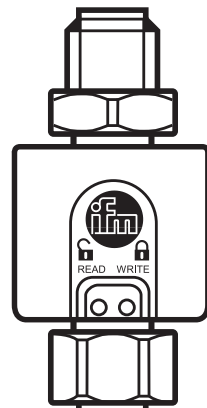




Operating instructions  
Memory Plug  
**E30398**

**UK**

704930 / 03 08 / 2018



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# 1 Preliminary note

## 1.1 Symbols used

▶ Instructions

> Reaction, result

→ Cross-reference



Important note

Non-compliance may result in malfunction or interference.



Information

Supplementary note.

● LED on

○ LED off

☼ LED flashes slowly (1 Hz)

☼ LED flashes quickly (4 Hz)

☼ LED flickers

## 1.2 Terms used

|                         |   |
|-------------------------|---|
| Memory plug             | Plug with storage medium  |
| Memory plug empty       | Setting at the factory.<br>No parameter set is saved in the memory plug.<br>The memory plug has to be connected to a sensor or a PC system in order to save a valid parameter set.  |
| Memory plug full        | A valid parameter set is available in the memory of the memory plug.  |
| Memory plug transparent | The memory plug is transparent if after successful saving of the parameters all unfiltered sensor signals are transmitted to the higher-level system.<br>For further data operation the operating voltage or the connection sensor - memory plug must be interrupted once.  |
| [Write protected]       | <ul style="list-style-type: none"><li>• If the memory plug is empty (no parameter set saved), one parameter set can be written to the memory plug once.</li><li>• If the memory plug is full (a parameter set is saved), it is protected against further writing.</li></ul> |
| [Read/Write]            | The memory plug is not protected against overwriting. The internal data set is overwritten when the memory plug is connected to a sensor.   |
| Sensor of the same type | Sensors of the same type have the same IO-Link device ID or can take this ID in the compatibility mode. However, they do have a different serial number.  |
| Identical sensor        | Physically identical device: The serial number of the sensor and the saved parameter set are the same.  |
| IODD                    | Abbreviation for IO Device Description. It is a file describing the parameters of the IO-Link devices. This file can be interpreted by machines.<br>An IODD is assigned to each IO-Link device ID.  |

## 2 Safety instructions

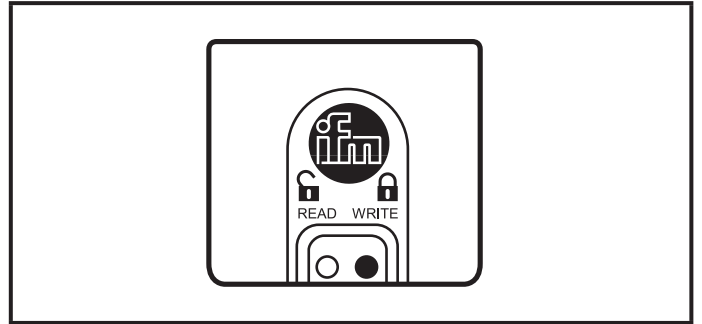
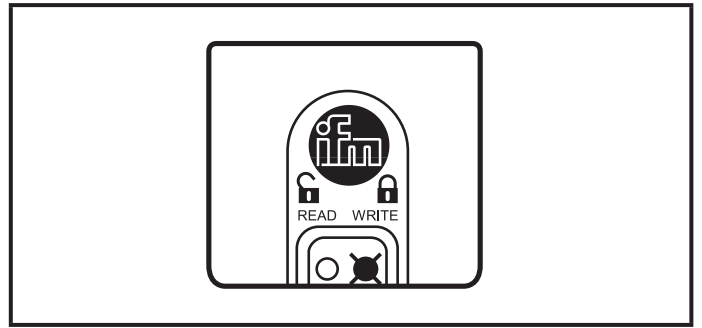
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Functions and features).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the product must be carried out by qualified personnel authorised by the machine operator.
- Changing parameters during operation will influence the function of the plant. Ensure that no malfunction or dangerous conditions will occur in the plant.
- Protect units and cables against damage.

### 3 Factory setting

On delivery the memory plug is empty (no parameter set saved).

When the supply voltage is applied, the LED WRITE flashes slowly (1 Hz).

In this state one parameter set can be written to the memory plug once. Then it changes to the mode [Write protected].



To write a new parameter set to the device, the memory plug has to be reset to the factory setting (→ 6.6 Configure the memory plug via LR DEVICE).

### 4 Functions and features

The memory plug saves parameter sets of IO-Link devices. It offers the following options:

- Bi-directional backup for IO-Link V1.1 sensors.
- Bi-directional backup for IO-Link V1.0 sensors from ifm electronic.
- Preconfiguration as data carrier via PC.

#### 4.1 Applications without PC

- Save the parameter set of a sensor once → 6.1.
- Save the parameter set of a sensor continuously → 6.2.
- Copy the parameter set of a sensor (copy to several sensors of the same type; e.g. in series production or for fast set-up) (→ 6.3 Copy the parameter set of a sensor).
- Set the parameters of replacement sensors (without using further tools, without configuration tools or menu handling) (→ 6.4).
- Restore the parameter set of a sensor (e.g. during start-up of an installation) (→ 6.5).

## 4.2 Applications with IO-Link master and LR DEVICE (software)

- Configure the memory plug via LR DEVICE (software) → 6.6.
- Write the data stored on the memory plug → 6.6.1.
- Read and edit the data stored on the memory plug → 6.6.2.

## 4.3 Basic operating conditions

- Negative switching sensors are not supported.
- The memory plug cannot be used with IO-Link actuators.
- IO-Link sensors with COM3 are not supported.
- The memory plug is intended for saving the data of IO-Link sensors used without IO-Link master.
- Data in the parameter set of the sensor protected by an access code cannot be overwritten by the memory plug.



The memory plug saves / writes data after the following operations.

- After application of the supply voltage.
- After interrupting and restoring the connection between the memory plug and the sensor.

After saving the parameters all sensor signals are linked through without being changed. The output function of the sensor, its quality and speed remain unchanged. An integrated memory plug does not influence the complete system.



Recommended operating mode:

Operation in the [Write protected] mode is recommended. This mode ensures that a parameter set saved in the memory plug is not unintentionally overwritten. In the [Read/Write] mode the memory plug is not write-protected!



The manufacturer of an IO-Link sensor is responsible for providing all parameters necessary for an exchange. The memory plug reads this information from the sensor and saves exactly these parameters.

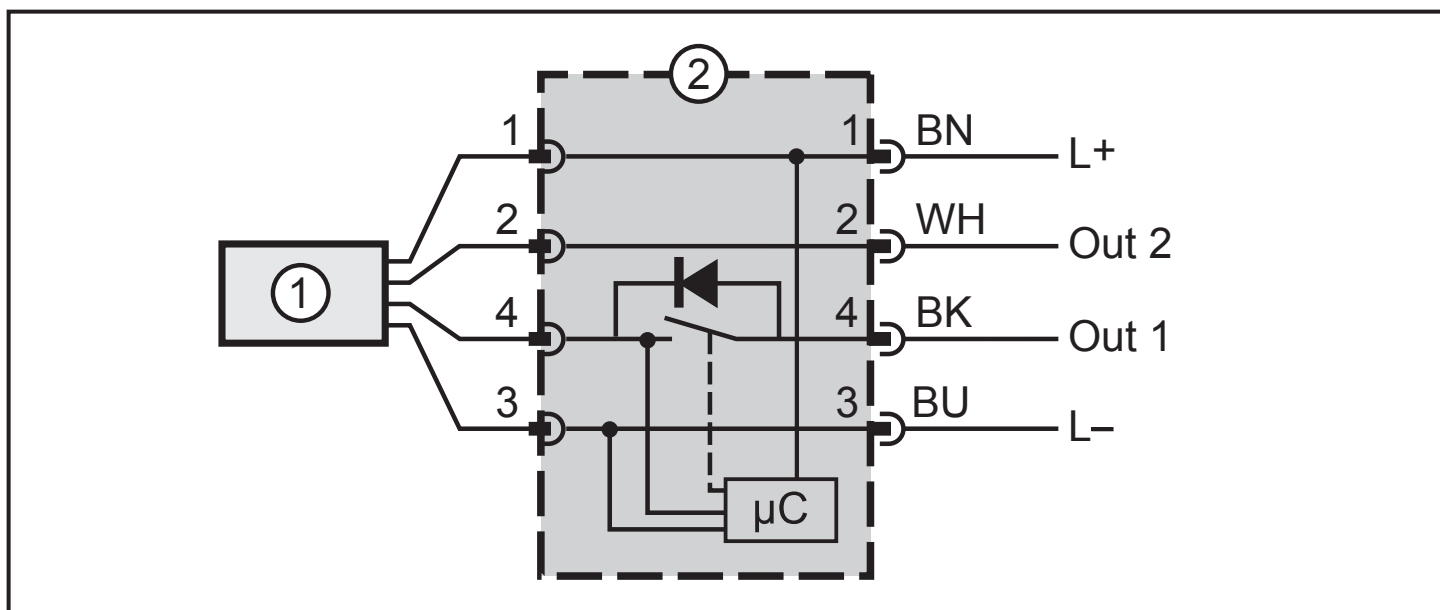


The memory plug cannot be used in a system with IO-Link master. The functionality of the system cannot be guaranteed.

## 5 Electrical connection



The memory plug is an accessory intended for connection to IO-Link devices.



1: Sensor

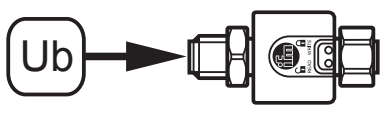

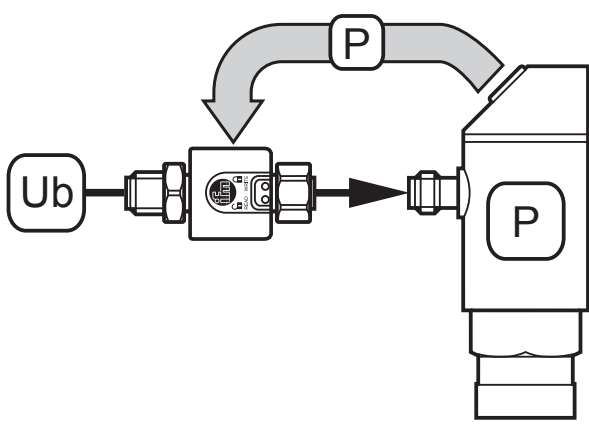
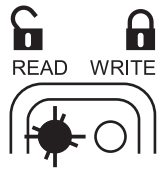

2: Memory plug



# 6 Operation

## 6.1 Save the parameter set of a sensor once

Requirement: The memory plug is used as delivered (empty / [Write protected]).

|  |   |  |
|--|---|--|
| <p><b>1</b></p>                                  | <p>▶ Connect the memory plug to the supply voltage.</p>    |   |
| <p><b>2</b></p>                                  | <p>▶ Connect memory plug and sensor.<br/>         &gt; The memory plug reads the parameter set of the sensor and saves it.</p>  |  <p>Reading process</p>  <p>Process terminated.<br/>         Memory plug full / [Write protected].</p> |
| <p>UB = Operating voltage; P = Parameter set</p> |   |  |

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The empty memory plug can carry out this process only once. It can be reset to the factory setting (→ 6.6.3).



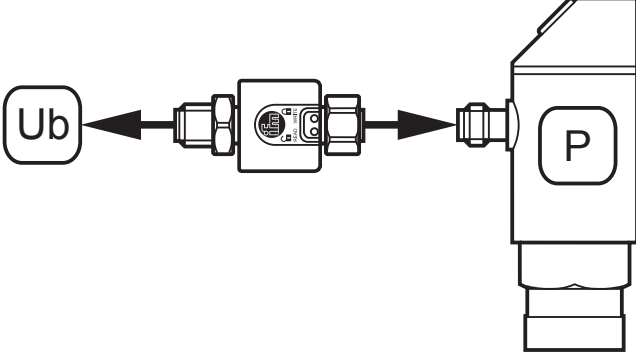


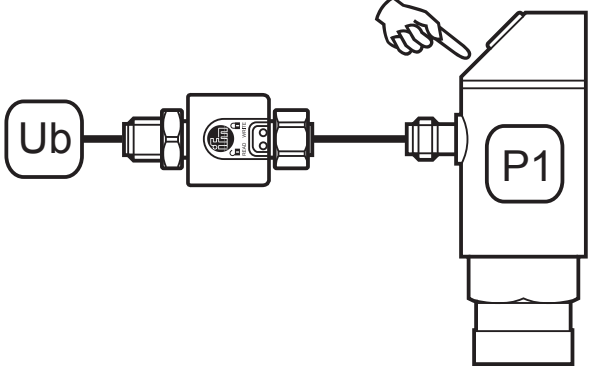
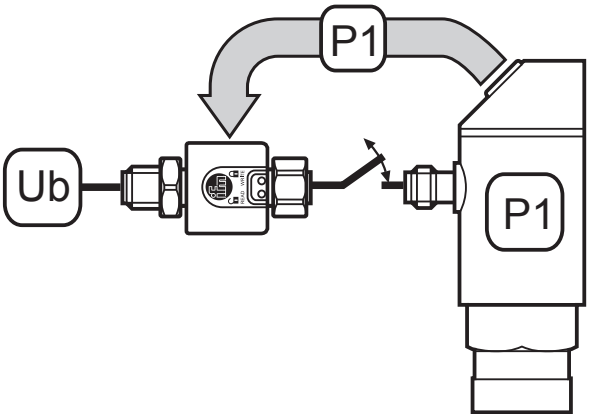
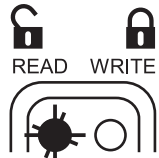

Do not install a brand new memory plug before setting the sensor parameters.

If the memory plug is installed before parameter setting is completed, the parameter set defined at this point will be saved and any further parameter change of the connected sensor will be reversed with the next data exchange.

## 6.2 Save the parameter set of a sensor continuously

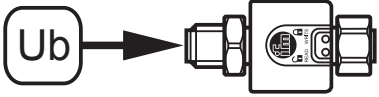


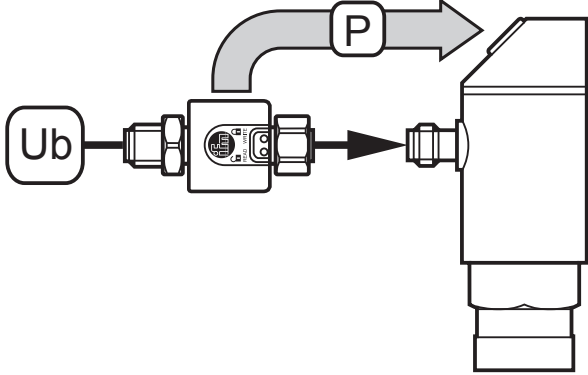




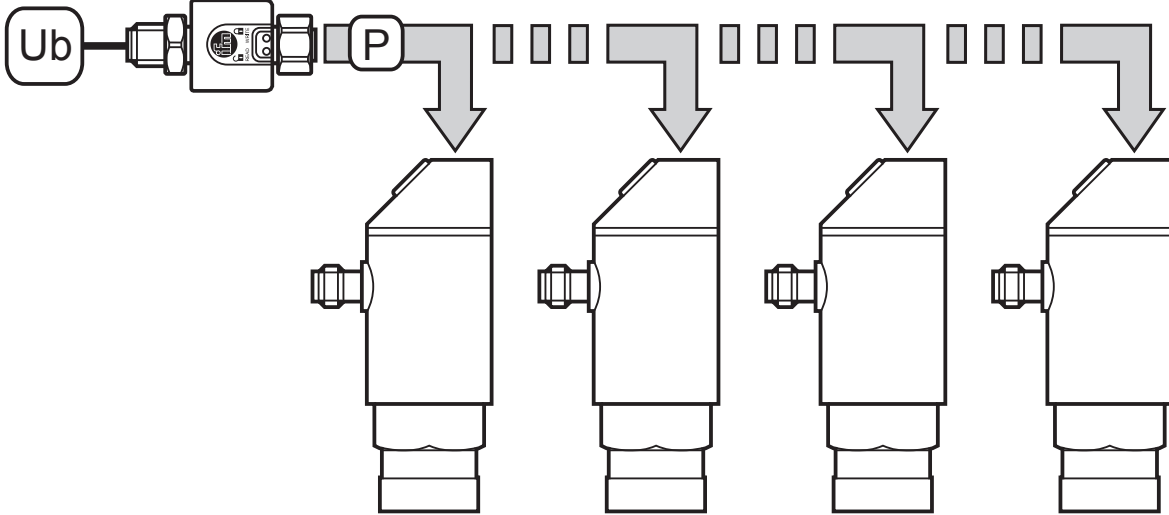
Requirement: Memory plug in the [Read/Write] mode.

To change from [Write protected] to [Read/Write] → 6.6 Memory plug parameter setting.

|                 |  |  |
|-----------------|--|--|
| <p><b>1</b></p> | <p>► Connect the memory plug between the sensor and the evaluation unit of the installation.</p>    |  <p>Display when the memory plug is empty</p>  <p>Display when the memory plug is full</p> |
| <p><b>2</b></p> | <p>The parameter set of the sensor is changed (P → P1).</p>   |  |
| <p><b>3</b></p> | <p>► Disconnect the memory plug from the sensor and connect it again.<br/>         &gt; The memory plug reads the changed parameter set P1 and saves it.</p>  |  <p>Reading process</p>  <p>Process terminated</p>                                     |

## 6.3 Copy the parameter set of a sensor

Requirement: Memory plug full / in the mode [Write protected].

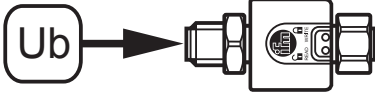



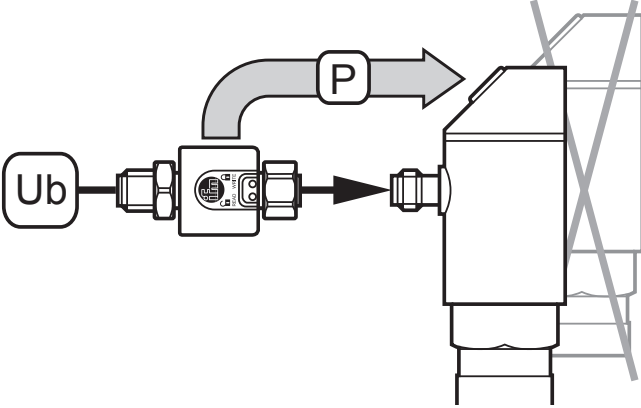




|                 |   |  |
|-----------------|---|--|
| <p><b>1</b></p> | <p>▶ Connect the memory plug to the supply voltage.</p>    |    |
| <p><b>2</b></p> | <p>▶ Connect the memory plug with a sensor of the same type.<br/>         &gt; The memory plug writes its parameter set to the sensor.</p>  |   <p>Writing process</p>   <p>Process terminated</p> |
| <p><b>3</b></p> | <p>▶ Repeat the process with sensors of the same type as often as you wish.</p>   |  |

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This process only works for sensors of the same type (= sensors with the same IO-Link device ID).

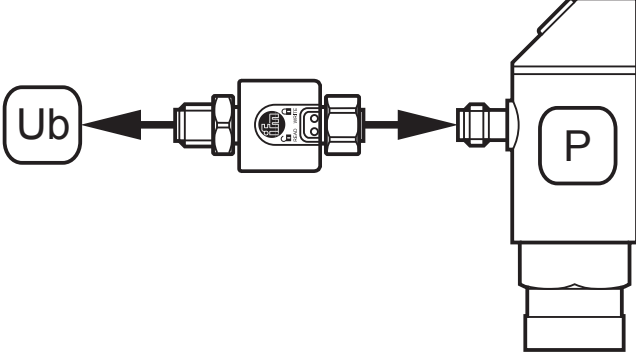

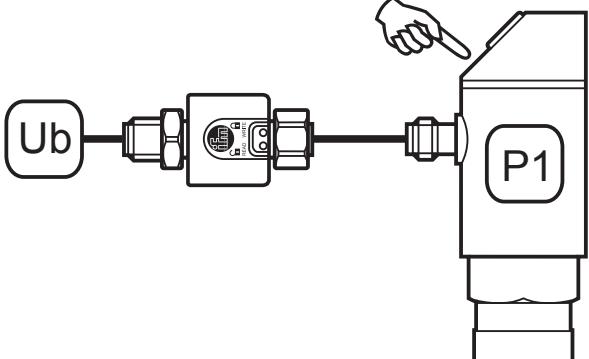
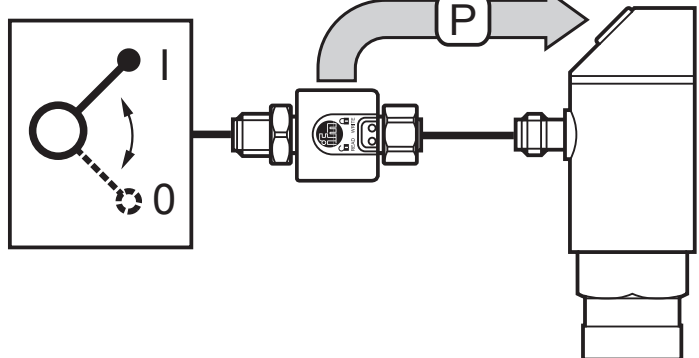


## 6.4 Set the parameters of the replacement sensor

Requirement: Memory plug full / in the mode [Write protected] or [Read/Write].

|   |   | [Write protected]   | [Read/Write]  |
|---|---|---|---|
| 1 | <p>▶ Connect the memory plug to the supply voltage.</p>    |   |    |
| 2 | <p>▶ Connect the memory plug with a sensor of the same type.</p> <p> If the memory plug is used in the [Read/Write] mode, the sensor must have the factory setting. If in doubt reset the sensor.</p> <p>&gt; The memory plug writes its parameter set to the new sensor.</p>  |  <p>Writing process</p>  <p>Process terminated</p> |  <p>Writing process</p>  <p>Process terminated</p> |

## 6.5 Restore the parameter set of a sensor

Requirement: Memory plug full / in the mode [Write protected].

|          |   |  |
|----------|---|--|
| <p>1</p> | <p>► Connect the memory plug between the sensor and the evaluation unit of the installation.</p>   |   |
| <p>2</p> | <p>The parameter set of the sensor is changed (P → P1).</p>   |  |
|          | <p>► Switch the supply voltage of the installation off and on again.</p> <p>&gt; The memory plug writes the original parameter set P to the sensor.</p>  |  <p>Writing process</p>  <p>Process terminated</p> |

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## 6.6 Configure the memory plug via LR DEVICE



You need an IO-Link master and the LR DEVICE software to connect the memory plug with a PC.

► For connection and set-up, refer to the LR DEVICE operating instructions.

> The following information is displayed in the (LR DEVICE) header.

|   |   |
|---|---|
|    | <p>Write protection is not active:<br/>When the memory plug is connected to a suitable sensor, the parameters of this sensor will be written in the memory plug.</p>  |
|    | <p>Write protection is active:<br/>When the memory plug is connected to a suitable sensor, the data set saved in the memory plug will be written in the sensor.</p>   |
|   | <p>After reading of a memory plug which contains data,  appears. By clicking on the icon, the parameters of the saved device are displayed, if this is supported by the respective device. (→ Display of the data stored on the memory plug)</p>   |
|  | <p> appears after clicking on . By clicking on  the parameter list of the memory plug is displayed again. The icon changes again to .</p> |



The memory plug only provides memory space for the parameters of one device.

### 6.6.1 Store data on the memory plug

► Read IO-Link parameters from a device using the LR DEVICE software or select offline parameter setting.

► Edit parameters.




► Connect the memory plug to the IO-Link master.

► Click on [] to store data on the memory plug.





The write protection is activated via the system command [Write protect]. The system command [Read/Write] deactivates the write protection.

## 6.6.2 Read and edit the data stored on the memory plug





- ▶ Connect the memory plug to the USB IO-Link master.
- ▶ Click on .
- > The parameter list of the connected memory plug is loaded into the software.
- ▶ Click on .
- > All stored parameters are displayed and can be edited.
- ▶ Click on .
- > The parameter list of the connected memory plug is displayed.







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## 6.6.3 Restore the factory setting of the memory plug

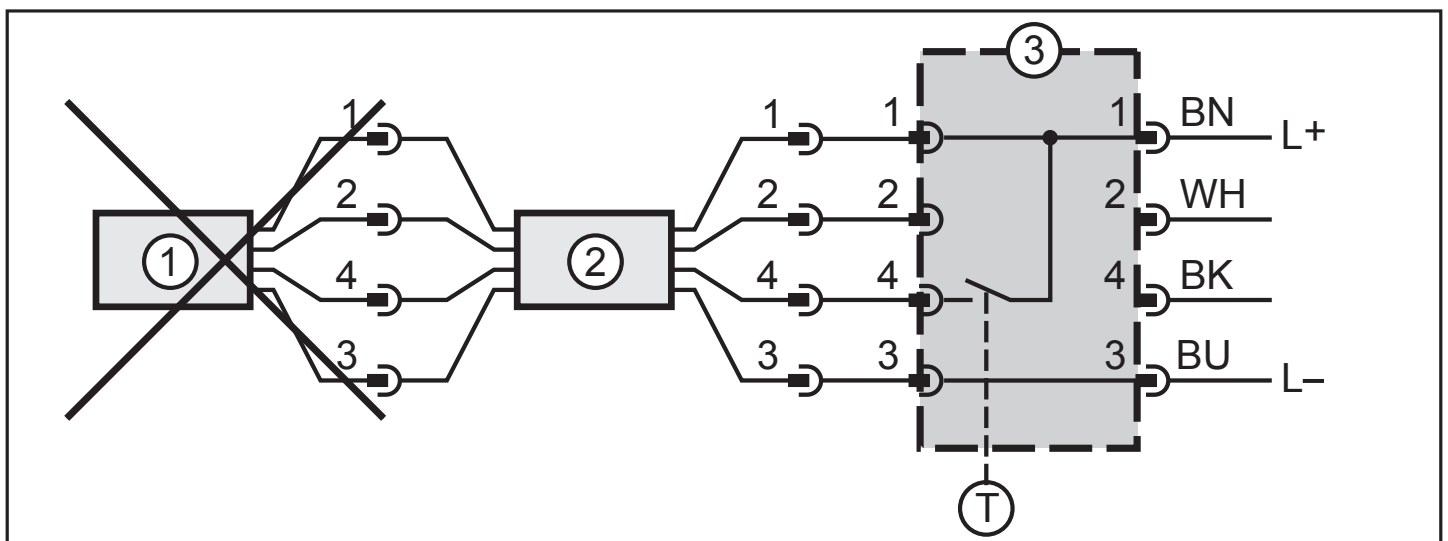
- ▶ Connect the memory plug to the IO-Link master.
- ▶ Click on .
- > The parameter list of the connected memory plug is loaded into the software.
- ▶ Click on .
- > The factory setting of the memory plug is restored.

## 6.7 Operation indication

|   |   |
|---|---|
|  <p>READ WRITE</p> | No supply voltage.  |
|  <p>READ WRITE</p> | Memory plug without saved parameter set in the [Write protected] mode, factory setting. |
|  <p>READ WRITE</p> | Memory plug with saved parameter set in the [Write protected] mode.                     |
|  <p>READ WRITE</p> | Memory plug without saved parameter set in the [Read/Write] mode.                       |

|   |   |
|---|---|
|     | Memory plug with saved parameter set in the [Read/Write] mode.  |
|    | Memory plug reads the parameter set of the sensor.  |
|    | Memory plug writes the saved parameter set in the sensor.   |
|    | Memory plug in the [Read/Write] mode;<br>error in data processing.  |
|   | Memory plug in the [Write protected] mode;<br>error in data processing.   |
|  | The connected sensor is not of the same type.<br>This state remains until a sensor of the same type is connected or the<br>voltage supply is interrupted. |

## 6.8 Configuration via teach button



1: Sensor

2: Memory plug

3: Teach button (available as accessories; order no. E30405)

T = Button

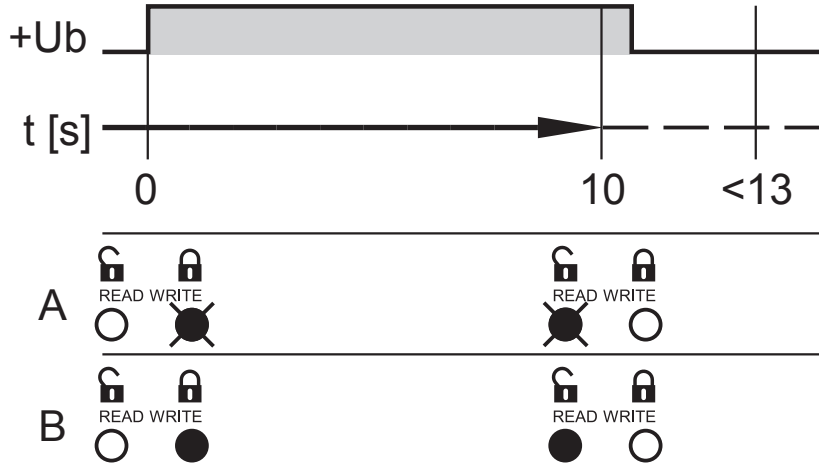




No sensor may be connected.

- ▶ Press the teach button for the indicated time (the end of the time span is signalled by a change of the LED display; → following figures).

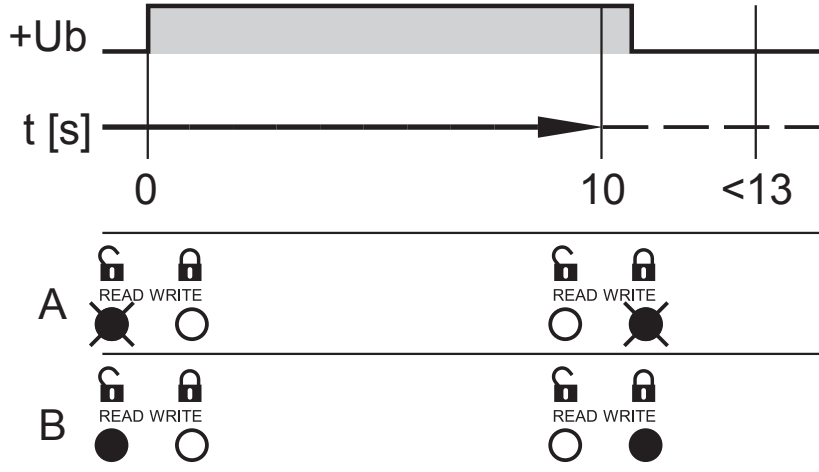
### Change from [Write protected] to [Read/Write]



A: LED display memory plug empty

B: LED display memory plug full

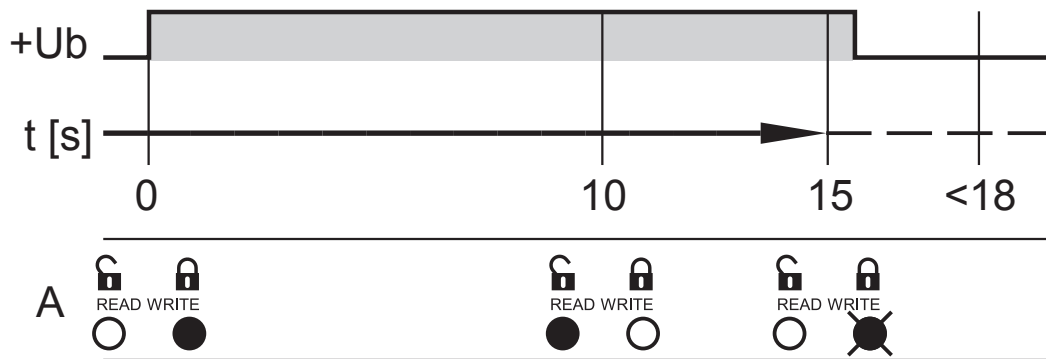
### Change from [Read/Write] to [Write protected]



A: LED display memory plug empty

B: LED display memory plug full

## Restore the factory setting of the memory plug



A: LED display memory plug

## 6.9 Use the memory plug as data carrier

Memory plugs can be used as external storage medium:

- ▶ When the installation has been set up, keep units with saved parameter sets in a safe place.

## 7 Technical data



Further technical data and scale drawing at [www.ifm.com](http://www.ifm.com).

# 8 Troubleshooting

For all errors the following applies:

- The parameter set in the memory plug remains. It is not damaged by faulty reading or writing.
- The error remains until it has been removed.
- If the memory plug detects an error, the transmission of the sensor output (OUT1, pin 4) to the higher-level system is stopped.

| Error in data processing   |  |
|--|--|
| Cause of the fault   | Corrective measures  |
| Sensor cable removed during transmission.  | ▶ Connect the sensor cable to the memory plug again.                                     |
| Unknown sensor connected, e.g. <ul style="list-style-type: none"> <li>• IO-Link 1.0 sensor of another manufacturer.</li> <li>• Sensor not equipped with IO-Link .</li> </ul> | ▶ Connect an IO-Link 1.0 sensor from ifm electronic.<br>▶ Connect an IO-Link 1.1 sensor. |
| The sensor does not support any saving of data.  | ▶ Connect a sensor supporting IO-Link and saving of data (→ data sheet of the sensor).   |
| Sensor locked, writing impossible.   | ▶ Unlock the sensor or connect an unlocked sensor.                                       |

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| The identification of the connected sensor does not correspond to the parameter set in the memory plug. |  |
|---|--|
| Cause of the fault  | Corrective measures  |
| The connected sensor is neither of the same type nor compatible.  | ▶ Connect a sensor of the same type (= sensor with the same IO-Link device ID) or another compatible sensor. |

More information at [www.ifm.com](http://www.ifm.com)