DIGITAL PANEL METER
N15 Type

1. APPLICATION

Digital panel meters of N15 series are destined for temperature, resistance, voltage from shunt, d.c. voltage and d.c. current measurement.

They have two versions of display field:

- 5 digits of 14 mm high,
- 4 digits of 20 mm high.

In red, green or blue colour.

N15 meters have an output to supply object transducers.

2. TECHNICAL DATA

INPUTS:

Resistance thermometer	Pt100, Pt500, Pt1000 acc. EN 60751
Potentiometer transmitter	4000 Ω
Thermocouples	J, K, N, E acc. EN 60584-1
Voltage measurement	-10...60 mV, 0...150 mV, 0...300 mV, 0...10 V, 0...200 V, ±60 mV, ±150 mV, ±300 mV, ±2 V, ±10 V, ±50 V, ±200 V, input resistance > 1 MΩ
Current measurement	0...5 mA, 0...20 mA, 0...200 mA, 0...1 A, 0...5 A, ±5 mA, ±20 mA, ±200 mA, ±1 A, ±5 A, for 1 A and 5 A input - resistance = 10 mΩ ±10% for other ranges, input - resistance < 5 Ω

Current flowing through the resistance thermometer:

- Pt100	< 800 μA
- Pt500, Pt1000	< 100 μA
Resistance of wires linking the resistance thermometer with the meter	< 15 Ω /wire
Basic error	0.2% of range ± 1 digit
Additional errors in rated working conditions when measuring the temperature:	
- compensation of reference junction temperature changes	± 0.2% of the range
- compensation of wire resistance changes	± 0.2% of the range
- from the ambient temperature changes	± (0.1% of the range/10 K)
Averaging time	min 0.2 s (significantly 1 s)
Output to supply object transducers	24 V d.c. ±10%, max 25 mA
Rated operation conditions:	
- supply voltage depending on the execution code	230 V, 50/60 Hz ±10% 110 V, 50/60 Hz ±10% 24 V, 50/60 Hz ±10% 12 V d.c. ±10%, without galvanic isolation 24 V d.c. ±10%
- ambient temperature	- 10...23...55°C
- storage temperature	- 25... 85°C
- relative humidity	< 95% (no condensation)
- working position	any

Sustained overload:

- thermocouples, resistance thermometers, resistance	1%
- measurement of voltage and current	10%

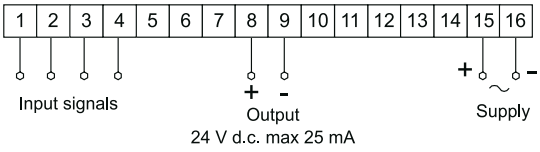
Short-duration overload (3 s):

- inputs of sensors and voltage up to 60 mV	30 V
- voltage input > 60 mV	10 Un (< 1000 V)
- current input	10 In

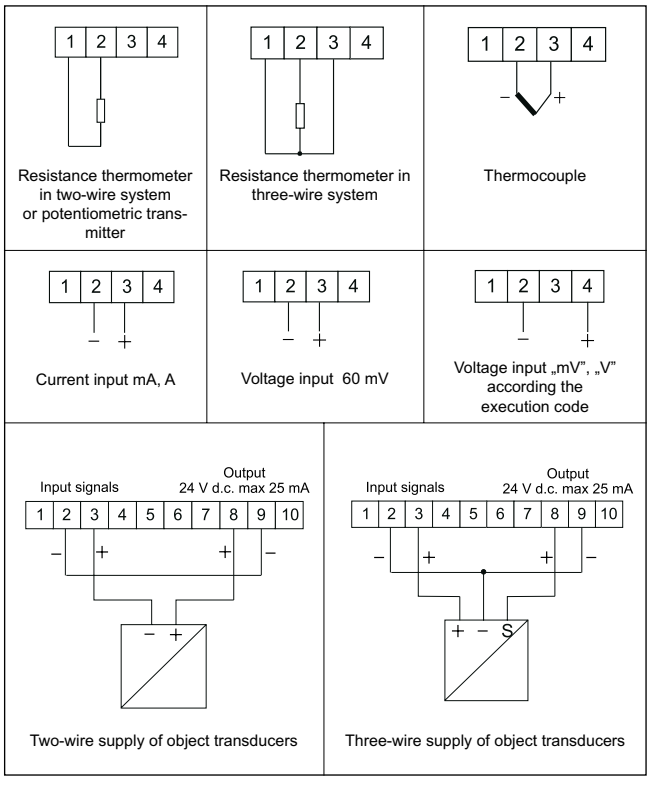
Display field

(depending on execution)	four LED displays (digit height = 20 mm) red or green colour; indication range: -1999...9999 or five LED displays (digit height = 14 mm) red, green or blue colour; indication range: -19999...19999
Ensured protection level	IP 50 or IP 65 (from frontal side)
Overall dimensions	96 × 48 × 64 mm (with terminals)
Cut-out dimensions	$92^{+0.5} \times 45^{+0.5}$ mm
Weight	< 250 g
Power consumption	< 6 VA
Preheating time	15 minutes
Resistance against voltage decay	EN 61000-6-2
Electromagnetic compatibility:	
- immunity	EN 61000-6-2
- emission	EN 61000-6-4
Safety requirements acc. EN 61010-1 standard:	
- installation category	III
- pollution degree	2
- phase-to-earth working voltage	300 V a.c.

3. EXTERNAL CONNECTION DIAGRAMS



External connections of the N15 meter



LUMEL S.A., ul. Sulechowska 1, 65-022 Zielona Góra, Poland / tel.: +48 68 329 53 02, +48 68 329 53 04, fax: +48 68 325 40 91 / e-mail:export@lumel.com.pl / www.lumel.com.pl

ООО "Энергометрика", тел./факс 8 (495) 510-1104
e-mail: info@energometrika.ru, www.energometrika.ru

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5. ORDERING CODES

Table 1

N15 DIGITAL METER	XX	X	X	X	X	X	X	XX	X	XX	...

Input:
write the code of the input quantity
from the table 2 ..... **XX**

Number of displays:
4 digits of 20 mm high **4**
5 digits of 14 mm high **5**

Display colour:
red ..... **R**
green ..... **G**
blue ** ..... **B**
on order * ..... **X**

Supply voltage:
230 V 50/60 Hz **1**
110 V 50/60 Hz **2**
24 V 50/60 Hz **3**
24 V d.c. with galvanic isolation **4**
12 V d.c. without galvanic isolation **5**
on order * ..... **X**

Supplying output:
without output **0**
24 V d.c. (maximal load 25 mA) **1**

Protection level through the housing:
IP 50 ..... **0**
IP 65 ..... **1**

Kind of terminals:
socket - screw plug **0**
on order *** ..... **X**

Version:
standard **00**
custom made* ..... **XX**

Acceptance tests:
without an extra quality inspection certificate **8**
with an extra quality inspection certificate **7**
according customer's agreement * ..... **X**

Unit:
(only in the execution with 5 digits). The code number according table 3 ..... **XX**

NOTE

When ordering give:
- measuring range,
- sensor type (concerning the input to co-operate with a thermocouple, e.g. J),
- choice of compensation (concerns temperature meters)**:**
manual (give the value °C, Ω), **automatic** ...

* The code number must be agreed with the manufacturer
** The blue colour is only possible in the execution with 5 digits
*** Possible execution with self-locking sockets.

Table 2

Input	Code	Input	Code
Pt100 (-200...850°C)	**00**	0...200 mA	**22**
Pt100 (-50...150°C)	**01**	0...1 A	**23**
Pt100 (-50...250°C)	**02**	0...5 A	**24**
Pt100 (-50...400°C)	**03**	± 5 mA	**25**
Pt100 (-50...600°C)	**04**	± 20 mA	**26**
Pt500 (-200...850°C)	**05**	± 200 mA	**27**
Pt1000 (-200...850°C)	**06**	± 1 A	**28**
Potentiometer transmitter 4000 Ω	**07**	± 5 A	**29**
Thermocouple J,K,N,E, -10...60 mV	**08**	0...100 Ω	**30**
0...150 mV	**09**	230 V	**31**
0...300 mV	**10**	0...20 mA characteristic narrowed down	**32**
0...10 V	**11**	0...250 V	**33**
0...200 V	**12**	0...150 Ω	**34**
± 60 mV	**13**	0...1 mA	**35**
± 150 mV	**14**	0...20 V	**36**
± 300 mV	**15**	0... 1 V	**37**
± 2 V	**16**	0...60 mV	**38**
± 10 V	**17**	4...20 mA	**39**
± 50 V	**18**	0...300 V	**40**
± 200 V	**19**	0...2 V	**41**
0...5 mA	**20**	0... 50 V	**42**
0...20 mA	**21**	on order*	**XX**

* the code number must be agreed with the manufacturer

Code of the highlighted unit

Table 3

Code	Unit	Code	Unit
00	V	**24**	ms
01	A	**25**	s
02	mV	**26**	h
03	kV	**27**	N
04	MV	**28**	kN
05	mA	**29**	Pa
06	kA	**30**	hPa
07	MA	**31**	kPa
08	°C	**32**	MPa
09	°F	**33**	bar
10	K	**34**	rad
11	Hz	**35**	Ω
12	kHz	**36**	kΩ
13	Ah	**37**	%
14	kAh	**38**	°
15	m/s	**39**	turns
16	µm	**40**	rps
17	mm	**41**	rpm
18	cm	**42**	rph
19	m	**43**	m/h
20	km	**44**	km/h
21	l	**45**	imp
22	l/s	**XX**	on order *
23	l/h		

* - After agreeing with the manufacturer

Examples of order:

When ordering, one must respect successive code numbers.

Code: N15 08 5 G 1 0 1 0 00 8 08 (0... 450°C), J, comp. auto means:

N15 - N15 digital meter
08 - thermocouple J input
5 - 5 LED digit displays (digit height = 14 mm)
G - green colour displays
1 - supply: 230 V 50/60 Hz
0 - without output to supply object transducers
1 - protection degree from frontal side: IP 65
0 - socket - screw-plug terminals
00 - standard version
8 - without an extra quality inspection certificate
08 - unit: °C

Programmed measuring range: thermocouple J = 0...450°C
Automatic compensation of cold junction temperature changes, programmed by the manufacturer.

Code: N15 01 4 R 1 1 0 0 00 8 08 (0... 100°C), comp. auto means:

N15 - N15 digital meter
01 - Pt100 resistance thermometer input (-50... 150°C)
4 - four LED digit display (digit height = 20 mm)
R - red colour displays
1 - supply: 230 V 50/60 Hz
1 - output to supply object transducers: 24 V d.c. (maximal load = 25 mA), for supplying object transducers
0 - protection level through the housing: IP 50
0 - socket - screw-plug terminals
00 - standard version
8 - without an extra quality inspection certificate
08 - unit: °C
0... 100 - programmed indication range: 0...100°C

Automatic compensation of wire resistance, programmed by the manufacturer.

If ordered, a programmer of PD15 type enabling the modification of N15 digital meter parameters can be delivered with the software on a diskette.
PD15 main features:
– programming of individual characteristics,
– setting of the decimal point,
– setting of the averaging time,
– selection of the sensor compensation mode,
– unit highlighting,
– meter re-calibration.

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LUMEL S.A., ul. Sulechowska 1, 65-022 Zielona Góra, Poland / tel.: +48 68 329 53 02, +48 68 329 53 04, fax: +48 68 325 40 91 / e-mail:export@lumel.com.pl / www.lumel.com.pl

ООО "Энергометрика", тел./факс 8 (495) 510-1104
e-mail: info@energometrika.ru, www.energometrika.ru