

Products 2010/2011

Precision Measurement of Power, Energy, TRMS Values, Harmonics and Flicker

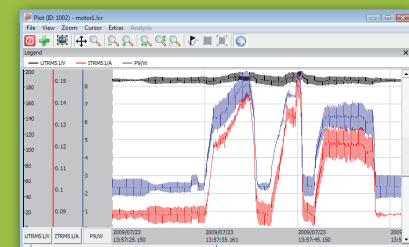
Precision Power Analyzers



Instrument Type	Power Channels	Frequency Range (Bandwidth)	Basic Accuracy	Ranges Voltage, Current	Harmonic Analysis	Computer Interfaces	Process Signal Interface	Graphic Display	Applications	Special Features
LMG500	1-8 (modular)	DC, 0.05Hz-10MHz	0.03%	3V-1000V 20mA-32A Sensor inputs for current and voltage channels 30mV-4V	1.) EN61000-3-2 2.) 0.1Hz-50kHz, up to 99th harmonics also interharmonics	RS232, IEEE488.2, Ethernet, USB	Inputs: 8 analog 8 digital 2 frequency Outputs: 8 analog 8 digital	Colour TFT 320x240	For very fast frequency inverters with steep slew rates; wideband power loss measurement at reactances (motor filters etc.), high speed motors (high performance spindles) with fundamental >3kHz, electronic ballasts; measurement of pulsed high voltage signals of short duration <3μs; efficiency of complex systems.	Very precise at small cos φ and/or high frequencies due to low group delay <3ns between U and I input; the delay time can be adjusted according to measurement set-up and used sensors. High dynamic of U and I range, each with only one connector pair. Earth capacity of the inputs <30pF, hence no aberration of measuring signals. 3MSamples/s, absolutely gapless power measurement with simultaneous transient monitoring.
LMG450	4	DC, 0.1Hz-20kHz	0.1%	6V-600V 0.6A-16A (60Apk) Current sensor input 120mV-4V	1.) EN61000-3-2 (pre-compliance) 2.) 1Hz-10kHz, up to 99th harmonics also interharmonics	RS232, IEEE488.2, Ethernet	Inputs: 2x 4 analog 4 digital 1 frequency Outputs: 2x 4 analog 4 digital	Color LCD 320x240	Universal power meter for nearly all applications of modern power electronics and mains analysis. Measuring of motor related magnitudes at frequency inverter outputs.	All essential features in the basic device: printer and RS232 interface, formula editor, vector diagram, harmonic analysis (pre-compliance). Splitting of four measuring channels in two groups as to measure of two systems with different frequencies, Aron circuit twice, flicker measuring, star-delta conversion, smart current sensor inputs with automatic recognition.
LMG95	1	DC, 0.05Hz-500kHz (1MHz)	0.03%	6V-600V 0.15A-20A (960Apk) Shunt voltage 30mV-4V, other ranges on request	1.) EN61000-3-2 2.) 0.1Hz-10kHz, up to 99th harmonics also interharmonics	RS232, IEEE488.2, Ethernet	Inputs: 1x 4 analog 4 digital 1 frequency Outputs: 1x 4 analog 4 digital	Mono-chrome LCD 240x128	High precision power measurement at switched devices, reference meter for calibration of power.	For EMC test systems meeting standard EN61000-3-2/-3/-11/-12, harmonics analyzer meets EN61000-4-7, flicker meter meets EN61000-4-15.
LMG95e	1	DC, 0.05Hz-50kHz	0.11%	6-600V 0.15-20A (960Apk) Shunt voltage 30mV-4V	EN61000-3-2 (pre-compliance)	RS232, IEEE488.2, Ethernet	n.a.	Mono-chrome LCD 240x128	Test benches, quality control.	Economic version of LMG95.

Analysis Software

LMG-CONTROL	PC software for configuring LMG as well as logging and analyzing data. The basic version is free and is sufficient for a wide range of measuring tasks. This version can be extended by the Waveform Analysis module which enables a versatile analysis of the sampling values, like e.g. the harmonic analysis of sampling values or the recording of transient events.
CE-Test61k CE-Test Standby	PC software which helps to perform tests according to EN61000-3-2/-3/-11/-12 and EN62301, respectively. The software sets up the instrument and generates a test protocol, regarding the requirements of the respective standard.



„Plug N’ Measure“ Current Sensors for Extended Current Ranges up to 5000A

Precision DC	0.02%	DC...1MHz	0.8A...5000A
Precision AC	0.02%	15Hz...5kHz	5A...1500A
Clamp on CT	0.15%	2Hz...50kHz	0.3A...3000A
Wideband AC	0.25%	30Hz...1MHz	10A...1000A
Low-cost Hall	0.3%	DC...200kHz	0.3A...2000A
Shunt for standby measurements	0.15%	DC...100kHz	0.15mA...1A

HF differential transformer with load resistor for almost reactionless measurement of current, e.g. at discharge lamps.

Technical data, information and selection guide in the user manual „ZES Sensors and Accessories“ (available on request and at www.zes.com).



Precision High Voltage Divider

Precision high voltage divider for 3/6/9/12/30kV to 300kHz, 0.05% Negligible phase error, therefore best suited for wideband power measuring.

- 1-channel HST for single ended voltages
- 2-channel HST for floating voltages (difference measuring)
- 3-channel HST for three phases systems (inverters)

Power quality analysis in railway technology and medium-voltage systems. Insulation diagnostics by $\tan \delta$ measuring down to 0.1Hz. Suitable for outdoor application (IP65) with high overvoltage.



AC Power Sources, AC Filter (Digest)

Series	Type	Phases	Power kVA	Frequency	UA	Application
i	5001i	1	5	DC, 16Hz-5kHz	0-270V	Usable for CE-Test61k
	15003i	3	15			
RP	801RP	1	0.8	16Hz-500Hz		Usable with restrictions for CE-Test61k
	1251RP		1.2			
AC Filter	TT-AC1000	1	1	Mains frequenz	Mains	For tests acc. to standard EN61000-3-2

5001i



CE-Test61k-3(1)PL50
3-phase with AC sources

Test Systems for EN61000-3-2/-3/-11/-12 (Harmonics, Flicker)

System	Power Channels	Basic Accuracy	Ranges Voltage, Current	Computer Interfaces	Applications	Special Features
CE-Test61k-3(1)PL50	3	0.03%	3V-1000V 20mA-32A	RS232, IEEE488.2, USB	For EMC test systems meeting standard EN61000-3-2/-3/-11/-12, harmonics analyzer meets EN61000-4-7, flicker meter meets EN61000-4-15.	Packages to build complete systems, consisting of power analyzer LMG95 or LMG500, AC power sources, reference impedance and evaluation software CE-Test61k; components can also be ordered and used separately, easy integration of customer owned power sources.
CE-Test61k-1PL95	1		6V-600V 0.15A-20A (960Apk)	RS232, IEEE488.2		



Energy Counters and Displays to Monitor and Maintain Production and Factory

Instrument Type	Phases	Bandwidth	Basic Accuracy	Input	Computer Interfaces	Outputs	Display	Values/Applications	Special Features
PM396	1-3	45-65Hz (1kHz)	Power: 0.1% (0.25-25A) 0.5% FS (0.02-0.25A)	230 _{V_{LN}} / 400 _{V_{LL}} 5A (opt. 1A) as above + 25A-option for I-Input	RS485, RS232, (optional Profibus)	2 digital 2 analog	LCD, 4 x 3 digits + unit	Phase values of current, voltage, power factor active/ reactive/ apparent power. Total values of active/ reactive/ apparent power, average power, maximum average power, active/ reactive/ apparent energy. Local collection and display of power and energy, also for import and export. Cost-effective replacement of many separate devices in panel mounting.	Evaluation software included in delivery, harmonic analysis.
TM396									Optional: CEE plug and socket for easy measuring of loads with CEE connectors.
EZ1	1	47-63Hz	P: 0.1% FS (0.25-25A) 0.5% FS (0.02-0.25A)	Ranges: 86V...250V, 0.02A...25A	-	1 pulse 1 analog	No display	Accurate energy measurement, esp. of devices with large and frequent load fluctuations, e.g. refrigerators.	Wide measuring range (0.02-25A, 86-250V) with high accuracy over the whole range, high resolution (25 pulses/Wh).
PM190 PM151	-	DC	0.1% ±1 digit	0-10V 0/4-20mA	-	4 relais 4 opto coupler	VF-display 3 digits + sign 101/51 segm. bar	For displaying and monitoring of processes.	Bar graph for simultaneous analog display of measuring and limit values, standard process inputs.

Subject to technical changes, especially to improve the product, at any time without prior notification.