N32O
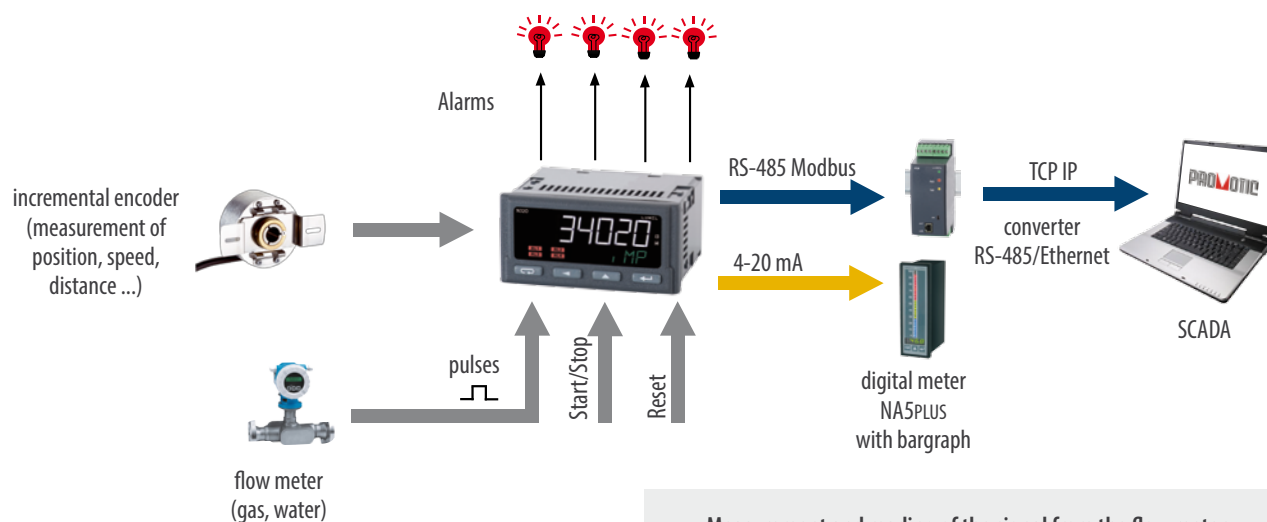## DIGITAL PANEL METER

- 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

Alarms

incremental encoder
(measurement of
position, speed,
distance ...)

pulses

flow meter
(gas, water)

Start/Stop

Reset

RS-485 Modbus

4-20 mA

digital meter
NA5PLUS
with bargraph

TCP IP

converter
RS-485/Ethernet

SCADA

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

eCon | MOD BUS | RTC
Ch-ka 32-punktowa | Password protection | IP65

INPUTS

Hz | ⟳
⊓ | ⊓

OUTPUTS

0/4...20 mA | 0..10 V | ⊕U | ⊗
1x | 3x | RS 485

GALVANIC ISOLATION

Supply |
 | RS 485

DATA VISUALISATION

687.07
13.662
AL1 AL2 AL3 AL4

lub

33.9
HZ
AL1 AL2 AL3 AL4

iMP
SZt
obr

lub

552.128
8.53
AL1 AL2 AL3 AL4

Two-line display.
Simultaneous preview of the measured value (top line) and the input signal not scaled (bottom line).
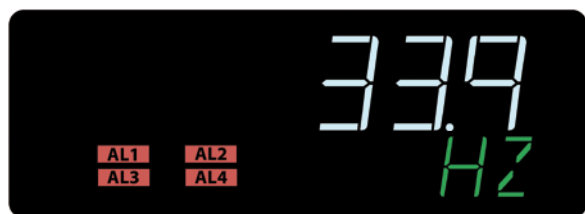
Programmable measurement unit chosen from 56 variants available in the menu. Additionally, the ability to define your own display unit.

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

N32O - DIGITAL PANEL METER

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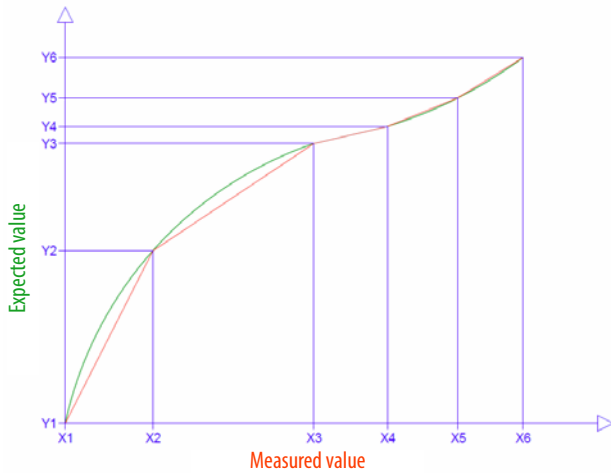
Conversion of the measured quantity based on 32-point individual characteristics. It allows for the mapping of signals non-linear characteristics.

$$\sqrt{x} \quad x^2 \quad (1/x)^2 \quad \sqrt{(1/x)} \quad 1/x$$
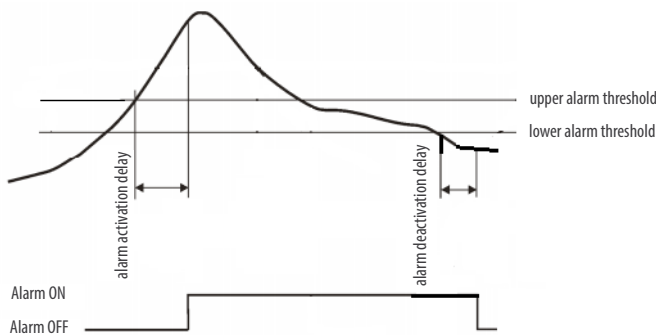
Conversion of the measured quantity by means of mathematical functions: $\sqrt{x}$, x^2, $1/x$, $(1/x)^2$, $\sqrt{(1/x)}$

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.

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.

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

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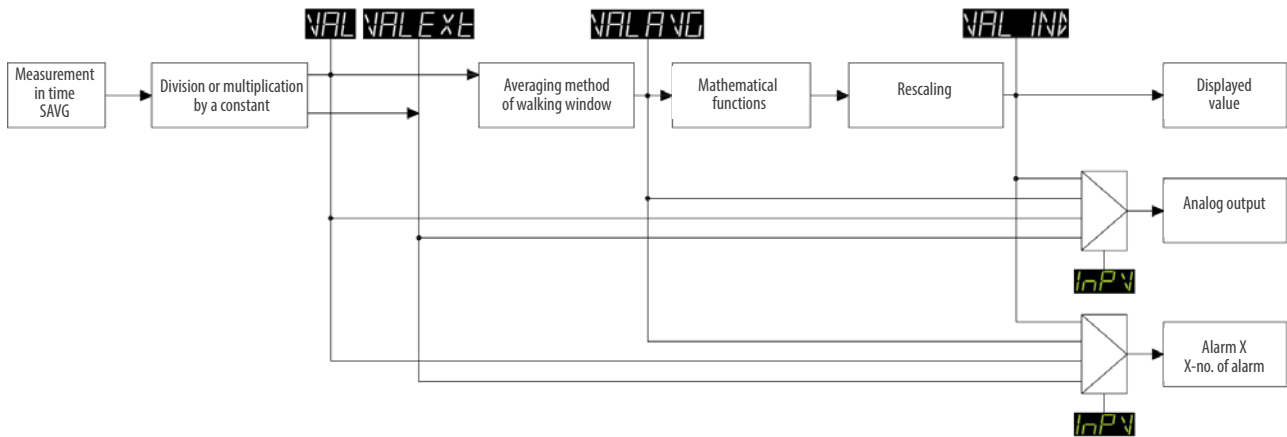
The measured value can be converted in series and the result can be displayed. After each conversion step, the signal can be used for retransmission on the analogue output or as an alarm source.

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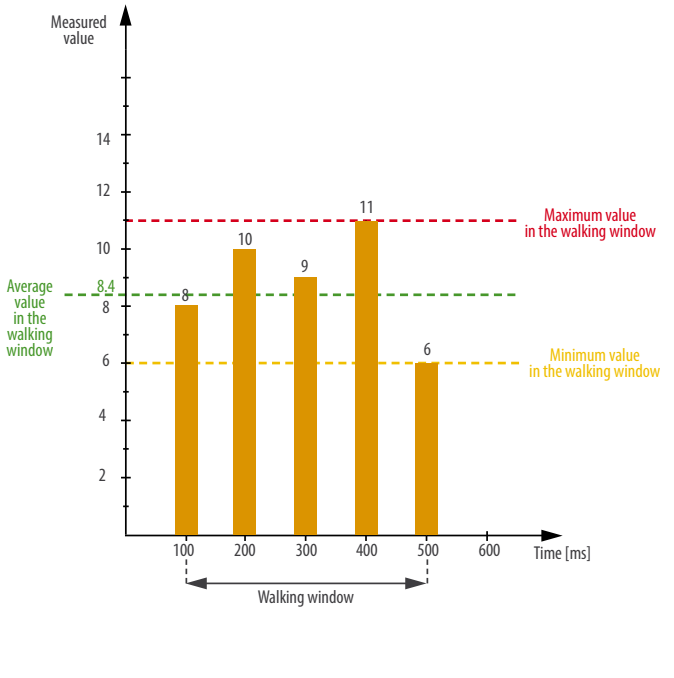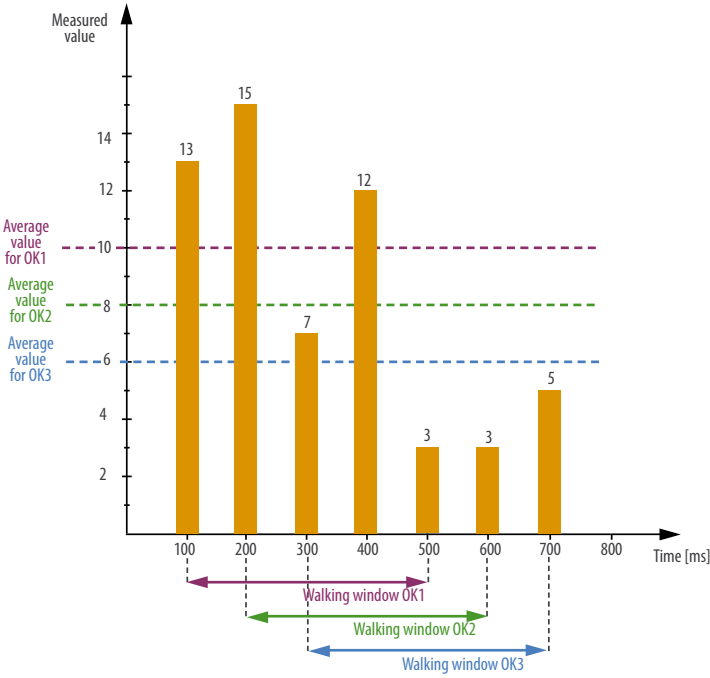
Programmed averaging time according to the walking window algorithm with a set averaging time. Only available for non-count values such as period, frequency and speed.

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

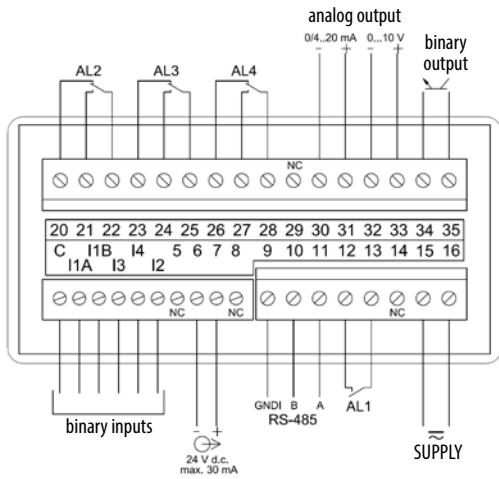|		
Readout field	1 row: 6-digits; digits height 12.85 mm 2 row: 5-digits; digits height 7.5 mm	high contrast LCD with backlight and programmable measuring unit
Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 93 mm	mounting hole $92^{+0.6}$ x $45^{+0.6}$ mm
Protection grade (acc. to EN 60529)	from frontal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

RATED OPERATING CONDITIONS

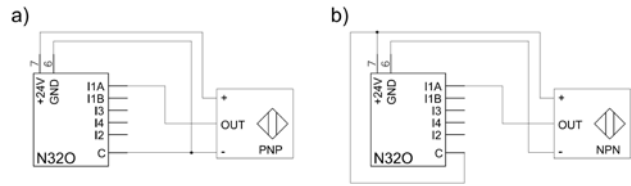|		
Supply voltage	85...253 V a.c. (40...400 Hz), 90...300 V d.c. 20...40 V a.c. (45...65 Hz) / 20..60 V d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	without condensation
Operating position	any	
External magnetic field	0...400 A/m	

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	
Polution level	2	
Installation category	III	acc. to EN 61010-1
Maximal phase-to-earth voltage	for supply circuits : 300 V	
	for other circuits: 50 V	
Altitude a.s.l.	< 2000 m	

CONNECTION DIAGRAMS

a) b)

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

a) b)

Description of signals on connection strips
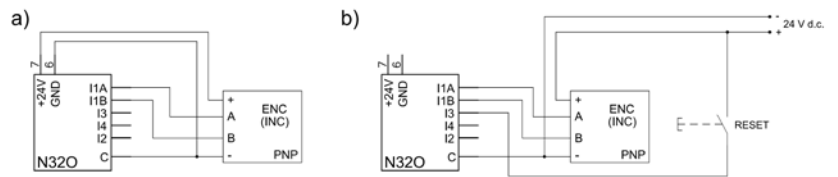
Example of connecting an incremental encoder with PNP outputs

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 certificate						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.