 % rdg + 0.1 % rng)	±(0.1 % rdg + 0.1 % rng)
Power	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)	PF= 0 to ±0.1
	1 Hz-1 kHz		Add accuracy percentage figures of current and voltage, +0.04 %/kHz P	PF= 0 to ±1
	DC, 1 kHz-10 kHz			PF= 0 to ±1
	10 kHz-100 kHz			PF=1
Frequency	0.1 Hz-400 kHz, V triggered; Accuracy ±0.1 %.			
Computed Values	Accuracy; Reactive Power, $Var = \pm(VA^2 - W^2)^{1/2}$, Apparent Power: $VA = Arms Vrms$; Power Factor: $PF = W/VA$; Crest Factor: $CF = Ap/Arms, Vp/Vrms$; Form Factor: $FF = At/Arms, Vt/Vrms$; Impedance: $Z = Vrms/Arms$; Total Harm Dist: $THD = (Irms^2 - Ifund^2)^{1/2}/Irms$		Add accuracy percentage figures of values involved in computation.	
Integrator	Energy, Charge; Accuracy Wh, Vah, Varh, Ah; Basic accuracy of integrated quantity.			
Harmonic Analysis	Frequency range of fundamental		2.5 Hz-100 kHz	
	Range of harmonic		1-99	
	Accuracy, Harmonic current and voltage			
Display	Blue liquid crystal graphic display with FL backlight		64x120 mm; 128 x 240 pixels	
	Power		AC, 50-400 Hz; Fuse: Power	
	Dielectric Strength		Inputs to case or power supply Line input to case Input to Input	
	Dimension		H x W x D; Weight	
	Options		IEEE-488-2, RS232, Centronics printer output 4 programmable analog outputs; single-, sum-, or average values 4 analog inputs 0-±5V, input impedance 200 kΩ 4 analog inputs, 0-±10 V, input impedance 200 kΩ Rack Mounting Kit Windows Operating Software 95, 98, 2000, NT, XP; transformer-motor testing	0-±5 V, accuracy 0.2 % 0-±5 V, accuracy 0.2 % 0-±10 V accuracy 0.2 %
	1.5mA-1A Inp/ Shunt Input	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√10, 600, 600√10, 6000, 6000√10 Input impedance: 60k	1 A input: set scaling to 0.1 Shunt input: 60 mV corresponds to 1.0000 A

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Models

2410-1HE:	Single-Phase Wideband Spectrum Power Analyzer with Harmonics and Enhanced Accuracy
2410-1HS:	Single-Phase Wideband Spectrum Power Analyzer with Harmonics Analysis
2410-1S:	Single-Phase Wideband Spectrum Power Analyzer
2430-3HE:	3-Phase Power Analyzer with Harmonics Analysis and Enhanced Accuracy
2430-3HS:	3-Phase Power Analyzer with Harmonics Analysis
2430-3S:	3-Phase Power Analyzer

Accessories

ACS 1:	Current clamp with connector to 106A shunt input; 0-200A / 0-1000A, DC-1kHz, 2% for 50/60Hz line current measurements only
ACS 2:	Current clamp with connector to 106A shunt input; 0-40A / 0-400A, DC-10kHz, 2% for 50/60Hz line current measurements only
ACS 3:	Current Shunt for Standby Power measurement. Current ranges: 0.1mA, 0.3mA, 1mA, 3mA, 10mA. Typical max error 0.5%, scale current by 0.0001.
ACS 4:	Set of Test Leads, max. 32A, 1.5m (2 red, 2 black)
ACS 5:	Shunt Input Connector
ACS 5a:	Assembled Shunt Input Connector
ACS 7:	Rack Mounting Kit
ACS 8:	Official Calibration Certificate from Swiss Calibration Services Customized
ACS 9:	EPROM to read four-digit serial numbers via interface

Options

Option 1:	RS-232 Interface and Centronics printer output, and Windows Operating Software
Option 1a:	USB Interface and Centronics printer output, and Windows Operating Software
Option 1b:	Ethernet Interface and Centronics printer output, and Windows Operating Software
Option 2:	RS-232 and IEEE-488 Interface, Centronics printer output, and Windows Operating Software
Option 2a:	USB and IEEE-488 Interface, Centronics printer output, and Windows Operating Software
Option 2b:	Ethernet and IEEE-488 Interface, Centronics printer output, and Windows Operating Software
Option 3:	RS-232 and IEEE-488 Interface, Centronics printer output, 4 programmable analog outputs, 8 analog inputs, and Windows Operating Software
Option 3a:	USB and IEEE-488 Interface, Centronics printer output, 4 programmable analog outputs, 8 analog inputs, and Windows Operating Software
Option 3b:	Ethernet and IEEE-488 Interface, Centronics printer output, 4 programmable analog outputs, 8 analog inputs, and Windows Operating Software
Option 4:	Three-Phase Current Sensor Module 0-100A
Option 4a:	Three-Phase Current Sensor Module 0-200A
Option 6:	2400 Series LabVIEW Driver
Option 7m:	2400 Series Software for Motor Testing
Option 7t:	2400 Series Software for Transformer Testing
Option 8:	TTL-Input for External Synchronization
Option 9:	Network to form Artificial Neutral. Mainly for Frequency Inverter Measurements
Option 10:	0-300A, 0-3000A Flexible Current Clamps with Connector to Clamp Input o (One per phase, 1% 50/60Hz)