LUMEL
EVERYTHING COUNTS

COMING SOON

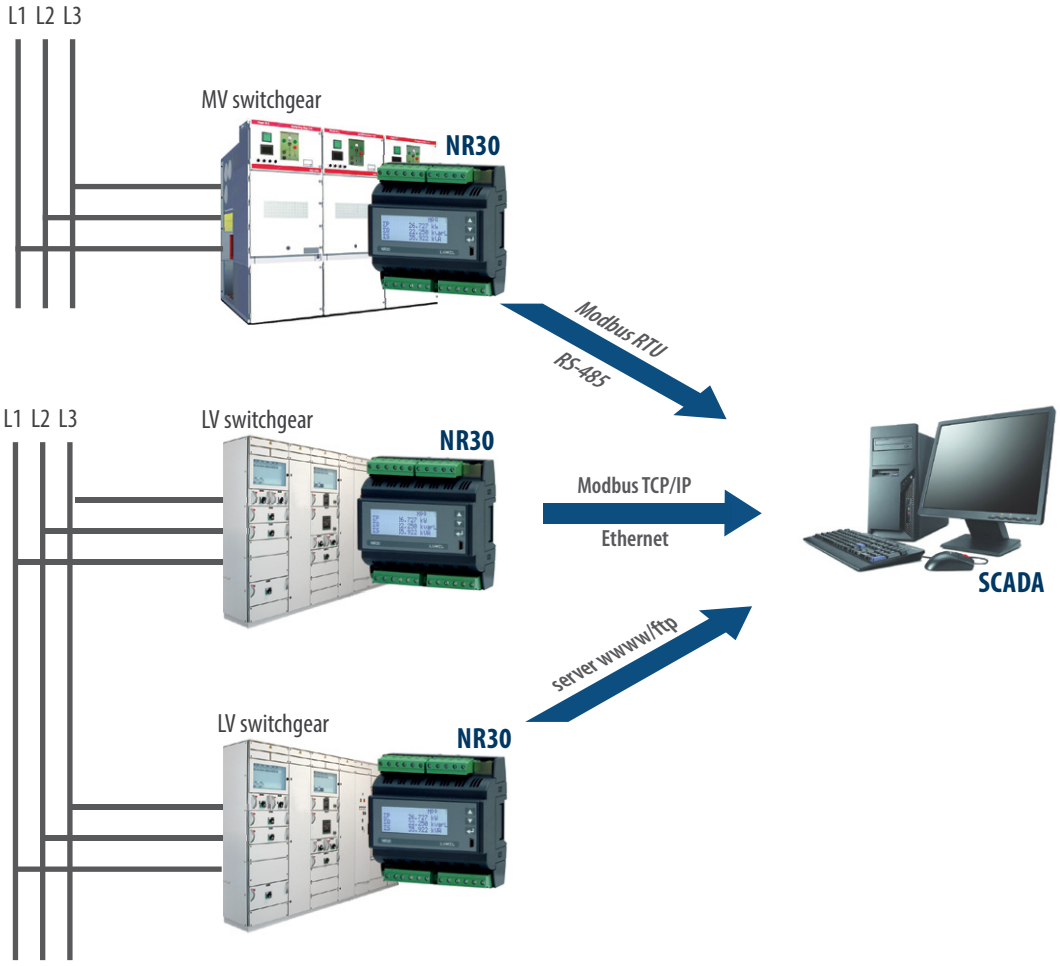
NR30
- RAIL MOUNTED POWER NETWORK METER

- **Measurement of 54** power network parameters and **current and voltage harmonics up to 51st**, in 1-phase 2-wire or 3-phase 3 or 4-wire balanced and unbalanced systems.
- Backlit LCD screen **fully configurable by a user** (22 views, 3 parameters in each).
- For direct (up to 63A) and indirect measurement (x/1A or x/5A).
- Indications considering values of programmed ratios.
- Memory of minimum and maximum values.
- 2 configurable alarm outputs.
- Optional: with an additional module of analog outputs S4AO (max. 4 current or voltage outputs).
- Digital output RS-485 - MODBUS protocol.
- Archiving of up to 32 measured parameters in the internal memory 8 GB.
- **Modern and user-friendly Ethernet interface** 10/100 BASE-T:
  - protocol: MODBUS TCP/iP, HTTP, FTP,
  - services: www server, ftp server, DHCP client.
- **New communication protocols: MQTT, BACNET, PROFINET coming soon.**
- Programming of parameters **through USB** using **free eCon software.**
- Battery backup RTC.
- Modular housing for S-rail according to EN 62208 (the meter has a width of 6 modules).

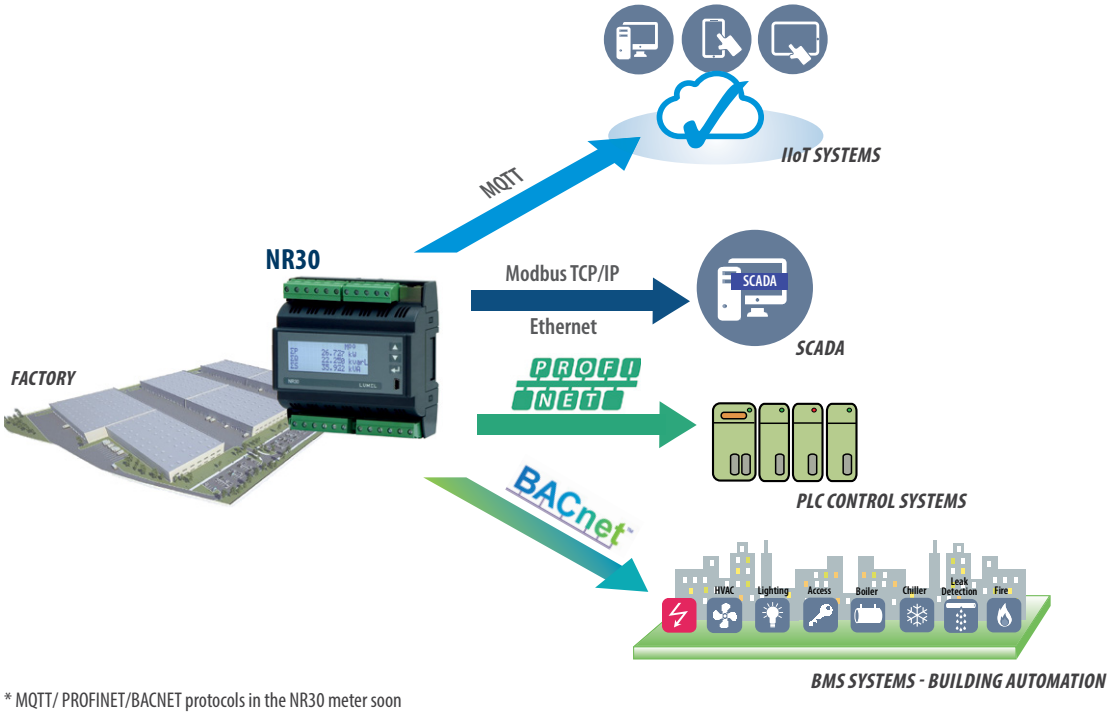
Electrical Safety CAT III

CE

EXAMPLE OF APPLICATION



EXAMPLE OF APPLICATION



* MQTT/ PROFINET/BACNET protocols in the NR30 meter soon

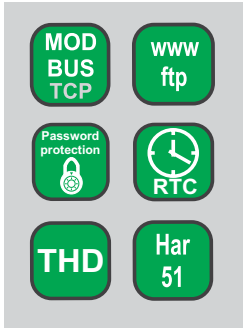
MEASUREMENT AND VISUALIZATION OF POWER NETWORK PARAMETERS

- 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!

NR30 - RAIL MOUNTED POWER NETWORK METER

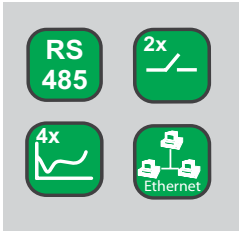
LUMEL
EVERYTHING COUNTS

FEATURES

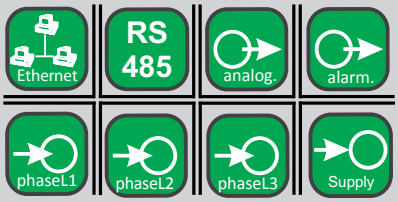


INPUTS

OUTPUTS



GALVANIC ISOLATION



TECHNICAL DATA

MEASURING RANGES

Measured value	Measuring range	L1	L2	L3	Σ	Class (*) / Basic error (*) class relative to the measured value acc. to EN61557-12
Current 1/5 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~ 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_i, average active power P_{dt}	.. (-)1999.9 W ..(-)1999.9 MW (tr_U≠1.tr_I≠1)	•	•	•	•	Class 0.5
Reactive power Q_i	.. (-)1999.9 Var ..(-)1999.9 MVar (tr_U≠1.tr_I≠1)	•	•	•	•	Class 1
Apparent power S_i, avarage apparent power S_{dt}	..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 [1)]
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_i	-1.00 ..0 ..1.00	•	•	•	•	± 0.01 basic error
Coefficient $tg\varphi_i$ (ratio of reactive power to active power)	-1.20 ..0 ..1.20	•	•	•	•	± 0.01 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_{h1} ...U_{h50}, and current I_{h1} ... I_{h50}	0.0 ..100.0 %	•	•	•		Class 5 50 / 60 Hz

tr_I, tr_U – ratio of current and voltage transformer

[1)] Class 0.5 S acc. to EN 62053-22

OUTPUTS

Output type	Properties
Relay output	2 x programmable relays, non-voltage contacts, load capacity 0.5 A / 250 V a.c. or 5 A / 30 V d.c.

DIGITAL INTERFACE

Interface type	Transmission protocol		Remarks
USB 1.1/2.0	Modbus RTU 8N2		baud rate115.2 kbit/s; firmware update
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 10/100 Base-T -option	Modbus TCP, HTTP, FTP		WWW server, FTP server, DHCP client

EXTERNAL FEATURES

Readout field	20 x 4 lines LCD character display; white background, black characters	
Overall dimensions	105 x 110 x 60 mm	
Weight	0.3 kg	
Protection grade	from frontal side: IP50	from terminal side: IP00

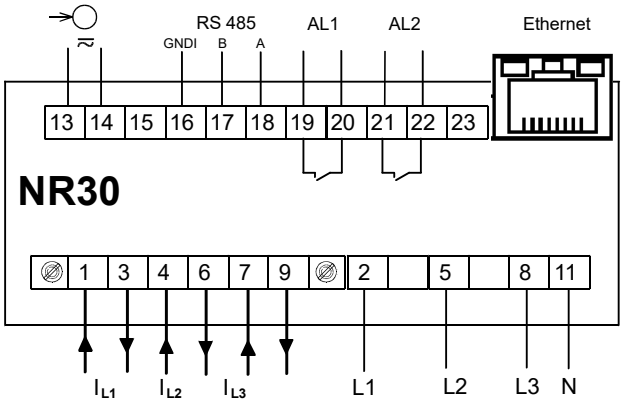
RATED OPERATING CONDITIONS

Supply voltage	~ 85...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 ≤ 0.5 VA	in current circuit ≤ 0.1 VA (In = 1/5 A); ≤ 2.0 VA (In = 63 A)
Input signal	0...0,1...1,2 In; 0,1...0,2...1,2 Un for current, voltage, PF_i, $tg\varphi_i$	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%	inadmissible 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 for In = 1A/5A (1 sec.) 630 A for In = 63A (1 sec.)
Admissible crest factor	current: 2	voltage: 2
Additional error (in % of the intrinsic error)		from ambient temperature change: < 50% / 10°C

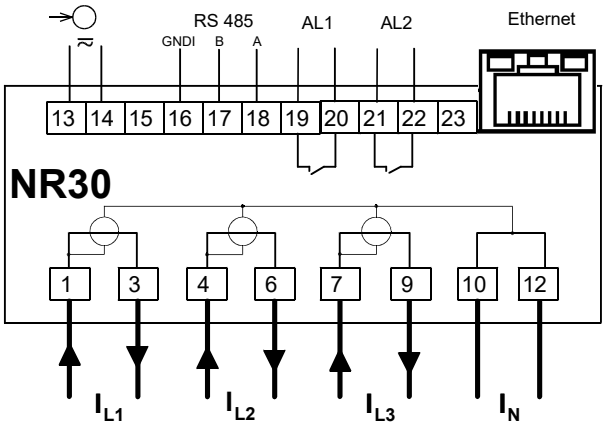
SAFETY AND COMPABILITY REQUIREMENTS

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
Polution level	2	acc. to EN 61010-1
Installation category	III	acc. to EN 61010-1
Maximal phase-to-earth voltage	• for supply circuit and relay outputs 300 V • for measuring input 500 V • for circuits of RS-485, analog outputs: 50 V	acc. to EN 61010-1
Altitude a.s.l.	< 2000 m	

CONNECTION DIAGRAMS



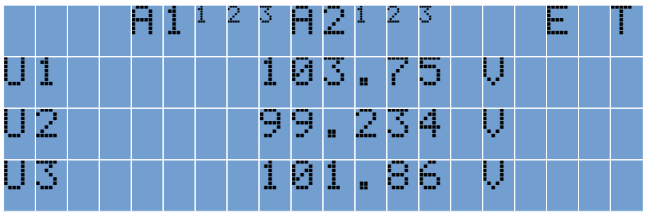
Description of connection strips in the execution of the meter for indirect connections



Description of connection strips in the execution of the meter for direct connections 63A

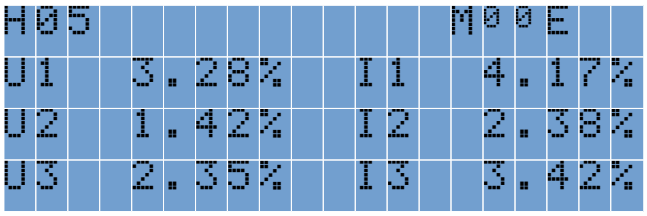
NR30 - RAIL MOUNTED POWER NETWORK METER

DISPLAING OF MEASUREMENT PARAMETERS



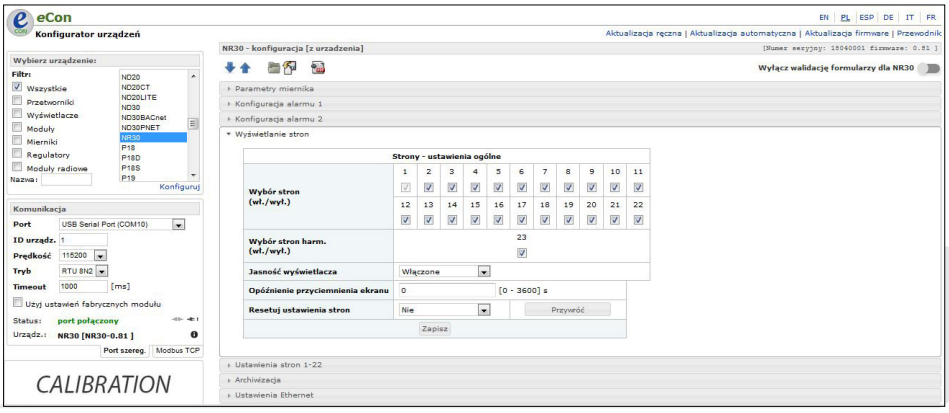
up to 22 programmable screens
(3 parameters per page)

easy to use and intuitive menu;
information bar with status of:
min.max values, phase sequence,
alarm outputs, archiving status,
Ethernet and RS-485 interfaces



one screen dedicated to harmonics;
indication of individual harmonic
for voltages and currents (up to 51st)

METER CONFIGURATION WITH FREE **eCON** SOFTWARE



ability to configure and update* NR30
with free **eCon** software
(via RS-485, USB or Ethernet interface)

*- update only via USB port

NR30 - RAIL MOUNTED POWER NETWORK METER

REMOTE READOUT OF PARAMETERS THROUG ETHERNET: **WWW, FTP** SERVER

WEB server for remote reading of current measurement data; FTP server for downloading archived CSV files

ORDERING CODE

Meter NR30 -	X	X	X	X	XX	X	X
Input current In:							
1/5 A (X/A ; X/5)	1						
63 A	2						
Input voltage (phase/phase-to-phase) Un:							
3 x 57.7/ 100 V up to 3 x 100/ 170 V		1					
3 x 230/ 400 V up to 3 x 400/ 690 V		2					
Interface:							
RS-485 and Ethernet			2				
Supply:							
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		
with S4AO: 4 current outputs 0/4 .. 20 mA					01		
with S4AO: 4 voltage outputs 0 .. 10 V					02		
with S4AO: 4analog outputs (2 x 0..10V; 2 x 0/4..20mA)					03		
custom-made*					XX		
Language:							
Polish						P	
English						E	
other*						X	
Acceptance tests:							
without additional quality requirements							0
with an extra quality inspection certificate							1
acc.to customer's request							X

Order example:
The code: **NR30-1.1.2.1.00.E.0** means:

NR30 - NR30 meter
1 – input current 1/5 A (X/A; X/5)
1 – input voltage 3x57.7/100 V up to 3x100/170 V,
2 – RS485 and Ethernet,
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.

* only after agreeing with the manufacturer

LUMEL
EVERYTHING COUNTS

LUMEL S.A.
ul. Sulechowska 1, 65-022 Zielona Góra, Poland
tel.: +48 68 45 75 100, fax +48 68 45 75 508
www.lumel.com.pl

Export department:
tel.: (+48 68) 45 75 139, 45 75 233, 45 75 321, 45 75 386
fax.: (+48 68) 32 54 091
e-mail: export@lumel.com.pl