# N14 MEtEr Of NEtwOrk PArAMEtErS

ADEL INSTRUMENTATION

**FeaTUReS:**

MOD BUS

Ochrona hasłem

Program LPConfig

P,Q C L L C

**INPUT:**

AC

**OUTPUT:**

RS 485

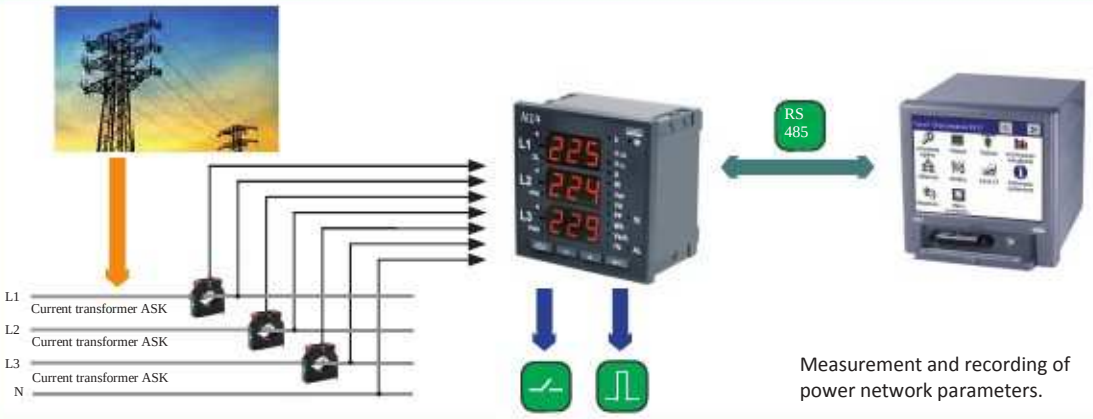
**GaIVaNIC ISoIaTIoN:**

Zasilanie

RS 485


- Measurement of power network parameters in 3 or 4-wire balanced or unbalanced systems.
- Tetraquadrantic measurement of power and energy (P+, P-, QL, QC).
- Indications taking into consideration values of programmed ratios.
- Measurement of 15-minutes' mean power.
- Digital transmission to the Master system through the RS-485 interface (MODBUS).
- Configurable alarm output and current and voltage ratios.
- Programmable parameters using pushbuttons or through the RS-485 interface using the free LPCon program.
- Impulse output of OC type for the retransmission of 3-phase active energy.
- Battery support of configuration data and state of watt-hour meters at supply decays.
- Detection and signalling of incorrect phase sequence.

## Example of application




Measurement and recording of power network parameters.

## Measured quantities and measuring ranges

| Measured quantity | Indication range Ki; Ku □ 1 | Measuring range Ki; Ku = 1 | L1 | L2 | L3 | Σ | Intrinsic error |
|---|---|---|---|---|---|---|---|
| Current 1/5 A L1 .. L3 | 0.00 .. 9.99 kA | 0.02 .. 6 A ~ | • | • | • | | ± 0.5% |
| Voltage L-N | 0.0 .. 289 kV | 2.9 .. 480 V ~ | • | • | • | | ± 0.5% |
| Voltage L-L | 0.0 .. 500 kV | 10 .. 830 V ~ | • | • | • | | ± 1% |
| Frequency | 45.0 .. 70.0 Hz | 45.0 .. 100.0 Hz | • | • | • | | ± 0.2% |
| Active power | -999 MW .. 0.00 W .. 999 MW | -2.64 kW .. 1.4 W .. 2.64 kW | • | • | • | • | ± 1% |
| Reactive power | -999 Mvar .. 0.00 var .. 999 Mvar | -2.64 kvar .. 1.4 var .. 2.64 kvar | • | • | • | • | ± 1% |
| Apparent power | 0.00 VA .. 999 MVA | 1.4 VA .. 1.64 kVA | • | • | • | • | ± 1% |
| PF factor | -1 .. 0 .. 1 | -1 .. 0 .. 1 | • | • | • | • | ± 2% |
| Tangens φ | -1.2 .. 0 .. 1.2 | -1.2 .. 0 .. 1.2 | • | • | • | • | ± 2% |
| Angle between U and I | -180 .. 180o | -180 .. 180o | • | • | • | | ± 0.5% |
| Input active energy | 0 .. 99 999 999.9 kWh•± 1% | | | | | | |
| Output active energy | 0 .. 99 999 999.9 kWh•± 1% | | | | | | |
| Inductive reactive energy | 0 .. 99 999 999.9 kVarh•± 1% | | | | | | |
| Capacitive reactive energy | 0 .. 99 999 999.9 kVarh•± 1% | | | | | | |
| | Ku - voltage transformer ratio: 1 .. 4000; Ki - current transformer: 1 .. 10000 | | | | | | |

**Caution!** - for a correct measurement, the presence of a voltage value higher than 0.05 Un is required, at least in one of the phase.

## Outputs

| Kind of output | Properties |
|---|---|
| Relay output | NOC contacts, load capacity: 250 V a.c./ 0.5 A a.c. |
| Pulse energy output | • OC type, passive of class A, acc. to EN 62053-31<br>• supply voltage: 18 .. 27 V, current 10 .. 27 mA<br>• impulse constant: 5000 imp./ kWh, independent on Ku, Ki ratios |

## Digital interface

| Interface type | Transmission protocol | Mode | Rate |
|---|---|---|---|
| RS-485 | MODBUS RTU | 8N2, 8E1, 8O1, 8N1 | 4.8; 9.6; 19.2 kbit/s |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## External features

| | | |
|---|---|---|
| Readout field | 3 x 3 LED digits | red colour, 14 mm |
| Dimensions | 96 ´ 96 ´ 77 mm | cut-out: $91^{+0.5}$ ´ $91^{+0.5}$ mm |
| Weight | 0.3 kg | |
| Protection grade | from frontal side: IP40 | from terminal side: IP10 |

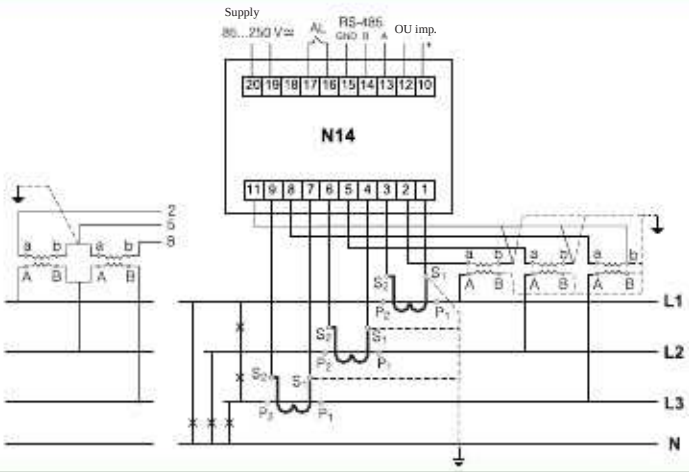
## Rated operating conditions

| | | |
|---|---|---|
| Supply voltage | 85...253 V a.c. (40 .. 400 Hz) or d.c. | power input □ 6 VA |
| Input power | in voltage circuit □ 0.05 VA | in current circut: □ 0.05 VA |
| Input signalfor measurement of current and voltage; | • 0 .. 0.005 .. 1.2 In; 0.05 .. 1.2 Un;<br>• frequency: 45 .. 65 Hz | • 0 .. 0.1 .. 1.2 In; 0 .. 0.1 .. 1.2 Un;<br>for measurement of Pf, tgj factors<br>• sinusoidal (THD □ 8%) |
| Power factor• 0 .. 0.2 cap. ... 1 .. 0.2 ind .. 0 | | |
| Temperatureambient: -25...23...55°C | | |
| Relative humidity25...95% | | storage: -30...70°C |
| Operating positionany | | condensation inadmissible |
| External magnetic field0 .. 40 .. 400 A/m | | |
| Short duration overload (5 s)voltage input: 2Un (max. 1000 V) | | |
| Admissible peak factorcurrent intensity: 2 | | |
| Preheating time5 minutes | | current input: 10 In |
| Additional errors in % of intrinsic error from frequency of input signals: < 50% | | voltage: 2 |
| | | |
| | | from ambient temperature changes: < 50%/ 10% |

## 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 |
| Pollution level | 2 | |
| Installation category | III | |
| Maximal phase-to-earth voltage | 600 V | acc. to EN 61010-1 |
| Altitude a.s.l. | < 2000 m | |

## Connection diagram




## Ordering

| | N14 - XXX-X |
|---|---|
| **Input current:** | |
| 1 A (X/1) | **1** |
| 5 A (X/5) | **2** |
| **Input voltage (phase/ phase-to-phase) Un:** | |
| 3 x 57,7/100 V | **1** |
| 3 x 230/400 V | **2** |
| 3 x 400/690 V* | **3** |
| **Version:** | |
| standard | **00** |
| input voltage 3 x 110/ 190 V | **01** |
| custom-made | **XX** |
| **Acceptance tests:** | |
| without extra quality requirements | **8** |
| with an extra quality inspection certificate | **7** |
| according to custromer's request** | **X** |

**Example of order:**
The code: **N14 - 2 2 00 7** means:
**N14** - meter of N14 type
**2** - input current: 5 A
**2** - input voltage: 3 x 230/400 V
**00** - standard version
**7** - with an extra quality inspection certificate

* - version only for direct measurements
** - version code will be established by the manufacturer

**See also:**

Current transformers from 5 A up to 6 kA.

Analysers of network parameters ND1.

P43 - three-phase transducers of power network parameters.

PD10 converter (RS-485/USB).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