

INTRA-AUTOMATION

MESS- UND REGELINSTRUMENTE / MEASUREMENT AND CONTROL



TÜVRheinland®
CERT
ISO 9001

Digital Panel Meter IntraDigit Series IA-N24



Technical Information

02/2011



Accessories

THE EXPERT IN LEVEL AND FLOW

Intra-Automation
Technical Information
02/2011

Technical details subject to be changed without notice.

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IA-N24 IntraDigit Digital Panel Meter

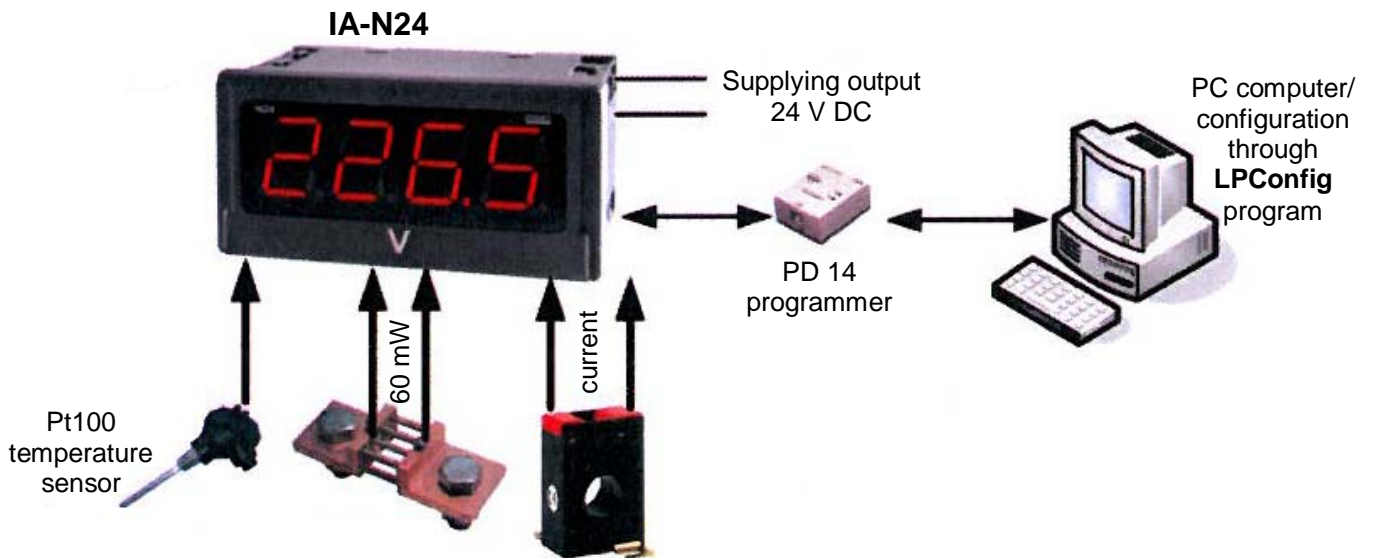
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1 Features

- ◆ Designed for measurement of DC voltage or DC current, temperature through Pt100 thermometers, J, K thermocouple, AC voltage and AC current.
- ◆ 4-digit LED display (20 mm digit height)
- ◆ Programmable parameters through the PD14 programmer
 - Precision of displayed results (decimal point)
 - measurement averaging time
 - recounting of indications (individual characteristic)
 - automatic or manual compensation: temperature of cold ends (for J, K) or wire resistance (for Pt100)

2 Application example



Measurement and display; temperature, analog signals, DC current & voltage, AC current & voltage

3 Technical details

Inputs					
Type	Measuring ranges		Parameters	Overloads	Errors
IA-N24S	-11 mV...-10 mV...60 mV...66 mV		Input resistance: > 1 M Ω	Short term overload (1s): - voltage input: 10 Un - current input: 5 In Sustained overload: 110 % Un, 110 % In	Basic error: \pm (0,2% of range + 1 digit) Additional error from ambient temperature changes: \pm (50 % of basic error)
	66 mV...-60 mV...60 mV...66 mV				
	-0,5V...0 V...10 V...11 V				
	-11 V...-10 V...10 V...11 V				
	-1 mA...0 mA...20 mA...22 mA				
	3,6 mA...4 mA...20 mA...22 mA		Input resistance: 10 Ω \pm 1%		
IA-N24T	Pt100	-50...150 °C	Current flowing through the sensor: < 300 μ A Resistance of wires conn. RTD with the meter: - max. 5 Ω (per wire) for automatic compensation - max. 10 Ω (per wire) for manual compensation	Short term overload (1s): Input of sensors: 30 V	Basic error: \pm (0,2% of range + 1 digit) Additional errors: - compensation of cold junction temperature changes: \pm 0,2 % of range from ambient temperature changes: \pm (50 % of basic error)
		-50...400 °C			
	Thermocouple Type J	-50...1200 °C			
	Thermocouple Type K	-50...1370 °C			
IA-N24Z	1...100...120 V AC		Input resistance: > 2 M Ω	Short term overload (1s): Voltage input: 2 Un (<1000 V), Current input: 10 In Sustained overload 150 % Un (for 400 V input) 120 % (for remaining inputs) 120 % In	Basic error: - voltage and current: \pm (0,5% of range + 1 digit) - frequency: \pm (0,02% of range + 1 digit) Additional error from ambient temperature changes: \pm (50 % of basic error)
	2,5...250...300 V AC				
	4...400...600 V AC				
	20...500 V AC (in voltage range: 24...480 V)				
	0,01...1...1,2 A AC				
	0,05...5...6 A AC		Input resistance: 2m Ω \pm 10%		
IA-N24H	0...100...120 V DC		Input resistance: > 2 M Ω	Short term overload (1s): Voltage input: 2 Un (<1000 V), Current input: 10 In Sustained overload 150 % Un (for 400 V input) 120 % (for remaining inputs) 120 % In	Basic error: \pm (0,2% of range + 1 digit) Additional error from ambient temperature changes: \pm (50 % of basic error)
	0...250...275 V DC				
	-120...-100...100...120 VDC				
	-300...-250...250...300 VDC				
	-600...-400...400...600 VDC				
	-1,2...-1...1...1,2 A DC				
	-6...-5...5...6 A DC		Input resistance: 10m Ω \pm 10%		

Outputs

For N24S and N24T	Output for supply of external transducers	24 V \pm 5 %, 30 mA
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External features

Weight	< 0,25 kg	
Overall dimensions	96 x 48 x 64 mm (with terminals)	
Protection grade	IP65 (Front side)	IP10 (Terminal side)
Display	4-digit LED display, 20 mm height, red	Indication range: -1999...9999

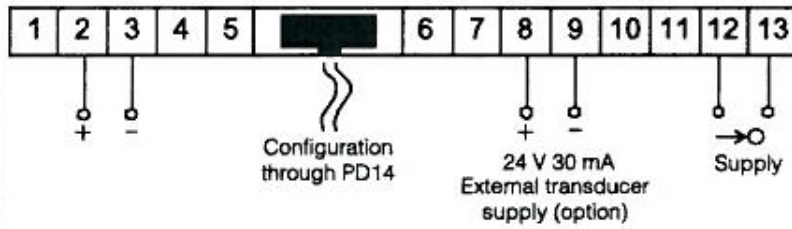
Rated operating conditions

Supply voltage	230 V \pm 10 % AC (45...65 Hz); 110 V \pm 10 % AC (45...65 Hz); 24 V \pm 10 % AC (45...65 Hz); 85...253 V AC (40...400 Hz) or DC; 20...40 V AC (40...400 Hz) or DC;	Power consumption < 6VA
Temperature	Ambient: -10...23...55 °C	Storage: -25...85 °C
Relative Humidity	< 95 %	Condensation inadmissible
Operating position	Any	
Preheating time	30 min	
Averaging time	\geq 0.5 s	1 second default set

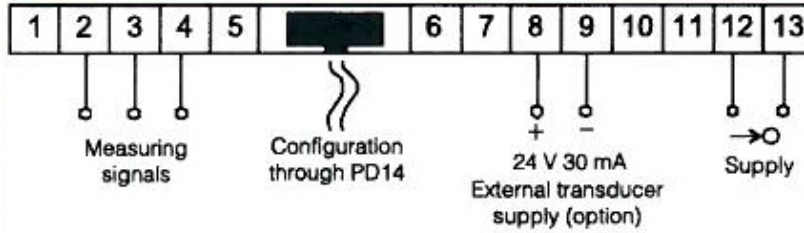
Safety and compatibility conditions

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
Pollution grade	2	
Installation category	III (for the 400 V option – category II)	
Maximal phase-to-earth operating voltage	For supply circuits: 300 V, for measuring circuits: 600 V, cat. II	
	For other circuits: 50 V	
Altitude above sea level	< 2000 m	

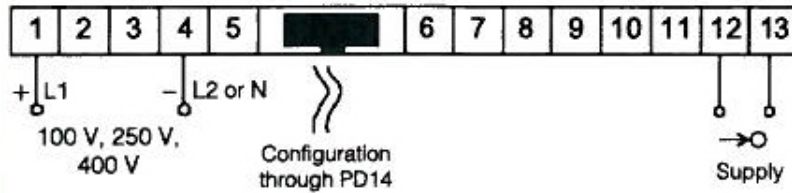
4 Connecting diagrams



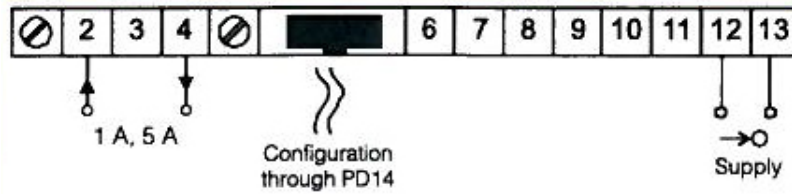
Electrical connection of the **N24S** meter



Electrical connection of the **N24T** meter

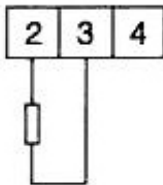


Electrical connection of the **N24Z** and **N24H** meters for voltage measurement (frequency: only **N24Z**)

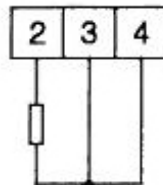


Electrical connection of the **N24Z** and **N24H** meters for current measurement

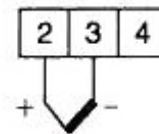
Connections of N24T measuring inputs



Resistance thermometer in a two-wire system with manual compensation



Resistance thermometer in a three-wire-system with automatic compensation



Thermocouple of J or K type

5 Order codes	
Code	Description
IA-N24	Digital panel meter
	Kind of input:
S	standard: voltage, current
T	temperature: thermocouples, resistance thermometers
Z	AC signals
H	DC signals: high voltage and high current
	Input
X	see table 1
	Power supply:
1	230 V AC
2	110 V AC
3	24 V AC
4	85...253 V AC/DC with supply output 24 V/30 mA*
5	20...40 V AC/DC with supply output 24 V/30 mA*
	Unit
XX	see table 2
	Version
00	standard
NS	non-standard settings (please see example)
XX	custom-made**
	Language
E	English
X	other**
	Certification
0	without additional quality inspection certificate
1	with additional quality inspection certificate
X	On request**
IA-N24	

*only for N24S and N24T

**Please contact manufacturer

Table 1: Input signals

Code	N24S	N24T	N24Z	N24H
1	0...20 mA	Pt100: -50...150 °C	100 V AC	± 100 V DC
2	4...20 mA	Pt100: -50...400 °C	250 V AC	± 250 V DC
3	0...60 mV	Thermocouple J	400 V AC	± 400 V DC
4	0...10 mV	Thermocouple K	1 A AC	± 1 A DC
5	± 60 V		5 A AC	±5 A DC
6	± 10 V		20...500 Hz	0...100 V DC
7				0...250 V DC

Table 2: Unit codes

Code	Unit	Code	Unit	Code	Unit
00	without	06	mA	12	bar
01	°C	07	kA	13	kPa
02	%	08	kV	14	MPa
03	A	09	Hz	XX	On order**
04	V	10	turns		
05	mV	11	rpm		

**Please contact the manufacturer

Order examples:

Example 1: **N24Z-2-1-04-00-E-0** means:

N24Z meter for AC signals, input: 250 V AC, Power supply: 230 V AC, unit: V, 00- standard version, English language without extra certification requirements

Example 2: **N24S-1-4-02-NS-E-1** + description:

Parameter	Range/Value
Decimal point	000,0 for I, U
Averaging time	1 s
Upper overflow of measurement	9999
Lower overflow of measurement	-1999
Individual characteristic	enabled
Parameter a of the individual characteristic	5
Parameter b of the individual characteristic	0

- means: N24S meter for DC signals, input: 4...20 mA supply: 85...253 V AC, with supply output: 24 V/ 30 A, unit %, non standard settings, display range 0...100.0, English language, with extra certificate

→ When ordering a meter with parameters different from the standard, all parameters have to be provided! ←

Besides the products covered by this brochure, Intra-Automation GmbH also manufactures other high-quality and high precision instruments for industrial measurement tasks. For more information, please contact us (contact details on the backside of this brochure).

Flow measurement



Itabar®-Flow Sensor



IntraSonic IS210 Ultrasonic Flow Meter

Level measurement



ITA-mag. Level Gauge



MAGLINK Level Indicator

Other Measurement Tasks:



DigiFlow Flow and Level Computers



IntraCon Digital Controllers



IntraDigit Digital Indicators / Meters



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