

LUMEL

N24 DIGITAL PANEL METER SERIES

FEATURES:

PD14 compatible
LPConfig compatible

IP65
 $Y=a*x+b$
Individual characteristic

INPUTS:

AC DC

$\frac{V}{I}$ ∇

-20..20 mA -10..10 V

60 mV

OUTPUTS:

U

GALVANIC ISOLATION:



PD14 interface

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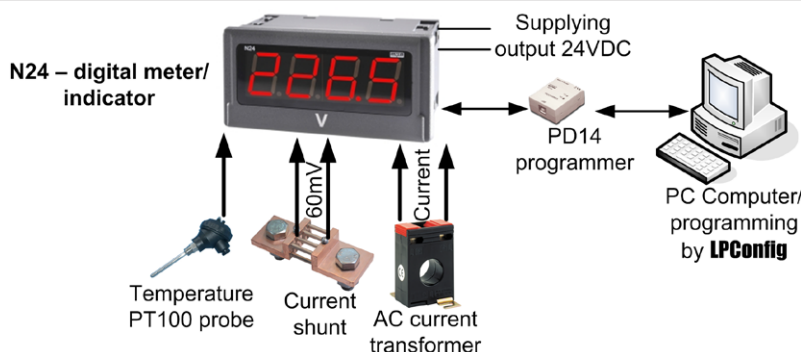
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- ✓ Designed for measurement of d.c. voltage, d.c. current, uni or bipolar, temperature through J, K thermocouples, Pt100 resistance thermometer and for measurement of a.c. voltage and a.c. current
- ✓ 4 digit display with 20mm digit height
- ✓ Parameters programmable by PD14 programmer
 - ✓ thresholds of displayed overflows,
 - ✓ precision of the displayed result (decimal point),
 - ✓ measurement averaging time,
 - ✓ recounting of indications (individual characteristic),
 - ✓ automatic or manual compensation: cold junction temperature, or wire resistance (only in N24T).

EXAMPLE OF APPLICATION



Measurement and displaying of standard analogue signals like: Pt100, TC, 20mA, 60mV, 10V or high d.c. signals or a.c. current/voltage with configurable CT/VT ratio.

INPUTS

Model	Measuring ranges	Parameters	Overloads	Errors
N24S	-11 mV..-10mV..60mV..66mV	input resistance >1MΩ	Short duration overload (3s): 10 Un Sustained overload:10%	Basic error (at manufacturer's settings): ±(0.2% of range + 1 digit) Additional error from ambient temperature changes: ±(50% of basic error/10K)
	-1V..0V..10V..11V			
	-11V..-10V..10V..11V			
	-1mA..0mA..20mA..22mA	input resistance 10Ω ±1%	Short duration overload (3s): 10 In Sustained overload:10%	
3.6 mA..4mA..20mA..22mA	input resistance 5Ω ±1%			
N24T		-50°C..150°C	current flowing through the sensor <300 μA Resistance of wires connecting thermometer with meter: 10Ω (per wire)	Short duration overload (3s) (input of sensors): 30V
	-50°C..400°C			
	Thermocouple J	-50°C..1200°C		
	Thermocouple K	-50°C..1370°C		
N24Z	1..100..120 V a.c.	input resistance > 2MΩ	Short duration overload (3s): 2 Un (<1000V) Sustained overload 20%	Basic error (at manufacturer's settings): • voltage and current: ±(0.5% of range + 1 digit) in frequency interval 20..500Hz • frequency: ±(0.02% of range + 1 digit) Additional error from ambient temperature changes: ±(50% of basic error/10K)
	2.5..250..300 V a.c.			
	4..400..600 V a.c.			
	20..500 Hz (in voltage range: 24..480 V)	input resistance 50mΩ ±10%	Short duration overload (3s): 10 In Sustained overload 20%	
0.01..1..1.2 A a.c.				
N24H	0.005..5..6 A a.c.	input resistance 10mΩ ±10%	Short duration overload (3s): 2 Un (<1000V) Sustained overload 10%	Basic error (at manufacturer's settings): ±(0.2% of range + 1 digit) Additional error from ambient temperature changes: ±(50% of basic error/10K)
	-1..50..55 V d.c.	input resistance > 2MΩ		
	-3..200..220 V d.c.			
	-120..-100..100..120 V d.c.			
	-300..-250..250..300 V d.c.	input resistance 50mΩ ±10%		
	-480..-400..400..480 V d.c.			
-0.1..1..1.1 A d.c.				
-1.2..-1..1..1.2 A d.c.	input resistance 10mΩ ±10%			
-0.1..5..5.5 A d.c.				
-6..-5..5..6 A d.c.				

OUTPUTS

For N24S and N24T	Output for supply external transducers	24V ± 5% 30 mA
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EXTERNAL FEATURES

Weight	<0,25 kg	
Dimensions	96 x 48 x 64 mm	
Protection level(acc. to EN 60529)	ensured by the housing: IP65	from the terminal side: IP20
Display	4-digit LED display, 20 mm height, red colour	indication range: -1999..9999

RATED OPERATING CONDITIONS

Supply voltage	230 V ± 10% a.c. (45..65 Hz); 110 V ± 10% a.c. (45..65 Hz) 110 V ± 10% a.c. (45..65 Hz); 85..253 V a.c. (45..65 Hz) or d.c.; 20..40 V a.c. (45..65 Hz) or d.c.	input power consumption: 6 VA
Temperature	ambient: -10..23..55 °C	storage: -25..85 °C
Relative humidity	≤ 95%	condensation inadmissible
Working position	any	
Preheating time	30 min	
Averaging time	≥ 0,5 s	1 second set by default

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emission	acc. to EN 61000-6-4
Insulation between circuits	basic	
Pollution degree	2	
Installation category	III (for the 400V option - category II)	
Maximal phase-to-earth working voltage	for the supply circuit: 300V	acc. to EN 61010-1
	for the measuring input: 600V - category II (300 V cat. II)	
	for the programming input: 5V	
Altitude above sea level	<2000 m	

CONNECTION DIAGRAMS

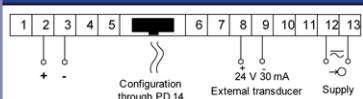


Fig. 1. Electrical connections of the N24S meter

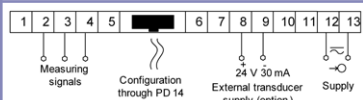


Fig. 2. Electrical connections of the N24T meter

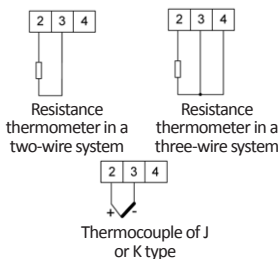


Fig. 3. Connections of N24T measuring inputs

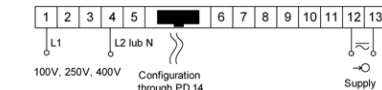


Fig. 4. Electrical connections of N24Z and N24H meters with the measurement of voltage and frequency

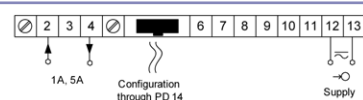


Fig. 5. Electrical connections of N24Z i N24H meters with the current measurement

ORDERING

TABLE 1. ORDERING CODES:

	N24	X	X	X	XX	XX	X
Kind of input signal							
Standard: voltage, current		S					
temperature: thermocouples, resistance thermometers		T					
a.c. signals		Z					
d.c. signals: high voltage and current		H					
Input signal:							
See table 2			X				
Supply voltage							
230 V a.c.						1	
110 V a.c.						2	
24 V a.c.						3	
85..253 V a.c./d.c. with supply output 24V/30mA*						4	
20..40 V a.c./d.c. with supply output 24V/30mA*						5	
Unit:							
See table 3							XX
Kind of execution:							
standard PL							PL
standard EN							EN
after agreeing with the manufacturer							99
custom-made**							XX
Acceptance tests:							
without extra requirements							8
with an extra quality inspection certificate							7
acc. to customer's agreements							X

* - The output is only in N24S and N24T meters
** - the code will be established by the manufacturer

TABLE 2. METER TYPE

No	N24S	N24T	N24Z	N24H
1	0..20 mA	Pt100: -50..150 °C	100 V a.c.	±100 V d.c.
2	4..20 mA	Pt100: -50..400 °C	250 V a.c.	±250 V d.c.
3	0..60 mA	Thermocouple J	400 V a.c.	±400 V d.c.
4	0..10 V	Thermocouple K	1 A a.c.	±1 A d.c.
5	± 60 mV		5 A a.c.	±5 A d.c.
6	± 10 V		20..500 Hz	0..50 V d.c.
7				0..200 V d.c.

TABLE 3. CODES OF HIGHLIGHTED UNIT:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	06	mA	12	Pa
01	°C	07	kA	13	kPa
02	%	08	kV	14	MPa
03	A	09	turns	15	on order
04	V	10	rpm		
05	mV	11	bar		

Order example1 :

The code N24Z-2.1.04.EN.8 means

N24Z - digital meter for a.c. signal

2 - input signal: 250 V a.c.

1 - supply voltage: 230 V a.c.

04 - unit: V

EN - standard execution with user's 99 - execution acc. to required customer's manual in English

8 - without extra requirements

Order example2 :

The code N24S-6.4.02.99.7 means

N24S - digital meter for d.c. signal

6 - input signal: 0..20 mA

4 - supply voltage: 85..253 V a.c.

02 - unit: % and display indications 0.100.0

99 - execution acc. to required customer's settings mentioned in table 4

7 - with an extra quality inspection certificate

TABLE 4. EXAMPLE OF CUSTOMER'S REQUIREMENTS:

Parameter	Range/Value
Decimal point	000.0 for I, U
Averaging time	1 s
Upper measurement overflow	9999
Lower measurement overflow	-1999
Individual characteristic	1
Parameter a of the individual characteristic	5
Parameter b of the individual characteristic	0

SEE ALSO:



Free LPConfig software for easy programming of LUMEL's products. Available on our website



PD14 programmer - unit for programming LUMEL's products, with USB connection, LPCon compatible. For more details check DIGITAL METERS catalogue or our website.



N30 digital panel meters with three-colour display. For more details check DIGITAL METERS catalogue or our website.



For more information about products check Product Guide 2009 catalogue or visit our website.

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