### Features:
- LPConfig Program
- MODBUS
- IP65
- THD
- HARM
- PAord
- Meas. of energy transients
- 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).

### Example of Application
Measurements, monitoring, recording of network parameters and energy.

### Measured Quantities and Measuring Ranges

<table>
<thead>
<tr>
<th>Measured value</th>
<th>Indication range*</th>
<th>Measuring range</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>Σ</th>
<th>Basic error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current 1/5A L1...L3</td>
<td>0.00 ... 60 kA</td>
<td>0.02 ... 6 A~</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.2%</td>
<td></td>
</tr>
<tr>
<td>Voltage L-N</td>
<td>0.0 ... 1.104 MV</td>
<td>2.9 ... 276 V~</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.2%</td>
<td></td>
</tr>
<tr>
<td>Voltage L-L</td>
<td>0.0 ... 1.92 MV</td>
<td>10 ... 480 V~</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>47.0 ... 63.0 Hz</td>
<td>47.0 ... 63.0 Hz</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.2%</td>
<td></td>
</tr>
<tr>
<td>Active power</td>
<td>-9999 MW ... 0.00 W</td>
<td>-1.65 kW ... 1.4 W ... 1.65 kW</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Reactive power</td>
<td>-9999 Mvar ... 0.00 var</td>
<td>-1.65 kvar ... 1.4 var ... 1.65 kvar</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Apparent power</td>
<td>0.00 VA ... 9999 MVA</td>
<td>1.4 VA ... 1.65 kVA</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Power factor PF</td>
<td>-1 ... 0 ... 1</td>
<td>-1 ... 0 ... 1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±1%</td>
<td></td>
</tr>
<tr>
<td>Tangent φ</td>
<td>-1.2 ... 0 ... 1.2</td>
<td>-1.2 ... 0 ... 1.2</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±1%</td>
<td></td>
</tr>
<tr>
<td>Cosinus φ</td>
<td>-1 ... 1</td>
<td>-1 ... 1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±1%</td>
<td></td>
</tr>
<tr>
<td>θ</td>
<td>-180 ... 180</td>
<td>-180 ... 180</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Imported active energy</td>
<td>0 ... 99 999 999.9 kWh</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Exported active energy</td>
<td>0 ... 99 999 999.9 kWh</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Reactive inductive energy</td>
<td>0 ... 99 999 999.9 kvarh</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>Reactive capacitive energy</td>
<td>0 ... 99 999 999.9 kvarh</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td>±0.5%</td>
<td></td>
</tr>
<tr>
<td>THD</td>
<td>0 ... 400%</td>
<td>0 ... 400%</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>±5%</td>
<td></td>
</tr>
</tbody>
</table>

### Outputs

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

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**ND20** METER OF NETWORK PARAMETERS

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**ND20**

**METER OF NETWORK PARAMETERS**

### Digital Interface

<table>
<thead>
<tr>
<th>Interface type</th>
<th>Transmission protocol</th>
<th>Mode</th>
<th>Baud rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-485</td>
<td>MODBUS RTU</td>
<td>8N2, 8E1, 8O1, 8N1</td>
<td>4.8; 9.6; 19.2; 38.4 kbit/s</td>
</tr>
</tbody>
</table>

### External Features

- **Readout field:** LCD 3.5” screen, specialized, monochromatic with backlit
- **Weight:** < 0.3 kg
- **Overall dimensions:** 96 x 96 x 77 mm
- **Protection grade (acc. to EN 60529):** from frontal side: IP65 from terminal side: IP20

### Rated Operating Conditions

- **Supply voltage:** 85...253 V d.c. or a.c. (40...400 Hz), 20...40 V d.c. or a.c. (40...400 Hz) power consumption < 6 VA
- **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

### Safety and Compatibility Requirements

- **Electromagnetic compatibility:** noise immunity acc. to EN 61000-6-2 noise emissions acc. to EN 61000-6-4
- **Safety requirements:** acc. to EN 61010-1

### Example of Connection Diagram

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**

- **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
- **Analog current output:**
  - without analog output 0
  - with programmable output 0(4) ... 20 mA 1
- **Supply voltage:**
  - 85...253 V d.c. or a.c. (40...400 Hz) 1
  - 20...40 V d.c. or a.c. (40...400 Hz) 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 0 0 E 0 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./ d.c.
- **00** - standard version
- **E** - all descriptions and user’s manual in English
- **0** - without extra quality requirements.

* - after agreeing with the manufacturer