LUMEL

N32 SERIES
DIGITAL PANEL METERS

N32U

N320

N32H

N32P

Electrical Safety CAT III

CE

LUMEL
EVERYTHING COUNTS

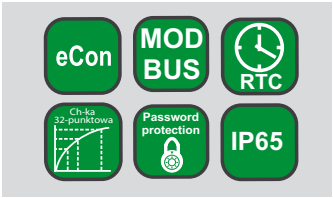
N32U
DIGITAL PANEL METER

- Multi-purpose input for measuring: temperature, resistance, standard signals.
- Two-line LCD display with high contrast and built-in backlighting.
- Possibility of displaying the measured value and time simultaneously or an uncalculated quantity or unit (programmable unit of measured quantity).
- Meter programming from keyboard or through the RS-485 interface by means of the free eCon software.
- 4 alarm outputs with signalling on LED diodes, working in 7 different modes (option).
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10 V (option).
- Storage of minimal and maximal values for all measured quantities.
- Supply of object transducers.
- 32-point individual characteristic for the measured value.
- Mathematical functions for converting the measured value.

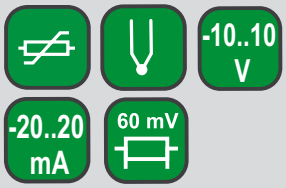
Electrical Safety CAT III

CE

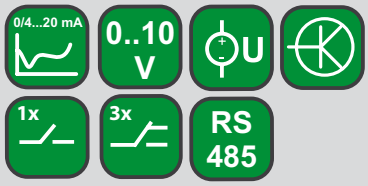
FEATURES



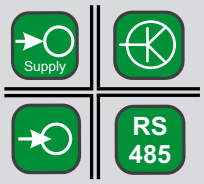
INPUTS



OUTPUTS



GALVANIC ISOLATION



DATA VISUALISATION

Two-line display.
Simultaneous preview of the measured value (top line) and the input signal not scaled (bottom line).

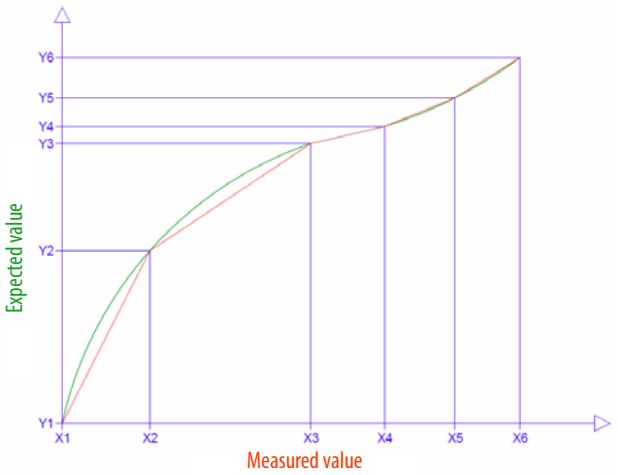
lub

Programmable measurement unit chosen from 56 variants available in the menu.

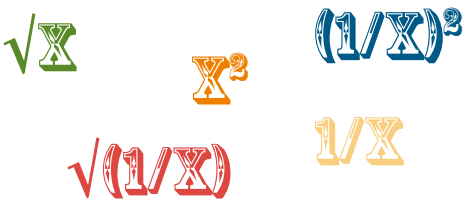
lub

Preview of current time on the bottom line of the display.
Real-time clock with automatic winter/summer time change function.

INPUT SCALING



Conversion of the measured quantity based on 32-point individual characteristics. It allows for the mapping of signals from objects or sensors with non-linear characteristics.

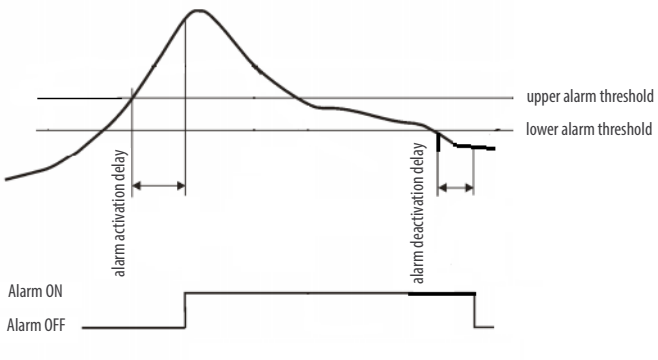


Conversion of the measured quantity by means of mathematical functions: √x, x^2, 1/x, $(1/x)^2$, √(1/x)

ALARM FUNCTIONS

1 or 4 relay outputs with the indication on the display as an active alarm number.

Each alarm can be configured to operate in one of 7 modes, including REG mode for alarm control through RS-485 Modbus.

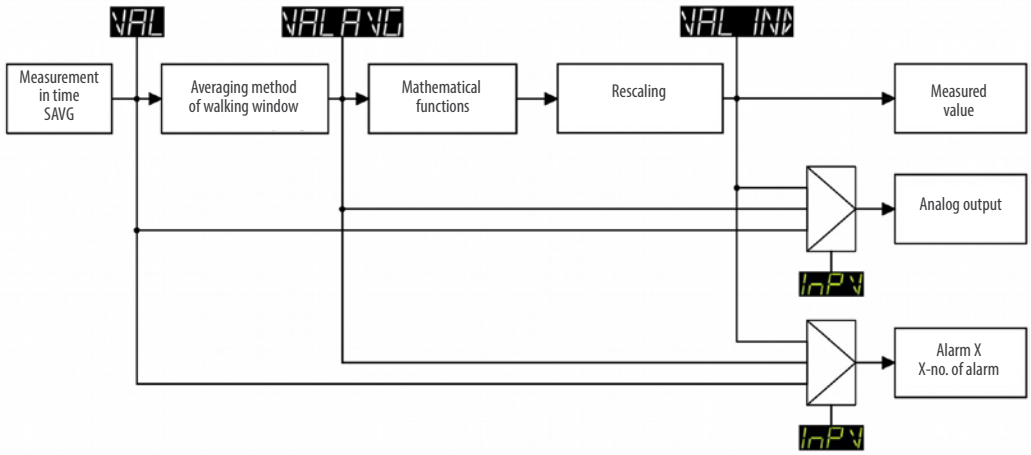


t ≥ time delay --> Alarm activeted
For alarm operation both conditions (value and time delay) must be met

Programmable alarm signal holding. Once the alarm event has ceased, the alarm status marker flashes on the display until it is reset by the user.

Individually programmable parameters for alarm activation and deactivation delay; the function can be used to prevent "false" alarms.

ADVANCED MEASUREMENT CONVERSION FUNCTION

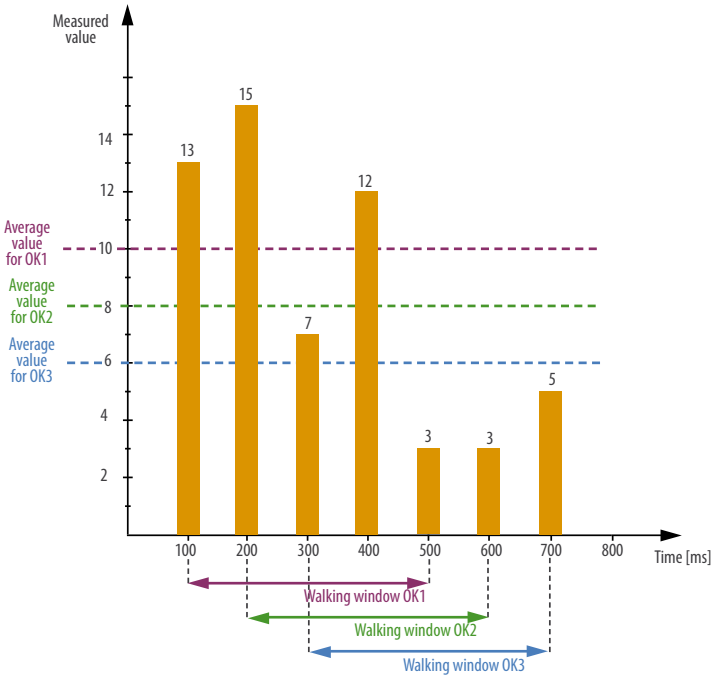


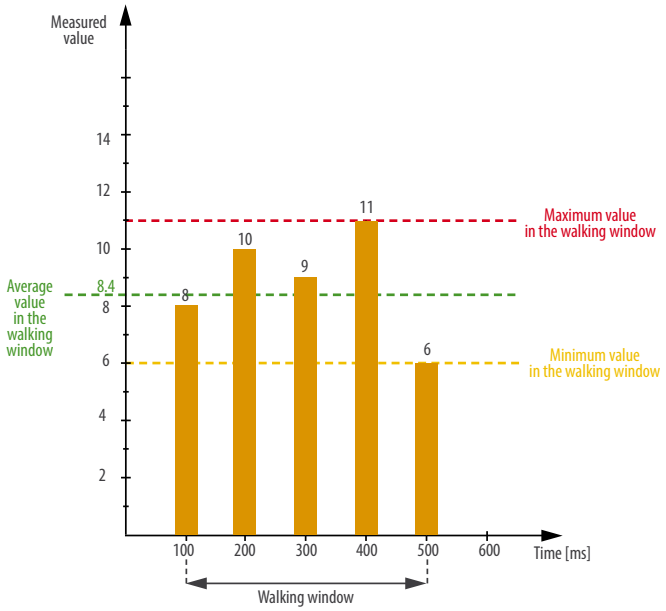
The measured value can be converted in series and the result can be displayed. After each conversion step, the signal can be used for retransmission on the analogue output or as an alarm source.

In practical use, the meter can read the value from an object-oriented transmitter and display the actual value within a limited range, e.g. pressure, level, etc. At the same time, the input signal not scaled can be retransmitted to the PLC.

This function can be useful in applications where the signal is dynamic. The display can show the values averaged over time (easier signal observation). On the analogue output instead, you can retransmit the signal without additional delays - this also applies to the alarm outputs.

WALKING WINDOW ALGORITHM





Programmed averaging time according to the walking window algorithm with a set averaging time. This function is useful for measuring high-dynamic signals.

Ability to measure the average, minimum or maximum value when displaying the walking window.

TECHNICAL DATA

INPUTS

Input type	Maximal measuring range	Class	Additional error
Pt100	-200...850°C (-200...850°C)	0.1	- due to automatic compensation of the reference junction temperature <1°C - due to automatic compensation of the cable resistance for thermoresistors < 0.5°C - due to automatic compensation of the cables for resistance measurement < 0.2 Ω (range 400 Ω) < 2 Ω (range 4000 Ω) - from temperature changes 50 % of the class/ 10 K
Pt1000	-200...850°C (-200...850°C)		
400 Ω	0...440 Ω (0...400 Ω)		
4000 Ω	0...4040 Ω (0...4000 Ω)		
Thermocouple of J type	-205..1000 °C (-200..1000 °C)		
Thermocouple of K type	-205..1200 °C (-200..1200 °C)		
Thermocouple of N type	-205..1372 °C (-200..1372 °C)		
Thermocouple of E type	-205..1372 °C (-200..1372 °C)		
Thermocouple of R type	-50..1768 °C (-50..1768 °C)		
Thermocouple of S type	-50..1768 °C (-50..1768 °C)		
Voltage input 10 V	-13...13 V (-10...10 V)		
Current input 20mA	-24...24 mA (-20...20 mA)		
Current input 4...20 mA	3.6...22.0 mA (4...20 mA)		
Voltage input 60 mV	-75...75 mV (-60...60 mV)		
Voltage input 150 mV	-155...155 mV (-150...150 mV)		
Voltage input 300 mV	-310...310 mV (-300...300 mV)		
Current time	00.00...23.59	± 20 ppm	

OUTPUTS

Output type	Properties	Remarks
Relay output	• 1 x NO contacts, load-carrying capacity 5A / 250 V a.c.; 5A / 30V d.c. • 3 relays with changeover contact, load-carrying capacity 6A / 250V a.c.; 6A / 30V d.c.; 0,15A / 250V d.c.	
Analog output	• current programmable 0/4...20 mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V, load resistance ≥ 500 Ω	Error of analog output: **0.1% of the set range** Additional error from temperature changes: **50% of the class/10K**
OC output	OC type, passive npn, 30 V d.c./30 mA	voltageless output
Auxiliary supply	24 V d.c./ 30mA	

DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	2.4, 4.8, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, 115.2 kbit/s

EXTERNAL FEATURES

Readout field	1 row: 6-digits; digits height 12.85 mm 2 row: 5-digits; digits height 7.5 mm	high contrast LCD with backlight and programmable measuring unit
Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 93 mm	mounting hole $92^{+0.6}$ x $45^{+0.6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP 10

RATED OPERATING CONDITIONS

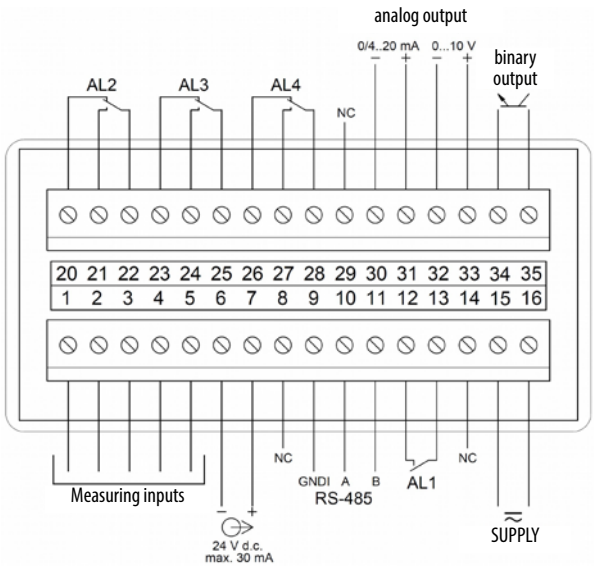
Supply voltage	85...253 V a.c. (40...400 Hz), 90...300 V d.c. 20...40 V a.c. (45...65 Hz) / 20..60 V d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	without condensation
Operating position	any	
External magnetic field	0...400 A/m	

SAFETY AND COMPABILITY 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
Polution level	2	
Installation category	III	
Maximal phase-to-earth voltage	for supply circuits : 300 V	
	for other circuits: 50 V	
Altitude a.s.l.	< 2000 m	

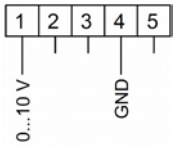
N32U - DIGITAL PANEL METER

CONNECTION DIAGRAMS

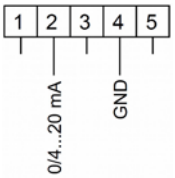


Description of signals on the connection strips

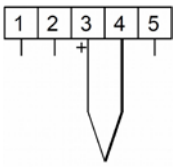
Standard signals 0...10 V (range -13...13 V)



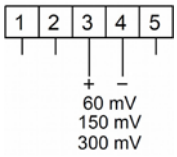
Standard signals 0/4...20 mA (range -24...24 mA)



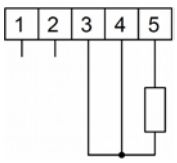
Thermocouples, thermoelectric sensors (thermocouple)



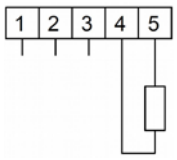
Standard shunts: 60 mV, 150 mV, 300 mV (measuring range respectively: -75...75 mV, -155...155 mV, -310...310 mV



Resistance sensors or resistor in a three-wire system



Resistance sensors or resistor in a two-wire system



Meter connection

ORDERING CODE

	N32U	X	X	XXXXXXX	X	X
Supply:						
85...253 V a.c., 90...300 V d.c.		1				
20..40 V a.c./ 20..60 V d.c.		2				
Additional outputs:						
1 relay output, RS-485			1			
4 relay outputs, RS-485			2			
4 relay outputs, RS-485, 1 analog output			3			
Version:						
standard				0000000		
custom-made*				XXXXXXX		
Language:						
Polish/English					M	
Acceptance tests:						
without additional quality requirements						0
with an extra quality inspection certificate						1
with an extra calibration certifiate						2
acc. to customer's request						X

* only after agreeing with the manufacturer

ORDERING EXAMPLE:

N32U 130000000M0 means N32U meter with supply 85... 253 V a.c.,90...300 V d.c., with 4 relay outputs, RS-485 interface and 1 analog output, in standard version, polish-english language version, without addtional quality requirements.

N32U-19_en

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e-mail: export@lumel.com.pl

Calibration & Attestation:
e-mail: laboratorium@lumel.com.pl

LUMEL
EVERYTHING COUNTS

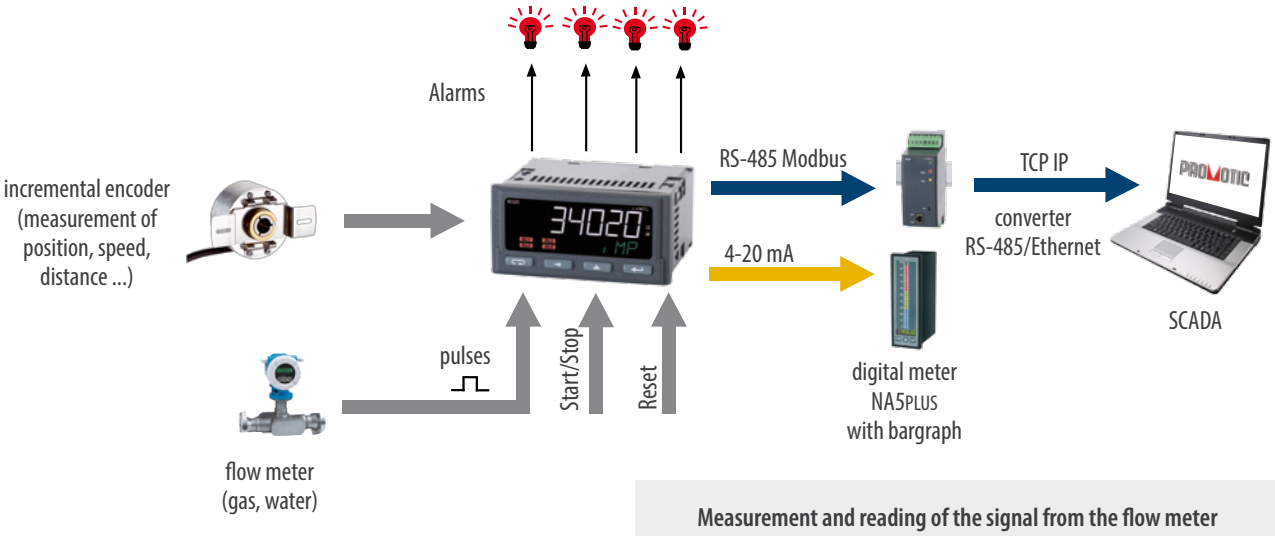
Electrical Safety CAT III

CE

N32O
DIGITAL PANEL METER

- Measurement: number of pulses, period, frequency, rotational speed, working time, position from an incremental encoder.
- Advanced functions for the configuration of pulse signals, e.g. for counting slowly changing pulses.
- Two-line LCD display with high contrast and built-in backlighting.
- Possibility of displaying the measured value and time simultaneously or an uncalculated quantity or unit (programmable unit of measured quantity).
- Meter programming from keyboard or through the RS-485 interface by means of the free eCon software.
- Two additional binary inputs for pulse counting or as control inputs.
- 4 alarm outputs with signalling on LED diodes, working in 7 different modes (option).
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10 V (option).
- Storage of minimal and maximal values for all measured quantities.
- Built-in power supply of object transducers 24V d.c.
- 32-point individual characteristic for the measured value.
- Mathematical functions for converting the measured value.

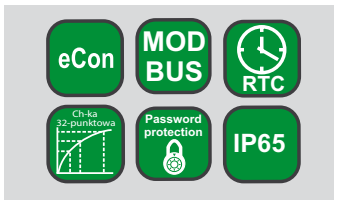
EXAMPLE OF APPLICATION



Measurement and reading of the signal from the flow meter and encoder. The measured values are available via the analog output and the digital interface.

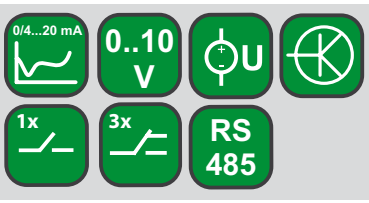
N32O - DIGITAL PANEL METER

FEATURES

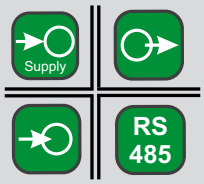


INPUTS

OUTPUTS



GALVANIC ISOLATION



DATA VISUALISATION

Two-line display. Simultaneous preview of the measured value (top line) and the input signal not scaled (bottom line).

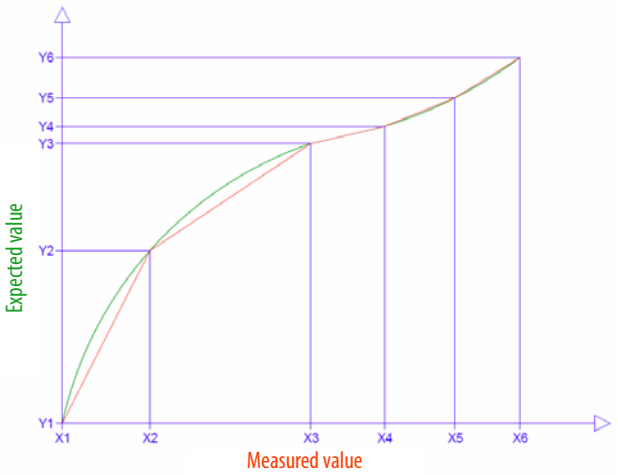
lub

Programmable measurement unit chosen from 56 variants available in the menu. Additionally, the ability to define your own display unit.

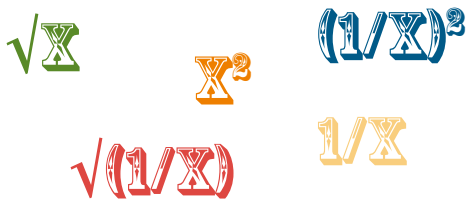
lub

Preview of current time on the bottom line of the display. Real-time clock with automatic winter/summer time change function.

INPUT SCALING



Conversion of the measured quantity based on 32-point individual characteristics. It allows for the mapping of signals non-linear characteristics.

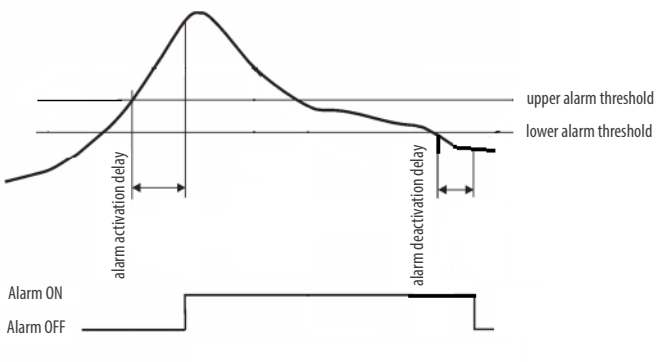


Conversion of the measured quantity by means of mathematical functions: √x, x^2, 1/x, $(1/x)^2$, √(1/x)

ALARM FUNCTIONS

1 or 4 relay outputs with the indication on the display as an active alarm number.

Each alarm can be configured to operate in one of 7 modes, including REG mode for alarm control through RS-485 Modbus.

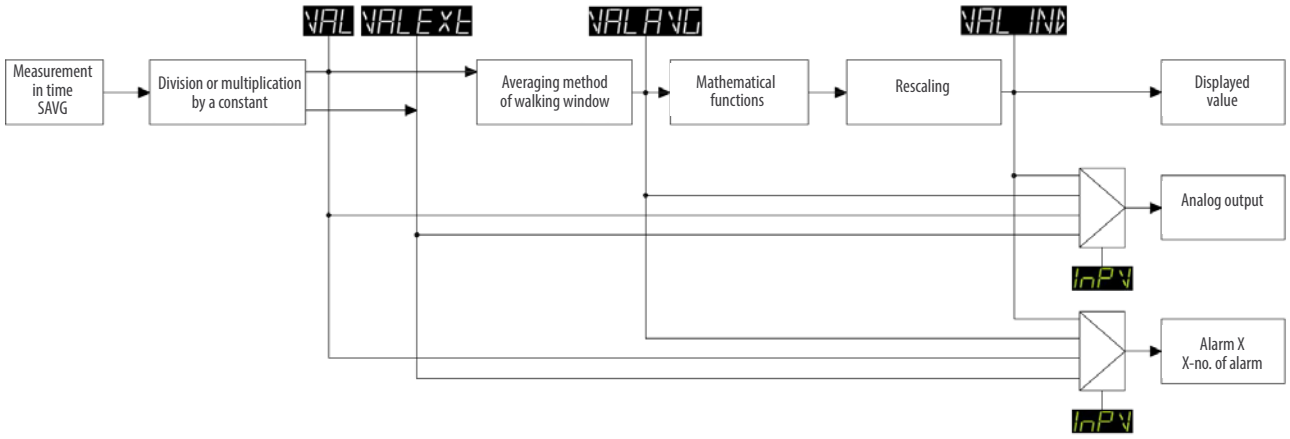


t ≥ time delay --> Alarm activeted
For alarm operation both conditions (value and time delay) must be met

Programmable alarm signal holding. Once the alarm event has ceased, the alarm status marker flashes on the display until it is reset by the user.

Individually programmable parameters for alarm activation and deactivation delay; the function can be used to prevent "false" alarms.

ADVANCED MEASUREMENT CONVERSION FUNCTION

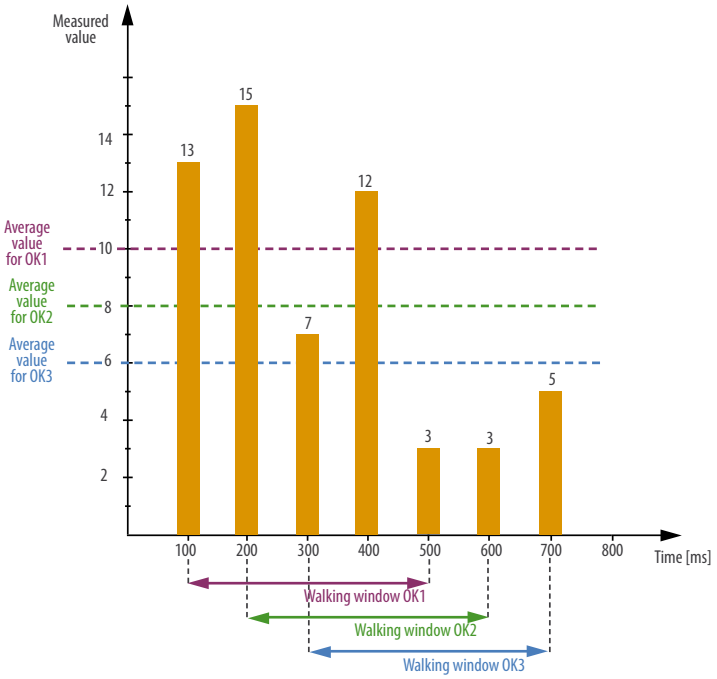


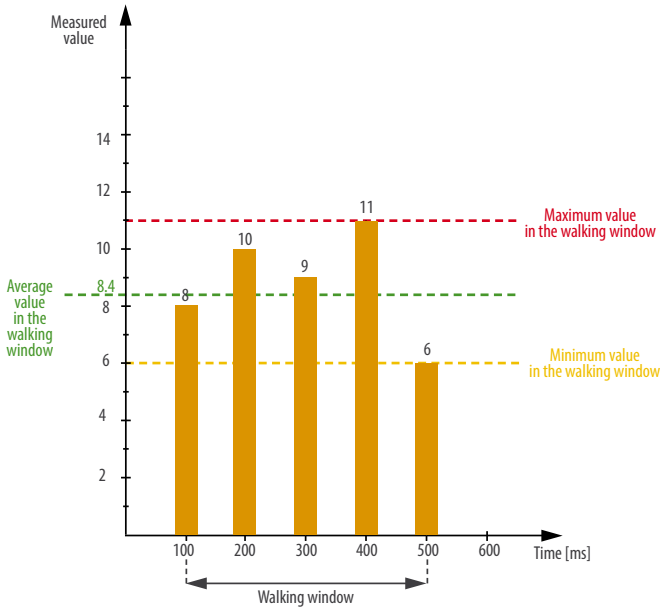
The measured value can be converted in series and the result can be displayed. After each conversion step, the signal can be used for retransmission on the analogue output or as an alarm source.

In practical use, the meter can read the value from an object-oriented transmitter and display the actual value within a limited range, e.g. flow, volume etc. At the same time, the input signal not scaled can be retransmitted to the PLC.

This function can be useful in applications where the signal is dynamic. The display can show the values averaged over time (easier signal observation). On the analogue output instead, you can retransmit the signal without additional delays - this also applies to the alarm outputs.

WALKING WINDOW ALGORITHM





Programmed averaging time according to the walking window algorithm with a set averaging time. Only available for non-count values such as period, frequency and speed.

Ability to measure the average, minimum or maximum value when displaying the walking window.

TECHNICAL DATA

INPUTS

Input type	Indication range	Klasa, błąd pomiaru
MAIN INPUT		
Pulse counter	-99999...999999	±1 impuls
Slow-changing pulses counter	-99999...999999	±1 impuls
Period	0.00005...3600 [s] [1]	0.0012
Frequency	0.017...20 000 Hz [1]	0.0012
Rotation speed	0...999999	0.0012
Encoder	0...999999	±1 impuls
Pulse counter with frequency measurement	0...999999 0.017...20 000 Hz [1]	±1 impuls 0.01
Working time counter, time counter	0...999999	0.5 seconds a day
Current time		0.5 seconds a day
ADDITIONAL INPUT		
Pulse counter	-99999...999999	±1 pulse
Slow-changing pulses counter	-99999...999999	±1 pulse
Period	0.00005...3600 [s] [1]	0.001 [2]
Frequency	0.017...20 000 Hz [1]	0.001 [2]
Rotation speed	0...99999	0,001 [2]
Working time counter, time counter	0...99999	0.5 seconds a day
Current time		0.5 seconds a day

[1] In the case of frequency and period measurements, the maximum measurement time (signal period duration) is determined by the SAVG setting, which also narrows the measuring range
[2] The measurement error is defined as a percentage of the displayed value, not less than the error resulting from the gating time of 30 ns, eg for the displayed value of 1000.00 Hz, the measurement error will be 0.01 Hz + 0.03 Hz.

OUTPUTS

Output type	Properties	Remarks
Relay output	• 1 x NO contacts, load-carrying capacity 5A / 250 V a.c.; 5A / 30V d.c. • 3 relays with changeover contact, load-carrying capacity 6A / 250V a.c.; 6A / 30V d.c.; 0,15A / 250V d.c.	
Analog output	• current programmable 0/4...20 mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V, load resistance ≥ 500 Ω	Error of analog output: 0.1% of the set range Additional error from temperature changes: 50% of the class/10K
OC output	OC type, passive npn, 30 V d.c./30 mA	voltageless output
Auxiliary supply	24 V d.c./ 30mA	

DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	2.4, 4.8, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, 115.2 kbit/s

EXTERNAL FEATURES

Readout field	1 row: 6-digits; digits height 12.85 mm 2 row: 5-digits; digits height 7.5 mm	high contrast LCD with backlight and programmable measuring unit
Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 93 mm	mounting hole $92^{+0.6}$ x $45^{+0.6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP 10

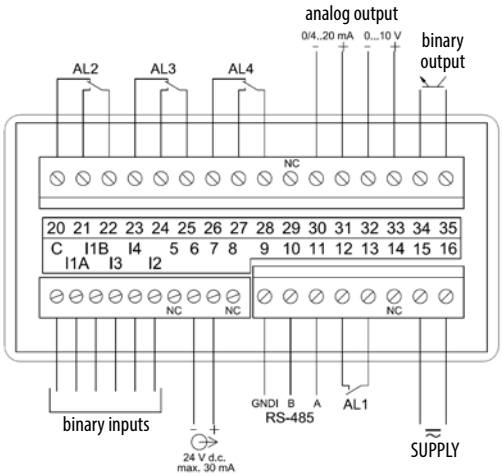
RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (40...400 Hz), 90...300 V d.c. 20...40 V a.c. (45...65 Hz) / 20..60 V d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	without condensation
Operating position	any	
External magnetic field	0...400 A/m	

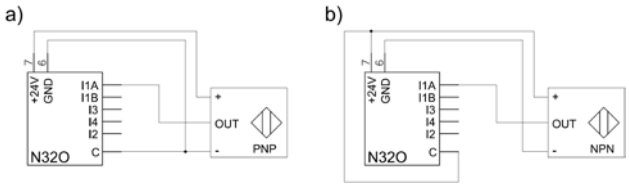
SAFETY AND COMPABILITY REQUIREMENTS

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
Polution level	2	
Installation category	III	
Maximal phase-to-earth voltage	for supply circuits : 300 V	
	for other circuits: 50 V	
Altitude a.s.l.	< 2000 m	

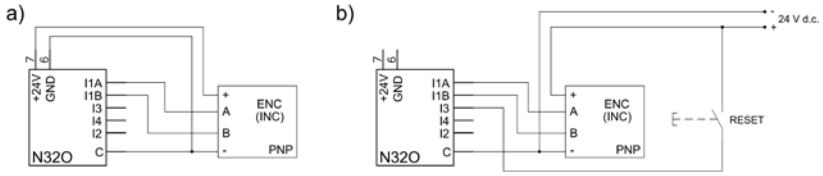
CONNECTION DIAGRAMS



Description of signals on connection strips



The way of connecting the meter to a sensor with an OC output: a) PNP type, b) NPN type



Example of connecting an incremental encoder with PNP outputs

ORDERING CODE

	N32O	X	X	XXXXXXX	X	X
Supply:						
85...253 V a.c., 90...300 V d.c.		1				
20..40 V a.c./ 20..60 V d.c.		2				
Additional outputs:						
1 relay output, RS-485			1			
4 relay outputs, RS-485			2			
4 relay outputs, RS-485, 1 analog output			3			
Version:						
standard				0000000		
custom-made*				XXXXXXX		
Language:						
Polish/English					M	
Acceptance tests:						
without additional quality requirements						0
with an extra quality inspection certificate						1
with an extra calibration certifiate						2
acc. to customer's request						X

* only after agreeing with the manufacturer

ORDERING EXAMPLE:

N32O 130000000M0 means N32O meter with supply 85... 253 V a.c.,90...300 V d.c., with 4 relay outputs, RS-485 interface and 1 analog output, in standard version, polish-english language version, without addtional quality requirements.

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tel.: (+48 68) 45 75 130, 45 75 131, 45 75 132
e-mail: export@lumel.com.pl

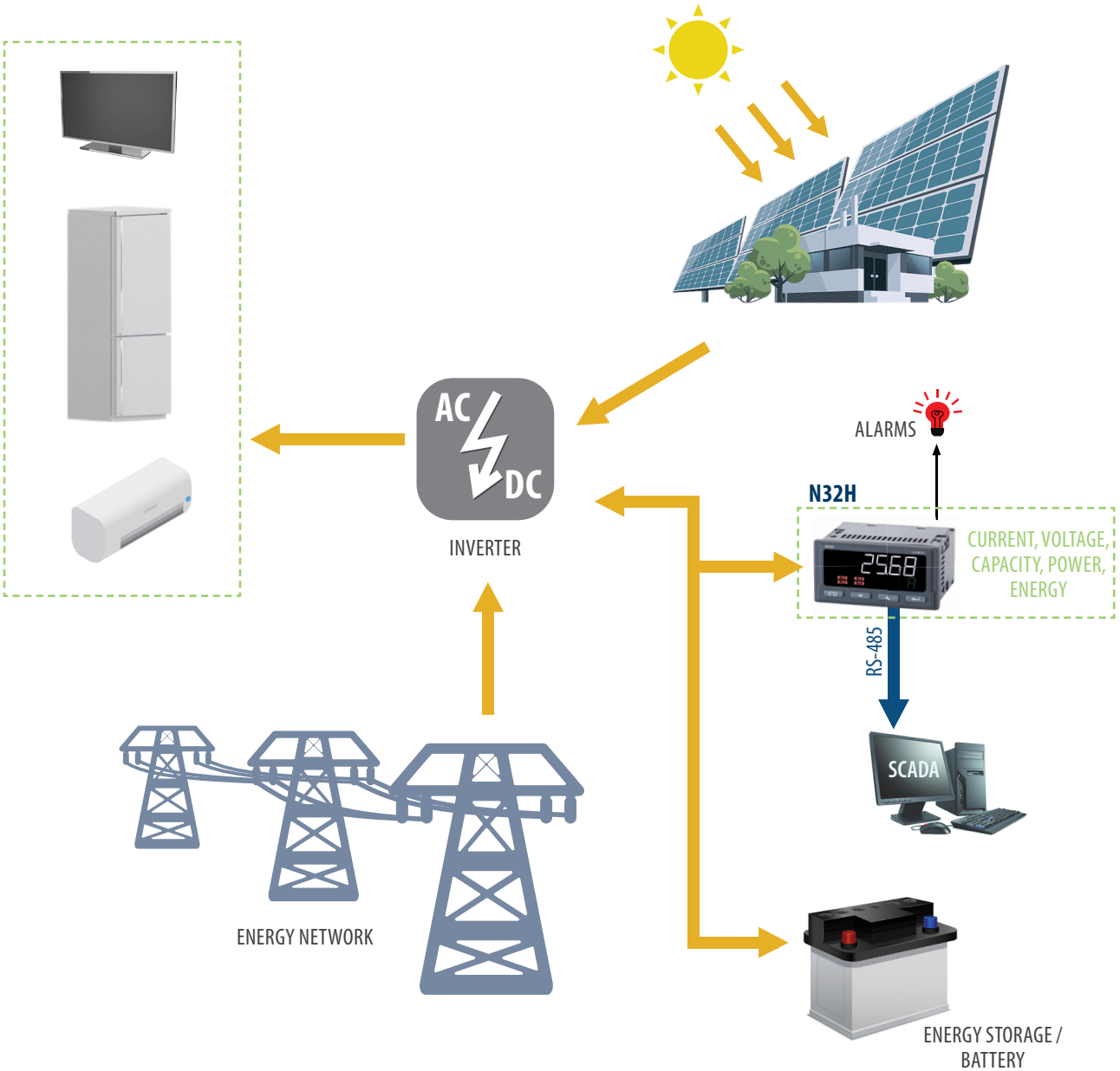
Calibration & Attestation:
e-mail: laboratorium@lumel.com.pl

N32H

DIGITAL METER OF D.C. CIRCUIT PARAMETERS

- Voltage measurement ±600V (maximum range display ±1200 V), current measurement via shunt, power, energy and capacity measurement of d.c. circuits.
- Two-line LCD display with high contrast and built-in backlighting.
- Possibility of displaying the measured value and time simultaneously or an second measured value or unit (automatically displayed unit of measured quantity).
- Wide range of voltage measurement at the shunt input up to 1500 mV.
- High sampling frequency of measured signals.
- Programming parameters via buttons or RS-485 interface and free e-con software.
- 4 alarm outputs with signaling on led diodes, working in 7 different modes (option).
- Pulse output to control energy consumption.
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10V (option).
- Memory of minimal and maximal values for all measured quantities.
- Automatic voltage measurement compensation function.

EXAMPLE OF APPLICATION



N32H - DIGITAL METER OF D.C. CIRCUIT PARAMETERS

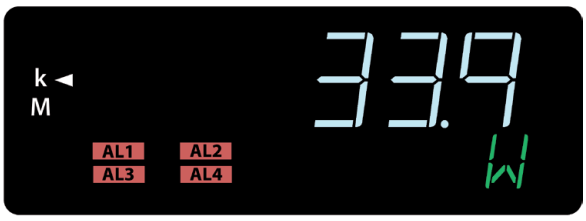
FEATURES	INPUTS	OUTPUTS	GALVANIC ISOLATION
eCon, MOD BUS, RTC, Password protection, IP65	-600 ... 600 V d.c., -1500... 1500 mV	0/4...20 mA, 0..10 V, 1x, 3x, RS 485	Supply, RS 485

MEASURED QUANTITIES AND CALCULATED BY THE METER

- d.c. voltage **U**
- d.c. current **I** (indirectly through the shunt)
- d.c. power **P**
- averaged voltage in a given range $\mathbf{U}_{AV}$
- averaged current in a given range $\mathbf{I}_{AV}$
- power averaged in a given range $\mathbf{P}_{AV}$
- capacity counter (accumulated current) CAP
- energy counter E
- maximum and minimum values in the given averaging period
- current time

DATA VISUALISATION

or



Two-line display.
Simultaneous preview of two measured values e.g. current and power.

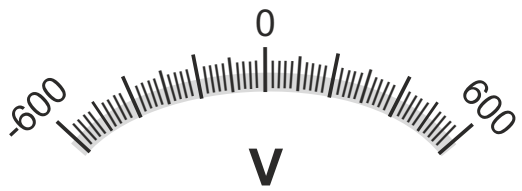
Automatically displayed unit of measured value and symbol of multiplier kilo, mega.

or

Preview of current time on the bottom line of the display.
Real-time clock with automatic winter/summer time change function.

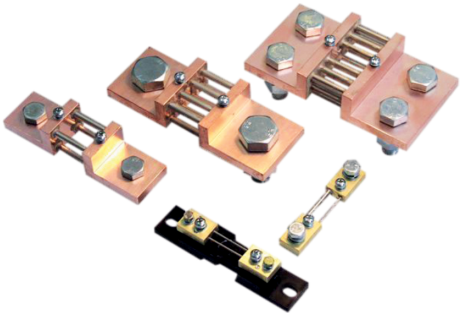
N32H - DIGITAL METER OF D.C. CIRCUIT PARAMETERS

BIDIRECTIONAL MEASURING INPUT



Bidirectional voltage measurement in a wide range of ± 600V (maximum indication range ± 1200V) and bi-directional current measurement through a shunt. This function is useful, among others when monitoring the parameters of an energy storage system.

50 mV
60 mV
75 mV
100 mV
150 mV



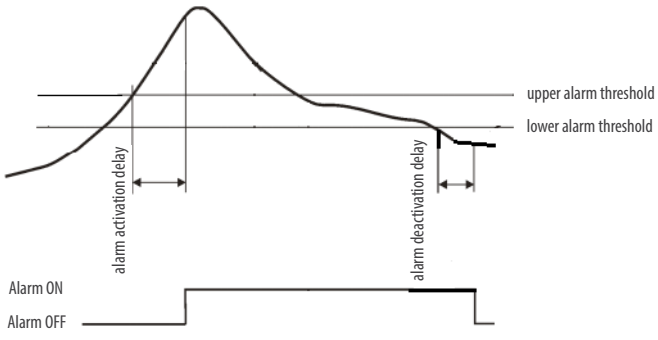
Universal input for measuring with any type of shunt with a wide voltage measurement range up to 1500 mV.

Automatic compensation of the voltage drop on the measuring shunt to support the correct measurements of voltage, power and energy in relation to the load.

ALARM FUNCTIONS

1 or 4 relay outputs with signaling on the display in the form of an active alarm number.

Each of the alarms can be configured to work in one of 7 modes, incl. REG mode for alarm control via RS-485 Modbus.

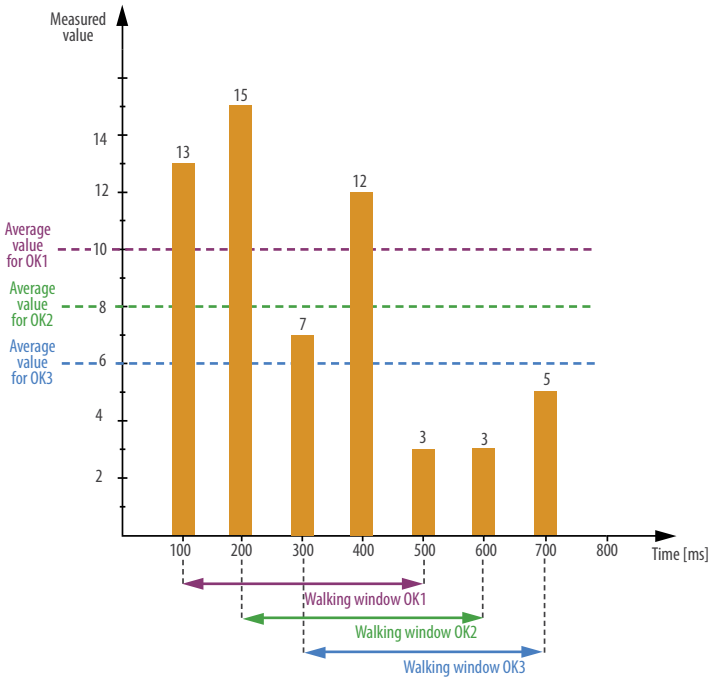


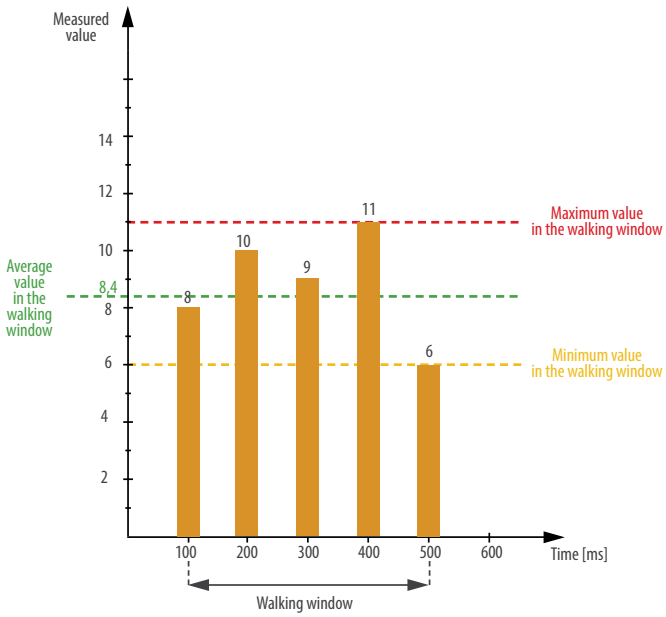
t ≥ time delay --> Alarm activeted
For alarm operation both conditions (value and time delay) must be met

Programmable maintenance of alarm signaling. After the alarm event has ceased, the alarm status marker blinks on the display until it is deleted by the user.

Individually programmable parameters of switching on and switching off the alarm; this feature can be used to prevent „false" alarms from occurring.

WALKING WINDOW ALGORITHM





Programmed averaging time according to the walking window algorithm with a given averaging time. This function is useful for measuring signals with high dynamics.

Possibility to measure the average, minimum or maximum value during the walking window.

TECHNICAL DATA

INPUTS AND MEASURING RANGES

Measured quantity	Nominal range	Maximum range of indications	Class
Voltages	50 V	-75...75 V	0.1
	100 V	-160..160 V	
	150 V	-300...300 V	
	300 V	-600...600 V	
	600 V	-1200...1200 V	
Currents (shunt voltage)		60000...60000 A (-1500...1500 mV)	
Capacity (accumulated current)		-99999...999999 MAh	±0.5 %
Power		all ranges	0.2 + shunt class
Energy		-99999...999999 MWh	±0.5 % + shunt class

OUTPUTS

Output type	Properties	Remarks
Relay output	• 1 NO contanct, load capacity 5A / 250 V a.c.; 5A / 30V d.c. • 3 relays with a changeover contact, load capacity 6A / 250V a.c.; 6A / 30V d.c.; 0,15A / 250V d.c.	
Analog output	• programmable current 0/4...20 mA, load resistent ≤ 500 Ω • programmable voltage 0...10 V, load resistent ≥ 500 Ω	Analog output error: **0.1% of the set range** Additional error from temperature changes: **50% of class/10K**
OC output	OC type, passive npn, 30 V d.c./30 mA	voltage free output

DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	2.4, 4.8, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, 115.2 kbit/s

EXTERNAL FEATURES

Readout field	1 row 6-digit; digits height 12.85 mm 2 rows: 5-digit; digits height 7.5 mm	high contrast LCD with backlight and programmable measuring unit
Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 93 mm	mounting hole: $92^{+0.6}$ x $45^{+0.6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP 10

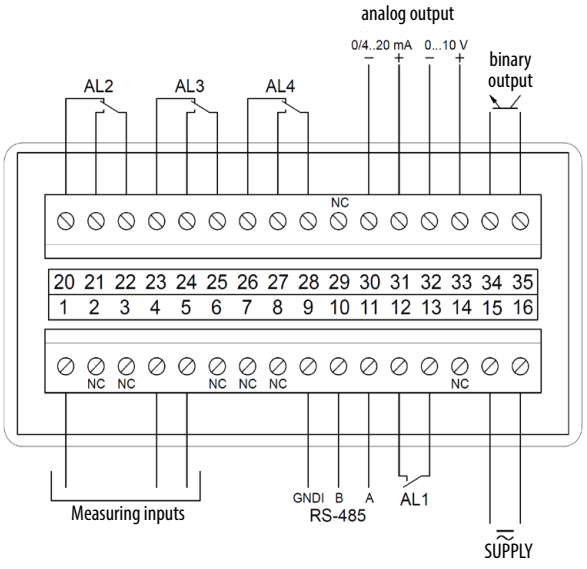
RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (40...400 Hz), 90...300 V d.c. 20...40 V a.c. (45...65 Hz) / 20..60 V d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	without condensation
Operating position	any	
External magnetic field	0...400 A/m	

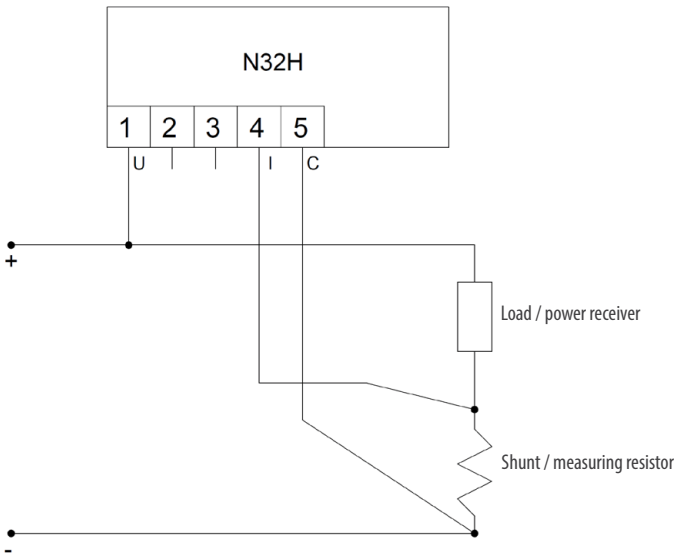
SAFETY AND COMPABILITY REQUIREMENTS

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
Polution level	2	
Installation category	III	
Maximal phase-to-earth voltage	for supply circuits: 300 V	
	for other circuits: 50 V	
Altitude a.s.l.	< 2000 m	

CONNECTION DIAGRAMS



Description of signals on the connector strips



Meter connection

N32H - DIGITAL METER OF D.C. CIRCUIT PARAMETERS

ORDERING CODE

N32H	X	X	XXXXXXX	X	X
Supply:					
85...253 V a.c., 90...300 V d.c.	1				
20..40 V a.c./ 20..60 V d.c.	2				
Dodatkowe wyjścia:					
1 relay output, RS-485		1			
4 relay outputs, RS-485		2			
4 relay outputs, RS-485, 1 analog output		3			
Version:					
standard			0000000		
custom-made*			XXXXXXX		
Language:					
Polish/English				M	
Acceptance tests:					
without additional quality requirements					0
with an extra quality inspection certificate					1
with an extra calibration certifiate					2
acc. to customer's request					X

* only after agreeing with the manufacturer

ORDERING EXAMPLE:

N32H 130000000M0 means N32H meter with supply 85... 253 V a.c.,90...300 V d.c. with 4 relay outputs, RS-485 interface and 1 analog output, in standard version, polish-english language version, without addtional quality requirements.

LUMEL
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Export department:
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e-mail: export@lumel.com.pl

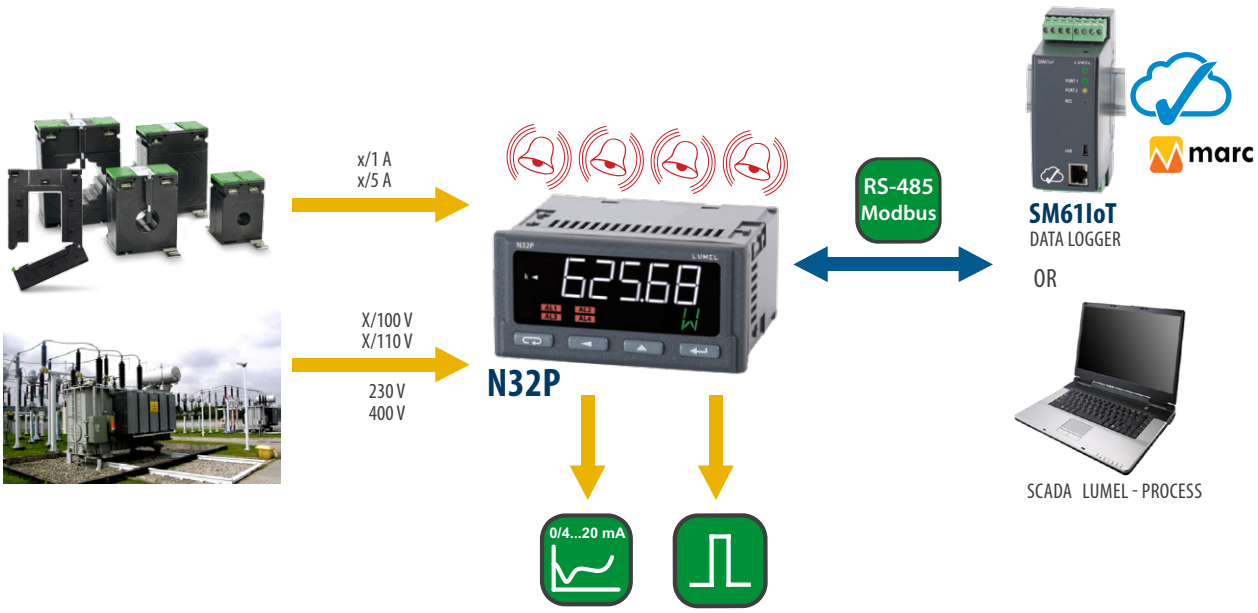
Calibration & Attestation:
e-mail: laboratorium@lumel.com.pl

N32P

1-PHASE POWER NETWORK METER

- Measurement of single-phase network parameters: voltage, current, active, reactive and apparent power, cos φ, tg φ, frequency, active, reactive and apparent energy, active power 15 minutes, voltage 10 minutes.
- Current and voltage harmonics analysis up to 51st (measurements available via RS-485).
- Two-line LCD display with high contrast and built-in backlighting.
- Possibility of displaying the measured value and time simultaneously or an second measured value or unit (automatically displayed unit of measured quantity).
- Programmable measuring range (current 1 A / 5 A and voltage 100 V /230 V / 400 V).
- High sampling frequency of measured signals 8 kHz.
- Programming parameters via buttons or RS-485 interface and free eCon software.
- 4 alarm outputs with signaling on led diodes, working in 7 different modes (option).
- Possibility to program each of the alarms to react to a different measurements.
- The function of the switch-on delay and switch-off delay of the alarm with the alarm event memory.
- Pulse output to control energy consumption.
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10V (option).
- Memory of minimal and maximal values for all measured quantities.
- Choice of period and averaging method with the possibility of synchronizing the average value with the built-in real-time clock.

EXAMPLE OF APPLICATION



N32P - 1-PHASE POWER NETWORK METER

FEATURES	INPUTS	OUTPUTS	GALVANIC ISOLATION
eCon, MOD BUS, RTC, Password protection, IP65	AC	0/4...20 mA, 0..10 V, 1x, 3x, RS 485	RS 485, analog., alarm., Un, In, Supply

MEASURED QUANTITIES AND CALCULATED BY THE METER

- effective voltage **U**
- effective current **I**
- frequency **f**
- power: active **P**, reactive **Q**, apparent **S**
- power factor **cos φ**
- power tangent **tg φ**
- active energy input/output **Ep**
- reactive energy input/output **Eq**
- total apparent energy **Es**
- energy meter **E**
- maximum and minimum values in the given averaging period
- current time

DATA VISUALISATION

or

or

Two-line display.
Simultaneous preview of two measured values e.g. current and power.

Automatically displayed unit of measured value and symbol of multiplier kilo, mega.

Preview of current time on the bottom line of the display. Real-time clock with automatic winter/summer time change function.

N32P - 1-PHASE POWER NETWORK METER

MULTI-PARAMETER MEASUREMENT

Up to 47 parameters can be viewed in one meter. The display can indicate two values simultaneously. All values are available via the RS-485 (Modbus) digital interface.

UNIERSAL MEASURING INPUT

x/1 A
x/5 A

Universal input for current and voltage measurement directly or indirectly from a current or voltage transformer. The primary and secondary sides of the transformer are separately configurable, which will correspond to the actual values.

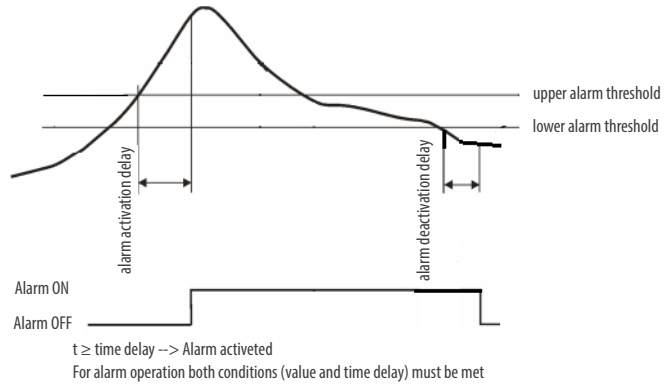
x/100 V
x/110 V

Only one parameter can be measured e. g. only the current, where the operation of the meter is synchronized with the current signal.

ALARM FUNCTIONS

1 or 4 relay outputs with signaling on the display in the form of an active alarm number.

Each of the alarms can be configured to work in one of 7 modes, incl. REG mode for alarm control via RS-485 Modbus.



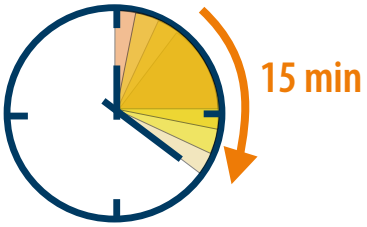
Programmable maintenance of alarm signaling. After the alarm event has ceased, the alarm status marker blinks on the display until it is deleted by the user.

Individually programmable parameters of switching on and switching off the alarm; this feature can be used to prevent „false" alarms from occurring.

MEASUREMENT AVERAGING ALGORITHM

Average values of voltage, current and power calculated by the walking window method, i.e. continuously updated.

Programmable averaging period of measured parameters in minutes, e.g. active power.



MOVING WINDOW

The average value can be synchronized with the internal time clock, e.g. for the 15-minute setting, the value is updated every quarter of an hour.

Additional measurement of minimum and maximum values during the moving window.

TECHNICAL DATA

INPUTS AND MEASURING RANGES

Measured quantity		Measuring range (Ku=1; Ki=1)	Class
Voltage input	100 V 230 V 400 V	0.05...1.2 Un	0.1
Current input	1 A 5 A	0.05...1.2 In	
Frequency		35...65...100 Hz	
Active power		The actual measuring range for active and reactive power: -1.2Ur * 1.2Ir. . . 1.2Ur * 1.2Ir. For apparent power: 0... 1.2Ur * 1.2Ir	0.2
Reactive power			
Apparent power			
cos φ		-1...0...1	0.5
tg φ		-999.99...-1.2...0...1.2...999.99	
THD of voltages and currents		0...100%	
Active energy		0...9 999 999.9 kWh	
Reactive power		0...9 999 999.9 kVarh	
Apparent power		0...9 999 999.9 kVA	
Current time		0.00...23.59	± 20 ppm

Ku - voltage ratio; Ki - current ratio; Un - rated voltage; In - rated current Ur - set voltage measurement range; Ir - set current measurement range;

OUTPUTS

Output type	Properties	Remarks
Relay output	• 1 NO contanct, load capacity 5A / 250 V a.c.; 5A / 30V d.c. • 3 relays with a changeover contact, load capacity 6A / 250V a.c.; 6A / 30V d.c.; 0,15A / 250V d.c.	
Analog output	• programmable current 0/4...20 mA, load resistent ≤ 500 Ω • programmable voltage 0...10 V, load resistent ≥ 500 Ω	Analog output error: **0.1% of the set range** Additional error from temperature changes: **50% of class/10K**
OC output	OC type, passive npn, 30 V d.c./30 mA	voltage free output

DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	2.4, 4.8, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, 115.2 kbit/s

EXTERNAL FEATURES

Readout field	1 row 6-digit; digits height 12.85 mm 2 rows: 5-digit; digits height 7.5 mm	high contrast LCD with backlight and programmable measuring unit
Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 93 mm	mounting hole: $92^{+0.6}$ x $45^{+0.6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP 10

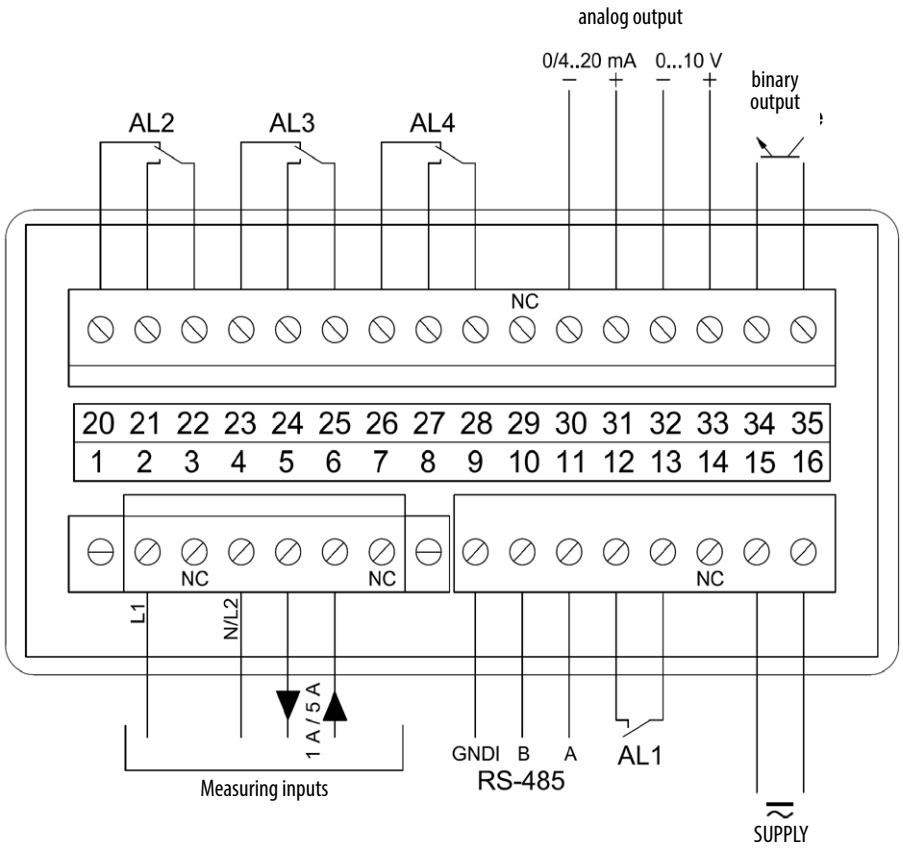
RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (40...400 Hz), 90...300 V d.c. 20...40 V a.c. (45...65 Hz) / 20..60 V d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	without condensation
Operating position	any	

SAFETY AND COMPABILITY 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
Polution level	2	
Installation category	III	
Maximal phase-to-earth voltage	for measuring, power and alarm circuits: 300 V	
	for other circuits: 50 V	
Altitude a.s.l.	< 2000 m	

CONNECTION DIAGRAMS

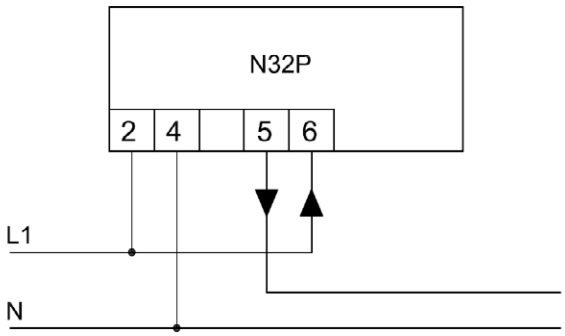


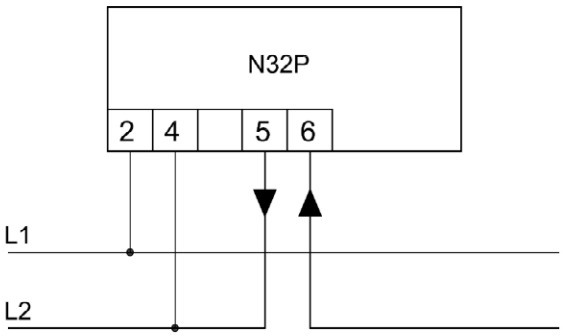
Description of signals on the connection strips

N32P - 1-PHASE POWER NETWORK METER

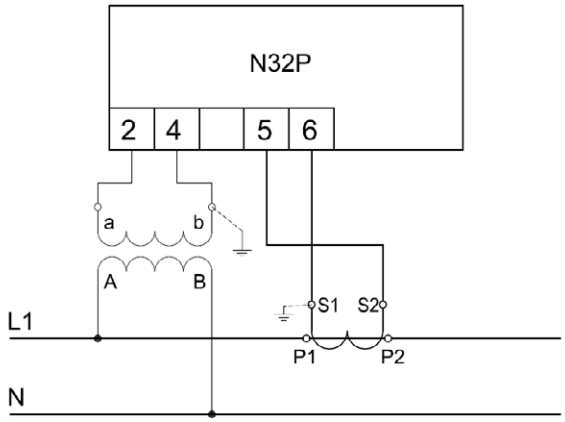
CONNECTION DIAGRAMS

Direct meaurement





Indirect meaurement



Meter connection

ORDERING CODE

	N32P	X	X	XXXXXXX	X	X
Supply:						
85...253 V a.c., 90...300 V d.c.		1				
20..40 V a.c./ 20..60 V d.c.		2				
Dodatkowe wyjścia:						
1 relay output, RS-485			1			
4 relay outputs, RS-485			2			
4 relay outputs, RS-485, 1 analog output			3			
Version:						
standard				0000000		
custom-made*				XXXXXXX		
Language:						
Polish/English					M	
Acceptance tests:						
without additional quality requirements						0
with an extra quality inspection certificate						1
with an extra calibration certifiate						2
acc. to customer's request						X

* only after agreeing with the manufacturer

ORDERING EXAMPLE:

N32P 130000000M0 means N32P meter with supply 85... 253 V a.c.,90...300 V d.c. with 4 relay outputs, RS-485 interface and 1 analog output, in standard version, polish-english language version, without addtional quality requirements.

N32P-19_en

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