

## PRODUCT ANNOUNCEMENT

November 1, 2005

## Introducing NORMA high precision Power Analyzer



# 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 40<sup>th</sup>
- 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, IEEE488, Ethernet, USB2.0 for fast and easy connection to PC
- P11 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

$$U_{\text{peak}} = 2 \times \text{range}$$

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

$I_{\text{peak}} = 2 \times \text{range}$ ; 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

$I_{\text{peak}} = 2 \times \text{range}$ ; 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

$U_{\text{RMS}}$  effective value,  $U_{\text{rm}}$  rectified mean,  $U_{\text{m}}$  mean value

$U_{\text{p-}}$ ,  $U_{\text{p+}}$ ,  $U_{\text{pp}}$  peak values

$U_{\text{cf}}$  crest factor  $U_{\text{cf}}$ ,  $U_{\text{ff}}$  form factor

$U_{\text{fc}}$  fundamental content

$U_{\text{thd}}$  distortion factor DIN, IEC

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$I_{\text{p-}}$ ,  $I_{\text{p+}}$ ,  $I_{\text{pp}}$  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]  
 $\lambda$ ,  $\cos\phi$  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:  $\pm 0.01$  % 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 <a href="http://www.fluke.com">www.fluke.com</a>