

# Products 2009/2010

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

### Precision Power Analyser



LMG500



LMG450



LMG95

Instrument Type	Power Channels	Frequency Range (Bandwidth)	Basic Accuracy	Ranges Voltage, Current	Harmonic Analysis	Computer Interfaces	Process Signal Interface	Printer Interface	Memory medium	Display	Mechanical Design	Dimensions W x H x D in mm	Application	Highlights
LMG500	1-8 (modular)	DC, 0.05Hz-10 MHz	0.03%	3V-1000V 20mA-32A	1.) EN 61000-3-2 2.) 0.1Hz-50kHz up to 99. also Inter-harmonics	RS232, IEEE488.2, Ethernet, USB	Inputs: 8 Analog 8 Digital 2 Frequency Outputs: 8 Analog 8 Digital	yes	USB-Stick or 3.5" FDD	Graphic display Colour-TFT 320x240	Desktop case Mounting-brackets for 19"-Racks	433 x 147 x 400 84PU x 3HU x 400	For most speedy frequency inverters with steepest slew rates; wideband loss power measurement at reactance (motor filter etc.), high speed motors (high performance spindles) with fundamental >3kHz, Electronic ballast, measure of pulsed high voltage signals of short duration > 3s, efficiency of complex systems.	Very precise at small cosphi and/or high frequencies by low delay difference between U- and I-Input (standard < 3ns); with use of delay time menu adjustable on measuring set-up respectively used sensor technology. High U-/I-dynamic range each with only one connector pair. Earth capacity of the inputs < 30pF by this no aberration of measuring signals. By continuous 3MSamples/s sampling power measurement absolutely without any gaps, to this parallel run of transient monitoring.
LMG450	4	DC, 0.1Hz - 20kHz	0.1%	6V-600V 0.6A-16A (60Apk) Current Sensor Input 0.12V-4V	1.) EN 61000-3-2 2.) 1Hz-10kHz up to 99. also Inter-harmonics	RS232, IEEE488.2	Inputs: 2x 4 Analog 4 Digital 1 Frequency Outputs: 2x 4 Analog 4 Digital	yes	USB-Stick or 3.5" FDD	Graphic display Colour-LCD 320x240	Desktop case Mounting-brackets for 19"-Racks	320 x 147 x 307 84PU x 3HU x 307	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, harmonics 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 adjustment.
LMG95	1	DC, 0.05Hz-500kHz (1MHz)	0.03%	6V-600V 0.15A-20A (960Apk) Shuntvoltage 0.03V-4V Other ranges on request	1.) EN 61000-3-2 2.) 0.1Hz-10kHz up to 99. also Inter-harmonics	RS232, IEEE488.2	Inputs: 2x 4 Analog 4 Digital 1 Frequency Outputs: 2x 4 Analog 4 Digital	yes	PC-Card	Graphic display monochrome LCD 240x128	Desktop case Mounting brackets for 19"-Racks	320 x 148 x 275 84PU x 3HU x 275	High precise power measurement at switched devices, reference meter for calibration of power	For EMC test systems meeting standard EN61000-3-2/-3, harmonics analyser meets EN61000-4-7, flicker meter meets EN61000-4-15
LMG90-1	1	DC, 10Hz-10kHz	0.05%	10V-1000V 10mA-30A	-	RS232, IEEE488	Outputs: 8 Digital 1 Analog	-	-	Alpha-num. fluorescent display of 16 characters	Desktop case 19"-casket	250 x 90 x 200 303 x 130 x 230 60PU, 3HU	Power losses at transformers, household appliances, quality control QE	Very compact mechanical design
LMG90-2	1	DC, 10Hz-50kHz		1V-1000V 10mA-30A										



NDL5

### Long Time Data Recording, Disturbance Analysis

NDL5 Data logging on hard disk for LMGs	up to 8 ch.	up to 10MHz	up to 0.03%	up to 1000V, 32A or 12kV, 5kA with ext. transformers	up to 99. also Inter-harmonics	Ethernet, Serial	Inputs f. ext. trigger Outputs f. event dependent control	Tables and plots of actual measuring values I,U,R,Q,S,P,mom	Desktop case	320 x 50 x 307	Datalogging on internal harddisk up to 80GB, disturbance analysis at industrial processes, long time analysis of wind energy plants etc.	For LMG500/450/95, communication via Internet/Ethernet, also during recording, UPS to cover breaks in mains. Configurable for autonomous data recording, visualisation, evaluation and data export by means of ZES ZIMMER PC software TERM-L5
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### Voltage and Current Sensors for Power Measurement

Sensor Type	No. of Channels	Frequency Range	Basic Accuracy %	Nominal Ranges *	Mech. Design	Order No.
HST High Voltage Divider	1-3	DC-1MHz	0.05	3kV-30kV	Aluminium Case	HST3/6/9/12/30
PSU Precision Current Transformer	1	DC-1MHz	0.02	200A-5000A	Plastic Sensor Head	PSU200/200HF/400/600/700 PSU1000HF/2000/5000
AC Current Transformer	1	15Hz-5kHz	0.02	750A	Plastic Sensor Head	LMG-Z502/505/510/520
CLAMP Current Transformer	1	2Hz-50kHz	0.15	40A-3000A	Plastic Clamp	Lxx-Z06/07/10/11/16/17/26
WCT Wideband Current Transformer	1	30Hz-1MHz	0.25	100A-1000A	Plastic Case	LMG-Z601/602
HALL Hall Sensor Current Transformer	1	DC-200kHz	0.3	50A-2000A	Plastic Sensor Head	Lxx-Z28Hall50/200 Lxx-Z29Hall300/500/1000/2000
FLEX Rogowski Current Transformer	1	10Hz-5kHz	2.5	500A-3000A	Flexible Sensor Head	L45-Z32-Flex500/1000/3000

\* All Sensors are usable beginning with approx. 1% of nominal range



AC



PSU

HALL



WCT

FLEX



HST



CLAMP

# AC Power Sources, AC Filter

Series	Type	Ph.	Power kVA	Frequency	UA	Application			
i	5001i	1	5	DC, 16Hz-5kHz	0-270V	Usable for SYS61K			
	15001i		15						
	15003i	3	15						
	30003i		30						
RP	801RP	1	0.8	16Hz- 500Hz		Usable with restrictions for SYS61K			
	1251RP		1.2						
	2001RP	3	2.0						
	2003RP		2.0						
P	801P	1	0.8			General applications			
	1251P		1.2						
AC-Filter	TT-AC1000	1	1				Mains freq.	Mains	Cost-effective



SYS61K-3PL50  
3phase  
with AC-sources

SYS61K-1PL95  
1phase  
with AC-source

# Test Systems for EN61000-3-2/-3 (Current Harmonics, Flicker)



Instrument Type	Power Channels	Frequency Range (Bandwidth)	Basic Accuracy	Ranges Voltage, Current	Harmonic Analysis	Computer Interfaces	Process Signal Interfaces	Display	Mech. Design	Dimensions W x H x D in mm	Application	Special Features
SYS61K-3PL50	3 Ch.	DC-10MHz	0.03%	3V-1000V 20mA-32A	EN 61000-3-2	RS232, IEEE488.2, USB	Inputs: 4 Analog, 4 Digital Outputs: 1 Frequency, 4 Analog, 4 Digital	Colour-TFT 320x240	to be built-in into e.g. 19"-racks	6...18HU x 800mm	For EMC test systems meeting standard EN61000-3-2/-3, harmonics analyser meets EN61000-4-7, flicker meter meets EN61000-4-15	Packages to build complete systems, consisting of: 1 to 3 power meters LMG95 or one LMG500, AC power sources, reference impedance and evaluation software (components also available for stand-alone operation, simple integration of existing customer sources)
SYS61K-1(3)PL95	1 (3) Ch.	DC, 0.05Hz-50kHz		6V-600V 0.15A-20A (960Apk)		RS232, IEEE488.2		LCD b/w 240x128				

# Energy Counters and Displays to monitor and maintain Production and Factory



Model	Channels	Frequency	Power	Accuracy	Range	Harmonic	Computer	Process	Display	Mech. Design	Dimensions	Application	Special Features
RM303d8	1-3	45-65Hz (1kHz)	Power: Class 0.25 Energy: Cl.1 (EN61036)	230VLN / 400VLL optional: 63VLN / 110VLL dynamic range: 0.5...1.2UN 5A optional: 1A dynamic range: 0.005...1.2IN	-	-	-	1 pulse relais + optional 1 pulse relais	LCD, 1 row with 8 digits + unit, backlight	Rail mounting	106 x 90 x 58	Energy counter as general operation display, for control tasks and energy management	kW-display short term on push-button
PM303d8								Optional Modbus RS485 (RS422)	LCD, 2 x 4,5 digits (kW), 7 dig.(kWh), backlight	Panel mounting	96 x 96 x 80		
PM325	1-3	45-65Hz (2.5kHz)	Power: Class 0.25 Energy: Cl.1 (EN61036)	230VLN / 400VLL optional: 63VLN / 110VLL dynamic range: 0.5...1.2UN 5A optional: 1A dynamic range: 0.005...1.2IN	-	-	-	Optional Modbus RS485 (RS422)	LCD, 2 x 4,5 digits (kW), 7 dig.(kWh), backlight	Panel mounting	96 x 96 x 80	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. Decentral registration and displaying of power and energy, also separately for import and export. Cost-effective replacement of many single displaying devices in panel mounting.	kW-display, average power kWMD and maximum average power kWMDmax
RM350								Optional Modbus RS485	LCD, 1 x 8 digits + unit, backlight	Rail mounting	106 x 90 x 58		
PM400	1-3	45-400Hz	Power: Class 0.25 Energy: Cl.1 (EN61036)	230VLN / 400VLL optional: 63VLN / 110VLL dynamic range: 0.5...1.2UN 5A optional: 1A dynamic range: 0.005...1.2IN	-	-	-	2 pulse optocoupler	LCD, 4 x 4 digits + unit	Panel mounting	96 x 96 x 83,5	Optional with internet connection (PM400IP)	
PM380								Optional Modbus RS485 (RS422)	LCD, 3 x 4 digits + unit, backlight	Panel mounting	96 x 96 x 80		
PM396	1-3	45-65Hz (1kHz)	Power: 0.1%	230VLN / 400VLL 5A (opt. 1A)	1...15 (THD)	-	-	RS485 RS232 (opt. Profibus)	LCD, 4 x 3 digits + unit	Panel mounting (opt. rail adapter)	96 x 96 x 55	Evaluation software in standard equipment, harmonic analysis	
TM396								as above + 25A-option for I-Input	Desktop case	248 x 138 x 253			
EZ1	1	47-63Hz	P: 0.1% FS (0.25-25A) 0.5% FS (0.02-0.25A)	Range: 86V...250V, 0.02A...25A	-	-	-	1 pulse 1 analog	No display	Wall set	160 x 240 x 150	Accurate energy measurement esp. of devices with great and frequent load fluctuation, e.g. refrigerators	Wide measuring range (0.02-25A, 86-250V) with high accuracy in the hole dynamic range, high resolution (25 pulses/Wh)
PM190 PM151 PM96	-	DC	0,1% ± 1 digit	0-10V 0/4-20mA	-	-	-	4 relais 4 opto coupler	VF-display 3 digits + sign 51/101 segm. bar	Panel (190/96), 19" (151)	144x48 96x48 3HU/1PU	Displaying and monitoring of processes	Bargraph for simultaneous analogue indication of measuring- and limit values. Standard process inputs

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