ND1 3-PHASE POWER QUALITY ANALYSER

LUMEL

NEW

CE

- Measurement and recording of over 300 electric energy quality parameters acc. to EN 50160 standard.
- Operation in 3 or 4-wire, 3-phase, balanced or unbalanced power networks.
- Analysis of current and voltage harmonics up to the 51 st.
- Configurable archives of actual values and event recording.
- Data archiving on a CompactFlash card - memory up to 4 GB.
- Web Server, FTP Server.
- Interfaces: RS-485 (Modbus Slave, Modbus Master). Ethernet 10 Base-T (Modbus TCP/IP Server) and USB.
- Colour touch screen: LCD TFT 5.7", 320 x 240 pixels.
- Users friendly interface based on Windows®CE.
- IP65 protection grade from the frontal side.
- Recording of operator's messages.
- Synchronization of RTC clock with the NTP time server.

FEATURES:

EN 50160	www ftp
THD	Har 51
IP65	CF 4GB
RTC	Password protection

INPUTS:

AC	
RS 485	MOD BUS

OUTPUTS:

0/4...20 mA	
RS 485	MOD BUS
USB	
U	

GALVANIC ISOLATION:

Supply	RS 485

EXAMPLE OF APPLICATION

ALARM x6

THD AC

RS 485

USB

L1 — ASK current transformer
L2 — ASK current transformer
L3 — ASK current transformer

230.2
230.2
230.2 V
Context Menu
230.2
230.2
230.2 ↓

x4 x6
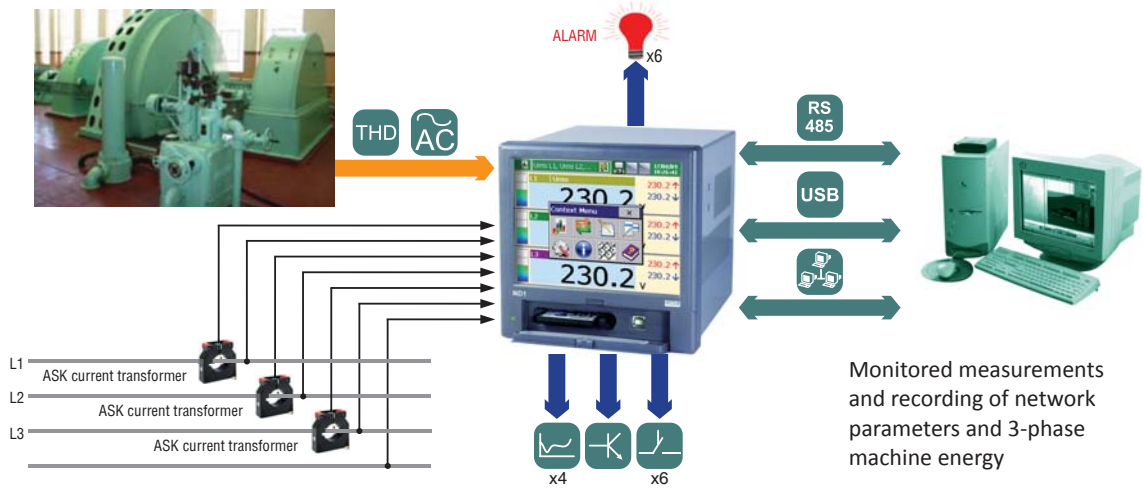
Monitored measurements and recording of network parameters and 3-phase machine energy

MEASUREMENT, VISUALIZATION AND RECORDING OF OVER 300 PARAMETERS OF 3-PHASE BALANCED OR UNBALANCED POWER NETWORK

- phase voltages: U_1, U_2, U_3 and phase currents: I_1, I_2, I_3
- phase-to-phase voltages: U_{12}, U_{23}, U_{31}
- 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: $tg\varphi_1$, $tg\varphi_2$, $tg\varphi_3$
- mean phase-to-phase voltage: U_S U_{mf}
- current in neutral wire and mean 3-phase current: I_0, I_S
- active, reactive and apparent 3-phase power: **P**, **Q**, **S**

- mean 3-phase power factors: **PF**, **tg**φ
- frequency **f** and **frequency deviation**
- 15 minutes' mean active power: **PAV**
- active, reactive and apparent 3-phase energy: **EnP**, **EnQ**, **EnS**
- **THD** for voltage and phase current,
- **harmonics** for current and phase voltage **up to 51 st!**
- **storage of min and max values**
- recording of dips and voltage decays
- monitoring of run function
- voltage asymetry

5 instruments in 1:

ND1 = **3-phase analyser** + **3-phase transducer** + **recorder/ data logging** + **Web & FTP Server** + **controller**

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ND1 3-PHASE POWER QUALITY ANALYSER

INPUTS

Kind of input	Measuring range	Parameters	Basic error
Voltage input	57.7/100 V, 230/400 V or 400/690 V	0.05...1.2 Un	± 0.2%
Current input	1 A or 5 A	0.005...1.2 In	± 0.2%
Logic input	12 inputs: 0/5...24 V d.c.	switch frequency up to 50 Hz	

OUTPUTS

Kind of output	Properties
Analog output	• 4 programmable current outputs of 0/4...20 mA, load resistance < 500 Ω
Relay output	• 6 programmable electromagnetic relays, voltageless NOC contacts, load capacity: 250 V a.c./1 A a.c.
Output to supply object transducers	• 2 outputs of 24 V d.c./30 mA

DIGITAL INTERFACES

Interface type	Properties
RS-485	2 interfaces: MODBUS Slave and Master, baud rate: 300...256000 bit/s, transmission mode ASCII/RTU
USB	Device V.1.1, USBB-G socket
Ethernet	10 Base-T, RJ45 socket, Modbus Slave TCP/IP

RATED OPERATING CONDITIONS

Supply voltage	85...230...253 V a.c./d.c., 40...400 Hz a.c.	Power consumption ≤ 30 VA
Ambient temperature	Work: 0...23...50°C	Storage: - 20...60°C
Relative humidity	< 70%	Condensation inadmissible
Reaction against	supply decays	Data and device state preservation
	supply recovery	Continuation of device work
Short term load (5s)	2 Un (max. 1000 V)	10 In
Casing protection grade	From frontal side: IP 65	From terminal side: IP20
Safety requirements	Installation category: II	EN 61010-1
	Pollution grade: 2	
Maximum phase-to-earth operating voltage	From the measuring system, relays and supply: 500 V	
	For RS-485 and USB interfaces: 50 V	

ORDERING CODES

ANALYSER OF NETWORK PARAMETERS ND1-	X	X	XX	X	X
Current input:					
1 A	1				
5 A	2				
Voltage input:					
57.7/100 V		1			
230/400 V		2			
400/690 V		3			
Version:					
standard			00		
in a portable case, without RJ45 socket			PO		
in a portable case, with Rj45 socket			PE		
Language:					
Polish				P	
English				E	
other*				X	
Acceptance tests:					
without extra quality requirements					0
with a extra quality inspection certificate					1
acc. to customer's request*					X

* after agreeing with the manufacturer
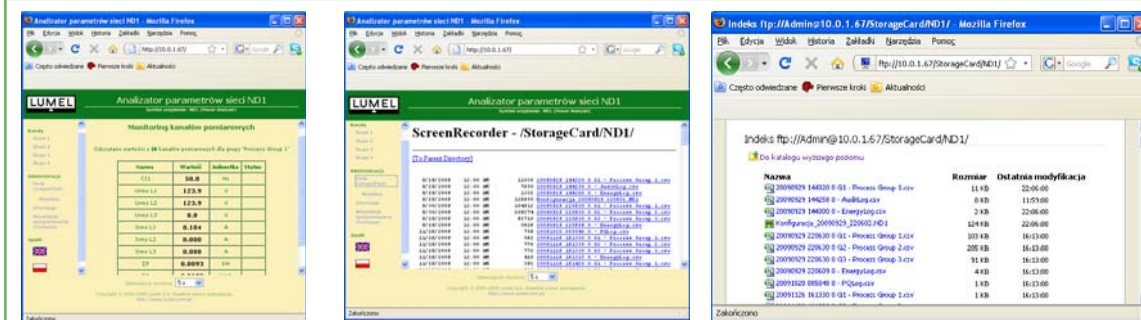
EXAMPLE OF ORDER:

The code **ND1 - 2 1 00 E 0** means:
- **ND1** - analyser of 3-phase power network parameters of ND1 type
- **2** - current input: 5 A
- **1** - voltage input: 57.7/100 V
- **00** - standard version
- **E** - English language
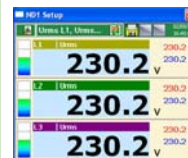- **0** - without extra quality requirements.

NOTE:

Each ND1 analyser is equiped with 6 alarms (electromecanic relays), 4 analog outputs, 12 logic inputs and Ethernet interface.
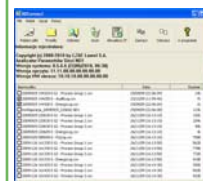
ETHERNET: WWW, FTP SERVER

ND1 3-PHASE POWER QUALITY ANALYSER

Examples of measuring data presentation

Various forms of data display:

- digital display,
- analog view,
- harmonic analysis,
- bargraphs,
- vector diagram of currents and voltages,
- shape of current and voltage run (oscilloscope),
- watt-hour meter,
- monitoring of binary states,
- tables and others.

Manual and automatic switching between screens.

Software ND archiving

- Tools to analyse collected data

- Checking of data authenticity - verification of digital signature

Results of file signature verification

File verification: CORRECT!
Data were not be modified.
- Measuring data: CORRECT
- Audit log: CORRECT
- Alarm log: lack of data
- Energy log: CORRECT
- Log of energy quality: CORRECT
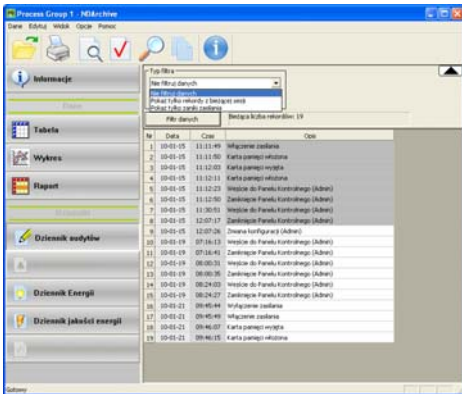- Log of dips and growths: lack of data

- Data presentation in tables and diagrams

ND SOFTWARE ARCHIVING

• Audit log, report of energy quality, report of electric energy consumption

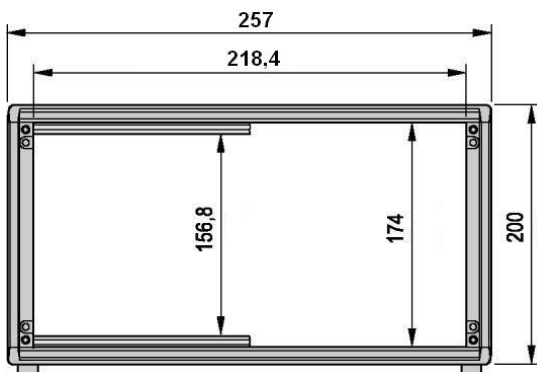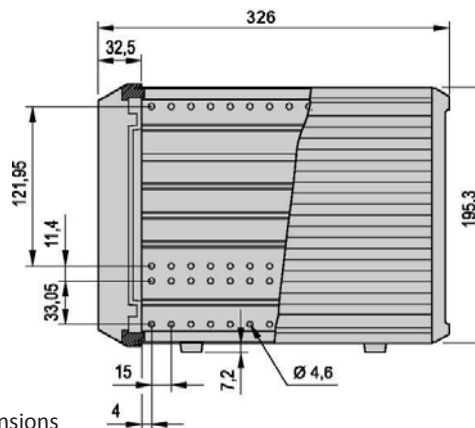## PORTABLE HOUSING

Housing view from frontal side

Housing view from rear view

Housing dimensions

ACCESSORIES

1301-130-903 – wire MLS R, 2m, black

1301-130-902 – crocodile terminal AK-2B 2540, black

SEE ALSO:

Meter of 3-phase network parameters - N14.

Meter of network parameters- ND20.

LUMEL-PROCES software.

OUR OFFER

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