

# N13 METER OF POWER NETWORK PARAMETERS

## FEATURES:

- MOD BUS** Password protection
- RTC** LPConfig Program
- THD** WizPar Program

## INPUT:



## OUTPUTS:

- 20..20 mA
- RS 485

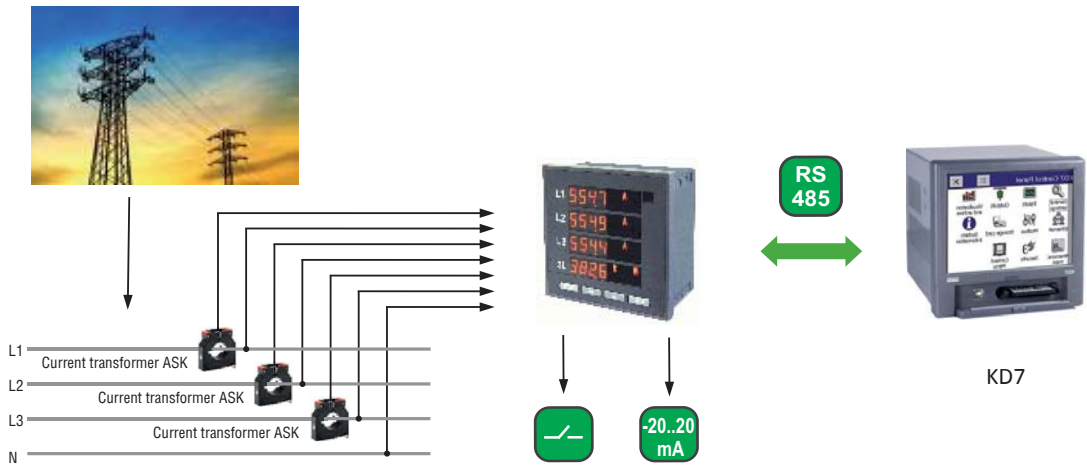
## GALVANIC ISOLATION:

- Supply
- RS 485



- Measurement of power network parameters in 3 or 4-wire balanced or unbalanced systems.
- Tetraquadrantic energy measurement.
- Calculation and display of the neutral wire current.
- Measurement of voltage and current harmonics up to the 25 th. (available through the RS-485 interface).
- Indications taking into consideration values of programmed ratio.
- Digital transmission to the master system through the RS-485 MODBUS interface.
- Configurable alarm output.
- Retransmission of any measured quantity through the analog output.
- Battery support of configuration data and watt-hour meters' states at supply decays.

## EXAMPLE OF APPLICATION



## MEASURED VALUES AND CALCULATED BY THE METER

Measured value	Single-phase parameters	Three-phase parameters	Intrinsic error
Phase voltage	$U_1, U_2, U_3$		$\pm (0.2\% \text{ m.v.} + 0.1\% \text{ range})$
Phase-to-phase voltage	$U_{12}, U_{23}, U_{31}$		$\pm (0.2\% \text{ m.v.} + 0.1\% \text{ range})$
Single-phase current	$I_1, I_2, I_3$		$\pm (0.2\% \text{ m.v.} + 0.1\% \text{ range})$
Mean phase current	$I$		$\pm (0.2\% \text{ m.v.} + 0.1\% \text{ range})$
Active power	$P_1, P_2, P_3$	P	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Reactive power (inductiv, capacitive)	$Q_1, Q_2, Q_3$	Q ( $Q_L, Q_C$ )	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Apparent power	$S_1, S_2, S_3$	S	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Active energy (total, input, output)		EnP (EnP_i, EnP_e)	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Reactive energy (inductive, capacitive)		EnQ (EnQ_L, EnQ_C)	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Apparent energy		EnS	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Power factor cos $\phi$	$PF_1, PF_2, PF_3$	PF	$\pm 1\% \text{ m.v.} \pm 2c$
Power factor tg $\phi$	$tg_1, tg_2, tg_3$	tg	$\pm 1\% \text{ m.v.} \pm 2c$
Current distortion factor	$THD_{I1}, THD_{I2}, THD_{I3}$		$\pm 5\% \text{ m.v.} \pm 2c$
Voltage distortion factor	$THD_{U1}, THD_{U2}, THD_{U3}$		$\pm 5\% \text{ m.v.} \pm 2c$
Frequency		F	$\pm 0.5\% \text{ m.v.}$
15 min. mean power		$P_{av}$	$\pm (0.5\% \text{ m.v.} + 0.2\% \text{ range})$
Current in the neutral wire		$I_n$	$\pm (0.2\% \text{ m.v.} + 0.1\% \text{ range})$

where:  $K_u$ : ratio of voltage transformer,  $K_i$ : ratio of current transformer, m.v.: measured value, range: measuring range, c: the less significant display digit

## OUTPUTS

Kind of output	Properties
Relay output	• voltageless NO contacts, load capacity: 250 V a.c./0.5 A a.c.
Analog output	• -20...20 mA, programmable, accuracy: 0.2%

## DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU and ASCII	8N2, 8E1, 8O1, 8N1, 7E1, 7O1	4.8; 9.6; 19.2; kbit/s

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### EXTERNAL FEATURES

Readout field	4 x 4 LED digits, brightness control	red or green colour, 10 mm
Overall dimensions	96 x 96 x 70.5 mm	mounting cut-out: 91 <sup>+0.5</sup> x 91 <sup>+0.5</sup> mm
Weight	0.4 kg	
Protection grade	from frontal side: IP40	from terminal side: IP10

### RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c.	power input ≤ 12 VA
Power input	in the voltage circuit ≤ 0.5 VA	in the current circuit ≤ 0.1 VA
Input signal	• 0...0.01...1.2 In; 0...0.01...1.2 Un	• 0...0.02...1.2 In; 0...0.07...1.2 Un for power factors: Pf, tgp • frequency 15...45...65...500 Hz • sinusoidal (THD ≤ 8%)
Temperature	ambient: 0...23...+55°C	storage: -20...+70°C
Humidity	25...95%	without condensation
Operating position	any	
External magnetic field	0...40...400 A/m	
Short duration overload (5 s)	voltage input: 2 Un (max 1000 V)	current input: 10 In
Admissible peak factor	current: 2	voltage: 2
Preheating time	5 min	
Additional errors in % of the intrinsic error	from frequency of input signals: <50%	from ambient temperature changes: <50%/10°C

### SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation ensured by the casing	double	acc. to EN 61010-1
Isolation between circuits	basic	
Pollution level	2	
Installation category	III	
Maximal phase-to-earth operating voltage	600V	
Altitude above sea level	< 2000 m	

### ORDERING

	N13 -	X	X	X	X	XX	X
<b>Input current:</b>							
1 A (X/1)		1					
5 A (X/5)		2					
<b>Input voltage (phase/phase-to-phase):</b>							
3 x 57.7/100 V			1				
3 x 230/400 V			2				
3 x 400/690 V			3				
<b>Current analog output:</b>							
without analog output					0		
with a programmable output -20...+20 mA					1		
<b>Digital output:</b>							
without interface					0		
with RS-485 interface					1		
<b>Display:</b>							
red						1	
green							2
<b>Version:</b>							
standard							00
custom-made*							XX
<b>Acceptance tests:</b>							
without extra quality inspection requirements							8
with an extra quality inspection certificate							7
according to customers' request *							X

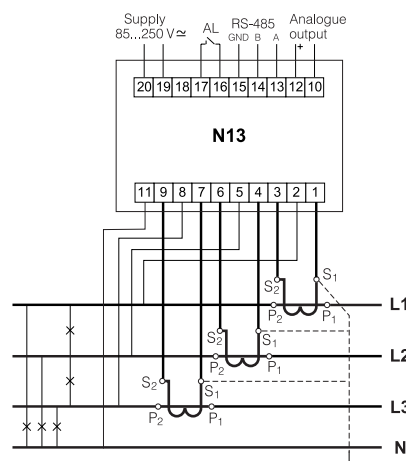
\* after agreeing with the manufacturer

#### Order example:

The code: **N13 - 2 2 1 1 2 00 7** means:

- N13** - meter of network parameters of N13 type
- 2** - input current: 5 A
- 2** - input voltage: 3 x 230/400 V
- 1** - programmable output: -20 ... +20mA
- 1** - with RS-485 interface
- 2** - display: green
- 00** - standard version
- 7** - with an extra quality inspection certificate.

### CONNECTION DIAGRAMS



Semi-indirect measurement in a four-wire network.

SEE ALSO:



Free LPConfig software for programming LUMEL's products. Available in our website.

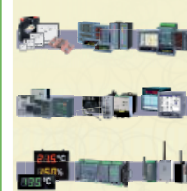


Current transformers from 5 A to 6 kA.



P43 - three-phase transducer of power network parameters.

OUR OFFER



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