

## Table of contents

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	Page
NT 10 Digital meter, current loop display 4-20 mA	G2
-----	
NT 20 Digital meter, signal input 0-20 mA, 4-20 mA, 0-10 V 2 point levels programmable	G7
-----	
NT 30 Digital meter, impulse counter 2 point levels programmable	G11
-----	
NT 40 Analogue meter, signal input 4-20 mA	G16

Technical information subject to change

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Different variations to those specified are possible

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## NT 10

The NT 10 is powered by the 4-20mA current loop. The 4-digit display shows the level on a 7 segment display.

### Operation

The NT 10 is configured using 3 buttons.



- Programme button P:                      The programme button P accesses the programme mode and executes the various functions in programme mode.
- Arrow DOWN button (minus button):    The arrow DOWN button is used for adjustment of the parameters.
- Arrow UP button (plus button):         The arrow UP button is used for adjustment of the parameters.

### Mounting

The user and display elements are on the front. The NT 10 is fixed in place with a plastic seal. The terminal block for electrical wiring is on the back.

The NT 10 is intended for mounting on the control panel. Before fitting, the panel cut-out must be prepared according to the dimensions and tolerances shown in the technical data.

Before inserting the instrument, the plastic seal must be removed carefully using a suitable screwdriver. Insert the instrument into the panel and then replace the plastic seal. Hold the NT 10 in place and press the seal gently with the screwdriver so that it is flush against the panel. To remove the NT 10 follow the above steps in the reverse order.

### Electrical connection

Electrical connection is on the rear of the NT 10. The NT 10 is powered via the current loop and therefore does not require its own power supply.

#### Wiring plan

NT10-1    Housing 48 x 24mm

clamp	clamp label
1	I <sub>B</sub>
2	I <sub>OUT</sub>
3	I <sub>IN</sub>
4	I <sub>B</sub>

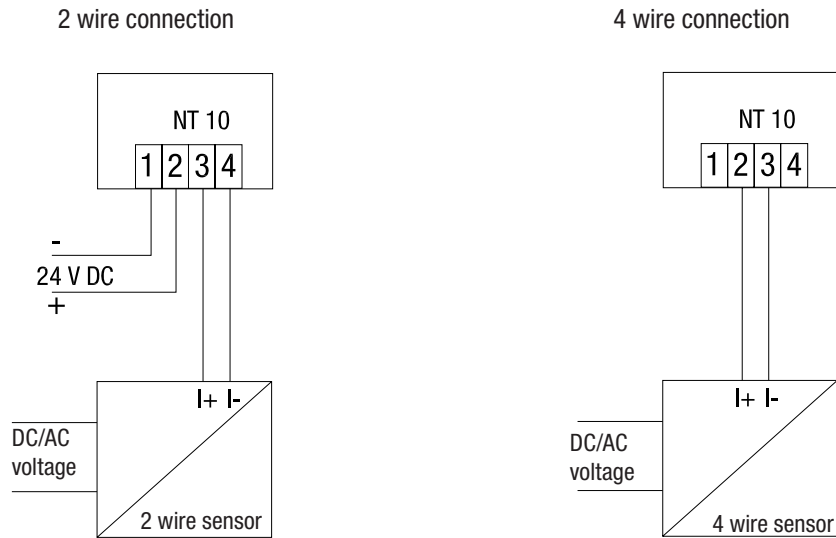
NT10-2    Housing 72 x 36mm

clamp	clamp label
1	I <sub>B</sub>
2	NC
3	I <sub>IN+</sub>
4	I <sub>IN-</sub>
5	I <sub>B</sub>

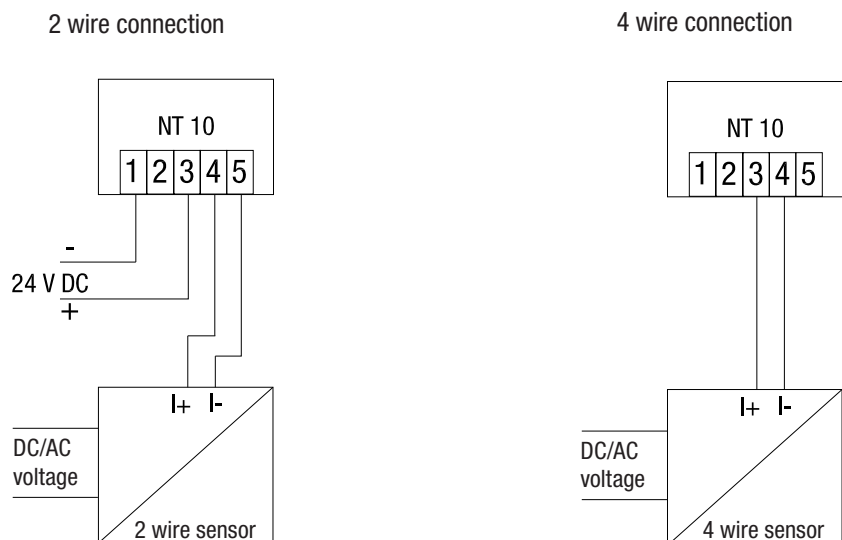
## NT 10

### Wiring example

#### NT10-1



#### NT10-2



## NT 10

### Setting up of the device

#### Switching on

Once the installation is complete, you can start the device by applying the current loop. Check beforehand once again that all the electrical connections are correct.

#### Starting sequence

For 1 second during the switching-on process, the segment test (8 8 8 8) is displayed, followed by an indication of the software type and, after that, also for 1 second, the software version.

After the start-up sequence, the device switches to operation/display mode.

#### Standard parameterization

To be able to parameterize the display, press the [P] key in operating mode for 1 second.

The display then changes to the menu level with the first menu item **TYPE**.

Menu level	Parameterization level
	<p>Selection of the input signal, <b>TYPE</b>:</p> <p>There are two measuring input options for the current loop: 4-20 mA as works calibration (without application of the sensor signal) and Sens as sensor calibration (with the sensor applied). Confirm the selection with [P] and the display switches back to the menu level.</p>
	<p>Setting the measuring range end value, <b>END (20mA)</b>:</p> <p>Set the end value from the smallest to the largest digit with [▲] [▼] and confirm each digit with [P]. A minus sign can only be parametrized on the highest value digit. After the last digit, the display switches back to the menu level. If Sens was selected as the input option, you can only select between NOCA and CAL. With NOCA, only the previously set display value is taken over, and with CAL, the device takes over both the display value and the analogue input value.</p>
	<p>Setting the measuring range start/offset value, <b>OFFS (4mA)</b>:</p> <p>Enter the start/offset value from the smallest to the largest digit [▲] [▼] and confirm each digit with [P]. After the last digit the display switches back to the menu level. If Sens was selected as the input option, you can only select between NOCA and CAL. With NOCA, only the previously set display value is taken over, and with CAL, the device takes over both the display value and the analogue input value.</p>

Menu level	Parameterization level
	<p>Setting the decimal point, <b>dot</b>:</p> <p> </p> <p>The decimal point on the display can be moved with [▲] [▼] and confirmed with [P]. The display then switches back to the menu level again.</p>
	<p>Setting the display time, <b>SEC</b>:</p> <p> </p> <p>The display time is set with [▲] [▼]. The display moves up in increments of 0.1 sec up to 1 sec and in increments of 1.0 sec to 10.0 sec. Confirm the selection by pressing the [P] button. The display then switches back to the menu level again.</p>
	<p>Activation / deactivation of the programming lock and completion of the standard parameterization, <b>run</b>:</p> <p> </p> <p>With the aid of the [▲] [▼] keys, you can choose between the deactivated key lock ULOC (works setting) and the activated key lock LOC. Make the selection with [P]. After this, the display confirms the settings with "- - -", and automatically switches to operating mode. If LOC was selected, the keyboard is locked. To get back into the menu level, you must press [P] for 3 seconds in operating mode. You must now enter the CODE (works setting 1 2 3 4) that appears using the [▲] [▼] keys plus [P] to unlock the keyboard. FAIL appears if the input is wrong.</p>

## NT 10

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### Technical datas

<b>Dimensions</b>	NT 10-1	
	Housing	48mm x 24mm x 52mm (BXHXT) incl. plug in terminal
	Panel cut out	45,0 <sup>+0,6</sup> mm x 22,2 <sup>+0,3</sup> mm
	NT 10-2	
	Housing	72mm x 36mm x 53mm (BXHXT) incl. plug in terminal
	Panel cut out	68,0 <sup>+0,7</sup> mm x 33,0 <sup>+0,6</sup> mm
	Fixing	snap-in screw element
	Material	PC polycarbonat black
	Protection class	standard IP65 (front) - bacI side IP00
	Connection	plug in terminal; wire cross section up to 2,5mm <sup>2</sup>
<b>Input</b>	Range	4-20 mA
	Levels	min. 3,5mA ..... max 21mA
<b>Accuracy</b>	Measuring fault	0,3%, +/- 1 Digit
	Temp. drift	100 ppm/K
<b>Display</b>	Display	7-Segment-LED, 10mm (housing 48mm x 24mm) 14mm (housing 72mm x 36mm), red 4 Digit = Display 9999 Digit
	Overflow/Underflow	horizontal bars at the top / horizontal bars at the bottom
	Display time	0,1 ... 10 sec.
<b>Memory</b>	Parametermemory	EEPROM > 100 Jahre
<b>Ambient conditions</b>	Working temperature	0 bis +60°C
	Storing temperature	-20°C bis +80°C
<b>EMV</b>	EN61326-1 (1997) A1, A2	
<b>Safety Standards</b>	DIN61010	
<b>CE-Sign</b>	Conformity to 89/336/EWG	

## NT 20

The NT 20 is used for the evaluation of the normal signals 0..10 V, 0..20 mA or 4..20 mA of the level sensors.  
 The 4 digit display shows the level on a 7 segment display

### Operation

The NT 20 is configured using 3 buttons.



Programme button P:

The programme button P accesses the programme mode and executes the various functions in programme mode.

Arrow DOWN button (minus button):

The arrow DOWN button is used for adjustment of the parameters.

Arrow UP button (plus button):

The arrow UP button is used for adjustment of the parameters.  
 functions in programme mode.

### Mounting

The user and display elements are on the front. The NT 20 is fixed in place with clamp screws. The terminal block for electrical wiring is on the back.

The NT 20 is intended for mounting on the control panel. Before fitting, the panel cut-out must be prepared according to the dimensions and tolerances shown in the technical data.

Before inserting the instrument, the mounting screws must be unclamped. Insert the instrument into the panel and then replace the screws. Hold the NT 20 in place and screw in by hand so that it is flush against the panel.

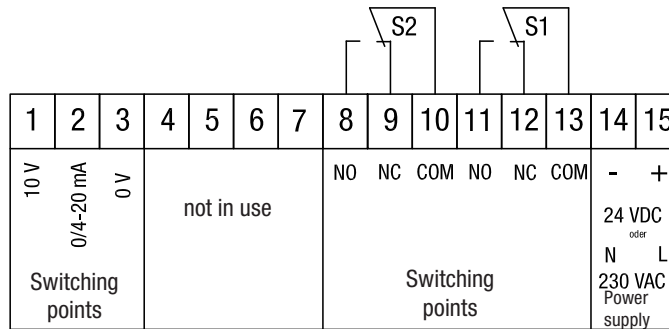
To remove the NT 20 follow the above steps in the reverse order.

### Electrical connection

Electrical connection is on the rear of the NT 20. A separate supply voltage is required and it not possible to be powered via a current loop.

#### Wiring plan

Clamp	Function	Clamp	Function
1	Input signal 10V	11	Relay S1 NO
2	Input signal 0/4-20mA	12	Relay S1 NC
3	Input signal 0V	13	Relay S1 COM
4-7	Not in use	14	Supply voltage -
8	Relay S2 NO	15	Supply voltage +
9	Relay S2 NC		
10	Relay S2 COM		



### Programming steps

To change into programming mode

Press the P button for the first programme number PNO

To change between the programme numbers

Press the P button and the arrow UP button to show the range of PNO to PN68.

To show the programmed value in the programme number

Once the required programme number is shown in the display, press the arrow UP or DOWN button to shown the programmed value

To change the programmed value

Follow the steps above to display the value. The first digit to the right will flash.

Use the UP and DOWN buttons to change to the required value. Press P and then the second digit from the right will flash.

Repeat as before until all digits have been set. Then press P for 1 second to save the new value. For a brief moment the NT 20 will show dashes in the display.

After approximately 7 seconds the NT12 will return to operating mode.

### Table of the programme numbers

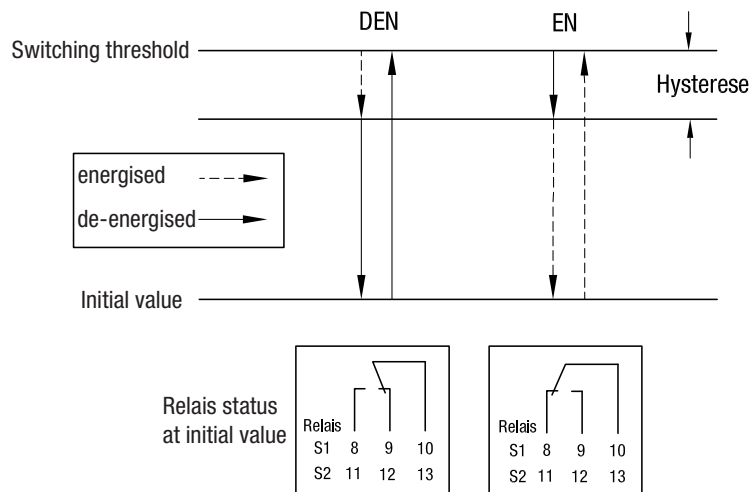
PN	Function	Value range	Factory setting
Input			
0	Type of measurement signal	0 = Programming of the display over the max and min vlaues of the input signal 1 = 0 - 10V 2 = 0 - 20mA 3 = 4 - 20mA	0
1	Display by 10V, 20mA or max value of the input signal	-999...9999	2000
2	Display by 0V, 0mA, 4mA or min value of the input signal	-999...9999	0
3	Decimal place setting	use arrow UP for the required number	no decimal places
4	Measurement update time in seconds	0.1...10.0	1.0

## NT 20

Switching point relay S1			
61	Switching threshold based on the display value	-999...9999	500
62	Hysteresis based on the display value	0...9999	1
63	Mode 0 = EN 1 = DEN	0 / 1	1
Switching point relay S2			
66	Switching threshold based on the display value	-999...9999	1500
67	Hysteresis based on the display value	0...9999	1
68	Mode 0 = EN 1 = DEN	0 / 1	1

### Programme number functions

- PN 0 Defines whether input signal 1 - 3 is to be used or if the display is to be programmed with the input signal
- PN 1 This programme number defines the display at 0V, 20mA or the max value of the input signal
- PN 2 This programme number defines the display at 0V, 20mA or the min value of the input signal
- PN 3 This parameter sets the number of decimal places shown in the display
- PN 4 This sets the measurement update time.
- PN 61 - 63 and PN 66 - 68 switching threshold, hysteresis, EN / DEN

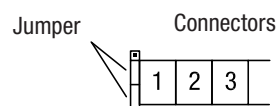


The hysteresis is freely programmable for each switching point. The function DEN activates the respective relay when the switching threshold is reached. In the function EN the respective relay is released when the switching threshold is reached. The function EN can be used for example to signal an alarm when there is a power supply outage.

### Programming lock

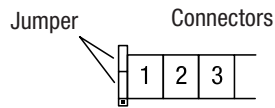
There are 2 jumpers on the back of the NT 20. These can be used to set a programming lock.

Variation 1: Unlimited programming possible.  
 The programmer can access all PNs.



## NT 20

Variation 2: Programming is locked.  
 The programming mode is blocked.



### Technical data

<b>Dimensions</b>	Housing	96mm x 24mm x 134mm incl. screw elements	
	Cut-out dimensions	92.0 <sup>+0.8</sup> mm x 22.0 <sup>+0.6</sup> mm	
	Mounting	snap in screw element	
	Housing material	PC/ABS blend, black colour, UL94V-0	
	Protection class	Front IP40; connections IP00	
	Elect. connection	Screw clamps on the back up to 2.5mm <sup>2</sup>	
<b>Input</b>	Measurement range	0-10 V, 0-20 mA, 4-20 mA	
	Input resistance	Ri at 10 V =100kOhm, 20 mA =100 Ohm	
<b>Output</b>	Relays S1 and S2		
	Change over contact	240 VAC / 0,25 A and 24 VDC / 1 A; resistive load	
	Switching cycle	2 x 10 <sup>5</sup> at max. contact load; 10 x 10 <sup>6</sup> mechanical	
<b>Accuracy</b>	Resolution	-999 bis +9999 digits	
	Measurement error	+/- 0.2% of measurement area, +/- 1 digit	
	Temp. coeff.	100 ppm/K	
<b>Supply voltage</b>	Voltage	NT 20-1:	230 VAC +/- 10% 50-60 Hz
		NT 20-2:	24 VDC +/- 10%
	Power drain	max. 5 VA	
<b>Display</b>	Display	7 Segment LED, 10mm high, red; 4 decimal places = display 9999 digit	
	Overflow / Underflow	cross beam above / Cross beam below	
	Display time	0.1 ... 10 s adjustable	
<b>Memory</b>	Parameter saving	EEPROM	
	Data preservation	> 30 years	
<b>Operating conditions</b>	Operating temperature	0 to +60°C	
	Storage temperature	-20°C to +80°C	
<b>EMC</b>	EN61326-1 (1997) A1, A2		
<b>Electrical safety</b>	EN61010-1 (1998) A1, A2		

### Trouble shooting

1. The display is not working.

- Check the power.
- If it is ok, then the fault can only be repaired by the supplier ( faulty meter)

2. "HELP" is shown on the display

- The NT 20 has a fault in the configuration memory. It must be reset to the factory settings and then newly configured.
- Reset:
  1. Turn off the power supply.
  2. Press P button and hold down.
  3. Switch on the power and press P button for approximately 2 s.

## NT 30

The NT 30 is used for the fill level display of counter impulse input signals such as the electromechanical SLS Lot. The 4-digit display shows the level on a 7 segment display

### Operation

The NT 30 is configured using 3 buttons.



**Programme button P:** The programme button P accesses the programme mode and executes the various functions in programme mode.

**Arrow DOWN button (Minus button):** The arrow DOWN button is used for adjustment of the parameters.

**Arrow UP button (plus button):** The arrow UP button is used for adjustment of the parameters functions in programme mode.

### Mounting

The user and display elements are on the front. The NT 30 is fixed in place with clamp screws. The terminal block for electrical wiring is on the back.

The NT 30 is intended for mounting on the control panel. Before fitting, the panel cut-out must be prepared according to the dimensions and tolerances shown in the technical data.

Before inserting the instrument, the mounting screws must be unclamped. Insert the instrument into the panel and then replace the screws. Hold the NT 30 in place and screw in by hand so that it is flush against the panel.

To remove the NT 30 follow the above steps in the reverse order.

### Electrical connection

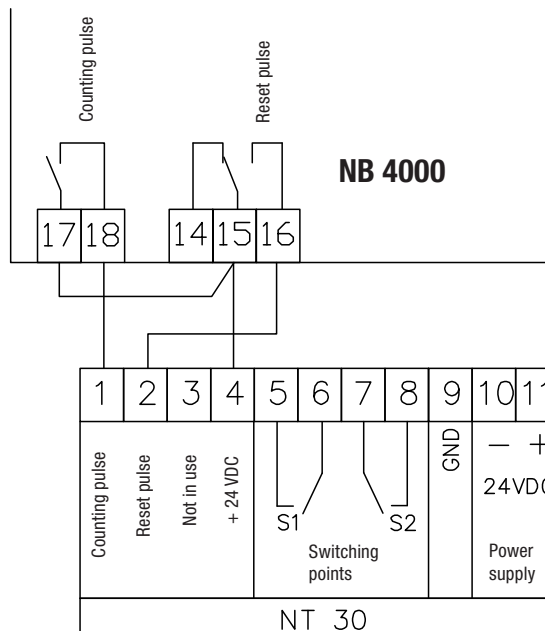
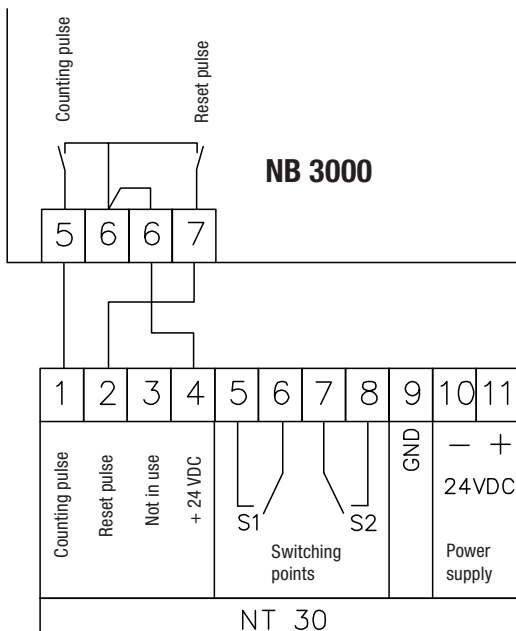
Electrical connection is on the rear of the NT 30. A separate supply voltage is required and it not possible to be powered via a current loop.

#### Wiring plan

Clamp	Function	Clamp	Function
1	Counter impulse (NB 3000 / 4000)	7	Switching point S2
2	Reset impulse (NB 3000 / 4000)	8	Switching point S2
3	Not in use	9	GND
4	+12 VDC	10	supply voltage -
5	Switching point S1	11	supply voltage +
6	Swtiching point S1		

## NT 30

### Electrical connections of the signal input of the UWT-Lot



## Programming steps

To change into programming mode

Press the P button for the first programme number PNO

To change between the programme numbers

Press the P button and the arrow UP button to show the range of PNO to PN73.

To show the programmed value in the programme number

Once the required programme number is shown in the display, press the arrow UP or DOWN button to shown the programmed value

To change the programmed value

Follow the steps above to display the value. The first digit from the right will flash  
Use the UP and DOWN buttons to change to the required value. Press P and then the second digit from the right will flash.  
Repeat as before until all digits have been set. Then press P for 1 second to save the new value. For a brief moment the NT 30 will show dashes in the display.

After approximately 7 seconds the NT 30 will return to operating mode.

## NT 30

### Table of programme numbers

PN	Function	Value range	Factory setting	with SLS 3000
1	Polarity of the input 0 = climbing / npn 1 = falling / pnp	0 / 1	0	0
2	Counter operation 0 = normal impulse counter without filter 1 = Filter >30Hz Other operations available on request	0	0	1
3	Scaling function 0 = subtracting/adding (dependant on PN 9) Function 1 and 2 are not relevant for contents measurement	0 / 1 / 2	0	0
4	Scaling factor	1...9999	1	Programme desired display
5	Decimal place setting	use arrow UP for the required number	no decimal place	Programme desired display
6	Reset to start value mode 0 = none 1 = UP button 2 = Reset input Reset 3 = Reset button or input Mode 4 - 7 not relevant for contents measurement	0 - 7	3	2 or 3
7	Reset handling 0 = static 1 =shoulder triggered	0 / 1	0	0
8	Counter start value	0000...max.	1000	Programme desired display
9	Counting directing 0 = count up 1 = count down	0 / 1	0	1
50	Programming lock	0000...9999	0000	Dependant on PN 51
51	Release code	0000...9999	0000	Programme desired display
Programming of switching points S1 and S2				
60/S1 70/S2	Level limit function 0 = deactivated 1 = standard signal output Function 2 is not relevant for contents measurement	0 / 1 / 2	0	Programme required function
61/S1 71/S2	Switching threshold	0000...max.	1000	Programmed required threshold
62/S1 72/S2	Decay time in ms	0...100	0	0
63/S1 73/S2	Operation type 0 = EN when > threshold 1 = DEN when > threshold	0 / 1	1	Programme required function

### Programme number functions

PN 1	This parameter defines the shoulder which is used to evaluate a level input as logic 1.
PN 2	This parameter sets the operation type. 0 is for standard impulse counting. In setting 1, frequencies over 30 Hz are not counted. Therefore mechanical contacts are ignored.
PN 3	This is used to set how the scaling factor in the calculation of the display result works. The scaling factor is either subtracted or added to each impulse, depending on PN9.
PN 4	The scaling factor is programmed here. This depends on whether the display is in height, weight or volume.
PN 5	This parameter is used to set the number of decimal places.
PN 6	The reset mode can be set to determine which incident returns the counter to the start value.
PN 7	This programme number is used to determine the handling of the reset signal. For static evaluations the counter remains at 0 for the duration of the incident. For evaluations of the shoulder, the counter will be reset to 0 with the respective shoulder change and then counting will immediately continue.
PN 8	This sets the start value of the counter.
PN 9	This sets the counting direction. With counting up the display value that has been programmed in PN 3 / 4 incrementally increases and conversely with counting down, it will be incrementally decreased.
PN 50	Access to the set up parameters is only possible, when the same access code for PN 51 has been entered in PN50. When an access code is in use, PN51 will always jump to PN50D.
PN 51	Programming of the access code for use in PN50.
PN 60 / 70	This parameter sets whether switch S1 and S2 are deactivated or are used for a level limit function. Depending on the operation type, the digital output will either be switched on or switched off when the switching threshold is exceeded.
PN 61/ 71	This programmes the switch threshold for the digital output switching.
PN 62 / 72	This programmes the decay time of the digital output signal
PN 63 / 73	This programmes the logic of the digital output. By 1, S1 and S2 are turned on when the threshold value of PN 61 / 71 is exceeded. By 0, S1 and S2 are turned off when the threshold value of PN 61 / 71 is exceeded.

## NT 30

### Technical data

<b>Dimensions</b>	Housing	72mm x 36mm x 103mm incl. screw elements
	Cut-out dimensions	68.0 <sup>+0.7</sup> mm x 33.0 <sup>+0.6</sup> mm
	Mounting	Snap in screw element
	Housing material	PC/ABS blend, black colour, UL94V-0
	Protection class	Front IP54; connections IP00
	Elect connections	Screw clamps on the back up to 2.5mm <sup>2</sup>
<b>Input</b>	Impulse rate	10.000 Impulse / s max 30 Impulses / s be active damping
	Input resistance	approx 5 kOhm
	Input voltage	+/-5...24V
	High- / Low level	>=3V / <2V
<b>Output</b>	Switching point	30 VAC / 0.4 A - 30 VDC / 0.4 A
	Photo Mosfet	Input / output strength 100 VAC
<b>Power</b>	Voltage	230 VAC +/- 10% 50-60 Hz 24 VDC +/- 10%
	Power drain	max. 5 VA
<b>Display</b>	Display	7 segment LED, 14mm high, red 4 digits = display 9999 digits
<b>Memory</b>	Parameter saving	EEPROM
	Data preservation	> 30 years
<b>Operating conditions</b>	Operating temperature	0 bis +60°C
	Storage temperature	-20°C bis +80°C
<b>EMC</b>	EN61326-1 (1997) A1, A2	
<b>Electrical safety</b>	EN61010-1 (1998) A1, A2	

### Trouble shooting

1. The display is not working.

- Check the power.
- If it is ok, then the fault can only be repaired by the supplier ( faulty meter)

2. "HELP" is shown on the display

- The NT 30 has a fault in the configuration memory. It must be reset to the factory settings and then newly configured.
- Reset:
  1. Turn off the power supply.
  2. Press P button and hold down.
  3. Switch on the power and press P button for approximately 2 s.

3. Overflow- / Underflow characteristics.

- When there is an overflow of the counter (when counting up), then all digits are shown with a flashing 9  
This error can only be reset by resetting the counter.
- When there is an underflow of the counter (when counting down), then all digits are shown with a flashing 0  
It is not possible to display negative values.

## NT 40

The NT 40 is a coil meter that is used to show the fill level in percentage. The input signal is 4-20 mA.



### Mounting

The user and display elements are on the front. The NT 40 is supplied with mounting elements in place with a plastic seal. The terminal block for electrical wiring is on the back.

The NT 40 is intended for mounting on the control panel. Before fitting, the panel cut-out must be prepared according to the dimensions and tolerances shown in the technical data.

### Electrical connection

Electrical connection is on the rear of the NT40. The NT40 does not require its own power supply.

#### Wiring plan

Clamp	Function
1	signal input +
2	signal input -

### Technische Daten

<b>Dimensions</b>	NT 40-1	
	Housing	72mm x 72mm x 38.5mm incl screw elements
	Cut-out dimensions	68.0 <sup>+0.3</sup> mm x 68.0 <sup>+0.3</sup> mm
	NT 40-2	
	Housing	96mm x 96mm x 60mm incl screw elements
	Cut-out dimensions	92.0 <sup>+0.3</sup> mm x 92.0 <sup>+0.3</sup> mm
	Mounting	Snap in clamp elements
	Housing material	PC/ABS bend, UL94V-1
	Protection class	Front IP52; connection IP00
	Elect connection	Terminal board on the rear
<b>Input</b>	Measurement range	4 - 20mA
	Internal resistance	10 Ohm
<b>Operating conditions</b>	Operating temperature	-25°C to +40°C
<b>Accuracy</b>	Class 1.5	1.5% of end value
<b>Display</b>	Scale	0 - 100 (corresponds to 4-20 mA), needle deflection 90°