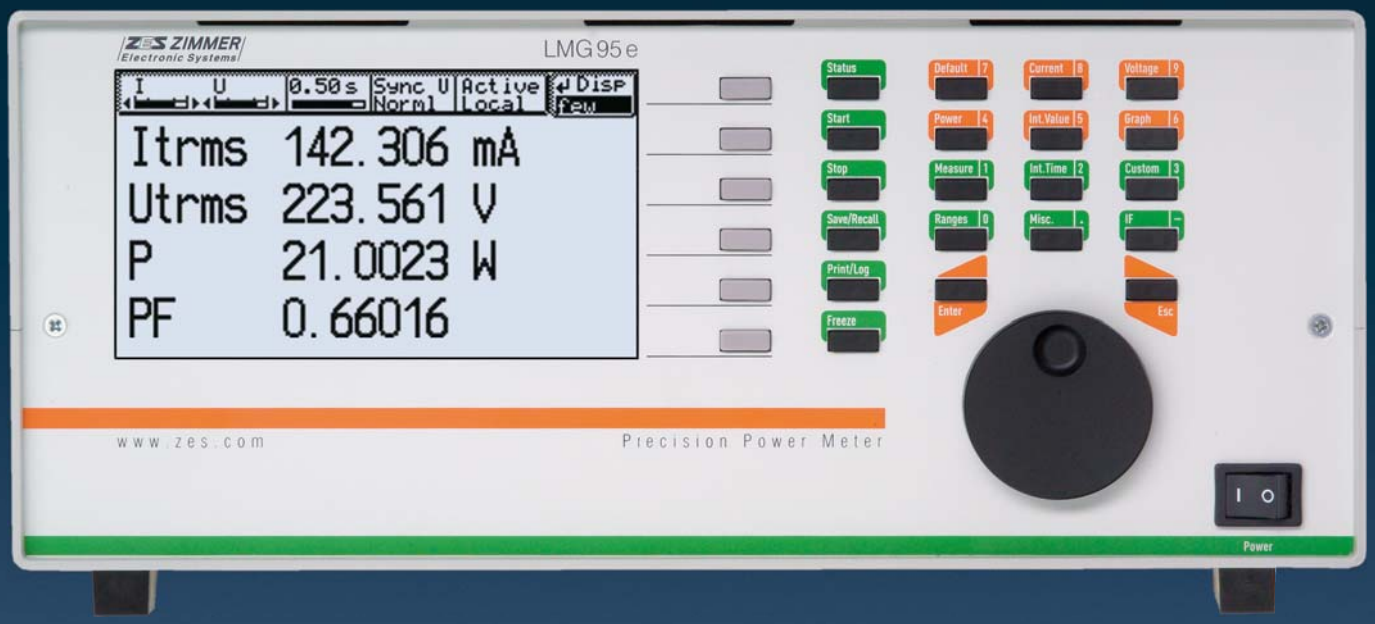
LMG95e
Precision Power Meter



- **Uncertainty:**

  U, I : 0.03% + 0.08%
  P : 0.05% + 0.12%
  (% of reading + % of range)

- **RS232, IEEE488.2 and Printer interface**
- **Software for configuration, logging and analysis LMG-CONTROL-B**

Features	LMG95	LMG95e
RS232, IEEE488.2, printer interface	01	✓
CE Harm (full compliance)	✓	–
CE Harm (pre compliance)	–	✓
Process signal interface	03	–
Flicker	04	–
Monitoring of transients	05	–
Extension up to 500kHz	06	–
Modification U-input	07	–
Modification I-input	08	–
Measuring input sockets on rear panel	09	✓
Harm 100	010	–
Memory extension for scope mode	011	–
Waveform analysis for LMG-CONTROL	LMG-CONTROL-WA	–

0xx: option

The precision power meter LMG95e is the economic version of the proven LMG95. Available in a fixed configuration, it is the entry-level model of the LMG product family and balances price, accuracy and features.

Precision Power Meter LMG95e

Voltage measuring ranges												
Rated range value /V	6	12.5	25	60	130	250	400	600				
Permissible trms value /V	7.2	14.4	30	60	130	270	560	720				
Permissible peak value for full scale /V	12.5	25	50	100	200	400	800	1600				
Overload capability	1500V for 1s											
Input resistance	1MΩ, 20pF											
Current measuring ranges												
Rated range value /A	0.15	0.3	0.6	1.2	2.5	5	10	20	120	240	480	960
Permissible trms value /A	0.3	0.6	1.3	2.6	5.2	10	21	21	21	21	21	21
Permissible peak value for full scale /A	0.469	0.938	1.875	3.75	7.5	15	30	60	120	240	480	960
Overload capability	160A for 1s											
Input resistance	5mΩ											
Voltage inputs for current measuring with shunt / transducer												
Rated range value /V	0.03		0.06		0.12		0.25		0.5	1	2	4
Permissible trms value /V	0.06		0.13		0.27		0.54		1	2	4	8
Permissible peak value for full scale /V	0.0977		0.1953		0.3906		0.7813		1.563	3.125	6.25	12.5
Overload capability	250V fo 1s											
Input resistance	100kΩ											

Measuring range selection	Auto, manual or remote control
Isolation	Current and voltage path are isolated against each other and may float against earth with 1000V/CAT III
Measuring method	Simultaneous sampling of the current and voltage signals and A/D conversion of the instantaneous values (100kHz)
Measuring cycle, synchronization, averaging	For measurements of the trms values for current, voltage and active power the measuring cycle time is adjustable in the range of 50ms to 60s. In each measuring cycle gapless 100kHz sampling and evaluation. The synchronization can be performed on the measuring signal, the fundamental harmonic, the envelope or the mains. Average from 1 to 1000 cycles.

Measuring uncertainty

Measuring uncertainty	± (% of reading + % of range)		
	DC, 0.05Hz...3kHz	3...15kHz	15...50kHz
Voltage	0.03+0.08	0.1+0.2	0.5+1.0
Current	0.03+0.08	0.1+0.2	0.5+1.0
Shunt Voltage Input	0.03+0.08	0.1+0.2	0.5+1.0
Active Power	0.05+0.12	0.2+0.2	1.0+1.0

Measuring uncertainties based on:

1. sinusoidal voltage and current
2. ambient temperature 23°C ± 3°C
3. warm-up time 1h
4. definition of power range as the product of current and voltage range, $0 \leq |\lambda| \leq 1$, $\lambda = P/S$ (power factor)
5. calibration interval 12 month

Other values	All other values are derived from the values for current, voltage and active power. Accuracies for the derived values depend on the functional relation (e.g. $S = I * U$, $\Delta S/S = \Delta I/I + \Delta U/U$)
Internal time base	±100ppm
Frequency measuring	0.05Hz...50kHz ± 0.01% of measuring value, measuring channel selectable
Display of measured and computed values	
Representation	With standard abbreviation of measured magnitudes, numeral values 6 digits (0...999999), with sign, decimal point and unit (e.g. I_{trms} 0.73851mA), 4 to 8 values can be displayed simultaneously, selectable via default or user defined menus
Voltage, current	Trms value, peak values (min, max, pp), rectified value (rect), mean value (dc), trms value of ac component (ac), form factor, crest factor
Power	Active power (P), reactive power (Q), apparent power (S), phase angle (φ), power factor (λ)
Impedance	Amount (Z), real and imaginary part of resistor in serial equivalent circuit
Integrated values depending on the measuring time	The integration can be controlled manually, automatically using start and stop times or remote controlled via computer interface
Energy, charge	Active energy (Ep), reactive energy (Eq), apparent energy (Es), charge (q)
Date and time, measuring time	Current date (day, month, year) with time (hour, minutes, seconds), accu buffered real time clock, start time for measurement, running measuring time, on-time, each with days, hours, minutes, seconds
Adjustable parameters	Scaling factors for external shunt, current and voltage transducer
Synchronization	Synchronization is made on the periodicity of the measured signal. Periodicity can be determined by the signals u(t), i(t), p(t), $u^2(t)$, $i^2(t)$, each of them can be adapted with selectable filters. By this stable displays also with pulse width modulated signals (e.g. frequency inverter) and amplitude modulated signals (e.g. electronic ballast). Synchronization also on mains.
Scope function	Graphical representation of sampled values (waveform of the signal)
Plot function	Time diagram of calculated values, e.g. trms value and power
Harmonic analysis CE-Hrm	Analysis of current and voltage up to the 40th harmonic (total of 41 with DC component), fundamental in the range 45Hz to 65Hz. Analyzer in accordance with EN61000-4-7 with evaluation in accordance with EN61000-3-2 (pre compliance)
Computer interface	Interfaces: **RS232** and **IEEE488.2**, only one interface can be used at the same time
Remote control	All functions can be remote controlled
Output data	Output of all displayable data possible, data formats of all interfaces are the same, SCPI command set
Transfer rates	RS232: max. 115200 Baud, IEEE488.2: max. 1MByte/sec
Printer interface	Parallel PC-printer interface with 25 pin SUB-D socket for printing of values, tables and graphics on needle, ink or laser printer
Other data	
Service RS232 interface	For firmware update and service diagnostics
Auxiliary power supply output	+15V/0.4A and -15V/0.2A for external current transducers
Dimensions/weight	Desktop case, (w)320mm x (h)147mm x (d)274mm, subrack 84PU, 3HU, (d)274mm, about 5.5kg
Safety regulation	EN61010-1, protection class I, overvoltage class III
Electromagnetic compatibilty	EN61326-1, EN61000-3-2, EN61000-3-3
Protection class	IP20 acc. to EN60529
Operation temperature, storage temperature	5...40°C, -20...+55°C
Supply	90...250V, 45...65Hz, about 30W

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

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