N13 METER OF POWER NETWORK PARAMETERS

LUMEL

FEATURES:

MOD BUS | Password protection | RTC | LPConfig Program | THD | WizPar Program

INPUT:

AC

OUTPUTS:

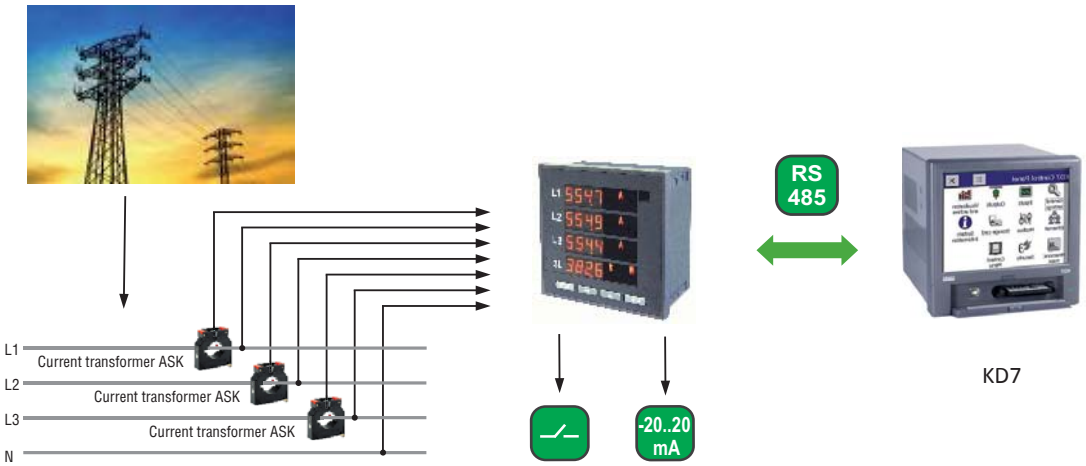
-20..20 mA | RS 485

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

where: Ku: ratio of voltage transformer, Ki: ratio of current transformer, m.v.: measured value, range: measuring range, c: the less significant dispaly 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

Export department:
English: +48 68 32 95 302 / 321 / 276 / 386 / 233
German: +48 68 32 95 305
French: +48 68 32 95 304
Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N13 METER OF POWER NETWORK PARAMETERS

EXTERNAL FEATURES

Readout field	4 x 4 LED digits, brightness control	red or green colour, 10 mm
Overall dimensions	96 × 96 × 70.5 mm	mounting cut-out: $91^{+0,5} \times 91^{+0,5}$ 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, tgφ • 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

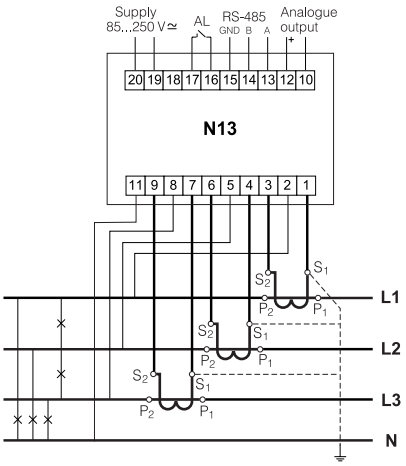
N13 -	X	X	X	X	X	XX	X
Input current:							
1 A (X/1)	**1**						
5 A (X/5)	**2**						
Input voltage (phase/phase-to-phase):							
3 x 57.7/100 V		**1**					
3 x 230/400 V		**2**					
3 x 400/690 V		**3**					
Current analog output:							
without analog output			**0**				
with a programmable output -20..+20 mA			**1**				
Digital output:							
without interface				**0**			
with RS- 485 interface				**1**			
Display:							
red					**1**		
green					**2**		
Version:							
standard						**00**	
custom-made*						**XX**	
Acceptance tests:							
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 × 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.

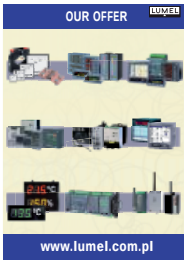
SEE ALSO:

LPConfig

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.



For more information about LUMEL's products, please visit our website: www.lumel.com.pl.

Export department:
English: +48 68 32 95 302 / 321 / 276 / 386 / 233
German: +48 68 32 95 305
French: +48 68 32 95 304
Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL