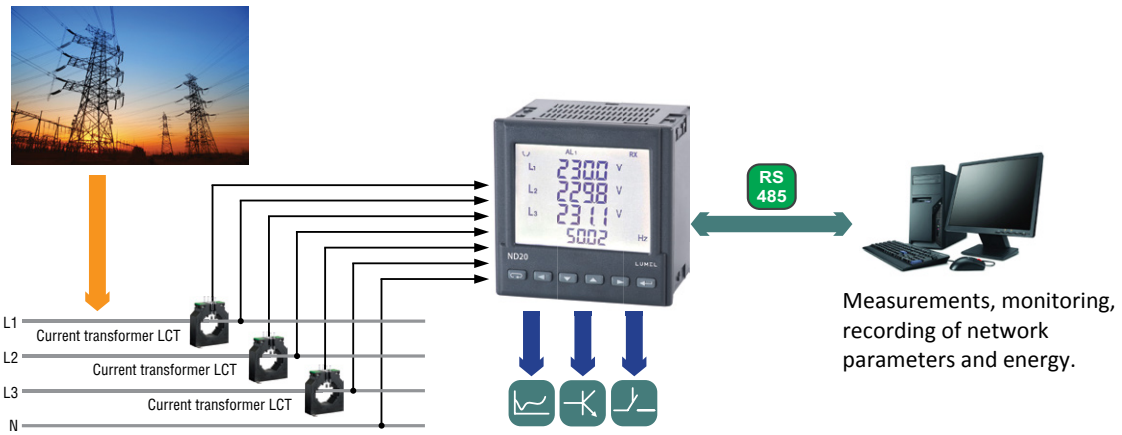
ND20 METER OF NETWORK PARAMETERS



- Measurement of power network parameters in 2,3 or 4- wire balanced and unbalanced systems.
- High accuracy class.
- Indications considering values of programmed ratios.
- Harmonics of voltages and currents (selectively).
- THD factors for currents and voltages.
- Profile of 15, 30, 60-minutes' power (9000 measurements).
- Watt-hour meter for the selected harmonic.
- Backlit LCD 3.5" screen.
- Protection grade from the frontal side: IP65.
- Digital transmission to the master system through the RS-485 interface (MODBUS).
- Configurable analog, alarm and pulse outputs (energy).
- Configuration of displayed pages.

Example of Application



Measured Quantities and Measuring Ranges

Measured value	Indication range*	Measuring range	L1	L2	L3	Σ	Basic error
Current In 1 A 5 A	0.00 ... 12 kA 0.00 ... 60 kA	0.002 ... 1.200 A~ 0.010 ... 6.000 A~	•	•	•		±0.2% r
Voltage L-N 57.7 V 69.3 V 230 V **	0.0 .. 318.0 kV 0.0 .. 382.5 kV 0.0 .. 1.269 MV	2.8 ... 70.0 V~ 3.4..84 V~ 11.5 ... 276 V~	•	•	•		±0.2% r
Voltage L-L 100 V 120 V 400 V **	0.0 ... 552.0 kV 0.0 .. 662.0 kV 0.0 ... 2.20 MV	5 ... 120 V~ 6.0.. 144 V~ 20 ... 480 V~	•	•	•		±0.5% r
Frequency	47.0 ... 63.0 Hz	47.0 ... 63.0 Hz	•	•	•		±0.2% mv
Active power	-9999 MW ... 0.00 W ... 9999 MW	-1.65 kW ... 1.4 W ... 1.65 kW	•	•	•	•	±0.5% r
Reactive power	-9999 Mvar ... 0.00 var ... 9999 Mvar	-1.65 kvar ... 1.4 var ... 1.65 kvar	•	•	•	•	±0.5% r
Apparent power	0.00 VA ... 9999 MVA	1.4 VA ... 1.65 kVA	•	•	•	•	±0.5% r
Power factor PF	-1 ... 0... 1	-1 ... 0 ... 1	•	•	•	•	±1% r
Tangent φ	-1.2...0...1.2	-1.2 ... 0 ... 1.2	•	•	•	•	±1% r
Cosinus φ	-1... 1	-1 ... 1	•	•	•	•	±1% r
φ	-180 ... 180	-180 ... 180	•	•	•		±0.5% r
Imported active energy	0 ... 99 999 999.9 kWh					•	±0.5% r
Exported active energy	0 ... 99 999 999.9 kWh					•	±0.5% r
Reactive inductive energy	0 ... 99 999 999.9 kvarh					•	±0.5% r
Reactive capacitive energy	0 ... 99 999 999.9 kvarh					•	±0.5% r
THD	0 ... 100%	0 ... 100%	•	•	•		±5% r

* Depending on the set tr_U ratio (ratio of the voltage transformer: 0.1..4600.0) and tr_I ratio (ratio of the current transformer: 1...10000)

** available also other meter executions (see ordering code)

r - of the range mv - of the measured value

Outputs

Kind of output	Properties
Analog output	• 1 programmable current output 0/4...20 mA
Relay output	• programmable relay output, normally open voltageless contacts, load capacity 250 V~/0.5 A~
Pulse output of active or reactive energy	• 1 OC type, passive

Features: eCon software, RTC, MODBUS, Password protection, IP65, THD, HARM, P,Q, Meas. of energy harmonics, PAord

Input: AC

Outputs: 0/4..20 mA, RS 485

Galvanic isolation: Supply, RS 485

Export department:
+48 68 45 75 139/321/368
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

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EVERYTHING COUNTS

ND20 METER OF NETWORK PARAMETERS

DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; 38.4 kbit/s

EXTERNAL FEATURES

Readout field	LCD 3.5" screen,	specialized, monochromatic with backlit
Weight	< 0.3 kg	
Overall dimensions	96 × 96 × 77 mm	panel cut-out: $92.5^{+0.6} \times 92.5^{+0.6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP20

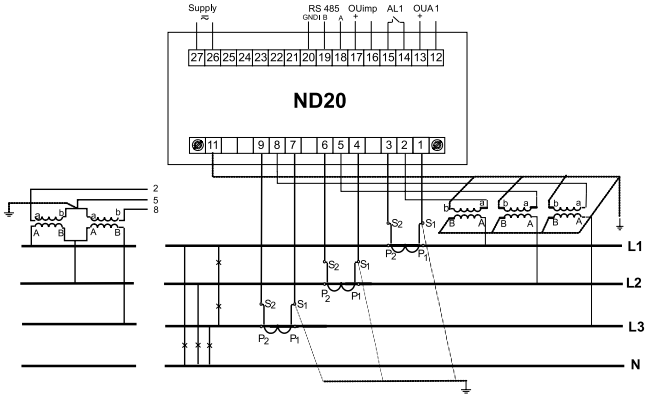
RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c., 90...300 V d.c., 20...40 V a.c., 20...60 V d.c.	
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	inadmissible condensation
Operating position	any	
External magnetic field	0...40...400 A/m	
Short duration overload (1 s)	voltage input: 2Un (max. 1000 V)	current input: 10 In
Power consumption	- in the supply circuit ≤ 6 VA, - in the voltage and current circuits ≤ 0.05 VA	

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Installation category	III	
Polution level	2	
Maximal phase-to-earth voltage	- for supply and measuring circuits: 300 V - for other circuits: 50 V	
Altitude a.s.l.	< 2000m	

ELECTRIC CONNECTIONS



Connections:
- direct, semi-indirect and indirect one-phase measurement,
- direct measurement in a 3-wire network,
- semi-indirect measurement in a 3-wire network,
- indirect measurement with the use of 3 current transformers and 2 or 3 voltage transformers in a 3-wire network,
- direct measurement in a 4-wire network,
- semi-indirect measurement in a 4-wire network,
- indirect measurement with the use of 3 current transformers and 2 or 3 voltage transformers in a 4-wire network

Fig 1. Meter connection diagrams in a 4-wire network.

ORDERING

ANALYSER OF NETWORK PARAMETER ND20	2	2	1	X	XX	X	X
Current input In:							
1/5 A	**2**						
Voltage input (phase/ phase-to-phase) Un:							
3 x 57.7/100 V, 3 x 69.3/120 V, 3 x 230/400 V		**2**					
Analog current output:							
with programmable output 0(4) ... 20 mA			**1**				
Supply voltage:							
85...253 V a.c., 90...300 V d.c.				**1**			
20...40 V a.c., 20...60 V d.c.				**2**			
Version:							
standard					**00**		
custom-made*					**XX**		
Language:							
Polish/ English						**M**	
Russian						**R**	
other*						**X**	
Acceptance tests:							
with an extra quality inspection certificate							**1**
with calibartion certificate							**2**
acc. to customer's request*							**X**

EXAMPLE OF ORDER:
The code **ND20 221100M1** means:
ND20 - meter of network parameters of ND20 type
2 - programmable current input ranges: 1 A or 5 A
2 - input voltage (phase/phase-to-phase)
Un = 3 x 57.7/100 V, 3 x 69.3/120 V, 3 x 230/400 V
1 - with programmable analog output
1 - supply voltage: 85...253 V a.c./ 90...300 V d.c.
00 - standard version
M - Polish/ English language version
1 - with extra quality inspection certificate.

* - after agreeing with the manufacturer

Castel Maggiore (BO) 40013
Via Lirone 60/i

e-mail: info@eurotecsrl.com
Tel: +39 051/6321595
Website: www.eurotecsrl.com

C.F.: 04103780377
P.I.: 01596581205