

# DIGITAL PANEL METER

## N20 TYPE



### APPLICATION

The N20 meter is a digital programmable panel instrument destined for measurements of d.c. voltages or d.c. currents: uni or bipolar, temperature through thermocouples (J, K) and Pt100 resistance thermometers.

### FEATURES

- three-colour display: red, orange, green, facilitating the observation of measured value changes,
- readout field: 5-digit LED, 14 mm digit height,
- 2 alarm outputs of OC type (4 types of alarms),
- signaling of alarm states through the highlight of the alarm index,
- housing protection level: IP 65,
- programming possibility of chosen meter parameters with the use of the PD14 programmer and **free delivered LPConfig software**:
  - display colour, individually in three intervals,
  - thresholds of displayed overflows
  - display precision of the result (decimal point),
  - highlight of the unit,
  - automatic or manual temperature compensation of ends in measurements with thermocouples,
  - averaging time of the measurement,
  - two alarms of OC type operating in six working modes.
  - recalculation of indications (individual characteristic),

### TECHNICAL DATA

#### Measuring Ranges

##### INPUTS:

Measuring range of Un voltage:

-11...-10... 60...66 mV	} input resistance > 1 MΩ
-1...0... 10...11 V	
-11...10... 10...11 V	

Measuring range of In current:

-1...0... 20...22 mA	input resistance 10 Ω ± 1%
3.6...4... 20...22 mA	input resistance 10 Ω ± 1%
- 22...- 20... 20...22 mA	input resistance 5 Ω ± 1%

Temperature measurement through Pt100

- 50... 400°C current flowing through the sensor < 300 μA

Resistance of wires connecting

the resistance thermometer to the meter ≤ 10 Ω (of one wire)

Temperature measurement through thermocouple J

- 50... 1200°C

Temperature measurement through thermocouple K

- 50... 1370°C

**Preheating time** 30 min.

**Intrinsic error (at manufacturer settings)** ± (0.2% of the range + 1 digit)

#### Additional errors in rated operating conditions:

- compensation of reference junction temperature changes ± 0.2% of the range
- compensation of wire resistance changes ± 0.2% of the range
- from ambient temperature changes ± (0.1% of the range/10K)

**Averaging time** ≤ 0.5 s (1 s by default)

**Alarm outputs** outputs of OC type (30 V, 20 mA), passive outputs acc. EN 62053-31

**Output to supply external transducers** 24 V ± 5% 30 mA

#### Rated operating conditions:

- supply voltage 85...253 V a.c. (45...65 Hz) or d.c. 20...40 V a.c. (45...65 Hz) or d.c.
- ambient temperature - 10...23...55°C
- storage temperature - 25... + 85°C
- relative air humidity < 95% (condensation inadmissible)
- working position any

**Sustained overload capacity** measurement of voltage, current: 10%

#### Short duration overload capacity (3 s):

- sensor inputs 30 V
- voltage input 10 Un
- current input 10 In

**Readout field** 5-digit three-colour LED display digit height: 14 mm, colours: green, orange, red, indication range: -19999...99999

**Ensured protection level from frontal side** IP 65 acc. EN 60529

**Dimensions** 96 × 48 × 64 mm (with terminals)

**Panel cut-out dimensions** 92<sup>+0,6</sup> × 45<sup>+0,6</sup> mm

**Weight** < 0.25 kg

**Power consumption** < 6 VA

#### Electromagnetic compatibility:

- noise immunity acc. to EN 61000-6-2
- noise emission acc. to EN 61000-6-4

#### Safety requirements acc. to EN 61010-1:

- isolation between circuits: basic
- installation category: III
- pollution degree: 2
- maximal phase-to-earth working voltage:
  - for supply circuit 300 V (at supply 85... 253 V)
  - for measuring input 50 V
  - for input destined for programming 50 V
- altitude above sea level: < 2000 m

### CONNECTION DIAGRAMS

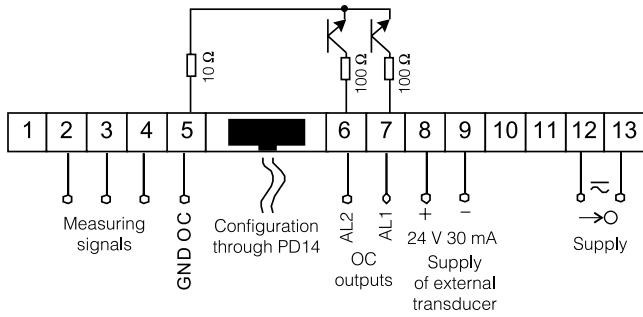


Fig. 1 Electrical Connections of the N20 Meter

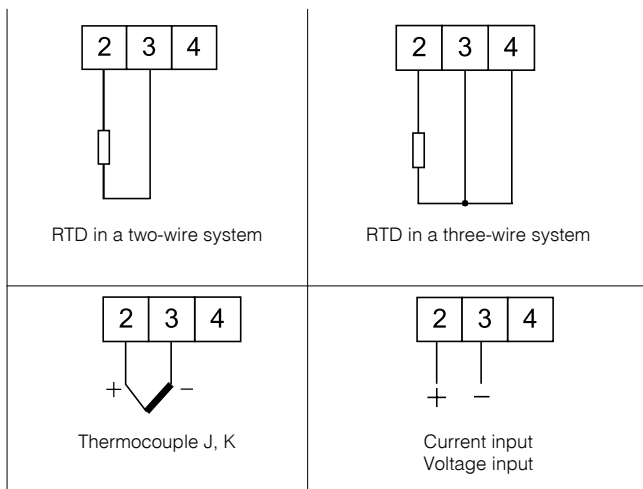


Fig. 2 Connections of Measuring Inputs

### 4. ORDERING CODES

Execution Codes of the N20 Digital Meter

Table 1

DIGITAL PANEL METER	N20 -	X	X	XX	XX	X
<b>Input:</b>						
Pt100: - 50... 400°C .....	1					
Thermocouple J: - 50... 1200°C .....	2					
Thermocouple K: - 50... 1370°C .....	3					
0... 20 mA .....	4					
4... 20 mA .....	5					
± 20 mA .....	6					
0... 60 mV .....	7					
0... 10 V .....	8					
± 10 V .....	9					
<b>Supply Voltage:</b>						
85... 253 a.c. (45...65 Hz) or d.c. ....	1					
20... 40 a.c. (45...65 Hz) or d.c. ....	2					
<b>Unit:</b>						
code number of the unit acc. table 2 .....				XX		
<b>Kind of Execution:</b>						
standard .....					00	
special execution .....					XX	
custom-made .....					99	
<b>Acceptance Tests:</b>						
without extra additional requirements .....						8
with an extra quality inspection certificate .....						7
acc. to customer's agreement* .....						X

\* - After agreeing with the manufacturer

Code of the Highlighted Unit

Table 2

Code	Unit	Code	Unit
00	without unit	24	l/h
01	V	25	ms
02	A	26	s
03	mV	27	h
04	kV	28	N
05	MV	29	kN
06	mA	30	Pa
07	kA	31	hPa
08	MA	32	kPa
09	°C	33	MPa
10	°F	34	bar
11	K	35	rad
12	Hz	36	Ω
13	kHz	37	kΩ
14	Ah	38	%
15	kAh	39	°
16	m/s	40	rev
17	µm	41	rps
18	mm	42	rpm
19	cm	43	rph
20	m	44	m/h
21	km	45	km/h
22	l	46	imp
23	l/s	XX	on order <sup>1)</sup>

<sup>1)</sup> After agreeing with the manufacturer

### ORDERING EXAMPLES:

#### Example 1

The code: **N20 - 9 1 01 00 8** means:

- N20** - digital panel meter
- 9** - input: ± 10 V
- 1** - supply voltage: 85... 253 V a.c./d.c.
- 01** - displayed unit: V
- 00** - standard execution
- 8** - without an extra quality inspection certificate

#### Example 2

The code: **N20 - 5 2 38 99 8 (+ description)** means:

- N20Z** - digital panel meter
- 5** - with a 400 V a.c. input
- 2** - supply voltage: 20... 40 V a.c./d.c.
- 38** - displayed unit: "%"
- 99** - custom-made execution, with the description like in the table 3 (below),
- 8** - without an extra quality inspection certificate

Custom-made Execution Description

Table 3

Parameter	Range/value
Colour of displayed measured upper value	red
Colour of displayed measured middle value	green
Colour of displayed measured lower value	orange
Upper threshold - KpH	44.00
Lower threshold - KpL	40.00
Decimal point	000.00
Highlight of measuring unit	switched on
Automatic compensation of terminal temperature	switched off
Manual compensation of terminal temperature	0
Averaging time	1 s
Overflow of upper measurement	99999
Overflow of lower measurement	- 19999
Individual characteristic	enabled
Parameter a of individual characteristic	10.0
Parameter b of individual characteristic	0
Operation kind of alarm output 1	on
Upper value of alarm 1 switching - Aon	40.00
Lower value of alarm 1 switching - Aoff	0.00
Delay of the alarm 1 switching time	0 second
Operation kind of alarm output 2	n-on
Upper value of alarm 2 switching - Aon	44.00
Lower value of alarm 2 switching - Aoff	40.00
Delay of the alarm 2 switching time	0 second

### ACCESSORIES:

- PD14 programmer with a USB link (if ordered)
- LPCon software (free delivered).

### Note:

One can collect the LPCon software from our page: [www.lumel.com/pl/download/tool](http://www.lumel.com/pl/download/tool)

