

user manual UDA 50-...-A & -B



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user manual UDA 50-...-B-0

Direct current / Direct voltage signals 0-20 mA, 4-20 mA, 0-10 VDC



Technical features:

- red display of -1999...9999 digits (optional: green, orange or blue)
- minimal installation depth: 27 mm without plug-in terminal
- Display adjustment via factory settings or directly at the sensor signal possible
- Min/Max-memory
- 10 adjustable supporting points
- display flashing at treshold exceedance / undershooting
- tara-function
- programming lock via code entry
- protection class IP65 at the front
- Plug-in screw terminal
- accessories: pc-based configuration software PM-TOOL with CD and USB-adapter for displays without keyboard and for easy parameterisation of standard devices

Identification

STANDARD-TYPE	ORDER NUMER
Direct voltage / Direct current Housing dimension: 48x24 mm	Articel-no. 99-000949 UDA 50-2-B-0 Articel-no. 99-001711 UDA 50-3-B-0

Dimension symbols are to specified when ordering, e.g. mbar



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1. Short description

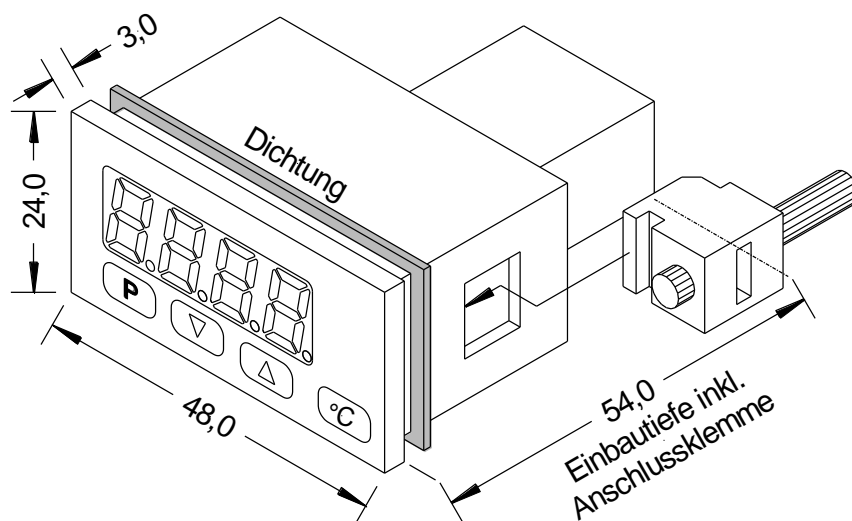
The panel instrument UDA 50 is a 4-digit display for direct voltage / direct current signals and a visual limit value monitoring via the display. The configuration happens via three front keys or via the optional PC-software PM-TOOL. An integrated programming lock prevents unrequested changes of the parameter and can be unlocked again via an individual code.

The electrical connection happens on the rear side via plug-in terminals.

Selectable functions like e.g. the query of the min/max value, a zero point calming, a direct limit value adjustment in the operating mode and additional measuring support points for linearization complete the modern device concept.

2. Assembly

Please read the safety advices on page 13 before installation and keep this user manual for future reference.

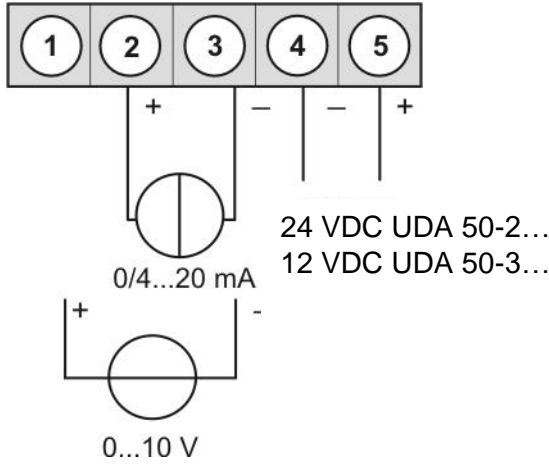


1. After removing the fixing elements, insert the device.
2. Check the seal to make sure it fits securely.
3. Click the fixing elements back into place and tighten the clamping screw by hand. Then use screwdriver to tighten them another half a turn.

ATTENTION! The torque should not exceed 0,1 Nm!

3. Electrical connection

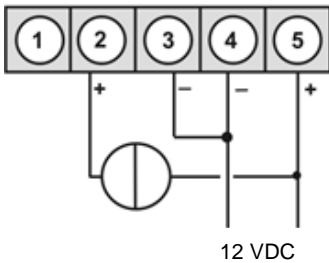
Type UDA 50 – Supply 24 VDC or 12 VDC, galvanically isolated, depending on version, see type code



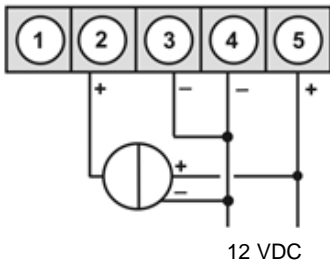
Connection examples:

Below you find some connection examples, which demonstrate some practical applications:

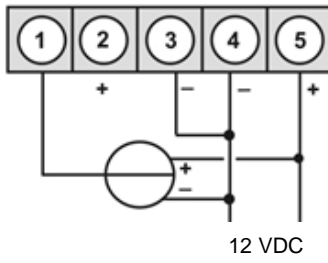
In connection with a
2-wire-sensor 4-20 mA



In connection with a
3-wire-sensor 0/4-20 mA



In connection with a
3-wire-sensor 0-10V



4. Function description and operation

Operation

The operation is divided into different levels.

Menu level

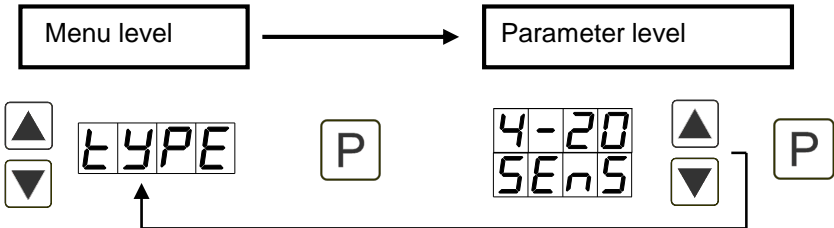
Here it is possible to navigate between the individual menu items.

Parameterisation level:

The parameters stored in the menu item can be parameterised here.
Functions that can be adjusted or changed are always indicated with a flashing of the display. Adjustments made at the parameterisation level should be always confirmed by pressing the **[P]** key to save them.
However, the display automatically saves all adjustments and then switches to operation mode if no further keys are pressed within 10 seconds.

Level	Button	Description
Menu level	<div>P</div>	Change to parameterisation level with the relevant parameters
	<div>▲ ▼</div>	For navigation at the menu level
Parameter level	<div>P</div>	Serves to confirm the performed parameterization
	<div>▲ ▼</div>	Adjusting the value or setting

Example:



4.1. Programming via configuration software:

Included with the software on CD, is a USB cable with device adapter. The connection is made via a 12-pin micromatch connector on the back of the device and to the PC side with a USB connector.

System requiremets: PC with USB-interface
Software: Windows XP, Windows VISTA

With this tool the device configuration can be generated, omitted and saved on the PC. The easy-to-use program interface allows the parameters to be changed, with the mode of operation and the possible selection options being specified by the program.

ATTENTION!

During parameterisation with connected measuring signal, make sure that the measuring signal has no mass supply to the programming plug.
The programming adapter is galvanic not isolated and directly connected with the PC. Reversing the polarity of the input signal can cause a current to flow through the adapter and destroy the device and connected components!

5. Setting the display

5.1. Switching on

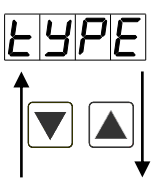

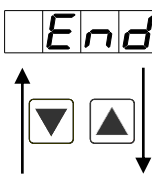

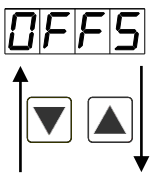

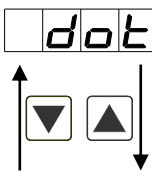
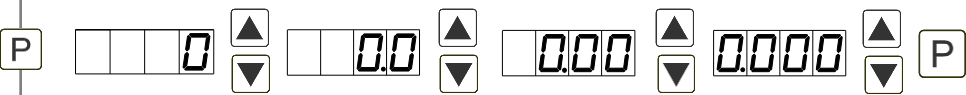
After completing the installation, you can put the device into operation by applying the supply voltage. Check all electrical connections once again beforehand to ensure that they are connected correctly.

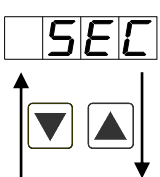
Starting sequence

During the switch-on process, the segment test (8 8 8 8), the message of the software type and subsequently the software version are displayed for 1 second for the same time. The start sequence is followed by the change to the operating or display mode.

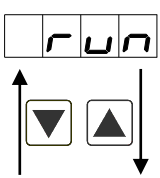
5.2. Standard parameterisation:

To be able to parameterise 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	Parameterisation level
	<p>Selection of the input signal TYPE: Default: <i>sens</i></p>  <p>As measuring input variants 0/4-20 mA or 0-10 VDC signals are available as factory calibration (without application of the sensor signal) and <i>Sens</i> as sensor calibration (with applied measuring signal). With [P] the selection is confirmed and the display changes back to the menu level.</p>
	<p>Setting the measuring range end value END: Default: 1000</p>  <p>The final value is adjusted from the smallest to the largest digit with [▲] [▼] and confirmed digit-selectively with [P]. A minus sign can only be parameterised on the highest value digit. After the last digit the display changes back to the menu level. If <i>Sens</i> was selected as the input variant, you can now choose between <i>noca</i> and <i>cal</i>. With <i>noca</i> the previously set display value is taken over, with <i>cal</i> the adjustment is made via the measuring section and the analog input value is taken over.</p>
	<p>Setting the measuring range start value offs: Default: 0000</p>  <p>The initial value is adjusted from the smallest to the largest digit with [▲] [▼] and confirmed digit-selectively with [P]. After the last digit the display switches back to the menu level. If <i>Sens</i> was selected as the input variant, you can now choose between <i>noca</i> and <i>cal</i>. With <i>noca</i> the previously set display value is taken over, with <i>cal</i> the adjustment is made via the measuring section and the analog input value is taken over.</p>
	<p>Setting the decimal point dot: Default: 0</p>  <p>The decimal point of the display can be adjusted with [▲] [▼]. With [P] the selection is confirmed and the display changes back to the menu level.</p>

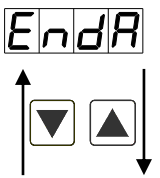
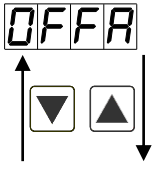
Menu-level	Parameterization level
	<p>Setting the display time SEC: Default: 01.0</p> <p>The display time is set with [▲] [▼]. The jumps are in steps of 0.1 up to 1 second and in steps of 1.0 up to 10.0. With [P] the selection is confirmed and the display changes to the menu level.</p>

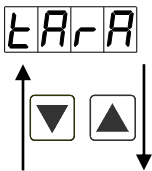

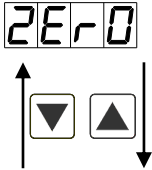

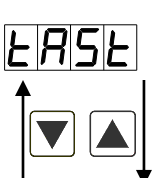

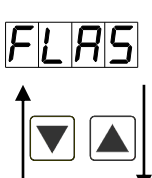

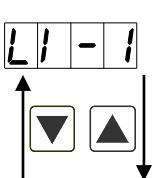

5.3. Programming interlock RUN

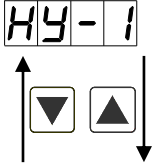
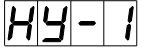

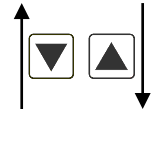
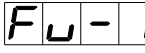

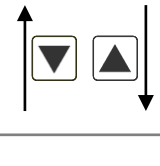
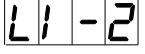

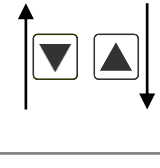
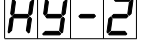

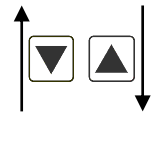
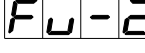

Menu-level	Parameterization level
	<p>Activation/deactivation of the programming lock and completion of standard parameterization run: Default: uloc</p> <p>Here, [▲] [▼] can be used to select between deactivated key lock uloc (factory setting) and activated key lock Loc. The selection is made with [P]. After this, the display confirms the settings with "- - -" and automatically switches to the operating mode. If Loc was selected, the keyboard is locked. To enter the menu level again, [P] must be pressed for 3 seconds in the operating mode. The now appearing CODE (factory setting 1 2 3 4) is entered with [▲] [▼] and [P] and unlocks the keyboard. An incorrect entry is displayed with FAIL.</p>

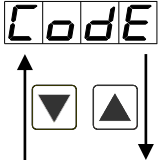

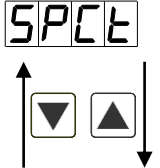

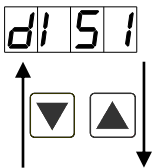

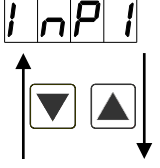

5.4. Extended parameterization

If the [▲] & [▼] keys are pressed for one second during standard parameterization, the display changes to the extended parameterization mode. Operation is the same as in the standard parameterization.

Menu level	Parameterization level
	<p>Rescaling the measurement input values, EndA:</p> <p>With the help of this function the final value can be rescaled to e.g. 19.5 mA input signal without applying the measuring signal. These parameters are not available when sensor calibration is selected.</p>
	<p>Rescaling the measurement input values, OFFA:</p> <p>With the help of this function the initial value can be rescaled to e.g. 3.5 mA input signal without applying the measuring signal. These parameters are not available when sensor calibration is selected.</p>

Menu level	Parameterization level
	<p>Setting the tara/offset value, TArA: Default: 0</p> <p>  </p> <p>The specified value is added to the linearized value. This is how the characteristic curve can be shifted by the selected amount.</p>
	<p>Zero point slowdown, ZErO: Default: 0</p> <p>  </p> <p>With zero point calming, a value range around the zero point can be preselected at which the display shows a zero. If, for example, a 10 should be set, the display would show a zero in a value range from -10 to +10 and continue with -11 below and +11 above.</p>
	<p>Assignment (deposit) of key functions, TAsT: Default: no</p> <p>  </p> <p>Here, either a min/max value query or a limit value correction can be stored on the direction keys for the operating mode. If the min/max memory is activated with EHER the measured min/max values are stored during operation and can be retrieved via the direction keys [▲] [▼]. The values are lost when the device is restarted. The values are lost when the device is restarted. If the limit value correction LI.1 is selected, the values of the limit values can be changed during operation without interfering with the operating sequence. With tara the display is tared to zero and permanently stored as offset. The display acknowledges the correct taring with 0000 in the display. If No is parameterized, the direction keys [▼] [▲] have no function in the operating mode.</p>
	<p>Flashing on display, FLAS: Default: no</p> <p>  </p> <p>Here a display flashing can be added as an additional alarm function either to the first limit value (selection: LI-1), to the second limit value (selection: LI-2) or to both limit values (selection: LI-12). With No (factory setting) no flashing is assigned.</p>
	<p>Limit value, LI-1: Default: 0200</p> <p>  </p> <p>The limit value specifies the threshold above which the alarm reacts or is activated / deactivated.</p>

Menu level	Parameterization level
  P	<p>Hysteresis for limit value, HY-1: Default: 0000</p>  The hysteresis defines a difference to the limit value by which an alarm reacts delayed.
  P	<p>Function for limit value undercut/ limit value exceeded, FU-1: Default: high</p>  The limit value violation is selected with Low (for LOW = lower limit value) and that with HiGH (for HIGH = upper limit value). Derived from "lower limit" = lower limit value and higher limit = upper limit value. If, for example, limit value 1 is set to a switching threshold of 100 and assigned the function high , the alarm is activated when the switching threshold is reached. If the limit value is assigned to Low an alarm is triggered when the value falls below the switching threshold, provided that the hysteresis is zero.
  P	<p>Limit values, LI-2: Default: 0300</p>  The limit value specifies the threshold above which the alarm reacts or is activated/deactivated.
  P	<p>Hysteresis for limit values, HY-2: Default: 0000</p>  The hysteresis defines a difference to the limit value by which an alarm reacts delayed.
  P	<p>Function for limit value undercut/ limit value exceeded, FU-2: Default: high</p>  The limit value violation is selected with Low (for LOW = lower limit value) and that with HiGH (for HIGH = upper limit value) Derived from "lower limit" = lower limit value and higher limit = upper limit value. If, for example, limit value 1 is set to a switching threshold of 100 and assigned the function high , the alarm is activated when the switching threshold is reached. If the limit value is assigned to Low an alarm is triggered when the value falls below the switching threshold, as long as the hysteresis is zero.

Menu level	parameterization level
	<p>Setting the code, CODE: Default: 1234</p>  <p>With this setting it is possible to select an individual code (factory setting 1 2 3 4) for the programming lock. For programming lock/unlock please proceed according to menu item <i>run</i>.</p>
	<p>Number of additional supporting points, SPCt: Default: 0</p>  <p>8 support points can be defined in addition to the start and end values in order to linearize non-linear sensor values. Only the activated support point parameters are displayed.</p>
	<p>Display value for supporting points, dISi ... dIS5:</p>  <p>Under this parameter the interpolation points are defined in terms of values. With sensor calibration, as with end value/offset, you are asked at the end whether a calibration is to be triggered.</p>
	<p>Analogue values for supporting points, INP1 ... INP8:</p>  <p>The supporting points are always specified according to the selected input signal mA/V. Here the desired analog values can be freely parameterized in ascending order.</p>

6. Reset to default values

To set the device to a defined basic state, it is possible to perform a reset to the default values.

For this purpose, the following procedure shall be applied:

- Switch off the voltage supply of the device
- Press [P] key
- Switch on the power supply and press the [P] key until the display shows "- - - -"..

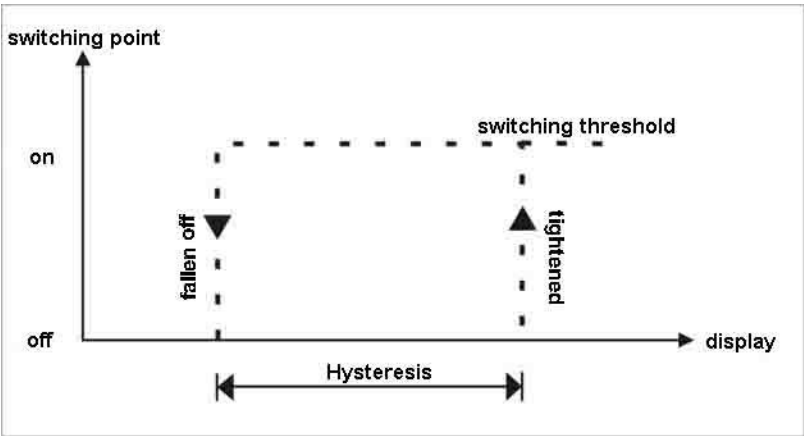
Reset loads the default values and uses them for further operation. This returns the device to the state it was in on delivery.

ATTENTION!

- All application specific data is lost.

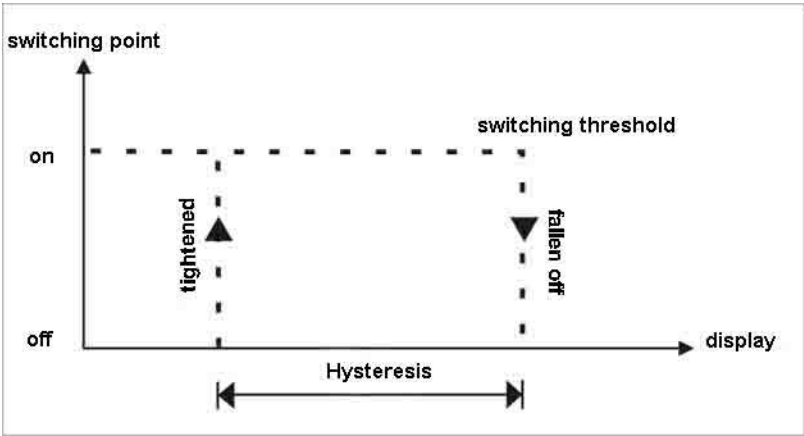
7. Alarms / switching points

Functional principle of the optical switching points:



Limit value exceeded „High“

With the operating current, the switching point S1-S2 is switched off below the switching threshold and is activated when the switching threshold is reached.



limit value undercut „Low“

During quiescent current, the switching point S1-S2 is switched below the switching threshold and is switched off when the switching threshold is reached.

Alarms / optical switching points display

Limit values can be visually signaled by flashing of the 7-segment display.

Function principle of the alarms	
Alarm	deactivated, display value
Threshold	Threshold value / limit value of the switchover
Hysteresis	Width of the window between the switching thresholds
Operating principle	Exceeding the limit value / falling below the limit value

8. Technical data

Housing				
Dimensions	48x24x27 mm (WxHxD)			
	48x24x54 mm (WxHxD) including plug-in terminal			
Mounting cutout	45,0 ^{+0,6} x 22,2 ^{+0,3} mm			
Wall thickness	up to 3 mm			
Fixing	screw element			
Material	PC Polycarbonat, black, UL94V-0			
Sealing material	EPDM, 65 Shore, black			
Protection class	standard IP65 (front), IP00 (back side)			
Weight	approx. 100 g			
Connection	Plug-in Terminal; wire cross section up to 2,5 mm ²			
Display				
Digit height	10 mm			
Segment color	red (optional green, orange or blue)			
Display range	-1999 up to 9999			
Setpoints	optical display flashing			
Overflow	horizontal bars at the top			
Underflow	horizontal bars at the bottom			
Display time	0,1 to 10,0 seconds			
Input	Measuring range	Ri	Measuring fault	Digit
min. -22...max. 24 mA	0/4 – 20 mA	~ 100 Ω	0,1 % of measuring range	±1
min. -12...max. 12 VDC	0-10 VDC	~ 200 kΩ	0,1 % of measuring range	±1
Accuracy				
Temperature drift	100 ppm / K			
Measuring time	0,1...10,0 seconds			
Measuring principle	U/F-conversion			
Resolution	approx. 18 Bit at 1s measuring time			
Power pack	24 VDC ±10 % max. 1 VA, or 12 VDC ± 10% max. 1 VA, depending on version, see type code			
Memory	EEPROM			
Data preservation	≥ 100 years at 25°C			

Ambient conditions	
Working temperature	0...60°C
Storing temperature	-20...80°C
Climatic resistance	relative humidity 0-80% on years average without dew
EMV	EN 61326
CE-sign	Conformity to directive 2004/108/EG
Safety regulations	According to Low Voltage Directive 2006/95/EG EN 61010; EN 60664-1

9. Safety instructions

Please read the following safety instructions and the assembly chapter 2 before installation and keep it for future reference.

Intended use

The device is intended for the evaluation and display of sensor signals.



In the event of improper use or operation personal injury and/or damage to property may occur.

Control of the device

The devices are checked before shipment and shipped in perfect condition. If any damage is visible on the device, we recommend a close inspection of the transport packaging. In case of damage, please inform the supplier immediately.

Installation



The device may only be installed by a specialist with appropriate qualifications, such as an industrial electronics technician or a specialist with comparable training.

Installation instructions

There must be no magnetic or electric fields in the immediate vicinity of the device, e.g. due to transformers, two-way radios or electrostatic discharges. The fuse protection of the supply should not exceed a value of **6A inert**.

- Do not install inductive loads (relays, solenoid valves, etc.) close to the device and suppress them using RC spark quenching combinations or free-wheeling diodes.
- Lay input and output lines spatially separated from each other and not parallel to each other. Route outgoing and return lines side by side. If possible, use twisted-pair cables. This will give you the most accurate measurement results.
- If high accuracy is required and the measuring signal is small, the sensor leads must be shielded and twisted. As a general rule, these must not be laid in the immediate vicinity of consumer supply lines. In the case of shielding, this should only be connected on one side to a suitable equipotential bonding (usually knife-edge ground).
- The device is not suitable for installation in explosive areas.
- An electrical connection deviating from the connection diagram can lead to danger to persons and destruction of the device.
- The clamp area of the devices is part of the service area. Hier sind elektrostatische Entladungen zu vermeiden. Dangerous body currents can occur in the clamp area due to high voltages, which is why increased caution is required.
- Galvanically isolated potentials within a system must be connected to a suitable point (usually earth or system ground). This results in lower interference sensitivity to radiated energy and avoids dangerous potentials that can build up on long lines or be caused by faulty wiring.

10. Error description

	Error description	Measures
1.	<p>The device indicates a permanent overflow.</p> 	<ul style="list-style-type: none"> • The input has a very large measured value, check the measuring distance. • If an input with a small sensor signal is selected, it is only connected on one side or the input is open. • Not all activated interpolation points are parameterized. Check whether the relevant parameters are set correctly.
2.	<p>The device indicates a permanent underflow.</p> 	<ul style="list-style-type: none"> • The input has a very small measured value, check the measuring distance. • If an input with a small sensor signal is selected, it is only connected on one side or the input is open. • Not all activated interpolation points are parameterized. Check whether the relevant parameters are set correctly.
3.	<p>The device displays „HELP“ in the 7-segment display</p>	<ul style="list-style-type: none"> • The device has detected an error in the configuration memory, perform a reset to the default values and reconfigure the device according to your application.
4.	<p>Programming numbers for parameterization of the input are not available</p>	<ul style="list-style-type: none"> • The programming lock is activated • Enter correct code
5.	<p>The device displays „Err“ in the 7-segment display</p>	<ul style="list-style-type: none"> • In case of errors of this category please contact the manufacturer.
6.	<p>The device does not respond as expected.</p>	<ul style="list-style-type: none"> • If you are not sure that the device has been parameterized before, restore the delivery state as described in <i>chapter 6</i>.

User manual UDA 50-...-A-0



Technical features:

- red display of -1999...9999 digits (optional: green, orange or blue)
- minimal installation depth: 27 mm without plug-in terminal
- display adjustment via factory settings or directly at the sensor signal possible
- Min-/Max-memory
- Display flashes when limit value is exceeded/below limit value
- Line adjustment
- Programming lock via code entry
- Protection class IP65 front
- plug-in screw terminal
- Accessories: PC-based configuration software with CD and USB adapter for displays without keyboard and for easy parameterization of standard devices

Identification

STANDARD-TYPE	ORDER NUMBER
Pt100 2-/3-wire Housing dimension: 48x24 mm	Article-no.: 99-000950 UDA 50-2-A-0 Article-no.: 99-000975 UDA 50-3-A-0

Dimension symbols are to be specified on request when ordering, e.g. °C

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1. Short description

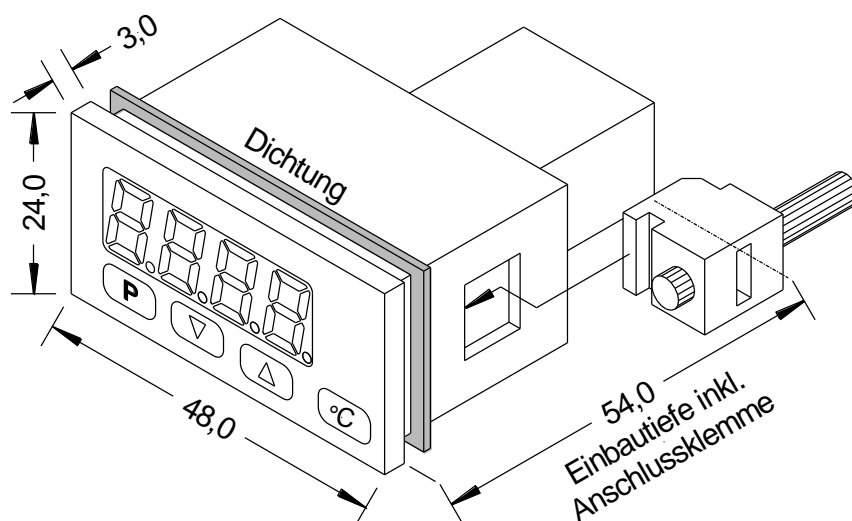
The panel meter **UDA 50** is a 4-digit display for Pt100 sensors and a visual limit value monitoring via the display. The configuration is done via three front keys or by means of an optional PC software PM-TOOL. An integrated programming lock prevents unwanted changes to parameters and can be unlocked again via an individual code.

The electrical connection is made at the back via plug-in terminals.

Selectable functions such as the min/max value query, a line adjustment up to 20°C and a direct limit value adjustment in the operating mode round off the modern device concept.

2. Assembly

Please read the safety instructions on page 12 before assembly and keep these instructions for future reference.

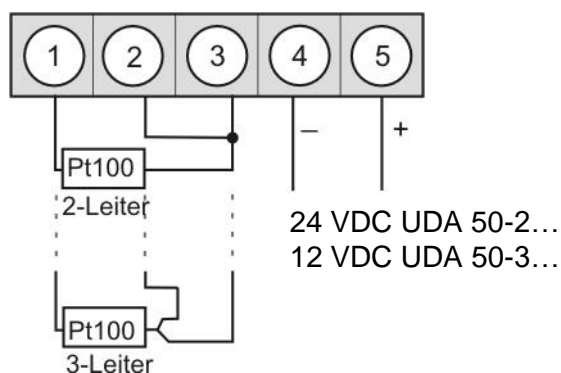


1. After removing the fixing elements, install the device.
2. Check seal for good fit.
3. Re-engage fixing elements and tighten clamping screws by hand. Then tighten further by half a turn with the screwdriver.

ATTENTION! Torque should not exceed max. 0.1 Nm!

3. Electrical connection

Type UDA 50 – Supply 24 VDC or 12 VDC, galvanically isolated, depending on version, see type code



Note:







In the case of temperature sensors which do not have a galvanic connection to an external potential, the galvanic isolation of the device can be cancelled by a jumper from terminal 3 to 4 and thus stabilize the display against external interference.

4. Function description and operation

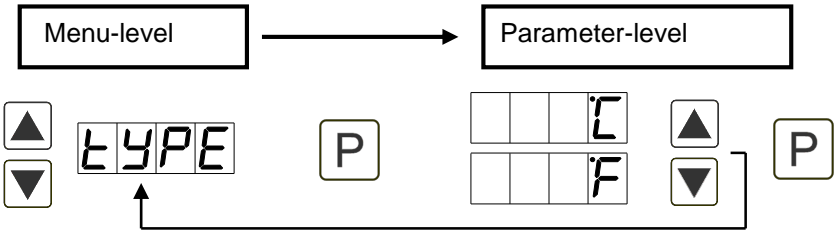
Operation:
The operation is divided into two different levels.

Menu-level:
Here you can navigate between the individual menu items.

Parameter-level:
The parameters stored in the menu item can be parameterized here.
Functions that can be adjusted or changed are always signaled with a flashing of the display. The settings made in the parameter level are always confirmed with **[P]** and thus saved.
However, the display also automatically saves all adjustments and switches to operating mode if there are no further key operations within 10 seconds.

Level	Button	Description
Menu-level		Change to the parameter level and the stored parameters.
	 	Used to navigate in the menu level.
Parameter-level		Used to confirm the performed parameterization.
	 	Adjusting the value or setting.

Example:



4.1. Programming above configuration software PM-TOOL:

Part including the software on CD, is a USB cable with device adapter. The connection is made via a 12-pin micromatch connector on the back of the device and to the PC side with a USB connector.

System requirements: PC with USB-interface
Software: Windows XP, Windows VISTA

With this tool the device configuration can be generated, omitted and saved on the PC. Through the easy-to-use program interface, the parameters can be changed, and the mode of operation and the possible selection options are specified by the program.

ATTENTION!
When setting parameters with a measuring signal applied, make sure that the measuring signal has no ground reference to the programming plug.
The programming adapter is not galvanically isolated and directly connected to the PC. Reversing the polarity of the input signal can cause a current to flow through the adapter and destroy the device and connected components!

5. Setting the display

5.1. switching on

After completing the installation, you can put the device into operation by applying the supply voltage. Check all electrical connections once again beforehand to ensure that they are connected correctly.

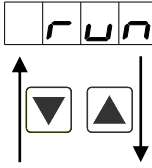
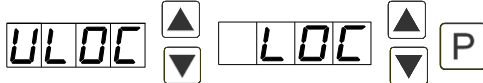
Start sequence

During the switch-on procedure, the segment test (8 8 8 8), the message of the software type and subsequently the software version are displayed for 1 second for the same time. The start sequence is followed by the change to the operating or display mode.

5.2. Standard parameterization:

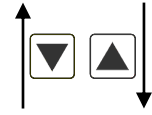

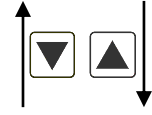

The display now changes to the menu level with the first menu item **TYPE**.

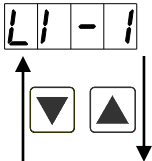

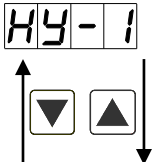

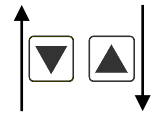

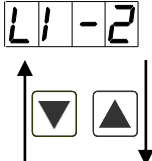

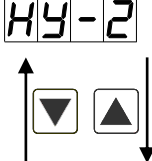

Menu-level	Parameter-level
	<p>Type of temperature measurement, TYPE: Default: °C</p> <p>To display the temperature you can choose between °C and °F. With [P] the selection is confirmed and the display changes back to the menu level.</p>
	<p>Setting the decimal point / dimension sign, DOT: Default: o.o</p> <p>The decimal place and the physical unit of the display can be set with [▼] [▲]. If e.g. the temperature measurement in °C is selected, you can select 0°C or 0.0°C in the parameter level. With [P] the selection is confirmed and the display changes back to the menu level.</p>
	<p>Line adjustment, offs: Default: 000.0</p> <p>The value for the sensor calibration is adjusted from the smallest to the largest digit with [▼] [▲] and confirmed digit-selectively with [P]. After the last digit, the display changes back to the menu level. The value adjustment for a temperature measurement in °C can be set between -20.0 and +20.0 and for a measurement in °F between -36.0 and +36.0. If the type of measurement is switched later, the value is rounded.</p>
	<p>Setting the measuring/display time, SEC: Default: 01.0</p> <p>The display time is set with [▲] [▼]. The jumps are in steps of 0.1 up to 1 second and in steps of 1.0 up to 10.0. With [P] the selection is confirmed and the display changes to the menu level.</p>

Menu-level	Parameter-level
5.3. Programming lock RUN	
	<p>Activation / Deactivation of the programming lock and completion of the standard parameterization. <i>run</i>:</p> <p>Default: <i>uloc</i></p> 
	<p>Here, [▲] [▼] can be used to select between deactivated key lock (factory setting) and activated key lock <i>Loc</i>. The selection is made with [P]. After this, the display confirms the settings with „- - - „, and automatically switches to the operating mode. If <i>Loc</i> was selected, the keyboard is locked. To enter the menu level again, [P] must be pressed for 3 seconds in the operating mode. The <i>CODE</i> that now appears (factory setting <i>1 2 3 4</i>) is entered with [▲] [▼] and [P] and unlocks the keypad. An incorrect entry is displayed with <i>FAIL</i>.</p>

5.4. Extended parameterization

If the [▲] & [▼] keys are pressed for one second during standard parameterization, the display changes to the extended parameterization mode. The operation is the same as in the standard parameterization.

Menu-level	Parameter-level
	<p>Assignment (deposit) of key functions, <i>Tast</i>:</p> <p>Default: <i>no</i></p> 
	<p>Here, either a min/max value query or a limit value correction can be stored on the direction keys for the operating mode. If the min/max memory is activated with <i>EHER</i>, the measured min/max values are stored during operation and can be retrieved via the direction keys [▲] [▼]. The values are lost when the device is restarted. If the limit value correction <i>LI.1</i>, is selected, the values of the limit values can be changed during operation without interfering with the operating sequence. If <i>No</i> is parameterized, the direction keys [▼] [▲] have no function in the operating mode.</p>
	<p>Display flashing, <i>FLAS</i>:</p> <p>Default: <i>no</i></p> 
	<p>Here a display flashing can be added as an additional alarm function either to the first limit value (selection: <i>LI-1</i>), to the second limit value (selection: <i>LI-2</i>) or to both limit values (selection: <i>LI-12</i>). With <i>No</i> (factory setting) no blinking is assigned.</p>

Menu-level	Parameter-level
	<p>Limit values, LI-1: Default: 0200</p> <p>  </p> <p>The limit value specifies the threshold above which the alarm reacts or is activated / deactivated.</p>
	<p>Hysteresis for limit values, HY-1: Default: 0000</p> <p>  </p> <p>The hysteresis defines a difference to the limit value by which an alarm reacts delayed.</p>
	<p>Function for undercutting/exceeding the limit value, FU-1: Default: high</p> <p>  </p> <p>The limit value violation is selected with Low (for LOW = lower limit value) and that with High (for HIGH = upper limit value). Derived from "lower limit" = lower limit value and higher limit = upper limit value. If, for example, limit value 1 is set to a switching threshold of 100 and assigned the function high, the alarm is activated when the switching threshold is reached. If the limit value is assigned to Low an alarm is triggered when the value falls below the switching threshold, as long as the hysteresis is zero.</p>
	<p>Limit values, LI-2: Default: 0300</p> <p>  </p> <p>The limit value specifies the threshold above which the alarm reacts or is activated / deactivated.</p>
	<p>Hysteresis for limit values, HY-2: Default: 0000</p> <p>  </p> <p>The hysteresis defines a difference to the limit value by which an alarm reacts delayed.</p>

Menu-level	Parameter-level
<div><div>FU-2</div><div>P</div><div><div>↑</div><div>↓</div></div></div>	<div><div>Function for undercutting / exceeding limit value, FU-2:</div><div>Default: <i>high</i></div><div><div>HI</div><div>GH</div><div>↑</div><div>↓</div><div>LOW</div><div>↑</div><div>↓</div><div>P</div></div><div>The limit value violation is selected with <i>Low</i> (for LOW = lower limit value) and the one with <i>HiGH</i> (for HIGH = upper limit value). Derived from "lower limit" = lower limit value and higher limit = upper limit value. If, for example, limit value 1 is set to a switching threshold of 100 and assigned the function <i>high</i> the alarm is activated when the switching threshold is reached. If the limit value is assigned to <i>Low</i> an alarm is triggered when the value falls below the switching threshold, as long as the hysteresis is zero.</div></div>
<div><div>Code</div><div>P</div><div><div>↑</div><div>↓</div></div></div>	<div><div>Setting the code, CODE:</div><div>Default: 1234</div><div><div>1</div><div>P</div><div>2</div><div>P</div><div>3</div><div>P</div><div>4</div><div>↑</div><div>↓</div><div>P</div></div><div>With this setting it is possible to select an individual code (factory setting 1 2 3 4) for the programming lock. For programming lock/unlock please proceed according to menu item <i>run</i>.</div></div>

6. Reset of Default value

To set the device to a defined basic state, it is possible to perform a reset to the default values. The following procedure shall be used for this purpose:

- Switch off the voltage supply of the device
- Press **[P]** key
- Switch on the power supply and press the **[P]** key until "- - -" appears in the display.

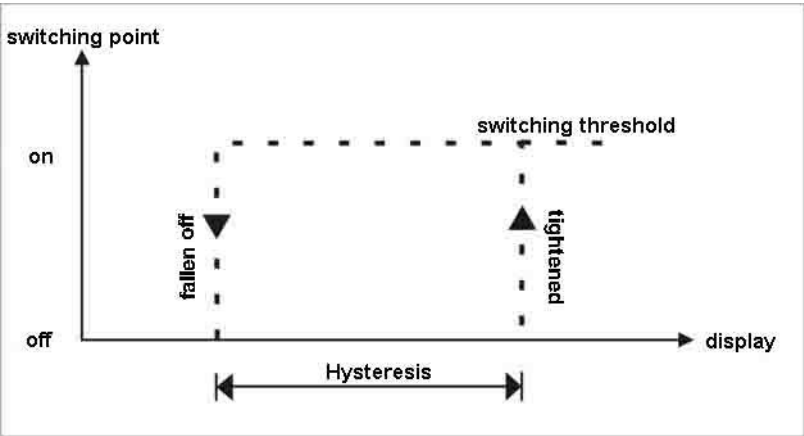
Reset loads the default values and uses them for further operation. This returns the device to the state it was in on delivery.

Attention!

- All application specific data is lost.

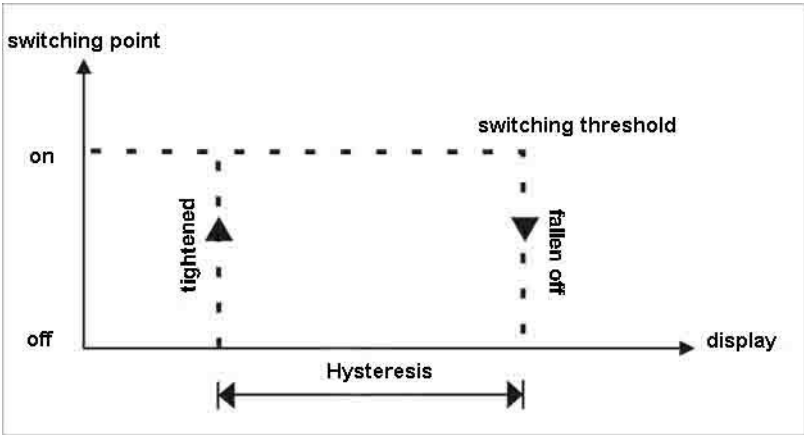
7. Alarms / switching points

Functional principle of the optical switching points:



Limit value exceeded „High“

With the operating current, the switching point S1-S2 is switched off below the switching threshold and is activated when the switching threshold is reached.



Undercutting the limit value „low“

During quiescent current, the switching point S1-S2 is switched below the switching threshold and is switched off when the switching threshold is reached.

Alarms / optical limit value display

Limit values can be visually signaled by flashing of the 7-segment display.

Functional principle of the alarms	
Alarm	deactivated, display value
Switching threshold	Threshold value / limit value of the switchover
Hysteresis	Width of the window between the switching thresholds
Working principle	Exceeding the limit value / falling below the limit value

8. Technical data

housing			
dimensions	48x24x27 mm (WxHxD)		
	48x24x54 mm (WxHxD) including plug-in terminal		
Installation cutout	45,0 ^{+0,6} x 22,2 ^{+0,3} mm		
Wall thickness	up to 3 mm		
Mounting	Screw elements		
Material	PC Polycarbonat, black, UL94V-0		
Sealing material	EPDM, 65 Shore, black		
Protection class	Standard IP65 (front), IP00 (back side)		
weight	approx. 100 g		
connection	Plug-in terminal; cable cross section up to 2,5 mm ²		
display			
Digit high	10 mm		
Segment color	red (optional green, orange or blue)		
Display range	-1999 up to 9999		
Switching points	optical display flashing		
Overflow	horizontal bars above		
Underflow	horizontal bars below		
Display time	0,1 up to 10,0 seconds		
input	measuring range	measuring fault	digit
Pt100 2-/3-wire	-200...850 °C	0,1 % of measuring range	±1
Pt100 2-/3-wire	-328...1562 °F	0,1 % of measuring range	±1
accuracy			
Temperature drift	100 ppm / K		
Measurement time	0,1...10,0 seconds		
Measuring principle	U/F conversion		
Resolution	0,1°C or 0,1°F		
Power pack	24 VDC ±10 % max. 1 VA, or 12 VDC ± 10% max. 1 VA, depending on version, see type code		
memory	EEPROM		
Data preservation	≥ 100 Years at 25°C		

Environmental conditions	
Working temperature	0°C...60°C
Storage temperature	-20°C...80°C
Climatic resistance	relative humidity 0-80% annual average without condensation
EMV	EN 61326
CE-mark	Conformity according to directive 2004/108/EG
Safety regulations	According to Low Voltage Directive 2006/95/EG EN 61010; EN 60664-1

9. Safety instructions

Please read the following safety instructions and assembly chapter 2 before installation and keep these instructions for future reference.

Intended use

The UDA 50 device is designed for the evaluation and display of Pt100 signals.



In the case of improper use or operation may result in personal injury or damage to property.

Control of the device

The devices are checked before shipment and shipped in perfect condition. If any damage is visible on the device, we recommend a close inspection of the transport packaging. In case of damage, please inform the supplier immediately.



Installation

The UDA 50 device may only be installed by a specialist with appropriate qualifications, such as an industrial electronics technician or a specialist with comparable training.

Installation instructions

- There must be no magnetic or electric fields in the immediate vicinity of the device, e.g. due to transformers, two-way radios or electrostatic discharges.
- The fuse protection of the supply should not exceed a value of **6A slow-blow**.
- Do not install inductive loads (relays, solenoid valves, etc.) near the device and suppress them using RC spark quenching combinations or free-wheeling diodes.
- Lay input and output lines separately and not parallel to each other. Route outgoing and return lines next to each other. If possible, use twisted-pair cables. This will give you the most accurate measurement results.
- If high accuracy is required and the measuring signal is small, the sensor cables must be shielded and twisted. As a general rule, they should not be laid in the immediate vicinity of consumer supply lines. In the case of shielding, it must only be connected on one side to a suitable equipotential bonding (usually blade ground).
- The device is not suitable for installation in hazardous areas.
- An electrical connection deviating from the connection diagram can lead to danger to persons and destruction of the device.
- The terminal area of the devices is part of the service area. Electrostatic discharges must be avoided here. Dangerous body currents can occur in the terminal area due to high voltages, which is why increased caution is required.
- Galvanically isolated potentials within a system should be connected to a suitable point (usually earth or system ground). This reduces the susceptibility to interference from radiated energy and avoids dangerous potentials that can build up on long lines or be caused by faulty wiring.

10. Error description

	Error description	Measures
1.	The device indicates a permanent overflow. 	<ul style="list-style-type: none"> • The input has a very large measured value, check the measuring distance. • The entrance is open.
2.	The device indicates a permanent underflow. 	<ul style="list-style-type: none"> • The input has a very small measured value, check the measuring distance. • The entrance is open.
3.	The device displays „HELP“ in the 7-segment display	<ul style="list-style-type: none"> • The device has detected an error in the configuration memory, perform a reset to the default values and reconfigure the device according to your application.
4.	Programming numbers for parameterization of the input are not available	<ul style="list-style-type: none"> • The programming lock is activated • Enter correct code
5.	The device displays „Err“ in the 7-segment display	<ul style="list-style-type: none"> • In case of errors in this category, please contact the manufacturer.
6.	The device does not respond as expected.	<ul style="list-style-type: none"> • If you are not sure that the device has been parameterized before, restore the delivery state as described in <i>chapter 6</i>.
7.	Temperature value is unstable.	<ul style="list-style-type: none"> • Check the possibility as described in <i>chapter 3</i> "Electrical connection" to cancel the galvanic isolation and thus to discharge interferences. However, make sure beforehand that any metallic sensor body is separated from the sensor element.