





# ND48-AN Panel Meter

## operation manual

### Device description

ND48-AN - is an electronic process panel meter. Can be used in a wide range of industrial measurement and control applications for DC voltage and current measurements.



SYMBOL	DESCRIPTION
	CAUTION or WARNING: Tells you about the risk of electrical shock.
	CAUTION, WARNING or IMPORTANT: Tells you of circumstances or practices than can effect the instrument's functionality and must refer to technical documentation.
	INFORMATION: Helpful information.
	INFORMATION: Discarded electronic equipment collecting



**READ THE MAUAL CAREFULLY BEFORE INSTALLATION AND USE!**

### Safety information



*Indicator is dedicated for SELV installations only!*

Safety recommendations:

- read operating manual carefully before use
- follow the manual safety recommendations
- disconnect power during display mounting and wiring
- do not use the display in corrosive and explosive atmosphere
- keep environmental conditions within specification
- provide proper ventilation by keeping appropriate spacing
- do not use even partially damaged display.

### EMC information



*Instrument meets EN-61326 EMC requirements for industrial environment.*

Follow listed below instructions to provide proper operation in real conditions:

- do not install the product near devices generating strong electromagnetic fields,
- wire the lines connected to the display separately from power lines carrying high voltages or currents,
- use twisted or shielded signal lines in noisy environment,
- always apply functional grounding,
- apply external surge protectors close to the unit if long lines are connected,
- apply additional filtering in noisy environment.

**Type identification**

Type: **ND48-AN** - ND48 panel display with analog input

**Principle of Operation**

ND48-AN measures analogue signal from the range 0-10V or 0(4)-20mA and displays it's value on four-digit, 7-segment LED display. A/D conversion, signal processing and control is performed by single-chip microcontroller. The user can set read-out scaling and display parameters like digit brightness, decimal dot position etc. Programmed parameter set is stored in non volatile memory and hardware protected. Analogue input is isolated from supply terminals.

**Display installation.**

ND48-AN is intended for panel mount. It requires rectangular cut-out according to Fig.2. The unit must be introduced to the cut-out from the front and fixed on the rear side with 2 plastic clamps. The clamps should be placed on the guides on both sides of the housing and slid to the panel. Clamps can be removed by releasing them with small screw-driver and pulling back.

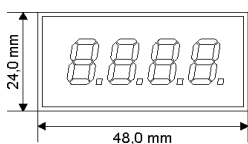


Fig.1 Device dimensions.

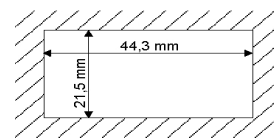
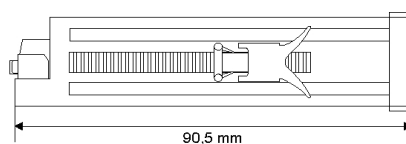


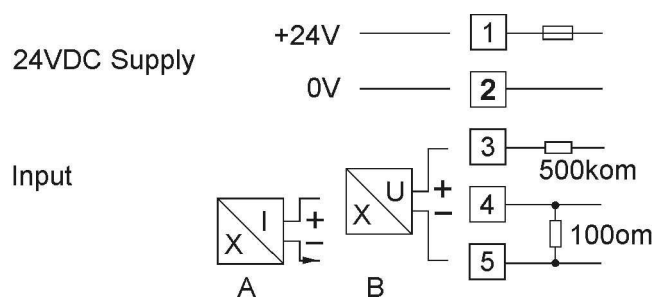
Fig.2 Panel cut-out.

**Wiring.**



*Disconnect power before installation procedure! Incorrect connections or reversed supply polarity may damage the instrument!*

Before electrical connections the display should be fixed in it's working position. Pin assignment is shown on Fig.3.



A – 0(4)-20mA current output transducer  
 B – 0-10V voltage output transducer

Fig.3 Electrical connections

<b>Pin No</b>	<b>Description</b>
1	+24V supply
2	0V supply
3	+ 10VDC input
4	+0(4)-20mA input
5	Input ground

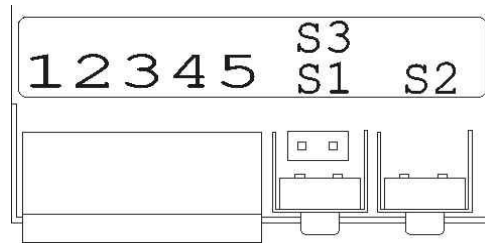


Fig.4 Rear view with connector and programming switches.

### Technical specification.

<b>Parameter</b>	<b>Value</b>	<b>Units</b>	<b>Comments</b>
Digit number	5		
Digit height	9	mm	
Digit colour	high efficient red		
Brightness adjustment	100, 75, 50,25	%	
Current input range	0(4)-20	mA DC	
Current input resistance	100	om	
Voltage input range	10	V DC	
Accuracy	+/-0.3	% FS	
Resolution	0.1	%FS	
Digital filter time-constant	0.01 - 5.12	s	
Input isolation	1000	V DC	
Supply voltage	18 - 36	V DC	
Power consumption	0.7	W	
Working temperature range	0 - 50	C	
Protection degree (front panel)	IP40		
Dimensions	48x24x90,5	mm	
Panel cut-out	44,3 x 21,5	mm	+0,5/-0 mm
Panel thickness	0 - 45	mm	
Wire cross-section	1.5 max	mm <sup>2</sup>	
Weight	70	g	
EMC standards	PN-EN61326:2002U		industrial environment

### Programming

ND48-RS should be programmed before use. User can set read-out scaling, filter time-constant, decimal dot position, read-out rounding and digit brightness.

Programming switches are placed on the rear wall of the housing. Programming menu messages are displayed on the main display in front.

At first, programming mode should be activated by putting the jumper on S3 pin strip. S1 and S2 push-buttons are used for menu scrolling and value changes. S1 push-button scrolls the menu and changes

edited values. S2 push-button is used to enter selected menu functions and accept edited values.

Programming procedure step by step:

1. Put the jumper on S3 pins - Edit message appears.
2. Press S2 key - the first menu function symbol appears ('Fa00').
3. Choose function to be edited by pressing S1 key.
4. Press S2 key to enter chosen function.
5. Change function value or option with S1 key.
6. Accept change by pressing S2 key - function name reappears.
7. Edit other functions by repeating steps 3, 4, 5, 6.
8. Move to the end of function list until 'Edit' message reappears. Settings are stored in this moment.
9. Remove the jumper from S3. This way, settings memory is hardware protected.

**I** *The jumper must be removed from S3 while 'Edit' message is displayed.*

*Resetting parameters to default settings.*


1. Switch display power off.
2. Put the jumper on S3.
3. Keep S1 key pressed and turn display supply on - 'Eini' message should appear.
4. Press S2 key to accept the reset.
5. Remove the jumper from S3.

**I** *If S2 key will be pressed erroneously in step 3, 'Fabr' message will appear. Turn display power off and repeat the procedure correctly.*

### Programming menu table.

Menu function	Decription	Parameter range	Factory setting
Fa00	Input type	I-DC current; U-DC voltage	I
Fa01	Minimum (zero) input setting	I: <0000;2000> *10 <sup>-2</sup> mA U: <0000;1000> *10 <sup>-2</sup> V	0000
Fa02	Minimum (zero) read-out setting	<-999;9999>	0000
Fa03	Maximum (full scale) input setting	I: <0000;2000> *10 <sup>-2</sup> mA U: <0000;1000> *10 <sup>-2</sup> V	I:2000; U:1000
Fa04	Maximum (full scale) read-out setting	<-999;9999>	I:2000; U:1000
Fa05	Decimal point position	0.000; 0.00; 0.0; 0	0.00
Fa06	Digital filter time-constant	0(0,01s); 1(0,02s); 2(0,04s); 3(0,08s); 4(0,16s); 5(0,32s); 6(0,64s); 7(1,28s); 8(2,56s); 9(5,12s)	3(0,08s)
Fa07	Read-out rounding	1, 2, 5, 10	1
Fd01	Digit brightness	25%, 50%, 75%, 100%	100%

**DISCARDED ELECTRONIC EQUIPMENT COLLECTING INFORMATION.**

 This equipment should be collected and treated according to 2002/96/EC European Directive on waste electric and electronic equipment (WEEE).

Materials and substances to be removed:

<b>Material</b>	<b>Quantity</b>	<b>Comments</b>
Printed circuit boards	37 cm <sup>2</sup>	

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