

ND20 METER OF NETWORK PARAMETERS

FEATURES:



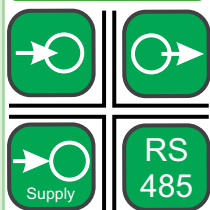
INPUT:



OUTPUTS:



GALVANIC ISOLATION:



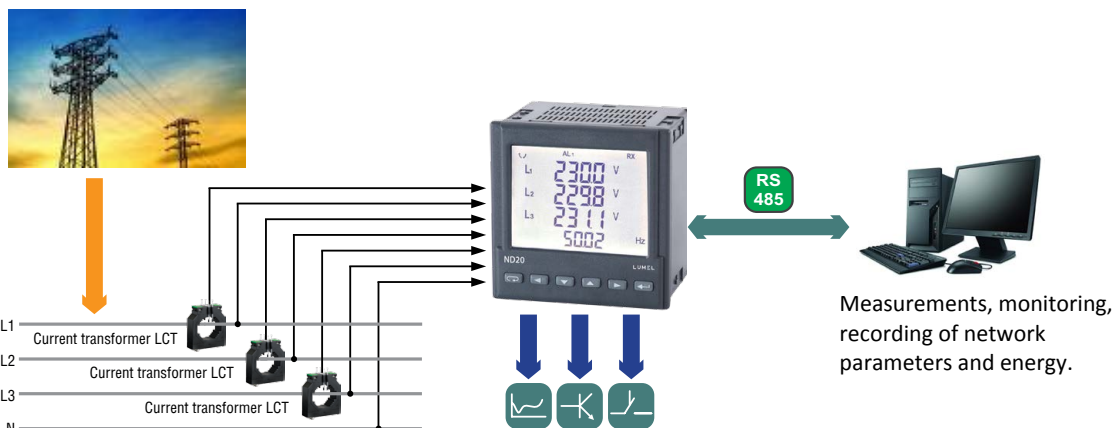
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- Measurement of power network parameters in 2,3 or 4- wire balanced and unbalanced systems.
- High accuracy class.
- Indications considering values of programmed ratios.
- Harmonics of voltages and currents (selectively).
- THD factors for currents 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 230 V ** | 0.0 ... 280 kV 0.0 ... 1.104 MV | 2.8 ... 70.0 V~ 11.5 ... 276 V~ | • | • | • | | ±0.2% r |
| Voltage L-L 100 V 400 V ** | 0.0 ... 480 kV 0.0 ... 1.92 MV | 5 ... 120 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...4000.0) 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 backlit |
| Weight | < 0.3 kg | |
| Overall dimensions | 96 × 96 × 77 mm | panel cut-out: 92.5 ^{+0.6} × 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 | |
| Pollution 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

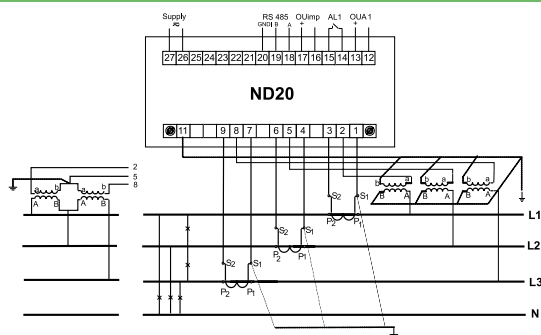


Fig 1. Meter connection diagrams in a 4-wire network.

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

ORDERING

| | | | | | | | |
|--|---|---|---|---|----|----|---|
| ANALYSER OF NETWORK PARAMETER ND20 - | X | X | X | X | XX | X | X |
| Current input In: | | | | | | | |
| 1 A (X/1) | | 1 | | | | | |
| 5 A (X/5) | | 2 | | | | | |
| Voltage input (phase/ phase-to-phase) Un: | | | | | | | |
| 3 x 57.7/100 V | | | 1 | | | | |
| 3 x 230/400 V | | | 2 | | | | |
| 3 x 290/ 500 V | | | 3 | | | | |
| 3 x 63.5/ 110 V | | | 4 | | | | |
| 3 x 69.9/120 V | | | 5 | | | | |
| Analog current output: | | | | | | | |
| without analog output | | | | | 0 | | |
| 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 | | | | | | | P |
| English | | | | | | | E |
| other* | | | | | | | X |
| Acceptance tests: | | | | | | | |
| without extra quality requirements | | | | | | | 0 |
| with an extra quality inspection certificate | | | | | | | 1 |
| acc. to customer's request* | | | | | | | X |

EXAMPLE OF ORDER:

The code **ND20 - 2 2 1 1 00 E 0** means:
ND20 - meter of network parameters of ND20 type
2 - current input: 5A (X/5)
2 - input voltage (phase/phase-to-phase) Un = 3 x 230 V/ 400 V
1 - with programmable analog output
1 - supply voltage: 85...253 V a.c./ 90...300 V d.c.
00 - standard version
E - all descriptions and user's manual in English
0 - without extra quality requirements.

* - after agreeing with the manufacturer

SEE ALSO:



Free eCon program for programming LUMEL's products. Available on our internet website.



Current transformers.



P43 - three-phase transducer of power network parameters.

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

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