



Multifunction Meters

Transducers & Isolators

Temperature Controllers

Converters & Recorders

Digital Panel Meters

Current Transformers

Analogue Panel Meters

Shunts

Digital Multimeters

Clamp Meters

Insulation Testers

## ND30PNET

# METER OF POWER NETWORK PARAMETERS WITH **PROFINET**

### Features

- Measurement of 54 power network parameters, including current and voltage harmonics up to 51st, in 1-phase 2-wire or 3-phase 3 or 4-wire balanced and unbalanced systems.
- Graphical color display: ICd TFT 3,5", 320 x 240 pixels, fully configurable by a user (10 vies, 8 parameters in each).
- Indications include the values of programmed ratios.
- Memory of minimum and maximum values.
- 2 configurable alarm outputs.
- Optional: analog output 0/4...20 mA and 2 PT 100 inputs (eg. for measurement of transformer temperature).
- Digital output RS-485 - MODBUS protocol.
- Modern and user-friendly ethernet/profi net (version 2.2.) interface.
- Programming of parameters using free econ software.
- Battery backup RTC.
- Overall dimensions: 96 x 96 x 77 mm.

## Example of Application



## Measurement and Visualization of Power Network Parameters

- Phase voltages:  $U_1, U_2, U_3$
- Phase-to-phase voltages:  $U_{12}, U_{23}, U_{31}$
- Phase currents  $I_1, I_2, I_3$
- Active phase powers:  $P_1, P_2, P_3$
- Reactive phase powers:  $Q_1, Q_2, Q_3$
- Apparent phase powers:  $S_1, S_2, S_3$
- Active power factors:  $PF_1, PF_2, PF_3$
- Reactive/active power factors:  $tg\varphi_1, tg\varphi_2, tg\varphi_3$
- Active, reactive and apparent 3-phase power:  $P, Q, S$
- Mean 3-phase power factors:  $PF, tg\varphi$
- Frequency  $f$
- Mean 3-phase voltage:  $U_s$
- Mean phase-to-phase voltage:  $U_{mf}$
- Mean 3-phase current:  $I_s$
- 15, 30, 60 minutes' mean active power:  $P_{demand}$
- Mean apparent power  $S_{demand}$
- Average current  $i_{demand}$
- Active, reactive and apparent 3-phase energy:  $EnP, EnQ, EnS$
- Active, reactive and apparent energy from external counter:  $EnPE$
- Total harmonic content coefficients for phase voltages and currents  $THD_{U1}, THD_{U2}, THD_{U3}, THD_{I1}, THD_{I2}, THD_{I3}$  and for 3-phase voltages and currents  $THD_U, THD_I$
- Harmonics for current and phase voltage up to 51 st!
- Temperature (2 x Pt100 input)

### Features



### Inputs



### Outputs



### Galvanic Isolation



**Technical Data - Measuring Range**

Measured value	Measuring range	L1	L2	L3	$\Sigma$	Class (*) / Basic error (*) class relative to the measured value acc. to EN61557-12
Current I/5 A 1 A~ 5 A~	0.010 ..0.100..1.200 A (tr_I=1) 0.050 ..0.500.. 6.000 A (tr_I=1) ...20.00 kA (tr_I≠1)	•	•	•		Class 0.2
Voltage L-N 57.7 V~ 230 V~ 400 V~	5.7..11.5 ..70.0 V (tr_U=1) 23.0..46 .. 276.0 V (tr_U=1) 40.0..80 .. 480.0 V (tr_U=1) ...480.0 kV (tr_U≠1)	•	•	•		Class 0.2
Voltage L-L 100 V~ 100 V~ 400 V~ 690 V~	10.0 ..20..120.0 V (tr_U=1) 40.0..80 .. 480.0 V (tr_U=1) 69.0..138 .. 830.0 V (tr_U=1) ...830.0 kV (tr_U≠1)	•	•	•		Class 0.5
Active power P <sub>i</sub> , average active power P <sub>dt</sub>	.. (-)1999.9 W .. (-)1999.9 MW (tr_U≠1, tr_I≠1)	•	•	•	•	Class 0.5
Reactive power Q <sub>i</sub>	.. (-)1999.9 Var .. (-)1999.9 MVar (tr_U≠1, tr_I≠1)	•	•	•	•	Class 1
Apparent power S <sub>p</sub> , average apparent power S <sub>dt</sub>	..1999.9 VA ..1999.9 MVA (tr_U≠1, tr_I≠1)	•	•	•	•	Class 0.5
Active energy EnP (imported or exported)	.. (-)1999.9 Wh .. (-)1999.9 MWh (tr_U≠1, tr_I≠1)				•	Class 0.5
Reactive energy EnQ (inductive or capacitive)	.. (-)1999.9 Varh .. (-)1999.9 MVarh (tr_U≠1, tr_I≠1)				•	Class 1
Apparent energy EnS	.. 1999.9 VAh ..1999.9 MVAh (tr_U≠1, tr_I≠1)				•	Class 0.5
Active power factor PF <sub>i</sub>	-1.00 ..0 ..1.00	•	•	•	•	± 0.01 of basic error
Coefficient tgφ <sub>i</sub> (ratio of reactive power to active power)	-1.20 ..0 ..1.20	•	•	•	•	± 0.01 of basic error
Frequency f	45.00..65.00 Hz				•	Class 0.1
Total harmonic distortion of voltage THDU and current THDI	0.0 ..100.0 %	•	•	•	•	Class 5 50 / 60 Hz
Amplitudes of the voltage U <sub>h1</sub> ... U <sub>h50</sub> , and current I <sub>h1</sub> ... I <sub>h50</sub>	0.0 ..100.0 %	•	•	•		Class 5 50 / 60 Hz

tr\_I, tr\_U – ratio of current and voltage transformer

**Inputs**

Input type	Properties
Input Pt100 (T1, T2) - option	2 x Pt100, 2-wire, -50...400°C, basic error 0.5 %

**Digital Interface**

Interface type	Transmission protocol	Baud rate
RS-485	Modbus RTU 8N2,8E1,8O1,8N1 Address 1..247	baud rate: 4.8, 9.6, 19.2 38.4, 57.6, 115.2 kbit/s
Ethernet /Profinet	ICMP (Ping) / Profinet version 2.2	

**External Features**

Readout field	graphic colour display LCD TFT 3,5" , 320 x 240 pixels	
Overall dimensions	96 x 96 x 77 mm	mounting hole 92.5 x 92.5 mm
Weight	0.3 kg	
Protection grade	from frontal side: IP65	from terminal side: IP20

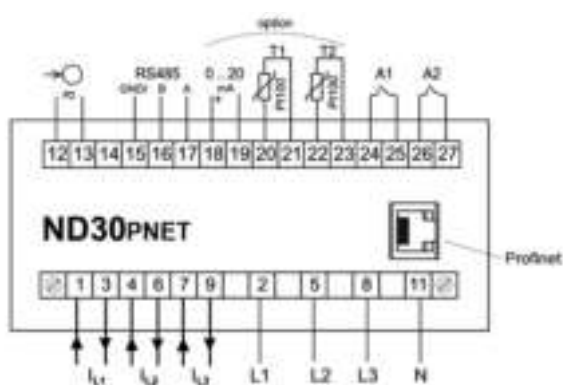
**Rated Operating Conditions**

Supply voltage	→ 085...253 V a.c. (40...50...400 Hz) , 90...300 V d.c. or 20...40 V a.c., 20...60 V d.c.	power consumption ≤ 6 VA
Power consumption	in voltage circuit ≤ 0.2 VA	in current circuit ≤ 0.1 VA
Input signal	0...0.1...1.2 In; 0.1...0.2...1.2 Un for current, voltage, PFi, tgji	frequency 45...50...60...65 Hz, sinusoidal (THD ≤ 8%)
Power factor	-1...0...1	
Preheating time	5 min.	
Ambient temperature	-10...23...55°C, class K55 acc. to EN61557-12	
Humidity	0...40...65...95%	without condensation
Operating position	any	
External magnetic field	≤ 40...400 A/m d.c.	≤ 3 A/m a.c. 50/60 Hz
Short-term overload	voltage input: 2 Un (5 sec.)	current input 50 A (1 sec.)
Admissible crest factor	current: 2	voltage: 2
Additional error (in % of the intrinsic error)		from ambient temperature change: < 50% / 10°C

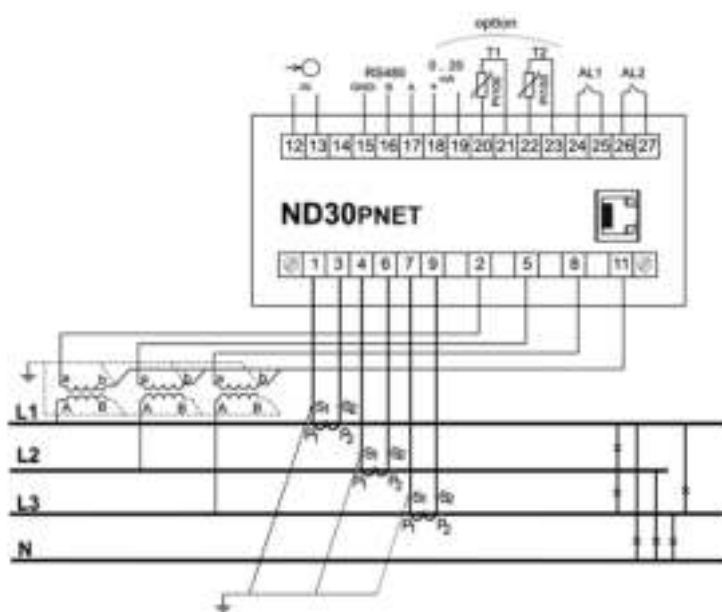
**Safety and Compatibility Requirements**

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation insured by the casing	double	acc. to EN 61010-1
Isolation between circuits	basic	acc. to EN 61010-1
Pollution level	2	acc. to EN 61010-1
Installation category	III	acc. to EN 61010-1
Maximal phase-to-earth voltage	<ul style="list-style-type: none"> <li>• for supply circuit and relay outputs 300 V</li> <li>• for measuring input 500 V</li> <li>• for circuits of RS-485, Ethernet, pulse input and output, analogue outputs: 50 V</li> </ul>	acc. to EN 61010-1
Altitude a.s.l.	< 2000 m	

**Connection Diagrams**



Description of meter connections strips



Indirect measurement in 4-wire network - connection of input signals

Displaying of Measurement Parameters



Up to 10 programmable screens (8 parameters per page); ability to change colour for all screens.

Available colours for digital indications:

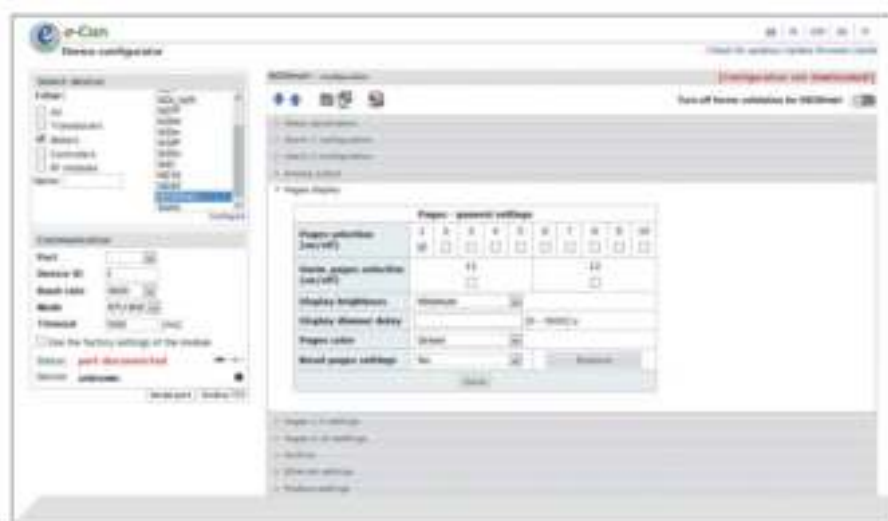


Two screens dedicated to harmonics; indication of individual harmonic for voltages and currents (up to 51st); bargraph presentation for all harmonics with zoom function.



Easy to use and intuitive menu; information bar with status of: phase sequence, alarm outputs, temperature measurements\*, archiving and memory\*, Ethernet\* and RS-485 interfaces, time and date.

\*Availability of feature depends on hardware version of ND30PNET.

**Meter Configuration with Free eCon Software**


Ability to configure and update ND30PNET with free eCon software (via RS-485)

\*Availability of feature depends on hardware version of ND30PNET

**Ordering Code**

<b>Ordering</b>	<b>Meter ND30PNET -</b>	X	X	X	XX	X	X
<b>Input voltage (phase/phase-to-phase) un:</b>							
3 x 57.7/ 100 V, 3x 230/ 400 V		1					
3 x 110/ 190 V, 3 x 400/ 690 V		2					
<b>Additional outputs /inputs:</b>							
2 relays			1				
2 relays, 1 analogue output, 2 inputs PT100			2				
<b>Supply:</b>							
85...253 V a.c., 90...300 V d.c.				1			
20...40 V a.c., 20...60 V d.c.				2			
<b>Version:</b>							
standard					00		
custom-made*					XX		
<b>Language:</b>							
Polish						P	
English						E	
other*						X	
<b>Acceptance tests:</b>							
without extra quality requirements							0
with an extra quality inspection certificate							1
acc. to customer's request							X

**EXAMPLE OF ORDER:**

The code **ND30PNET - 1 2 2 1 00 E 0** means:

**ND30PNET** - meter ND30PNET

**1** - input voltage 3 x 57.7/ 100 V, 3x 230/ 400 V

**2** - 2 relays, 1 analog output, 2 inputs PT100

**1** - supply: 85...253 V a.c., 90...300 V d.c.

**00** - standard version

**E** - user's manual in English

**0** - without additional quality requirements.

\* - after agreeing with the manufacturer



See Also

