



Level switch

Nivotemp NT-ELD

## Installation and Operation Instructions

Original instructions





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Read this instruction carefully prior to installation and/or use. Pay attention particularly to all advises and safety instructions to prevent injuries. Bühler Technologies can not be held responsible for misusing the product or unreliable function due to unauthorised modifications.

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# 1 Introduction

## 1.1 Intended Use

Level switches are used to monitor the liquid level and temperature in fluid systems. Level switches must not be used in highly flammable or corrosive liquids.

The medium must not contain particles, particularly metallic particles, to prevent deposits on the float or between the float and switching tube. If necessary, filter the medium.

Please note the technical data in the appendix for the specific intended use, existing material combinations, as well as temperature limits.

### WARNING



All device models are solely intended for industrial applications. They are **not safety components**. The devices must not be used if failure or malfunction thereof jeopardises the safety and health of persons. Use in explosive areas is **prohibited**.

## 1.2 Functionality

### 1.2.1 Liquid level monitoring

The measuring tube is located inside the tank. The level switches are located inside the measuring tube. These are activated by a magnet inside the level switch float.

The contacts are soldered to the board, spaced as specified in the purchase order.

### 1.2.2 Temperature monitor

Temperature is monitored via temperature sensor (Pt100) inside the sensor tube. Depending on the version, there are several switching outputs combined with one analogue output (4 - 20 mA). The temperature is shown in the display.

Please note the technical data in the appendix.

## 1.3 Ordering instructions NT-ELD

| NT-ELD - XX - XX - XX - XX - XX - XX - XX - XX - XX - XX              |                                                                                                                          |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Type designation</b>                                               |                                                                                                                          |
| <b>Version</b><br>MS Brass                                            |                                                                                                                          |
| <b>Connection</b><br>G1/2 = G1/2<br>M20 = M20x1.5<br>UNF = 7/8-14 UNF |                                                                                                                          |
| <b>Plug</b><br>2 x M12                                                |                                                                                                                          |
| <b>Length</b><br>280<br>370<br>500<br>variable (please specify)       |                                                                                                                          |
| <b>Number of level contacts</b><br>1K or 2K (NC / NO)                 |                                                                                                                          |
| <b>Installation dimensions L1 = ...mm</b><br>1st level contact        |                                                                                                                          |
|                                                                       | <b>LED temperature display</b><br>2T<br>2 x temperature output<br>1T-KT<br>1 x temperature output<br>1 x analogue output |
|                                                                       | <b>Switching function 2nd contact</b><br>NO / NC                                                                         |
|                                                                       | <b>Installation dimensions L2 = ...mm</b><br>2nd level contact                                                           |
|                                                                       | <b>Switching function 1st Contact</b><br>NO / NC                                                                         |

### Ordering example

You require: Level switch with G1/2 connection, brass, length L= 500 mm, 2 level contacts, 1st contact 100 mm NC, 2nd contact 450 mm NO, temperature analysis with display and 2 programmable outputs.

Order: NT-ELD-MS-G1/2-2M12/500-2K-100NC-450NO-2T

## **1.4 Scope of Delivery**

- Level switch
- Product documentation
- Connection/mounting accessories (optional)

## 2 Safety instructions

### 2.1 Important advice

Operation of the device is only valid if:

- the product is used under the conditions described in the installation- and operation instruction, the intended application according to the type plate and the intended use. In case of unauthorized modifications done by the user Bühler Technologies GmbH can not be held responsible for any damage,
- when complying with the specifications and markings on the nameplates.
- the performance limits given in the datasheets and in the installation- and operation instruction are obeyed,
- monitoring devices and safety devices are installed properly,
- service and repair is carried out by Bühler Technologies GmbH,
- only original spare parts are used.

This manual is part of the equipment. The manufacturer keeps the right to modify specifications without advanced notice. Keep this manual for later use.

### Signal words for warnings

|                |                                                                                                                                                     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DANGER</b>  | Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.                                            |
| <b>WARNING</b> | Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.                              |
| <b>CAUTION</b> | Signal word for a hazardous situation with low risk, resulting in damaged to the device or the property or minor or medium injuries if not avoided. |
| <b>NOTICE</b>  | Signal word for important information to the product.                                                                                               |

### Warning signs

These instructions use the following warning signs:

|                                                                                     |                                  |                                                                                     |                            |
|-------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|----------------------------|
|  | Warns of a general hazard        |  | General information        |
|  | Warns not to inhale toxic gasses |  | Wear respiratory equipment |
|  | Warns of corrosive liquids       |  | Wear a safety mask         |
|  | Warns of explosive areas         |  | Wear gloves                |

## 2.2 General hazard warnings

The equipment must be installed by a professional familiar with the safety requirements and risks.

Be sure to observe the safety regulations and generally applicable rules of technology relevant for the installation site. Prevent malfunctions and avoid personal injuries and property damage.

### The operator of the system must ensure:

- Safety notices and operating instructions are available and observed,
- The respective national accident prevention regulations are observed,
- The permissible data and operational conditions are maintained,
- Safety guards are used and mandatory maintenance is performed,
- Legal regulations are observed during disposal,
- compliance with national installation regulations.

### Maintenance, Repair

Please note during maintenance and repairs:

- Repairs to the unit must be performed by Bühler authorised personnel.
- Only perform conversion-, maintenance or installation work described in these operating and installation instructions.
- Always use genuine spare parts.
- Do not install damaged or defective spare part. If necessary, visually inspect prior to installation to determine any obvious damage to the spare parts.

Always observe the applicable safety and operating regulations in the respective country of use when performing any type of maintenance.

The method for cleaning the devices must be adapted to the IP protection class of the devices. Do not use cleaners which could damage the device materials.

#### DANGER



#### Toxic, acidic gases/liquids

Protect yourself from toxic, corrosive gasses/liquids when performing any type of work.  
Wear appropriate protective equipment.



### **3 Transport and storage**

Only transport the product inside the original packaging or a suitable alternative.

The equipment must be protected from moisture and heat when not in use. It must be stored in a covered, dry, dust-free room at room temperature.

## 4 Setup and connection

### DANGER

#### Toxic, acidic gases/liquids

Protect yourself from toxic, corrosive gasses/liquids when performing any type of work. Wear appropriate protective equipment.



### 4.1 Assembly

#### Please note before installing the level switch!

After transport and delivery of the level switch, the switching status of the bistable contacts may be different than required for proper operation.

Therefore slide the float for the level switch along the level switch tube from below immediately before installation.

This ensures all built-in bistable contacts have a clearly defined switching status (NC or NO).

The level switch comes fully assembled and can be mounted to the tank with 30 Nm of torque. Please be sure the float can move freely and to leave enough space between the tank wall and add-ons.

After removing the float, where applicable, be sure the magnet inside the float is above the fluid level. This can easily be verified with a piece of iron to determine the magnet position inside the float.

The level contacts are mounted (with the tank empty) as NO contact (NO) or NC contact (NC).

The contact logic assumes the level switch is installed in an empty tank, i.e. it is only in the operating position once filled.

### 4.2 Electrical connections

The level switch is powered by 24 V (max. 30 V). The switch connects with a cable and standard M12 plug-in connectors. Please refer to the appendix for installation dimensions and plug configuration.

### 4.3 Information on the correct operation of reed contacts in Bühler level switches

Based on their construction, reed contacts are very long lasting and reliable components. Yet the following should be considered when using them:

#### Life of reed switches

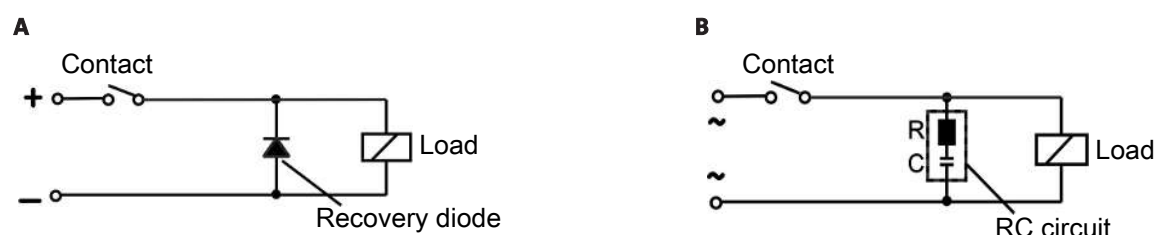
The life of reed switches can be up to  $10^9$  cycles. This is reduced by high stress and / or incorrect or the absence of protective circuits when switching inductive, capacitive or lamp loads.

**It's therefore important to ensure NEVER to exceed one or several of the maximum approved limits, even temporarily, and to install a contact protective circuit for loads which are not purely ohmic. Using test lamps when installing the devices is also prohibited, as these can temporarily allow too much current to flow, which can damage the reed contacts. In this case non-volatile testing equipment should always be used.**

#### Contact protective circuits for reed switches

For direct current voltage a recovery diode per figure A must be connected parallel to the contact.

For alternating current voltage an RC circuit per Figure B and Table 1 must be connected parallel to the contact.



| Load in VA | 10                   |       | 25         |       | 50         |       |
|------------|----------------------|-------|------------|-------|------------|-------|
|            | Voltage at contact V | R/Ohm | C/ $\mu$ F | R/Ohm | C/ $\mu$ F | R/Ohm |
| 24         |                      | 22    | 0.022      | 1     | 0.1        | 1     |
| 60         |                      | 120   | 0.0047     | 22    | 0.022      | 1     |
| 110        |                      | 470   | 0.001      | 120   | 0.0047     | 22    |
| 230        |                      | 470   | 0.001      | 470   | 0.001      | 120   |

Please note the max. voltage/load ratings of the respective level contacts!

#### Voltages and currents

All Bühler level contacts with reed switch can switch minimal Switching voltages of 10  $\mu$ V and minimal switching currents of 1  $\mu$ A.

The maximum values specified for the respective contact types apply.

Level contact with reed switches can therefore be used for SPS applications as well as for high loads (within the maximum limits) without hesitation.

#### Contact material

All reed switches in Bühler level contacts use rhodium as the contact material for the actual contact areas.

#### Magnetic fields

Avoid external magnetic fields, including from electric motors. These can interfere with the function of the reed switches.

#### Mechanical loads

Do not expose the level switch to strong blows or bending.

## 5 Operation and control

### NOTICE

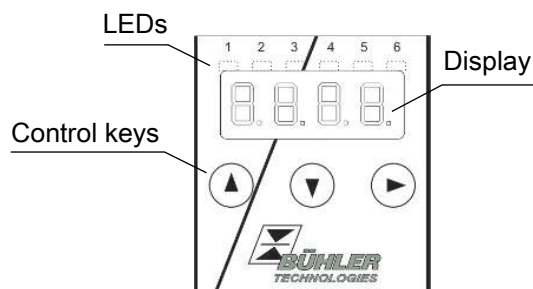


The device must not be operated beyond its specifications.

### 5.1 Start-up procedure

The device will automatically switch on when connected to power. It will first briefly display the software version, at which time the device will also check the built-in components. The display will then switch to displaying measurements.

The following describes the function of the display and control unit:



If an error message appears in the display during operation, please refer to the **Troubleshooting** table under chapter “Service and Repair”.

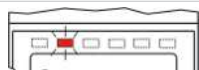
### 5.2 LED statuses

LEDs above the measurement display indicate the status of the temperature switching outputs. The LEDs are permanently assigned to the switching outputs.

The following table shows the factory settings:



LED 1 – yellow  
Status temperature switching output 1



LED 2 - red  
Status temperature switching output 2

The switching characteristics of the LED (on if switching contact closed or open) can be changed.

## 5.3 General key functions

The keys below the display are used for operation.

The menu controls are detailed in the following chapters.

| Key            | Mode                         | Function                                                                                                                        |
|----------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| ▶              | – Measurement display:       | Change measured variables displayed.                                                                                            |
|                | – In the menu:               | Move down one menu level.<br>Move up one menu level.                                                                            |
|                | – At the end of the menu:    | <br>The display indicates the end of the menu. |
|                | – Following input/selection: | Confirm and save a numerical value entered or a function selection. The display will flash if a parameter has been changed.     |
| ▲              | – Measurement display:       | Displays the configuration.                                                                                                     |
|                | – In the menu:               | Scroll up menu item, numerical value or function selection. Holding the key will continuously scroll.                           |
| ▼              | – Measurement display:       | Go to main menu.                                                                                                                |
|                | – In the menu:               | Scroll down menu item, numerical value or function selection. Holding the key will continuously scroll.                         |
| ▼ + ▶          | – In the menu:               | Exit the main / sub / drop-down menu and return to displaying the measurement without saving changes to the parameters.         |
| ▲ + ▶          | – In the menu:               | Move to the next higher menu level.                                                                                             |
| 60 s no action | – In the menu:               | Exit the main / sub/ drop-down menu.                                                                                            |

To select a menu item and to enter values:

- Open the main menu with the ▼ key.
- Select the submenu with the ▼ and ▲ keys and open the submenu with the ▶ key.
- If necessary, select the next submenu with the ▼ and ▲ keys and open with the ▶ key.
- Select the desired menu item with the ▼ and ▲ keys and open the list of values with the ▶ key.
- Set the value with the ▼ and ▲ keys and confirm with the ▶ key. The new settings will be saved and the device will return to the submenu.
- Select the menu item EXIT to exit the submenu and confirm with the ▶ key. The device will return to the next menu level up or to the measurement display.

## 5.4 Keylock enabled

With the keylock enabled, selecting the menu with the ▼ key will display  in place of the main menu. The active digit will be indicated by a dot.

- Use the ▲ and ▼ keys to enter the code and confirm with the ▶ key. The active digit will move one place to the right. After entering the 3rd digit the main menu will open.

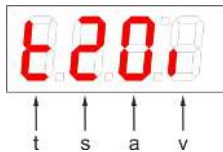
If the wrong code is entered, the device will return to the measurement display. If you forgot the password you can always enter master code 287 to access the menu.

You can cancel the keylock under *Loc* in submenu **Basic Settings Advanced Options** *bEE* and enter 000 to reset the code.

## 5.5 Menu overview

The menu structure is based on the VDMA standard sheet 24574-1. The menu structure is hierarchic. The top menu level contains the main menu items, e.g. **t**EMP, **b**EF, **d**i R, **E**. Each main menu has additional submenu items.

The menu items may vary depending on the device configuration. Not all menu items described below will necessarily apply to your device. Press the **▲** key in display mode to open the configuration. A 4-digit code will appear, e.g.



With the 4 digits tsav meaning:

t: Model

s: Number of switching outputs

a: Number of analogue outputs

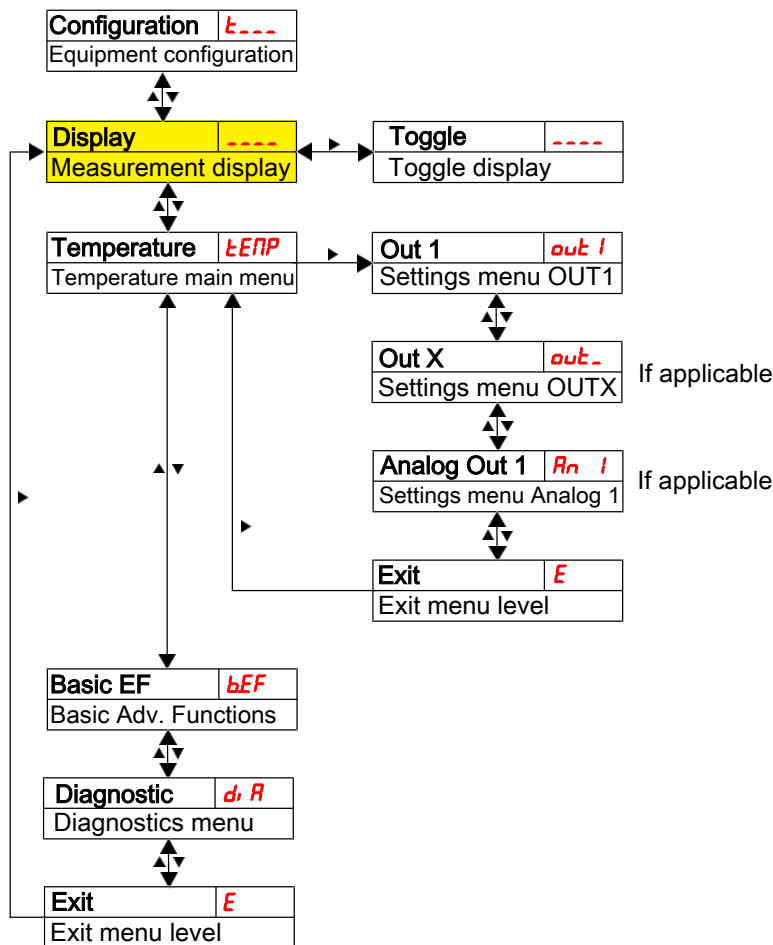
v: Device installation type

t = temperature measurement

2

0

i = standard installation (tank installation)



The individual menu items will not be shown if the option does not apply. Example: With a=0 the menu items for configuring the analogue output does not apply. You can then skip the description for this item.

The switching outputs can be configured in the **Temperature** (**t**EMP) main menu.

The basic device settings can be changed. General settings can be configured under **Basic Settings Advanced Functions** (**b**EF). These settings should be configured first, as they affect the displays and settings for the individual menus. These settings are e.g. the units used and allocating switching outputs for measuring the temperature.

The **Diagnostic** (**d**i R) menu further contains diagnostics options.

**For the detailed illustration of the entire menu structure please refer to the original operating instructions at the end of this chapter.**

## 5.6 Changing basic settings

The general basic settings can be changed under menu **Basic Settings Extended Functions** (**bEF**). These settings will affect the measurement display and the configuration options in the various main menus. Here you can also change the switching output assignment.

- Press the ▼ key to open the main menu.
- Select menu item (**EF**) using the ▼ and ▲ keys and open the menu with the ► key.

### NOTICE



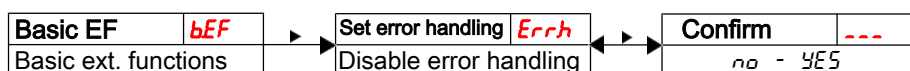
#### Disabling normal error handling

Disabling normal error handling and analysis could potentially cause dangerous operating states, dangers to the user or machines. Before using this option, review the hazard potential within the process. With this setting, Bühler Technologies GmbH assumes no liability for injuries to health or material damage caused by this setting.

### 5.6.1 Disabling normal error handling

Here you can enable/disable normal error handling and analysis

The function Disable error handling (**Errh**) is used to disable normal error handling and analysis. This may pose dangers to the user or machine.



The options are:



Disables normal error handling.

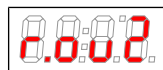
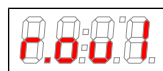
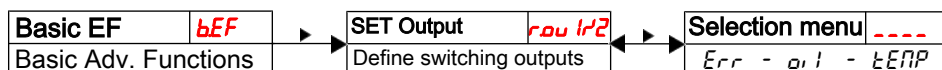
Enables normal error handling (default)

Important note: When exceeding the measuring range or if sensor errors occur, the measurement will be frozen and all six LEDs in the status bar will blink. When the measurement returns to the permissible range the LEDs will stop blinking and the display will refresh again as usual.

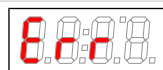
### 5.6.2 Define switching outputs

Here you can define the switching outputs.

Use the “Define switching outputs” function to define the switching outputs (**rou1** and **rou2**). The switching outputs can be configured as **Err**, **oil** and **TEMP**.



The options are:



Err



oil



TEMP

Options:

[**Err**, **oil**, **TEMP**]

#### Note:

- Switching outputs 1 and 2 can alternatively be wired as error indicators. In this case the output will be connected as a NC contact which opens when exceeding the range or if an error occurs. The LED assigned to this output will generally not be activated, as all 6 LED's in the status bar will blink if an error occurs.
- When defining a switching output as an error indicator it will no longer be an option for normal switching output settings.

### 5.6.3 Set temperature unit

This is where the unit symbol for the temperature is configured:



The options are:



Degrees  
Celsius



Degrees  
Fahrenheit

**Note:**

- Values are automatically converted and the measuring range adjusted. However, always check the respective switching points and switch-back points.

### 5.6.4 Set display refresh rate

The refresh rate of the display can be changed based on the application. The display can also be completely disabled. The LEDs will remain functional.



The options are:



fast



medium



slow



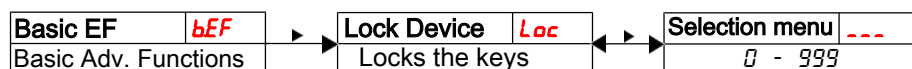
Display off

**Note:**

- Error messages will still appear, even with the display off.

### 5.6.5 Enable/disable keylock

The keylock can be enabled to prevent unauthorised changes to the device settings.



The keylock will be enabled after entering at least one digit > 0. A dot indicates the active digit during this input.



Setting range:  
000 to 999



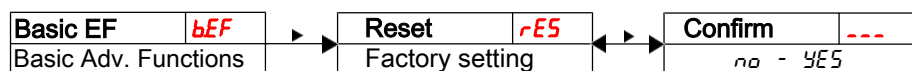
- Use the ► key to open the list of values:
- Enter the digit using the ▼ and ▲ keys (0 to 9) and press the ► key to confirm. The active digit will move one place to the right.
- Lastly, press the ► key to confirm the code. The device will now return to the submenu.

**Note:**

- To disable the keylock enter: 000

## 5.6.6 Restore factory settings (Reset)

Use the Reset function (*rES*) to restore the factory settings. All changes will be lost. Since this will also reset the limits, you must check the temperature settings.



The options are:



Original status:  
No,  
keep current settings



Original status:  
Yes,  
reset settings to the factory defaults.

The factory settings are:

Definitions:

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| <i>SP X / rPX</i>  | Switching point / switch-back point x                      |
| <i>dS X / drX</i>  | Switch-on delay / switch-back delay for switching output x |
| <i>AXHi / AXLo</i> | Maximum and minimum measurement for output*                |
| <i>ROu X</i>       | Analogue output signal type*                               |
| <i>ou X</i>        | Switching characteristic for switching output x            |
| <i>tuni</i>        | Temperature unit                                           |
| <i>di S</i>        | Display refresh rate                                       |
| <i>Loc</i>         | Keylock                                                    |
| <i>Sdow</i>        | Switching output logged                                    |
| <i>dEttt</i>       | Delay for recording the minimum / maximum temperature      |

**Note:** For customer-specific specifications the factory preset may vary from those listed here.

\*analogue output only.

### Version with 2 switching outputs:

| Switching outputs         |                    | Basic Settings |             |
|---------------------------|--------------------|----------------|-------------|
| <i>SP 1 / rP 1</i>        | <i>50 / 45</i>     | <i>tuni</i>    | <i>°C</i>   |
| <i>dS 1 / dr 1 / ou 1</i> | <i>0 / 0 / Hno</i> | <i>di S</i>    | <i>FRSt</i> |
| <i>SP 2 / rP 2</i>        | <i>60 / 55 °C</i>  | <i>Loc</i>     | <i>000</i>  |
| <i>dS 2 / dr 2 / ou 2</i> | <i>0 / 0 / Hno</i> |                |             |

### Version with 1 switching output and 1 analogue output:

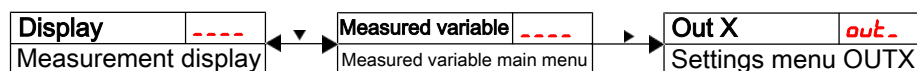
| Switching outputs          |                      | Basic Settings |             |
|----------------------------|----------------------|----------------|-------------|
| <i>SP 1 / rP 1</i>         | <i>50 / 45</i>       | <i>tuni</i>    | <i>°C</i>   |
| <i>dS 1 / dr 1 / ou 1</i>  | <i>0 / 0 / Hno</i>   | <i>rou 1</i>   | <i>tENP</i> |
| Analogue output            |                      | <i>di S</i>    | <i>FRSt</i> |
| <i>AXHi / AXLo / ROu 1</i> | <i>0 / 100 / 1 1</i> | <i>Loc</i>     | <i>000</i>  |

### Diagnostic settings:

| Diagnostics  |              |
|--------------|--------------|
| <i>Sdow</i>  | <i>out 1</i> |
| <i>dEttt</i> | <i>00</i>    |

## 5.7 Switching outputs

All switching outputs are configured the same way. The switching output number is therefore represented by x. Open the switching output to be configured from the menu for the respective measured variable.

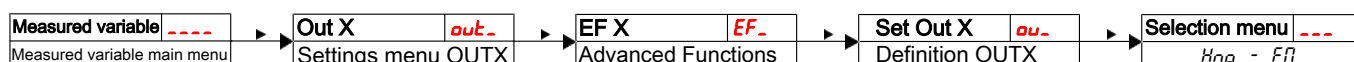


The switching output allocation and other basic settings related to all switching outputs can be configured in menu **Basic Settings Advanced Functions**.

Use submenu **Advanced Functions** to configure additional settings for each individual switching output which e.g. affect the switching characteristics of the output. The output can also be tested here.

### 5.7.1 Switching output x: Definition of the switching characteristic

The switching characteristic for the output can be configured under the following menu:



The options are:

#### Hysteresis Function



Hysteresis function as the NO contact



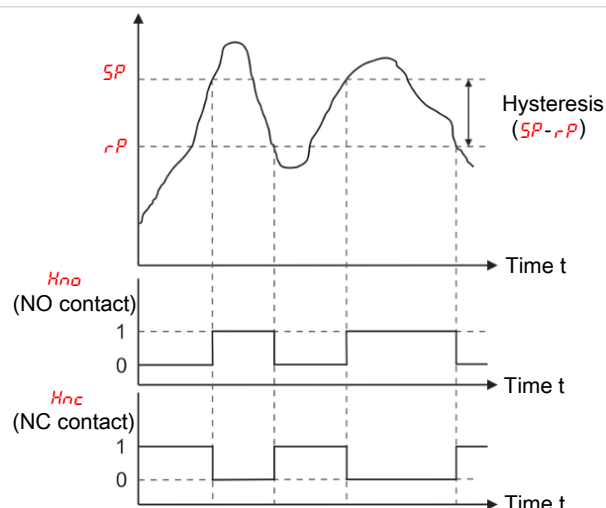
Hysteresis function as the NC contact

NO contact or NC contact function when the output signal is set when exceeding the configured switching point. The output signal will be deleted if the value is below the configured switch-back point.

Here, NO contact (**Hno**) means the PNP switching output is closed above switching point SPx and opens below switching point rPx.

Here, NC contact (**Hnc**) means the PNP switching output is open above switching point SPx and closes below switching point rPx.

Also see the explanation in the drawing below.



#### Window function



Window function as NO contact

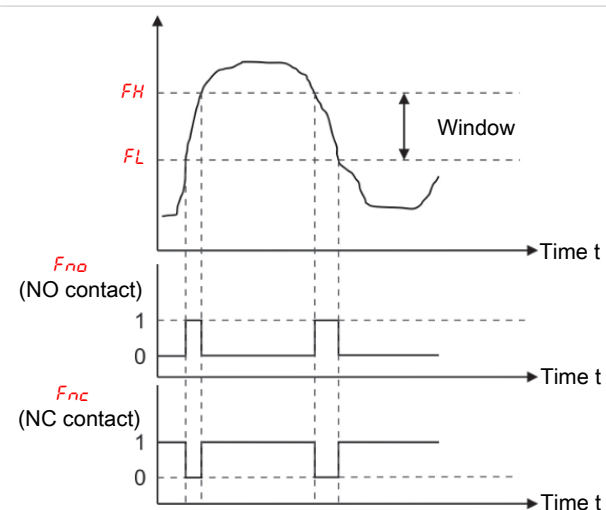


Window function as NC contact

NO contact or NC contact function defining a signal window. When the measuring window is reached the output signal is set and deleted upon exiting.

Here, NO contact (**Fno**) means the PNP switching output is closed if the value is within the window. Otherwise the switching output will be open.

Here, NC contact (**Fnc**) means the PNP switching output is open if the value is within the window. Otherwise the switching output will be closed.



## Frequency output

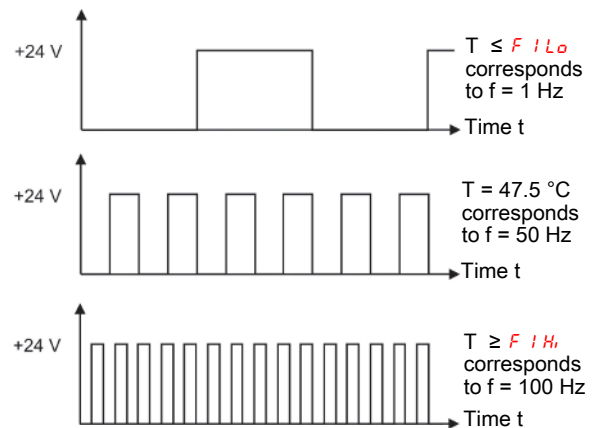


Frequency output

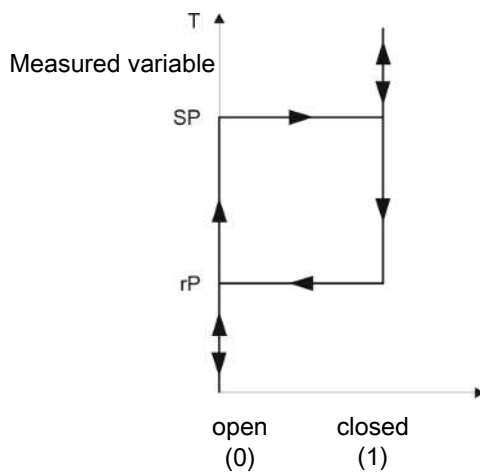
If the output is defined as a frequency output, a square wave signal with a frequency between 1 Hz and 100 Hz proportional to the measurement will be output.

**Note:** To increase the slew rate of the square wave signal, we recommend loading the switching output with an load of 10 kΩ.

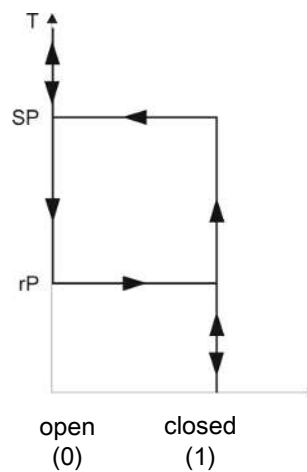
Example:  $FILo = 15\text{ °C}$ ,  $FIH = 80\text{ °C}$   
with temperature T and frequency f:



**Note:** The designation of the switching function may vary:



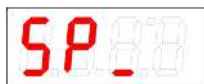
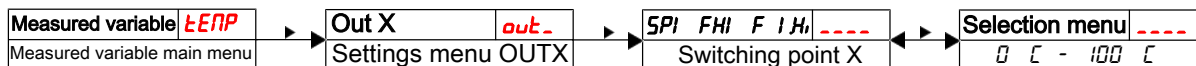
rising NO contact  
falling NC contact  
NO (normally open)  
*Hno*



rising NC contact  
falling NO contact  
NC (normally closed)  
*Hnc*

## 5.7.2 Switching output x: Upper switching limit (switching point)

The upper switching limit for switching output Out x can be defined with the following submenu:



Setting range:  
0 °C to 100 °C  
(32 °F to 212 °F)

Switching point for OUT x

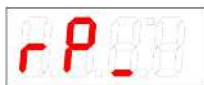
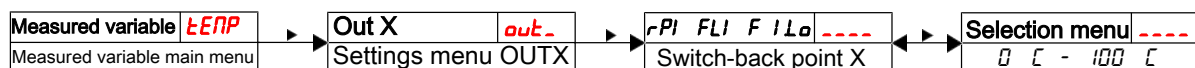
**Note:**

- The switching point must be set to within the range limits (see menu **Basic Settings Advanced Functions**).
- If switching output OUT x was assigned the function **Window**, **FHI** will appear. The setting corresponds with the upper window limit.
- If switching output OUT x was assigned the function **Frequency output**, **FIH** will appear. The setting corresponds to the frequency 100 Hz.



### 5.7.3 Switching output x: Lower switching limit (switch-back point)

The lower switching limit for switching output Out 1 can be defined in the following submenu:



Setting range:  
0 °C to 100 °C  
(32 °F to 212 °F)

Switch-back point for OUT x

**Note:**

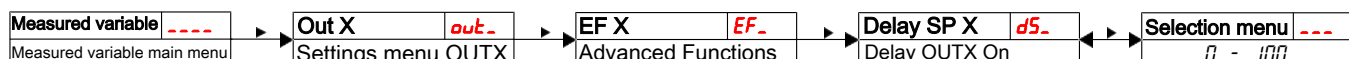
- The switch-back point must be set to within the range limits and must always be lower than the switching point.
- If switching output OUT x was assigned the function **Window**, **FLI** will appear. The setting corresponds with the lower window limit.
- If switching output OUT x was assigned the function **Frequency output**, **F ILo** will appear. The setting corresponds to the frequency 1 Hz.



### 5.7.4 Switching output x: Switch-on delay

The menu **Advanced Functions EFx** is used to configure additional settings for switching output x. The submenu is at the second submenu level.

The switching and switch-back delay prevents the alarm being triggered too frequently in unstable conditions. The switching delay can be configured with the following menu:



Setting range:  
0...100 seconds

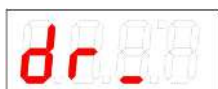
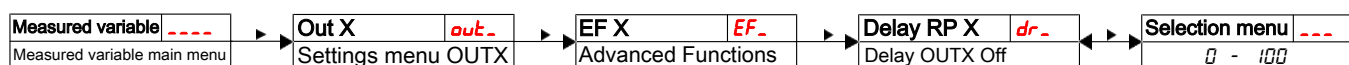
Time span in seconds during which the signal must be continuously present for the switching output to respond.

**Note:**

- If switching output OUT x was assigned the function **Window**, the setting corresponds to the switch-on delay which detects valid reaching of the measuring window.
- If switching output OUT x was assigned the function **Frequency output**, this value will have no affect.

### 5.7.5 Switching output x: Switch-back delay

The switch-back delay can be configured with the following menu:



Setting range:  
0...100 seconds

Switch-back signal delay for OUT x.

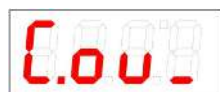
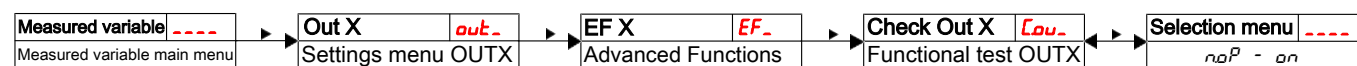
Time span in seconds during which the signal must be continuously present for the switching output to respond.

**Note:**

- If switching output OUT x was assigned the function **Window**, the setting corresponds to the switch-on delay which detects valid closing of the measuring window.
- If switching output OUT x was assigned the function **Frequency output**, this value will have no affect.

## 5.7.6 Switching output x: Testing the switching output

The switching output test can be started with the following menu:



Switching output test option

Options when setting **ou 1** to **Hno** / **Hnc** / **Fno** / **Fnc**:

noP

Normal switching output operation

off

Switching output permanently off disabled

on

Switching output permanently activated

Options when setting **ou 1** to **Ffi**:

noP

Normal mode as frequency output

F 1

Output Frequency 1 Hz

F 100

Output Frequency 100 Hz



**Note:**

– After completing the test, set the function to normal mode **noP**.

## 5.7.7 Change status LED display function

The LEDs in the display indicate the switching status of the output. The following table shows how LEDs are allocated to the switching output:

| Numbering LED | Switching output x | Allocation for 1 switching output | Allocation for 2 switching outputs |
|---------------|--------------------|-----------------------------------|------------------------------------|
| LED           | 1                  | LED 1 - yellow                    | LED 1 - yellow                     |
| 1 2 3 4 5 6   | 2                  |                                   | LED 2 - red                        |



In the factory setting the LED indicates the physical status of the PNP switching output (switching output closed – LED on).

The logical indicator function may need to be different from the physical signal on the switching output. You can therefore also reverse this indication with this menu (switching output open – LED on).

### Example:

You have 2 switching outputs for the temperature, configured as:

- **Switching output 1:** Max contact, rising NO contact. The LED lights up when exceeding the maximum temperature and the temperature is higher than the desired range. So this LED lighting up indicates an “Error” status.
- **Switching output 2:** Min contact, rising NO contact. So in the factory setting, the LED lights up when exceeding the minimum temperature. So in this case the LED would light up if the status is okay.

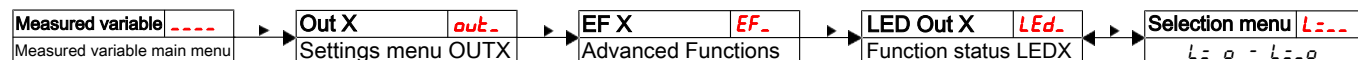
The table shows an example with the factory setting and with inverted status function for LED3. The switching points are defined as:

SP3 = 70 °C, rP3 = 65 °C

SP4 = 80 °C, rP4 = 75 °C

|   | Factory setting                                                                                       | Status function<br>LED 3 inverted                                                                 | State                                                         | Status |
|---|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------|
| A | <br>LED3 ON          | <br>LED3 OFF     | Temperature rises to > 70 °C<br>PNP switching output 3 closed | OK     |
| B | <br>LED4 and LED3 ON | <br>only LED4 ON | Temperature rises to > 80 °C<br>PNP switching output 4 closed | Error  |
| C | <br>LED3 ON          | <br>LED 3 OFF    | Temperature falls to < 75 °C<br>PNP switching output 4 open   | OK     |
| D | <br>LED3 OFF         | <br>LED3 ON      | Temperature falls to < 65 °C<br>PNP switching output 3 open   | Error  |

Here you can reverse the LED status function for a contact: the LED lights up if the contact is open, so below the minimum temperature, and the LED lighting up again indicates an “Error” status.



The options are:



LED = output;  
the LED lights up when the PNP switching  
output is closed.



LED = -output;  
the LED lights up when the PNP switching  
output is open.

#### NOTICE

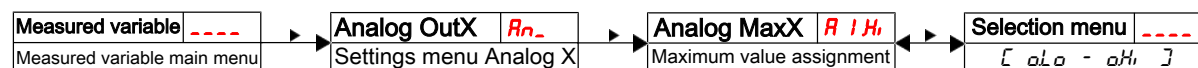


The display function of the status LED affects event logging! Please note chapter “Diagnostic options”.

## 5.8 Analogue outputs

### 5.8.1 Analogue output x: Assigning the upper limit

Used to configure at which temperature to output the maximum analogue signal. This is configured in menu:



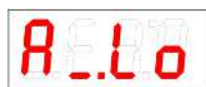
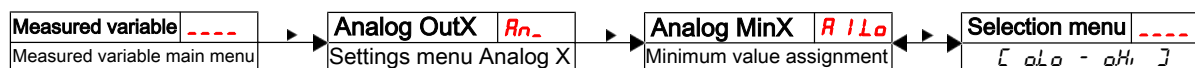
Setting range:  
0 °C to 100 °C  
(32 °F to 212 °F)

#### Note:

- The output range setting must not be less than 10 % of the measuring range:  $A !H_1 - A !L_o \geq 10\%$
- If the range is set too low, the analogue value output may have grades.

## 5.8.2 Analogue output x: Lower limit assignment

Used to configure at which temperature to output the minimum analogue signal. This is configured in menu:



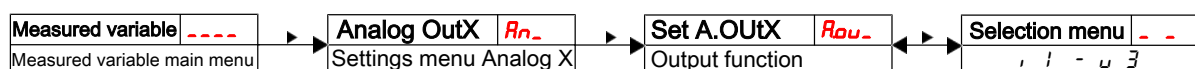
Setting range:  
0 °C to 100 °C  
(32 °F to 212 °F)

### Note:

- The output range setting must not be less than 10 % of the measuring range:  $A lH_i - A lL_o \geq 10\%$
- If the range is set too low, the analogue value output may have grades.

## 5.8.3 Analogue output x: Signal type assignment

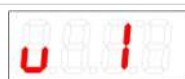
The analogue output can be defined as a voltage or current output with different value ranges. This is configured in menu:



### The options are:



4 mA to 20 mA



2 V to 10 V



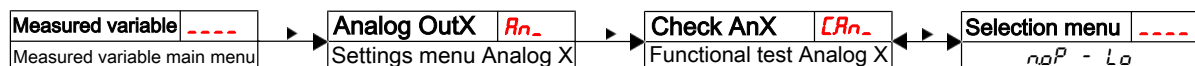
0 V to 10 V



0 V to 5 V

## 5.8.4 Analogue output x: Testing the analogue output

The analogue output can be tested. The highest, mean and lowest analogue value can be output successively. This is configured in menu:



### The options are:



Normal mode



Highest analogue value output



Mean analogue value output



Lowest analogue value output



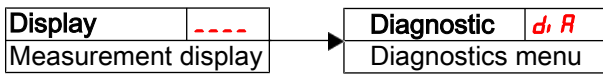
### Note:

- After completing the test, set the function to normal mode **noP**.

## 5.9 Diagnostic options

The device is able to log events for a switching output. The LED lighting up is considered an event. The logging of switching procedures therefore depends on how the LED switching function is configured.

The configuration and analysis can be carried out here.



### NOTICE



Only one switching output can be logged. The switching output to be logged is configured in menu item **Set Journal Out** (S<sub>out</sub>).

- Press the ▼ key to open the main menu.
- Select menu item d, R with the ▼ and ▲ keys.

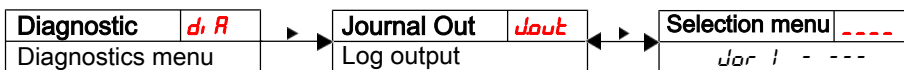


From here you will be able to access various diagnostic values and measurement monitoring logs.

- Open the menu with the ► key.  
You can now change or view the diagnostic settings.

### 5.9.1 View logbook

The last 6 events for the switching output being logged can be viewed here and all entries deleted:



The journal entries will be displayed as:

- Most recent event Jor 1 occurred x hours (h) / days (d) ago,
- Events 2 to 5 occurred x hours / days ago,
- The oldest event Jor 6 occurred x hours / days ago,
- Delete function (---)

#### Example:

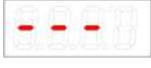
Jor 1 ⇔ 13h, key ▼  
 Jor 2 ⇔ 24h, key ▼, ▲  
 Jor 3 ⇔ 6.1h, key ▼, ▲  
 Jor 4 ⇔ 82h, key ▼, ▲  
 Jor 5 ⇔ non 8, key ▼, ▲  
 Jor 6 ⇔ non 8, key ▼, ▲  
 ---, key ▲; ► = delete

• not yet populated, only 4 events have occurred



The information displayed will alternate between the index and time for entry x, e.g. Jor 1 ⇔ 14h for the most recent event 1.4 hours ago.

Press the ► key to return to the submenu or use ▼, ▲ to select the next journal entry.

Confirming the information  with the ► key will delete the list of events and return to the submenu.

#### Note:

- If no events have been logged, the display will alternate between Jor X and non.

## 5.9.2 Maximum and minimum temperature

Used to view or delete the saved maximum and minimum temperature:

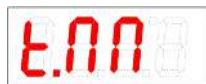


The journal entries will be displayed as:

- Maximum temperature,
- occurred x hours / days ago,
- Minimum temperature,
- occurred x hours / days ago,
- Delete function

**Example:**

72 °C, key ▼  
 84h, key ▼, ▲  
 22 °C, key ▼, ▲  
 2.1h, key ▼, ▲  
 ---, key ▲; ▶ = delete



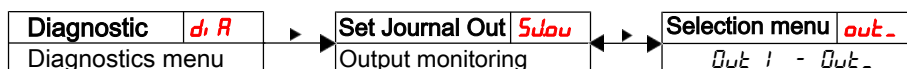
Menu order:  
 Max. value,  
 time  
 min. value  
 time  
 delete (reset)

Press the ▶ key to return to the submenu or use ▼, ▲ to select the next Journal entry.

Confirming the information  with the ▶ key will delete the list of events and return to the submenu.

## 5.9.3 Define switching output to log

Used to select the switching output to be logged. Only one switching output can be logged.



Switching output logging.

Options:  
 out 1 to outX

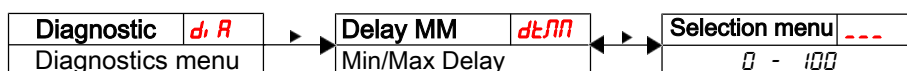
### NOTICE



Values are backed up from volatile to non-volatile memory approx. every three hours.

## 5.9.4 Delay for storing the Min/Max Temperature

A delay time for saving the minimum and maximum temperature can be set to record reliable values when temperatures fluctuate. Here, enter the time span in seconds during which the signal must be continuously present before the temperature is logged.



Setting range:  
 0...100 seconds

- Use the ▶ key to open the list of values.
- Set the value with the ▼ and ▲ keys and use the ▶ key to confirm (e.g. 5 (seconds)). The device will return to the submenu.

## **6 Cleaning and Maintenance**

This device is maintenance-free.

The method for cleaning the devices must be adapted to the IP protection class of the devices. Do not use cleaners which could damage the device materials.

## 7 Service and repair

This chapter contains information on troubleshooting and correction should an error occur during operation.

Repairs to the unit must be performed by Bühler authorised personnel.

Please contact our Service Department with any questions:

**Tel.: +49-(0)2102-498955** or your agent

If the equipment is not functioning properly after correcting any malfunctions and switching on the power, it must be inspected by the manufacturer. Please send the equipment inside suitable packaging to:

**Bühler Technologies GmbH**

**- Reparatur/Service -**

**Harkortstraße 29**

**40880 Ratingen**

**Germany**

Please also attach the completed and signed RMA decontamination statement to the packaging. We will otherwise be unable to process your repair order.

You will find the form in the appendix of these instructions, or simply request it by e-mail:

**service@buehler-technologies.com.**

### 7.1 Troubleshooting

| Problem / Malfunction                                                                          | Possible cause                                                                      | Action                                  |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------|
| No display                                                                                     | – No supply voltage                                                                 | – Check cable and replace, if necessary |
| Error messages on the display:                                                                 |                                                                                     |                                         |
| Alternating between Err and Exxx: e.g.                                                         |  |                                         |
|  Error 001  | – Ambient temperature too low                                                       | – Maintain limits                       |
|  Error 002  | – Ambient temperature too high                                                      | – Maintain limits                       |
|  Error 004  | – Pt100 defective (short-circuit)                                                   | – Send device in for repair             |
|  Error 008  | – Pt100 defective (cable break)                                                     | – Send device in for repair             |
|  Error 1024 | – Internal error                                                                    | – Please contact customer service       |

#### Possible errors

| Problem / Malfunction                                                          | Possible cause                            | Action                                                                                                 |
|--------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Switching output not triggering when exceeding limits                          | – Switching output configured incorrectly | – In submenu <b>LoUX</b> : “Test Switching Output” to ensure normal mode                               |
|                                                                                | – Switching output defect                 | – In submenu <b>LoUX</b> : “Test Switching Output” to test the desired switching output                |
| Switching output constantly switching                                          | – Switching output configured incorrectly | – In submenu <b>LoUX</b> : “Test Switching Output” to ensure normal mode                               |
|                                                                                | – Switching output defect                 | – In submenu <b>LoUX</b> : “Test Switching Output” to test the desired switching output                |
| The analogue doesn't receive the full/correct output current                   | – Wrong signal type set                   | – In submenu <b>RoUX</b> : Check and if necessary set the correct signal type (current/voltage output) |
|                                                                                | – Load too high (current output)          | – Reduce load to permissible value                                                                     |
| Analogue output doesn't change the output signal when the input signal changes | – Analogue output configured incorrectly  | – In submenu <b>LoUX</b> : „Test Analogue Output” to ensure normal mode                                |

## 8 Disposal

The applicable national laws must be observed when disposing of the products. Disposal must not result in a danger to health and environment.

The crossed out wheelie bin symbol on Bühler Technologies GmbH electrical and electronic products indicates special disposal notices within the European Union (EU).



The crossed out wheelie bin symbol indicates the electric and electronic products bearing the symbol must be disposed of separate from household waste. They must be properly disposed of as waste electrical and electronic equipment.

Bühler Technologies GmbH will gladly dispose of your device bearing this mark. Please send your device to the address below for this purpose.



We are obligated by law to protect our employees from hazards posed by contaminated devices. Therefore please understand that we can only dispose of your waste equipment if the device is free from any aggressive, corrosive or other operating fluids dangerous to health or environment. **Please complete the "RMA Form and Decontamination Statement", available on our website, for every waste electrical and electronic equipment. The form must be applied to the packaging so it is visible from the outside.**

Please return waste electrical and electronic equipment to the following address:

Bühler Technologies GmbH  
WEEE  
Harkortstr. 29  
40880 Ratingen  
Germany

Please also observe data protection regulations and remember you are personally responsible for the returned waste equipment not bearing any personal data. Therefore please be sure to delete your personal data before returning your waste equipment.

## 9 Appendices

### 9.1 Technical Data NT-ELD

| Version                 | MS                                                     |
|-------------------------|--------------------------------------------------------|
| Operating pressure:     | max. 1 bar                                             |
| Operating temperature:  | -20 °C to +80 °C                                       |
| Float:                  | SK 174                                                 |
| Min. fluid density:     | 0.80 kg/dm <sup>3</sup>                                |
| Lengths (all versions): | 280, 370, 500 mm (standard)<br>variable to max. 500 mm |
| Weight at L = 500 mm:   | approx. 300 g                                          |

#### Material

|                                        |                    |
|----------------------------------------|--------------------|
| Float:                                 | PU                 |
| Immersion tube:                        | Brass              |
| G1/2 connection, M20 x 1,5, 7/8-14UNF: | Anodised aluminium |

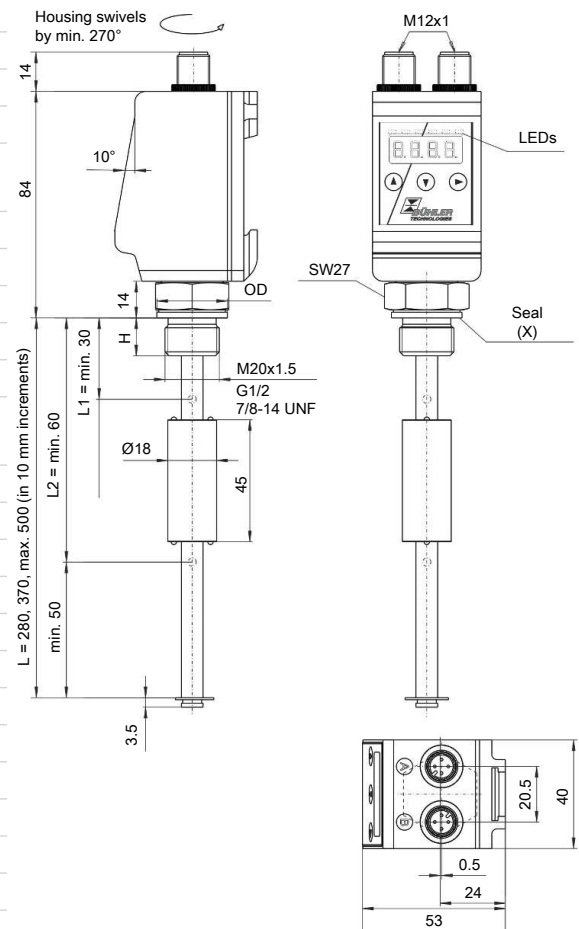
#### Level switching output K40

|                                                   |                             |
|---------------------------------------------------|-----------------------------|
| Number max.:                                      | 2 not adjustable            |
| Function:                                         | NO / NC*                    |
| Max. voltage:                                     | 30 V DC                     |
| Max. switching current:                           | 0.5 A                       |
| Max. contact load:                                | 5 VA                        |
| Min. contact spacing:                             | 30 mm (in 10 mm increments) |
| *NO= falling NC contact / NC = falling NO contact |                             |

#### Temperature display electronics

|                                   |                                                        |
|-----------------------------------|--------------------------------------------------------|
| Display:                          | 4 character 7 segment LED                              |
| Operation:                        | Via 3 keys                                             |
| Memory:                           | Min. / Max. Data memory                                |
| Starting current input:           | approx. 100 mA for 100 ms                              |
| Current input during operation:   | approx. 50 mA (without current- and switching outputs) |
| Supply voltage (U <sub>B</sub> ): | 10–30 V DC (nominal voltage 24 V DC)                   |
| Ambient temperature:              | -20 °C to +70 °C                                       |
| Temperature display units:        | °C / °F                                                |
| Display range:                    | -20 °C to +120 °C                                      |
| Alarm setting range:              | 0 °C to 100 °C                                         |
| Display accuracy:                 | ± 1 % FS                                               |
| Measuring principle:              | Pt 100 Class B, DIN EN 60751                           |

#### Dimensions



|    | M20 x1.5      | G1/2          | 7/8-14UNF |
|----|---------------|---------------|-----------|
| OD | 26            | 26.9          | 26        |
| H  | 14            | 14            | 12.7      |
| X  | EOlastic seal | EOlastic-seal | O-ring    |

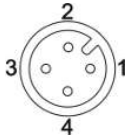
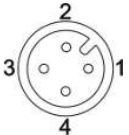
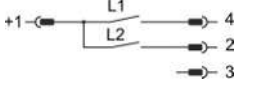
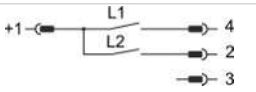
## 9.2 NT-ELD temperature outputs

Choose from the following switching outputs:

| Version                                              | 2T                                                     | 1T-KT                                                  |
|------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| Plug (base):                                         | 2 x M12 – 4-pin                                        | 2 x M12 – 4-pin                                        |
| <b>Switching outputs:</b>                            | 2 x freely programmable                                | 1 x freely programmable                                |
| Alarm memory:                                        | 1 switching output assignable to alarm logbook         | 1 switching output assignable to alarm logbook         |
| max. switching current*                              | 0.5 A per output<br>continuous short-circuit protected | 0.5 A per output<br>continuous short-circuit protected |
| Contact load:                                        | max. 1 A total                                         | max. 1 A total                                         |
| 1 switching output configurable as frequency output: | 0 – 100 Hz                                             |                                                        |
| Analogue output:                                     |                                                        | 1 x 4 – 20 mA, 2-10 V DC,<br>0-10 V DC or 0-5 V DC     |
| Max. burden $\Omega$ as current output:              |                                                        | $= (U_B - 8 \text{ V}) / 0.02 \text{ A}$               |
| Min. input load min. as voltage output:              |                                                        | 10 k $\Omega$                                          |

\*\*Output 1 max. 0.2 A.

## 9.3 NT-ELD standard pin assignment

|                                             | Plug A level<br>M12 (base)                                                          |                  | Plug B temperature<br>M12 (base)                                                   |
|---------------------------------------------|-------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------|
| Connection schematic:                       |   |                  |  |
| <b>Number of poles:</b>                     | 4-pin                                                                               |                  | 4-pin                                                                              |
| <b>DIN EN:</b>                              | 61076-2-101                                                                         |                  | 61076-2-101                                                                        |
| <b>Max. voltage:</b>                        | 30 VDC                                                                              |                  | 30 VDC                                                                             |
| <b>IP rating:</b>                           | IP65                                                                                |                  | IP65                                                                               |
| <b>2T</b>                                   |                                                                                     | <b>PIN</b>       |                                                                                    |
| 2 x temperature output                      |  | 1<br>2<br>3<br>4 | +24 V<br>S2 (PNP)<br>GND<br>S1 (PNP)                                               |
| <b>1T-KT</b>                                |                                                                                     | <b>PIN</b>       |                                                                                    |
| 1 x Temperature output<br>1 x Analog output |  | 1<br>2<br>3<br>4 | +24 V<br>Analogue<br>GND<br>S1 (PNP)                                               |

## 9.4 Current settings

| Switching outputs       | Basic Settings | Diagnostics |
|-------------------------|----------------|-------------|
| SP1 / rP1               | oUn1           | SdOu        |
| dS1 / dr1 / ou1         | LUr1           | dLr1        |
| SP2 / rP2               | oH1            |             |
| dS2 / dr2 / ou2         | oLo            |             |
| SP3 / rP3               | rOu1           |             |
| dS3 / dr3 / ou3         | rOu2           |             |
| SP4 / rP4               | rOu3           |             |
| dS4 / dr4 / ou4         | rOu4           |             |
|                         | d1.5           |             |
|                         | Loc            |             |
| <b>Analogue outputs</b> |                |             |
| RHi / RLo / Rou1        |                |             |

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

## 9.5 Display ranges

| Name               | Menu/Unit | Display | Range from/<br>with unit | Range to/<br>with unit |
|--------------------|-----------|---------|--------------------------|------------------------|
| <b>Temperature</b> |           |         |                          |                        |
| °C                 | ℃         | ℃       | -100 °C                  | 999 °C                 |
| °F                 | ℉         | ℉       | -100 °F                  | 999 °F                 |
| <b>Without</b>     |           |         |                          |                        |
| none               | non       | none    | -1000                    | 9999                   |
| none               | non1      | none    | -100.0                   | 999.9                  |
| none               | non2      | none    | -10.00                   | 99.99                  |

## 9.6 Display resolution

Range x = |Max - Min|

| °C, °F<br>(up to 1 decimal) |            | none (non1)<br>(1 fixed-point number) |            |
|-----------------------------|------------|---------------------------------------|------------|
| Range x                     | Resolution | Range x                               | Resolution |
| x < 50                      | 0.1        | x < 50                                | 0.1        |
| 50 ≤ x < 100                | 0.2        | 50 ≤ x < 100                          | 0.2        |
| 100 ≤ x < 200               | 0.5        | 100 ≤ x < 200                         | 0.5        |
| 200 ≤ x < 500               | 1          | 200 ≤ x < 500                         | 1          |
| 500 ≤ x < 1000              | 2          | 500 ≤ x < 1000                        | 2          |
| 1000 ≤ x                    | 5          | 1000 ≤ x                              | 5          |

none (*non2*)  
(2 fixed-point numbers)

| Range x           | Resolution |
|-------------------|------------|
| $x < 5$           | 0.01       |
| $5 \leq x < 10$   | 0.02       |
| $10 \leq x < 20$  | 0.05       |
| $20 \leq x < 50$  | 0.1        |
| $50 \leq x < 100$ | 0.2        |
| $100 \leq x$      | 0.5        |

**Example** no unit: Min = 100, Max = 1500 ->  $x = 1500 - 100 = 1400$  -> Resolution = 5

**Example** Temperature: Min = 0°C, Max = 100°C ->  $x = 100^\circ\text{C} - 0^\circ\text{C} = 100^\circ\text{C}$  -> Resolution = 0.5°C



## **10 Attached documents**

- Declaration of conformity KX100030
- RMA - Decontamination Statement

**EU-Konformitätserklärung**  
**EU-declaration of conformity**



Hiermit erklärt Bühler Technologies GmbH,  
dass die nachfolgenden Produkte den  
wesentlichen Anforderungen der Richtlinie

*Herewith declares Bühler Technologies GmbH  
that the following products correspond to the  
essential requirements of Directive*

**2014/30/EU**

**(Elektromagnetische Verträglichkeit / *electromagnetic compatibility*)**

in ihrer aktuellen Fassung entsprechen.

*in its actual version.*

**Produkt / products:** Niveauschalter und –geber / Level switches and gauges  
**Typ / type:** Nivotemp NT-ELD

Die Betriebsmittel dienen zur Überwachung des Füllstandes und der Temperatur in Fluidsystemen.  
*The equipment is designed for monitoring level and temperature in fluid systems.*

Das oben beschriebene Produkt der Erklärung erfüllt die einschlägigen  
Harmonisierungsrechtsvorschriften der Union:

*The object of the declaration described above is in conformity with the relevant Union harmonisation  
legislation:*

**EN 61326-1:2013**

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.  
*This declaration of conformity is issued under the sole responsibility of the manufacturer.*

Dokumentationsverantwortlicher für diese Konformitätserklärung ist Herr Stefan Eschweiler mit  
Anschrift am Firmensitz.

*The person authorised to compile the technical file is Mr. Stefan Eschweiler located at the company's  
address.*

Ratingen, den 27.10.2016

A handwritten signature in blue ink, appearing to read 'Stefan Eschweiler'.

Stefan Eschweiler  
Geschäftsführer – *Managing Director*

A handwritten signature in blue ink, appearing to read 'Frank Pospiech'.

Frank Pospiech  
Geschäftsführer – *Managing Director*

## UK Declaration of Conformity



The manufacturer Bühler Technologies GmbH declares, under the sole responsibility, that the product complies with the requirements of the following UK legislation:

### Electromagnetic Compatibility Regulations 2016

**Product:** Level switches and gauges  
**Type:** Nivotemp NT-ELD

The equipment is designed for monitoring level and temperature in fluid systems.

The object of the declaration described above is in conformity with the relevant designated standards:

**EN 61326-1:2013**

Ratingen in Germany, 01.11.2022

  
Stefan Eschweiler  
Managing Director

  
Frank Pospiech  
Managing Director

# RMA-Formular und Erklärung über Dekontaminierung

## RMA-Form and explanation for decontamination



RMA-Nr./ RMA-No.

Die RMA-Nr. bekommen Sie von Ihrem Ansprechpartner im Vertrieb oder Service. Bei Rücksendung eines Altgeräts zur Entsorgung tragen Sie bitte in das Feld der RMA-Nr. "WEEE" ein./ You may obtain the RMA number from your sales or service representative. When returning an old appliance for disposal, please enter "WEEE" in the RMA number box.

Zu diesem Rücksendeschein gehört eine Dekontaminierungserklärung. Die gesetzlichen Vorschriften schreiben vor, dass Sie uns diese Dekontaminierungserklärung ausgefüllt und unterschrieben zurücksenden müssen. Bitte füllen Sie auch diese im Sinne der Gesundheit unserer Mitarbeiter vollständig aus./ This return form includes a decontamination statement. The law requires you to submit this completed and signed decontamination statement to us. Please complete the entire form, also in the interest of our employee health.

### Firma/ Company

Firma/ Company

Straße/ Street

PLZ, Ort/ Zip, City

Land/ Country

Gerät/ Device

Anzahl/ Quantity

Auftragsnr./ Order No.

### Ansprechpartner/ Person in charge

Name/ Name

Abt./ Dept.

Tel./ Phone

E-Mail

Serien-Nr./ Serial No.

Artikel-Nr./ Item No.

### Grund der Rücksendung/ Reason for return

- ☐ Kalibrierung/ Calibration ☐ Modifikation/ Modification  
☐ Reklamation/ Claim ☐ Reparatur/ Repair  
☐ Elektroaltgerät/ Waste Electrical & Electronic Equipment (WEEE)  
☐ andere/ other

bitte spezifizieren/ please specify

### Ist das Gerät möglicherweise kontaminiert?/ Could the equipment be contaminated?

- ☐ Nein, da das Gerät nicht mit gesundheitsgefährdenden Stoffen betrieben wurde./ No, because the device was not operated with hazardous substances.  
☐ Nein, da das Gerät ordnungsgemäß gereinigt und dekontaminiert wurde./ No, because the device has been properly cleaned and decontaminated.  
☐ Ja, kontaminiert mit:/ Yes, contaminated with:



☐  
explosiv/  
explosive



☐  
entzündlich/  
flammable



☐  
brandfördernd/  
oxidizing



☐  
komprimierte  
Gase/  
compressed  
gases



☐  
ätzend/  
caustic



☐  
giftig,  
Lebensgefahr/  
poisonous, risk  
of death



☐  
gesundheitsge-  
fährdend/  
harmful to  
health



☐  
gesund-  
heitsschädlich/  
health hazard



☐  
umweltge-  
fährdend/  
environmental  
hazard

### Bitte Sicherheitsdatenblatt beilegen! / Please enclose safety data sheet!

Das Gerät wurde gespült mit:/ The equipment was purged with:

Diese Erklärung wurde korrekt und vollständig ausgefüllt und von einer dazu befugten Person unterschrieben. Der Versand der (dekontaminierten) Geräte und Komponenten erfolgt gemäß den gesetzlichen Bestimmungen.

This declaration has been filled out correctly and completely, and signed by an authorized person. The dispatch of the (decontaminated) devices and components takes place according to the legal regulations.

Falls die Ware nicht gereinigt, also kontaminiert bei uns eintrifft, muss die Firma Bühler sich vorbehalten, diese durch einen externen Dienstleister reinigen zu lassen und Ihnen dies in Rechnung zu stellen.

Should the goods not arrive clean, but contaminated, Bühler reserves the right, to commission an external service provider to clean the goods and invoice it to your account.

Firmenstempel/ Company Sign

Datum/ Date

rechtsverbindliche Unterschrift/ Legally binding signature



### **Vermeiden von Veränderung und Beschädigung der einzusendenden Baugruppe**

Die Analyse defekter Baugruppen ist ein wesentlicher Bestandteil der Qualitätssicherung der Firma Bühler Technologies GmbH. Um eine aussagekräftige Analyse zu gewährleisten muss die Ware möglichst unverändert untersucht werden. Es dürfen keine Veränderungen oder weitere Beschädigungen auftreten, die Ursachen verdecken oder eine Analyse unmöglich machen.

### **Umgang mit elektrostatisch sensiblen Baugruppen**

Bei elektronischen Baugruppen kann es sich um elektrostatisch sensible Baugruppen handeln. Es ist darauf zu achten, diese Baugruppen ESD-gerecht zu behandeln. Nach Möglichkeit sollten die Baugruppen an einem ESD-gerechten Arbeitsplatz getauscht werden. Ist dies nicht möglich sollten ESD-gerechte Maßnahmen beim Austausch getroffen werden. Der Transport darf nur in ESD-gerechten Behältnissen durchgeführt werden. Die Verpackung der Baugruppen muss ESD-konform sein. Verwenden Sie nach Möglichkeit die Verpackung des Ersatzteils oder wählen Sie selber eine ESD-gerechte Verpackung.

### **Einbau von Ersatzteilen**

Beachten Sie beim Einbau des Ersatzteils die gleichen Vorgaben wie oben beschrieben. Achten Sie auf die ordnungsgemäße Montage des Bauteils und aller Komponenten. Versetzen Sie vor der Inbetriebnahme die Verkabelung wieder in den ursprünglichen Zustand. Fragen Sie im Zweifel beim Hersteller nach weiteren Informationen.

### **Einsenden von Elektroaltgeräten zur Entsorgung**

Wollen Sie ein von Bühler Technologies GmbH stammendes Elektroprodukt zur fachgerechten Entsorgung einsenden, dann tragen Sie bitte in das Feld der RMA-Nr. „WEEE“ ein. Legen Sie dem Altgerät die vollständig ausgefüllte Dekontaminierungserklärung für den Transport von außen sichtbar bei. Weitere Informationen zur Entsorgung von Elektroaltgeräten finden Sie auf der Webseite unseres Unternehmens.

### **Avoiding alterations and damage to the components to be returned**

Analysing defective assemblies is an essential part of quality assurance at Bühler Technologies GmbH. To ensure conclusive analysis the goods must be inspected unaltered, if possible. Modifications or other damages which may hide the cause or render it impossible to analyse are prohibited.

### **Handling electrostatically conductive components**

Electronic assemblies may be sensitive to static electricity. Be sure to handle these assemblies in an ESD-safe manner. Where possible, the assemblies should be replaced in an ESD-safe location. If unable to do so, take ESD-safe precautions when replacing these. Must be transported in ESD-safe containers. The packaging of the assemblies must be ESD-safe. If possible, use the packaging of the spare part or use ESD-safe packaging.

### **Fitting of spare parts**

Observe the above specifications when installing the spare part. Ensure the part and all components are properly installed. Return the cables to the original state before putting into service. When in doubt, contact the manufacturer for additional information.

### **Returning old electrical appliances for disposal**

If you wish to return an electrical product from Bühler Technologies GmbH for proper disposal, please enter "WEEE" in the RMA number box. Please attach the fully completed decontamination declaration form for transport to the old appliance so that it is visible from the outside. You can find more information on the disposal of old electrical appliances on our company's website.

