FLUKE ®

PRODUCT ANNOUNCEMENT

November 1, 2005

NORMA High Precision Power Analyzer

Introducing NORMA high precision Power Analyzer

Features

- Compact, high precision power analyzer is easy to carry and saves working space
- Easy to use with simple user interface.
- Customer can build functionality for his own application with modular design
- Non gaping average values of current, voltage and power including details for all phases. A must for dynamic measurements and efficiency
- All inputs galvanically separated to avoid short circuits in all applications
- Voltage, current and power harmonics up to the 40th
- FFT analysis, vector diagram and DSO mode included
- 15ms up to 3600s free selectable average time for dynamic measurements
- 4 MB memory for sample or average data on board
- A choice of four interfaces to select from: RS232, IEE488, Ethernet, USB2.0 for fast and easy connection to PC
- PI1 Process interface to measure torque and speed with external sensors + 4 analogue outputs for easy use on motor and drive applications
- 102 kHz/341 kHz or 1 MHz sample rate
- Two years calibration interval recommended; as opposed to competitors who calibrate in intervals of three months to one year.
- Wide range power supply: 85 V … 265 V AC, 47 Hz … 440 Hz; DC 120 V … 370 V
- Safety rating: CAT II 1000 V

Compact, user-friendly high precision power analyzer

The Norma High Precision Power Analyzer delivers precise measurements of single or three-phase current and voltage as well as calculation of power and other derived values. It provides class-leading accuracy for any wave form, frequency or phase shift. Its 144 mm (5.7 in) color display makes it easy to use both in the field and as a table unit in labs and on test benches.

Two models to choose from:

✓ Norma 4000:

1-3 power phases, numeric screen, harmonic analysis, scope mode, vector diagram, recorder function and 4 MB RAM data memory

✓ Norma 5000:

1-6 power phases; internal printer and all Norma 4000 functions

Power Phases

Power Phase	Accuracy	Current range	Sampling rate	Band-width
PP30	0.15 % MW + 0.15 % of MB	10 A	102 kHz	1 MHz
PP40	0.1 % MW + 0.1 % of MB	10 A	341 kHz	3 MHz
PP42		20 A	341 kHz	3 MHz
PP54	0.05 % of MW + 0.05 % of MB	10 A	341 kHz	3 MHz
PP50		10 A	1 MHz	10 MHz

Voltage:

8 ranges: 0.3 – 1 – 3 – 10 – 30 – 100 – 300 – 1000 V
U_{peak} = 2 x range
Input impedance: 2 MOhm / 20pF
CMR common mode rejection: 120 dB at 100 kHz

Current 10A:

6 ranges: 30 – 100 mA – 0.3 – 1 – 3 – 10 A
I_{peak} = 2 x range; max level 150 % at sine wave (limit of error as at 100 %).
Input impedance with integrated shunts:
ranges 30, 100 mA: 1 Ohm
ranges 0.3, 1 A: 0.1 Ohm
ranges 3, 10 A: 0.01 Ohm
Current overload: max. 15A continuous
30 A < 5 sec / 15 sec no load
100 A < 0.1s / 30 sec no load

Input for external shunt or probe:
BNC terminal: 100 kOhm / 30pF
30 – 100 mV – 0.3 – 1 – 3- 10 V
Overload: max. 20 Vrms
CMR common mode rejection: 120 dB at 100 kHz

Current 20A:

6 ranges: 60 – 200 mA – 0.6 – 2 – 6 – 20 A
I_{peak} = 2 x range; max level 150 % at sine wave (limit of error as at 100 %).
Input impedance with integrated shunts:
ranges 60, 200 mA: 0.5 Ohm
ranges 0.6, 2 A: 0.05 Ohm
ranges 6, 20 A: 0.005 Ohm
Current overload: max. 25 A continuous
30 A < 5 sec / 15 sec no load
100 A < 0.1s / 30 sec no load

Input for external shunt or probe:
BNC terminal: 100 kOhm / 30pF
30 – 100 mV – 0.3 – 1 – 3- 10 V
Overload: max. 20 Vrms
CMR common mode rejection: 120 dB at 100 kHz

Measured values

U_{RMS} effective value, U_{rm} rectified mean, U_m mean value
U_{p-}, U_{p+}, U_{pp} peak values
U_{cf} crest factor U_{cf}, U_{ff} form factor
U_{fc} fundamental content
U_{thd} distortion factor DIN, IEC

I_{RMS} effective value, I_{rm} rectified mean, I_m mean value
I_{p-}, I_{p+}, I_{pp} peak values

I_{cf} crest factor I_{cf}, I_{ff} form factor
I_{fc} fundamental content
I_{thd} distortion factor DIN, IEC

P active power [W]
Q reactive power [Var]
S apparent power [VA]
λ, cosφ phase angular

Integral function for active power P, reactive power Q,
apparent power S, voltage (U_m) and current (I_m),

Number of digits 4 or 5 dependent on measured value.

Basic Functions
FFT: Measured values: U, I, P per phase, Order: 1. to 40. harmonics,
max. half sample frequency
DSO: Simultaneous display of up to 3 measured values on sample level
Recorder: Display of 3 average values over time for trend determination.
Vector: Display of HO1 up to 6 signals
Memory: 4 MB RAM are available for the storage of measured values.
The memory can be expanded up to 128 MB

Interface
RS232 Interface for upload of firmware and data exchange
with the PC. A printer can be connected over an external
converter.
Options: IEEE 488.2 / 1 MBit/s
Ethernet / 10 MBit/s or 100 Mbit/s
USB 2.0

Frequency and Synchronization
Range: 0.2 Hz ... sample rate
Accuracy: ±0.01 % of measured value (reading)
Channels which can be selected: all U/I or external input
One of three low pass filter with different frequencies can be switched into the signal.

Standard and Safety
Electrical safety:
EN 61010-1 / 2nd Edition 1000 V CAT II (600V CAT III)
Degree of pollution 2, safety class I.
EN 61558 for transformer
EN 61010-2-031/032 for accessories
Max. inputs:
for voltage inputs Measurement range 1000 V_{eff}, 2 kV_{peak}
for current inputs Measurement range 10 A_{eff}, 20 A_{peak}
Test voltages:
Net input - case (protective conductor): 1.5 KV a.c.
Net connection – Measurement input: 5.4 kV a.c.
Measurement inputs – case: 3.3 kV a.c.
Measurement input – Measurement input: 5.4 kV
Electromagnetic susceptibility:
Emission: IEC 61326-1, EN 50081-1, EN 55011 Class B
Immunity: IEC 61326-1 / Annex A (industrial sector), EN 50082-1

General
Working temp. range: +5 ... 35 °C
Storage temp. range: - 20 ... + 50 °C

Housing:	metal case.
Display:	5.7“ 320 x 240 pixel Background lighting and contrast decidable.
Climatic class:	KYG DIN 40040, max. 85 % rel. humidity, non condensing.
Net connection:	85 ... 264 V AC, 50 ... 60 Hz, DC 100 ... 260 V, ca. 40VA European plug with switch.
Measuring inputs:	Safety sockets 4 mm, 2 for each input. Ext. Shunt connection over BNC socket
Operation:	film keyboard with cursor, function keys and direct functions

Pricing information

See LEM pricelist

Ordering Information
Part Numbers and Ordering Codes

Model	Part Number	Model Noun	Item Number	Description	UPC Code
N4k BU43	EA1430Z	N4K BU43	2539612	NORMA 4000 POWER ANALYZER, BASIC UNIT	0 95969 32486 1
N5k BU56	EA1560Z	N5K BU56	2539985	NORMA 5000 POWER ANALYZER, BASIC UNIT	0 95969 32523 3
N4k PP30	EA1300Z	N4K PP30	2539784	POWER PHASE VOLT/CUR NORMA 4000 & 5000	0 95969 32503 5
N4k PP40	EA1400Z	N4K PP40	2539791	POWER PHASE VOLT/CUR NORMA 4000 & 5000	0 95969 32504 2
N4k PP42	EA1420Z	N4K PP42	2539804	POWER PHASE VOLT/CUR NORMA 4000 & 5000	0 95969 32505 9
N5k PP50	EA1500Z	N5K PP50	2540029	POWER PHASE VOLT/CUR, NORMA 4000 & 5000	0 95969 32527 1
N5k PP54	EA1540Z	N5K PP54	2540052	POWER PHASE VOLT/CUR NORMA, 5000 & 4000	0 95969 32530 1
N4k IFC IF3	EA1001Z	N4K IFC IF3	2539769	IF3 INTERFACE, USB2.0+ETHERNET	0 95969 32501 1
N4k IFC IF2	EA1002Z	N4K IFC IF2	2539757	IF2 INTERFACE, IEEE488+ETHERNET	0 95969 32500 4
N4k IFC PI1	EA1003Z	N4K IFC PI1	2539778	PI1 PROCESS INTERFACE, 8xIN & 4xOUT	0 95969 32502 8
N5k PRI-INT	EA1006Z	N5K PRI-INT	2540065	INTERNAL PRINTER FOR NORMA 5000	0 95969 32531 8

Dimensions & Weights

Model	Weight	Packaged Dimensions	Packaging Type
NORMA 4000 BU43	7 kg	43 x 35 x 26cm	Box
NORMA 5000 BU56	9 kg	43 x 56 x 26cm	Box

Additional Information

Country of origin for the NORMA power analyzer is AT
Warranty period for the NORMA power analyzer is 2 years.

Order Requirements: No Minimum order quantity
Discount: 25%
Launch Date (Embargo) November 1, 2005
COS Open November 1, 2005

Key Promotional Activity

Item
Category Press Release
Power Point Presentation
Product Images on Fluke Partner Portal
Product Data Sheet available in pdf format only
Demo Products
Product page on www.fluke.com