

# ND20 METER OF NETWORK PARAMETERS

## FEATURES:

- eCon software
- RTC
- MOD BUS
- Password protection
- IP65
- THD
- HARM
- P,Q C/L L/C
- Meas. of energy harmonics
- PAord
- 

## INPUT:



## OUTPUTS:

- 0/4...20 mA
- RS 485
- 
- 

## GALVANIC ISOLATION:

- 
- 

Export department:  
+48 68 45 75 130  
e-mail: export@lumel.com.pl

LUMEL S.A.  
ul. Stubiicka 4  
65-127 Zielona Góra  
POLAND  
[WWW.LUMEL.COM.PL](http://WWW.LUMEL.COM.PL)



- 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<br>1 A<br>5 A                    | 0.00 ... 12 kA<br>0.00 ... 60 kA                       | 0.002 ... 1.200 A~<br>0.010 ... 6.000 A~         | •  | •  | •  |   | ±0.2% r     |
| Voltage L-N<br>57.7 V<br>69.3 V<br>230 V ** | 0.0 .. 318.0 kV<br>0.0 .. 382.5 kV<br>0.0 .. 1.269 MV  | 2.8 ... 70.0 V~<br>3.4..84 V~<br>11.5 ... 276 V~ | •  | •  | •  |   | ±0.2% r     |
| Voltage L-L<br>100 V<br>120 V<br>400 V **   | 0.0 ... 552.0 kV<br>0.0 .. 662.0 kV<br>0.0 ... 2.20 MV | 5 ... 120 V~<br>6.0.. 144 V~<br>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 ...<br>9999 MW                     | -1.65 kW ... 1.4 W ... 1.65 kW                   | •  | •  | •  | • | ±0.5% r     |
| Reactive power                              | -9999 Mvar ... 0.00 var<br>... 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   |

### 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 backlight                     |
| Weight                              | < 0.3 kg                |   |
| Overall dimensions                  | 96 × 96 × 77 mm         | panel cut-out: 92.5 <sup>+0.6</sup> × 92.5 <sup>+0.6</sup> mm |
| Protection grade (acc. to EN 60529) | from frontal side: IP65 | from terminal side: IP20                                      |

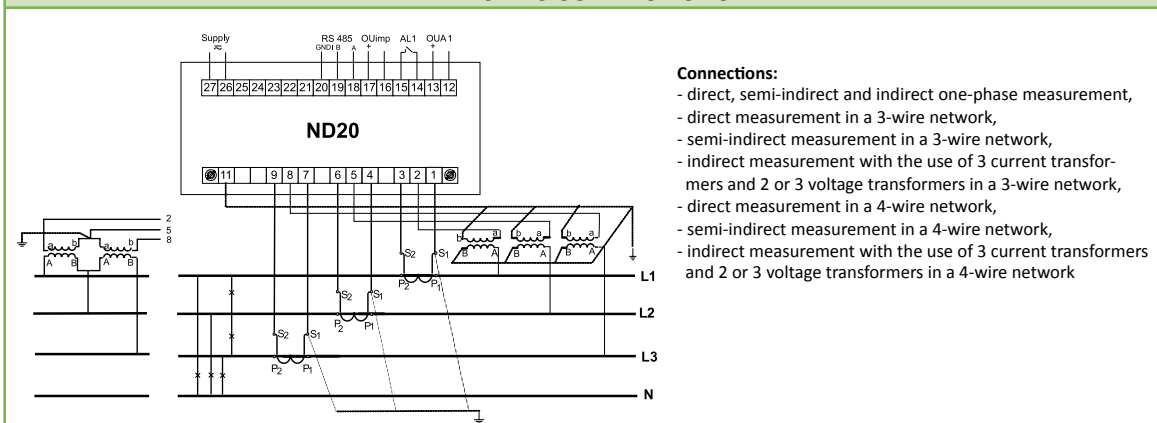
### RATED OPERATING CONDITIONS

|                               |  |                           |
|-------------------------------|--|---------------------------|
| Supply voltage                | 85...253 V a.c., 90...300 V d.c.,<br>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,<br>- 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  |                      |
| Pollution level                | 2  |                      |
| Maximal phase-to-earth voltage | - for supply and measuring circuits: 300 V<br>- 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

| Code                  | Description   |
|-----------------------|---|
| <b>ND20 221100M1*</b> | 3-phase power network meter ND20<br>current input 1A/5A, X/1A, X/5A,<br>voltage input 3x57,7/100V, 3x69,3/120V,<br>3x230/400V<br>1x analog output 0/4-20mA,<br>RS-485 interface,<br>supply 85-253Va.c./d.c.,<br>documentation and descriptions in Polish and<br>English version, test certificate |
| <b>ND20 221200M1*</b> | 3-phase power network meter ND20<br>prąd wej. 1A/5A, X/1A, X/5A,<br>napięcie wej. 3x57,7/100V, 3x69,3/120V,<br>3x230/400V<br>1x analog output 0/4-20mA,<br>RS-485 interface,<br>supply 20-40V a.c./d.c.<br>documentation and descriptions in Polish and<br>English version, test certificate      |

\* Upon agreement, an option to order a calibration certificate for the product is available against payment. Then, in the execution code, in the place of the last character, enter the digit **2**, e.g. **ND20 221200M2**. The customer will then receive a standard test certificate and a calibration certificate (against payment).

For more information  
about LUMEL's  
products please visit  
our website:  
[www.lumel.com.pl](http://www.lumel.com.pl)

Export department:  
+48 68 45 75 130  
e-mail: [export@lumel.com.pl](mailto:export@lumel.com.pl)

LUMEL S.A.  
ul. Słubicka 4  
65-127 Zielona Góra  
POLAND  
[WWW.LUMEL.COM.PL](http://WWW.LUMEL.COM.PL)