POWER ANALYZERS & WATTMETERS | MODEL 2800

Wideband Spectrum Power Analyzer
Precision Analysis That Delivers

– Available as 1-, 2-, 3-, 4-, 5-, 6-phase instrument
– 18 bit resolution. High accuracy at 10% full scale
– Simple to operate, most settings in 2 steps (2 touches)
– Extremely fast data transfer; up to 3400 values per seconds
– 4 current inputs: 1mA–1A, 15mA–5A, 1A–50A, Shunt
– Optional interfaces: Ethernet, RS-232 / USB, IEEE-488
– Interface commands for fast data transmission
– Optional high precision, broadband, current sensors 0.004%
– 6 analog inputs and 2 frequency inputs, 12 analog outputs
– Wide angle, touch-screen TFT display (800 x 480 pixels)
– Standard-, Logging-, Transient-, Power-Speed measure modes
– High DC precision for solar applications
– Voltage Ranges: 0.3V to 1000V
– Two optional operating softwares under Windows
– Software to read data from four 108A-6
– Simple servicing, modular concept, pre-calibrated inputs
– 4G Byte Memory for storing measurement data
– Individual settings for every phase and all phases

Reliable, Simple And Intuitive To Use – Delivers Accurate Measurements For Modern, Efficient Power Electronics.

Measures 280 electrical quantities on every phase. Energies, harmonics, motor- and transformer values, power sums, power ratios, analog- and frequency inputs can be displayed or read via interface at any time.

POWER & PERFORMANCE
The Infratek 108A High Precision Power Analyzer is available in 1-, 2-, 3-, 4-, 5-, or 6- phase versions. All voltage inputs 0.3V up to 1500Vpeak and all current inputs (1.5mA up to 1A; 15mA up to 5A; 1A up to 40A; and shunt inputs 60mV up to 6V are potential free and exhibit low noise, high common mode suppression, excellent DC-stability, Wide frequency range (DC-2MHz) and very low self-heating on current inputs.

SIMPLE OPERATION
There is no need to fiddle with dccompensation, or changing current plug-ins. All is built into the input sections of the Power Analyzer, ready for measurements. It is simple to use, your intuition will guide you to operate the Power Analyzer touch screen correctly. Almost all setting changes are accomplished with two touches on the display screen or two with the wireless mouse.

4 OPERATING MODES
STANDARD MODE
280 quantities per phase are measured without gap and are continuously updated. Values can be displayed on four display pages, can be saved in internal memory, or can be transferred via Interface to a computer.

LOGGING MODE
Fast measurements or for long-time averaging of data. It is possible obtaining 6 datasets of a 6-phase instrument within 20ms or 6 datasets per 10 minutes.
From every phase you obtain 8 values: frequency, rms current, rms voltage, power, power factor, apparent power, energy Wh, and apparent energy VAh.

TRANSIENT MEASURE MODE
You can catch current-, voltage-, and power wave forms in a start-up on transient mode up to 6 phases simultaneously or you can view all the wave forms at a critical operating point. Sections of the wave forms can be expanded by simply touching one of the 4 "Zoom Sectors".

POWER-SPEED MEASURE MODE:
This measure mode analyzes the performance of devices such as electric cars. In 20ms intervals the following data are stored in internal memory: rms current, rms voltage, power, apparent power, energy, apparent energy, and rpm of a shaft. At end of measurement, (maximum 11 seconds) data versus time are displayed, can be expanded to view details, or can be stored.

Voltage	8 measuring ranges: 0.3 - 1 - 3- 10- 30 -100- 300- 1000V			Bandwidth DC-2MHz	

	Bandwidth DC-2MHz
Coupling: AC or AC+ DC I Common mode rejection:	100dB at 100kHz
Input impedance: 1MO / 15pF. Floating input	max. 1000Vrms
Crest Factor 15:1 at 10% fs. Typical accuracy at 10% is 0.1%	fs = full scale
Temperature coefficient: 0.004% / ºc	

Voltage

%reading +%range

		High precision 10V to 600V
Standard accuracy 23°C ± 1°c . 3V to 600V		**High precision** 10V to 600V
45 to 65Hz	0.08 + 0.08	0.02 + 0.02
3 to 1000Hz	0.1 + 0.1	0.03 + 0.03
1 to 10kHz	0.2 + 0.2	0.1 +0.1
10 to 100kHz	(0.2 + 0.2) +(0.2 + 0.2) * log(f/1 kHz)	I (0.2 + 0.2) +(0.2 + 0.2) * log(f/1kHz)
DC[11]/100-500kHz'[1]	0.1 + 0.1 / 0.012,f{kHz}	

Current

4 inputs: In30A, In5A, In1A, shunt. Floating inputs	max. 1000Vrms to earth
In1A: 6 ranges 1.5" - 5- 15-50 -150- 500-1500mA. DC-100kHz	max. 2A continuous
In5A: 6 ranges: 15"-50-150-500mA-1.5-5-15A. DC-100kHz	max. 7A continuous
In30A: 4 ranges: 1'' - 3 - 10 - 30 -1 OOA DC-100kHz	max. 40N30A cont., 1-3ph/4-6ph
Shunt: 60 - 200 - 600mV - 2 - 6V. DC-1 OOkHz	max. 30V continuous
Couplina: AC or AC+ DC I Common mode reiection:	115dB at 100kHz
Crest factor 15:1 at 10% fs. Typical accuracy at 10% fs is 0.1 %	fs = full scale
Temperature coefficient: 0.004% / °C	

% reading +% range

Standard accuracy 23°C ± 1° c			**High precision In1A/In5A**
Input	**In1 A,In5A,Shunt**	**In30A**	15,50, 150,500mA, 1A/150,500mA, 1.5,5A
45 to 65Hz	0.08 + 0.08	0.08 + 0.08	0.02 + 0.02
3 to 1000Hz	0.1 + 0.1	0.2 + 0.2	0.03 + 0.03
1 to 10kHz	0.15+0.15		0.15+0.15
10 to 100kHz	(0.15+0.15)+ (0.5+0.5)*1oa(f/1 kHz)		I (0.15+0.15)+ (0.5+0.5)*1oa(f/1 kHz)
DC"/100-500kHz"	0.1 + 0.1 / 0.023,f(kHz)		

		Exposure of current inputs to their max. value will result in addrtional errors''
Input	**Coax. 30A** (Option) instead of In30A	In1A: 0.03% * î
45 to 65Hz	0.05 + 0.05	In5A: 0.003% * î
3 to 1000Hz	0.08 + 0.08	

Input	**0-1 OOA** precision current sensor (Option 04)	In30A: 0.0001% * î
connected to In1 A input		
3 to 100Hz	0.05 + 0.05	Coax: 0.0001% * î
100 101000Hz	0.1 + 0.1	
W range = voltage range times current range		112 power ranges

Power

Standard accuracy 23°C ± 1° c			**High precision**
Input	**PF**	**In1A, In5A, Shunt**	**In1A, In5A, Shunt**
45 to 65Hz	0-1	0.16+0.16	0.04 + 0.04
3 to 1000Hz	0-1	0.2 + 0.2	0.1 +0.1
1 to 20kHz	0-1	0.2 +(0.2 +0.08 *k1/kHz)	0.2 + (0.2 + 0.08 * k1/kHz)
20 to 100kHz	1	%error (A+V)	%error (A+V)
DC"/100-500kHz"	1	0.2 + 0.2/ add %error (V+A)	

% reading + % range

Input	**PF**	**In30A**	**Current**	
Sensor 0-1 OOA				**Coax. 30A** (Option) 0.08 + 0.08
45 to 65Hz	0-1	0.16+0.16	0.1 + 0.1	
3 to 1000Hz	0-1	0.2+(0.2+0.1 *k1/0.1 kHz)	0.2+(0.2+0.1 *k1/0.1 kHz)	0.08 + (0.08+0.05 k1/0.1 kHz)
Dc[1]		0.2 + 0.2	0.1 + 0.1	0.2 + 0.2

W Linearity	130%	100%	50%	10%	5%
Volt	130.00	100.00	49.985	9.9992	4.9990
Ampere	6.5004	5.0014	2.5020	500.82m	250.40m
Watt PF=1	844.74	500.07	125.05	5.0056	1.2522

Typical linearity of voltage, current and power

$k1 = (2 - PF) / (1+PF^2)$ [1]
Typical max. error