BA02223O/06/EN/03.23-00
71627423
2023-10-02

Valid as of version
01.01.zz (Device firmware)

# Operating Instructions
# 8050
# IO-Link

Electromagnetic flowmeter

MAN 1000540741 EN Version: D Status: RL (released | freigegeben) printed: 11.09.2025

- Make sure the document is stored in a safe place such that it is always available when working on or with the device.
- To avoid danger to individuals or the facility, read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures.
- The manufacturer reserves the right to modify technical data without prior notice. Your sales organization will supply you with current information and updates to these instructions.

# Table of contents

# 1 About this document

## 1.1 Document function

These Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.

## 1.2 Symbols used

### 1.2.1 Safety symbols

**DANGER**
This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

**WARNING**
This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

**CAUTION**
This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.

**NOTICE**
This symbol contains information on procedures and other facts which do not result in personal injury.

### 1.2.2 Electrical symbols

| Symbol | Meaning |
|---|---|
| ⎓ | Direct current |
| ⏚ | **Ground connection**<br>A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system. |

### 1.2.3 Communication-specific symbols

| Symbol | Meaning |
|---|---|
| ᛒ | **Bluetooth®**<br>Wireless data transmission between devices over a short distance. |
| IO-Link® | **IO-Link**<br>Communications system for connecting intelligent sensors and actuators to an automation system. In the IEC 61131-9 standard, IO-Link is standardized under the name "Single-drop digital communication interface for small sensors and actuators (SDCI)". |

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### 1.2.4 Symbols for certain types of information

| Symbol | Meaning |
|---|---|
|  | **Permitted**<br>Procedures, processes or actions that are permitted. |
|  | **Preferred**<br>Procedures, processes or actions that are preferred. |
|  | **Forbidden**<br>Procedures, processes or actions that are forbidden. |
|  | **Tip**<br>Indicates additional information. |
|  | Reference to documentation |
|  | Reference to page |
|  | Reference to graphic |
| ▶ | Notice or individual step to be observed |
| 1., 2., 3... | Series of steps |
| → | Result of a step |

### 1.2.5 Symbols in graphics

| Symbol | Meaning |
|---|---|
| **1, 2, 3, ...** | Item numbers |
| **A, B, C, ...** | Views |

## 1.3 Documentation

Please contact the Sales Department for an overview of the scope of Technical Documentation available for the measuring device: country.burkert.com

## 1.4 Registered trademarks

**IO-Link®**
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# 2 Basic safety instructions

## 2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

- Trained, qualified specialists must have a relevant qualification for this specific function and task.
- Are authorized by the plant owner/operator.
- Are familiar with federal/national regulations.
- Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- Follow instructions and comply with basic conditions.

The operating personnel must fulfill the following requirements:

- Are instructed and authorized according to the requirements of the task by the facility's owner-operator.
- Follow the instructions in this manual.

## 2.2 Intended use

**Application and media**

The measuring device described in this manual is intended only for the flow measurement of liquids with a minimum conductivity of 10 µS/cm.

To ensure that the measuring device remains in proper condition for the operation time:

- Use the measuring device only for media to which the process-wetted materials have an adequate level of resistance.
- Not suitable for use in ambient atmospheres with contamination by harmful gases, e.g. hydrogen sulfide, sulfur dioxide, nitrogen oxides or chlorine gas.

**Incorrect use**

Non-designated use can compromise safety. The manufacturer is not liable for damage caused by improper or non-designated use.

**⚠ WARNING**

**Danger of breakage due to corrosive or abrasive fluids and ambient conditions!**

- Verify the compatibility of the process fluid with the sensor material.
- Ensure the resistance of all fluid-wetted materials in the process.
- Keep within the specified pressure and temperature range.

**Residual risks**

**⚠ WARNING**

**If the temperature of the media or electronics unit is high or low, this may cause the surfaces of the device to become hot or cold. This poses a risk of burns or frostbite!**

- In the case of hot or cold medium temperatures, install appropriate protection against contact.

## 2.3 Workplace safety

For work on and with the device:

- Wear the required personal protective equipment according to national regulations.

For welding work on the piping:

- Do not ground the welding unit via the measuring device.

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## 2.4 Operational safety

Risk of injury!

- Operate the device in proper technical condition and fail-safe condition only.
- The operator is responsible for interference-free operation of the device.

## 2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate.

It meets the general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU Declaration of Conformity. The manufacturer confirms this by affixing the CE mark to the device.

## 2.6 IT security

Our warranty is valid only if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the device and associated data transfer, must be implemented by the operators themselves in line with their security standards.

## 2.7 Device-specific IT security

### 2.7.1 Access via the Wireless Field Device Configurator App

Two access levels (user roles) are defined for the device: the **Operator** user role and the **Maintenance** user role. The **Maintenance** user role is the default setting.

If a user-specific access code is not defined (in the **Set access code** parameter), the default setting **0000** continues to apply and the **Maintenance** user role is automatically enabled. The device's configuration data are not write-protected and can be edited at all times.

If a user-specific access code has been defined (in the **Set access code** parameter), all the parameters are write-protected and the device is accessed with the **Operator** user role. The previously defined access code must first be entered again before the **Maintenance** user role is enabled and all the parameters can be write-accessed.

### 2.7.2 Protecting access via a password

Different passwords are available to protect write access to the device parameters or access to the device via the Bluetooth® interface.

- User-specific access code
  Protect write access to the device parameters via the Wireless Field Device Configurator app
- Bluetooth key
  The password protects a connection between an operating device (e.g. smartphone, tablet) and the device via the Bluetooth® interface.

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**General notes on the use of passwords**

- The access code and Bluetooth key supplied with the device should be changed during commissioning.
- Follow the general rules for generating a secure password when defining and managing the access code or Bluetooth key.
- The user is responsible for the management and careful handling of the access code and Bluetooth key.

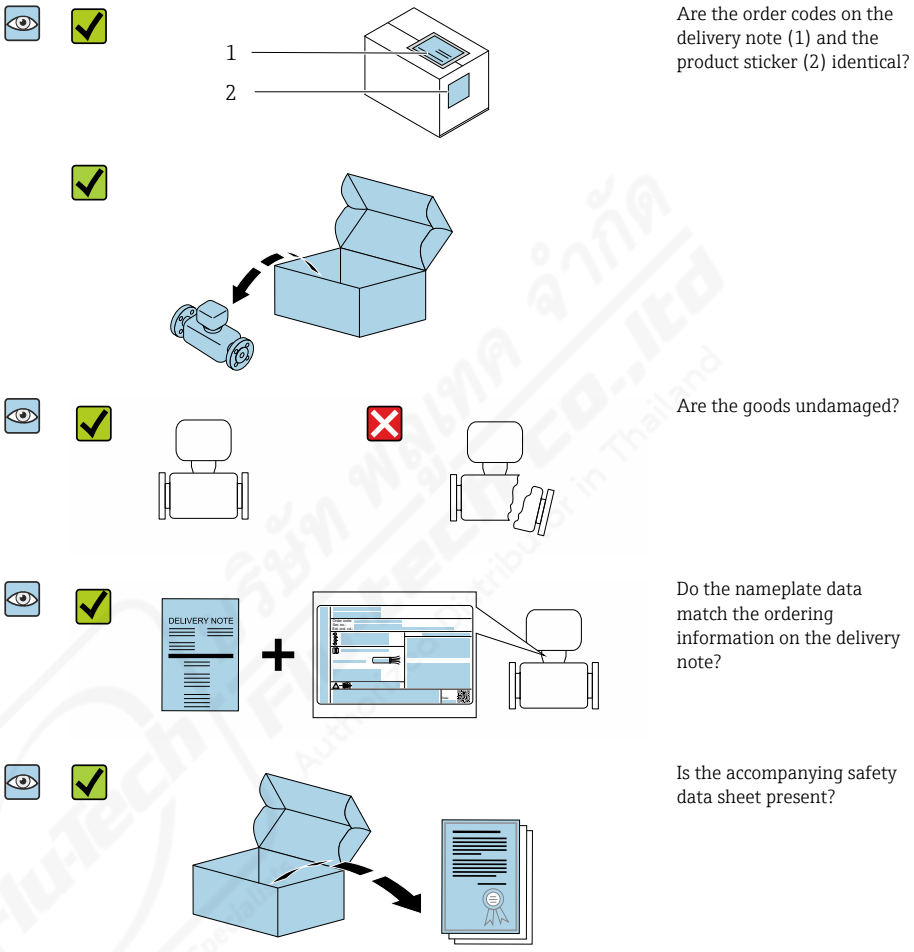
### 2.7.3 Access via Bluetooth® wireless technology

**Secure signal transmission via Bluetooth® wireless technology uses an encryption method tested by the Fraunhofer Institute.**

- The device is not visible via *Bluetooth*® wireless technology without the Wireless Field Device Configurator app.
- Only one point-to-point connection is established between the device and a smartphone or tablet.
- The *Bluetooth*® wireless technology interface can be disabled via the Wireless Field Device Configurator.

# 3 Incoming acceptance and product identification

## 3.1 Incoming acceptance




Are the order codes on the delivery note (1) and the product sticker (2) identical?

Are the goods undamaged?

Do the nameplate data match the ordering information on the delivery note?

Is the accompanying safety data sheet present?

- If one of the conditions is not satisfied, contact your sales organization.
- The Technical Documentation is available on the Internet.

## 3.2 Product identification

The measuring device can be identified in the following ways:
- The device label
- Order code with breakdown of the device features on the delivery note

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### 3.2.1 Symbols on measuring device

| Symbol | Meaning |
|---|---|
|  | **WARNING!**<br>This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury. To determine the nature of the potential hazard and the measures required to avoid it, consult the documentation accompanying the measuring device. |
|  | **Reference to documentation**<br>Refers to the corresponding device documentation. |

# 4 Storage and transport

## 4.1 Storage conditions

Observe the following notes for storage:
- Store in the original packaging to ensure protection from shock.
- Store in a dry place.
- Do not store outdoors.

Storage temperature → 40

## 4.2 Transporting the product

Transport the device to the measuring point in the original packaging.

Do not remove protective covers or caps installed on process connections. They prevent mechanical damage to the sealing surfaces and contamination in the measuring tube.

## 4.3 Packaging disposal

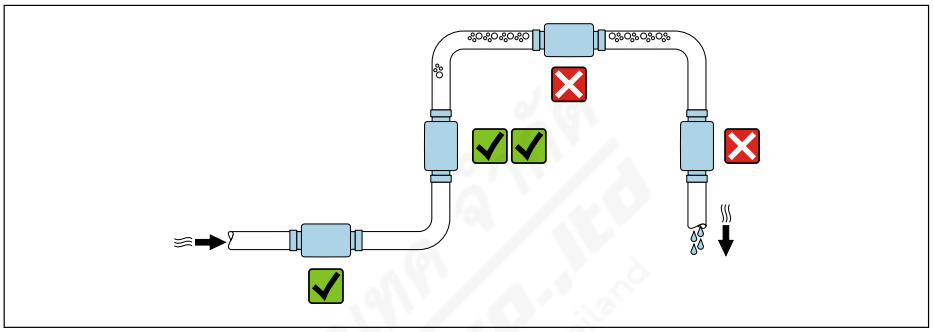
All packaging materials are environmentally friendly and 100% recyclable:
Carton in accordance with European Packaging Directive 94/62EC; recyclability is confirmed by the affixed RESY symbol.

# 5 Mounting

## 5.1 Mounting requirements

### 5.1.1 Mounting position

**Mounting location**




Preferably install the sensor in an ascending pipe.

**Inlet and outlet runs**

No inlet and outlet runs need to be considered.

The installation dimensions provide information on the dimensions and installed lengths of the device → 42

The arrow points in the preferred direction of flow. Measurement in the other direction is also possible.→ 22

## 5.2 Mounting the measuring device

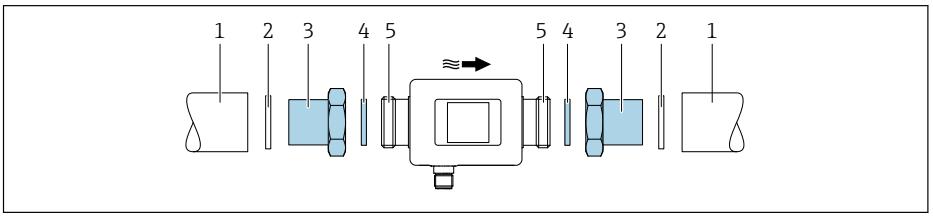
Install the measuring device without any mechanical tension so that pipe forces are not transferred to the measuring device.

**WARNING**

**Burn hazard!**

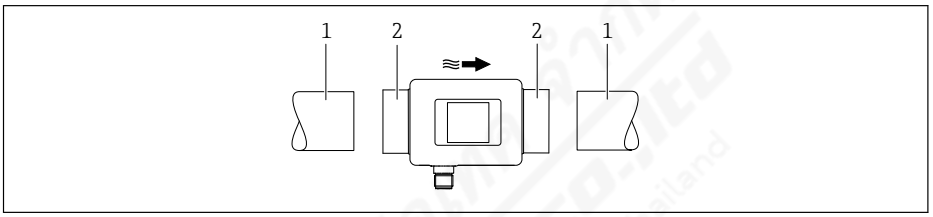
If medium temperatures or ambient temperatures exceed 50 °C, areas of the housing can heat to over 65 °C.

- Safeguard the housing so that it cannot be touched accidentally.




1 *Measuring device with male thread*

1 *Pipe with female thread*
2 *Seal (not supplied)*
3 *Adapter: available adapters*
4 *Seal (included in delivery)*
5 *Measuring device connection, male thread*




2 *Measuring device with female thread*

1 *Pipe with conical male thread*
2 *Measuring device connection, female thread*

No seals are included in the delivery for devices with a female thread. Suitable commercially available seal material can be used.

# 6 Electrical connection

## 6.1 Electrical safety

In accordance with applicable national regulations.

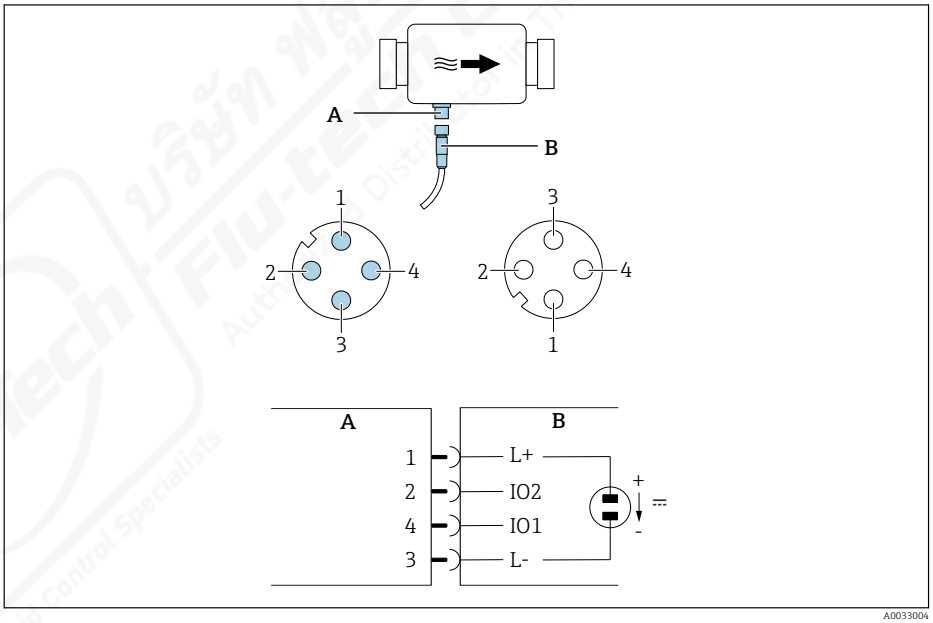
## 6.2 Connecting requirements

### 6.2.1 Requirements for connecting cable

National regulations and standards apply.

| | |
|---|---|
| **Connecting cable** | M12 × 1 A-coded |
| **Conductor cross-section** | At least 0.12 mm² (AWG26) |
| **Degree of protection** | IP65/67, pollution degree 3 |

### 6.2.2 Pin assignment, device plug



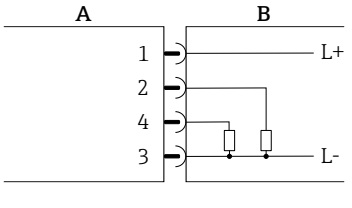
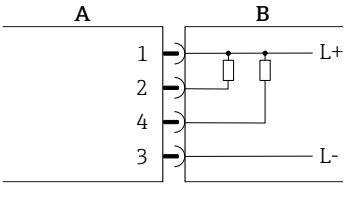

*A Plug (measuring device)*
*B Socket (customer side)*
*1...4 Pin assignment*

*Pin assignment*

| Pin | Assignment | Color | Description |
|---|---|---|---|
| 1 | L+ | Brown | Supply voltage + (18 to 30 $V_{DC}$/max. 3 W) |
| 2 | I/O 2 | White | Input/output 2, can be configured independently of I/O 1 |
| 3 | L- | Blue | Supply voltage - |
| 4 | I/O 1 | Black | Input/output 1, can be configured independently of I/O 2 |

### Switch output configuration version

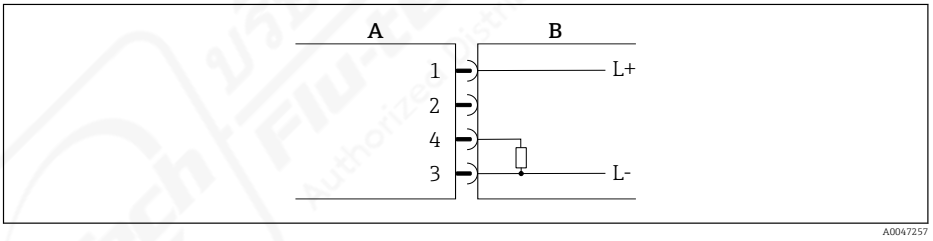
The switching behavior of I/O 1 and I/O 2 can be configured independently of one another.

| PNP [1] | NPN [2] |
|---|---|
|  <br>*A Plug (measuring device)*<br>*B Socket (customer side)*<br>*L+ Supply voltage +*<br>*L- Supply voltage -* |  <br>*A Plug (measuring device)*<br>*B Socket (customer side)*<br>*L+ Supply voltage +*<br>*L- Supply voltage -* |
| The load is switched to high side L+. The maximum load current is 250 mA. The output is protected against short-circuiting and reverse polarity. | The load is switched to low side L-. The maximum load current is 250 mA. The output is protected against short-circuiting and reverse polarity. |

1) Positive Negative Positive (high side switch)
2) Negative Positive Negative (low side switch)

### Pulse output configuration version

Option only available for output 1 → 24

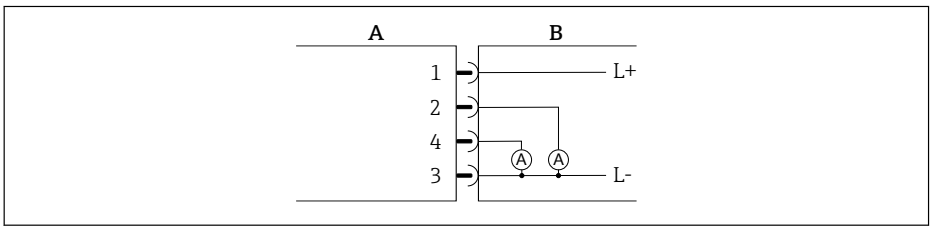



3 *Pulse output with PNP switching behavior*

*A Plug (measuring device)*
*B Socket (customer side)*
*L+ Supply voltage +*
*L- Supply voltage -*

The load is switched to high side L+. The maximum load current is 250 mA. The output is protected against short-circuiting and reverse polarity.

### Current output configuration version

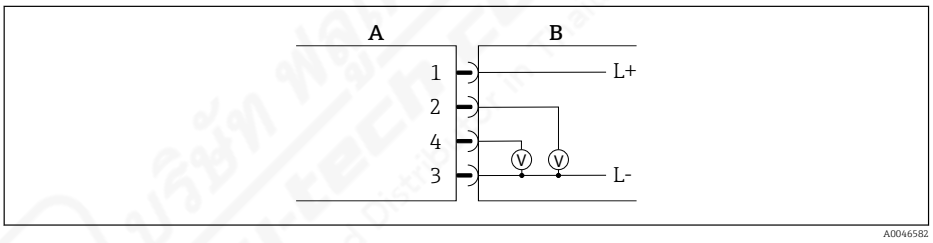



*4 Current output, active, 4 to 20 mA*

*A Plug (measuring device)*
*B Socket (customer side)*
*L+ Supply voltage +*
*L- Supply voltage -*

The current flows from the output to L-. The maximum load may not exceed 500 Ω. A bigger load distorts the output signal.

### Voltage output configuration version



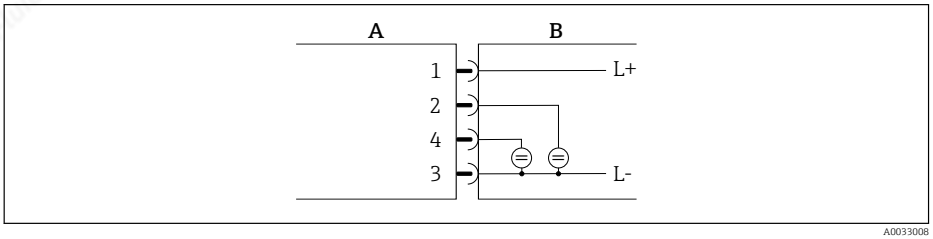

*5 Voltage output, active, 2 to 10 V*

*A Plug (measuring device)*
*B Socket (customer side)*
*L+ Supply voltage +*
*L- Supply voltage -*

The voltage from the output applies to L-. The load must be at least 600 Ω. The output is protected against short-circuiting and reverse polarity.

### Digital input configuration version

- 15 V (switch-on threshold)
- 5 V (switch-off threshold)




*6 Digital input*

*A Plug (measuring device)*
*B Socket (customer side)*
*L+ Supply voltage +*
*L- Supply voltage -*

Internal resistance: 7.5 kΩ

**IO-Link configuration version**

Option only available for output 1 in the **Output 1**→ 23 submenu

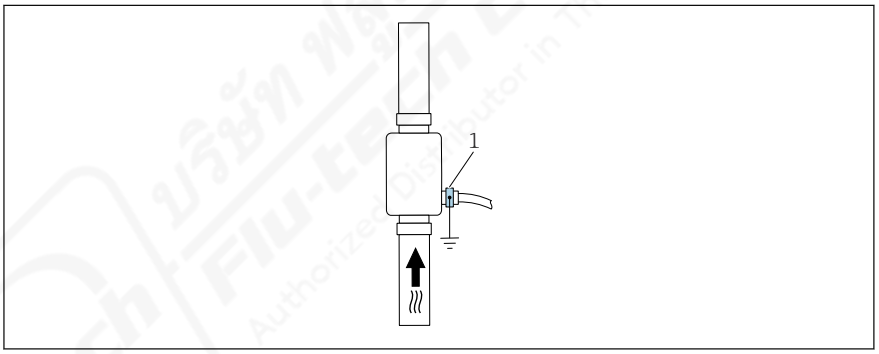
The measuring device features an IO-Link communication interface with a baud rate of 38,400 and with a second IO function on pin 2. This requires an IO-Link compatible module (IO-Link master) for operation. The IO-Link communication interface allows direct access to the process and diagnostics data.

## 6.3 Connecting the measuring device

NOTICE

**The measuring device may only be installed by properly trained technicians.**

- Comply with national and international regulations regarding the installation of electrotechnical systems.
- Power supply according to EN 50178, SELV, PELV or Class 2.

1. De-energize the system.
2. Connect the measuring device via the connector.
3. 


*1 Ground terminal*

In the case of non-grounded pipes:
The device must be grounded using the ground terminal accessory.

## 6.4 Post-connection check

| | |
|---|---|
| Are cables or the device undamaged (visual inspection)? | ❑ |
| Do the cables have adequate strain relief? | ❑ |
| Is the connector connected correctly? | ❑ |
| Does the supply voltage match the specifications on the measuring device? | ❑ |
| Is the pin assignment of the connector correct? | ❑ |
| Is the potential equalization established correctly? | ❑ |

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# 7 Operation options

## 7.1 Access to the operating menu via the Wireless Field Device Configurator App

The device can be operated and configured via the Wireless Field Device Configurator App. In this case, the connection is established via the Bluetooth® wireless technology interface.

*Supported functions*
- Device selection in Live List and access to the device (login)
- Configuration of the device
- Access to measured values, device status and diagnostic information

The Wireless Field Device Configurator app is available to download free of charge for Android devices (Google Playstore) and iOS devices (iTunes Apple Store): *Wireless Field Device Configurator*

Directly to the app with the QR code:


**System requirements**
- Devices with iOS:
  iOS9.0 or higher
- Devices with Android:
  Android 4.4 KitKat or higher

Download the Wireless Field Device Configurator App:

1. Install and start the Wireless Field Device Configurator App.
   ↳ A Live List shows all the devices available.
   The list displays the devices with the configured tag name. The default setting for the tag name is **S-MAG_XYZZZZZ** (XYZZZZZ = the last 7 digits of the device serial number).
2. For Android devices, activate GPS positioning (not necessary for devices with IOS)
3. Select the device from the Live List.
   ↳ The Login dialog box opens.

Logging in:

4. Enter the user name: **admin**
5. Enter the initial password: serial number of the device.
   ↳ When you log in for the first time, a message is displayed advising you to change the password.
6. Confirm your entry.
   ↳ The main menu opens.
7. Optional: change password: menu: Guidance → Security → Change Bluetooth password

Navigate through the various items of information about the device: swipe the screen to the side.

# 8 System integration

The measuring device has an IO-Link communication interface. The IO-Link interface allows direct access to process and diagnostics data and enables the user to configure the measuring device on the fly.

Properties:
- IO-Link Specification: Version 1.1
- IO-Link Smart Sensor Profile 2nd Edition
- SIO mode: yes
- Speed: COM2 (38.4 kBaud)
- Minimum cycle time: 10 ms
- Process data width: 120 bit
- IO-Link data storage: yes
- Block configuration: no
- Device operational: The measuring device is operational 4 seconds after the supply voltage is applied

More information on IO-Link is available at www.io-link.com

Overview of the entire IO-Link ISDU parameter list → 48

## 8.1 Overview of device description files

*Current version data for the device*

| | | |
|---|---|---|
| Firmware version | 01.01.zz | Information on the firmware version can be found:<br>▪ On the title page of the Operating instructions<br>▪ On the device label<br>▪ In the **Firmware version** parameter in the System menu |
| Release date of firmware version | 05.2019 | --- |
| Profile version | ▪ 1.1<br>▪ Smart Sensor Profile | --- |

## 8.2 Device master file

In order to integrate field devices into a digital communication system, the IO-Link system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transfer rate.

These data are available in the device master file (IODD [1)]) and provided to the IO-Link master via generic modules when the communication system is commissioned.

The IODD can be downloaded as follows:
- IODDfinder: ioddfinder.io-link.com
- Bürkert: country.burkert.com

1) IO Device Description



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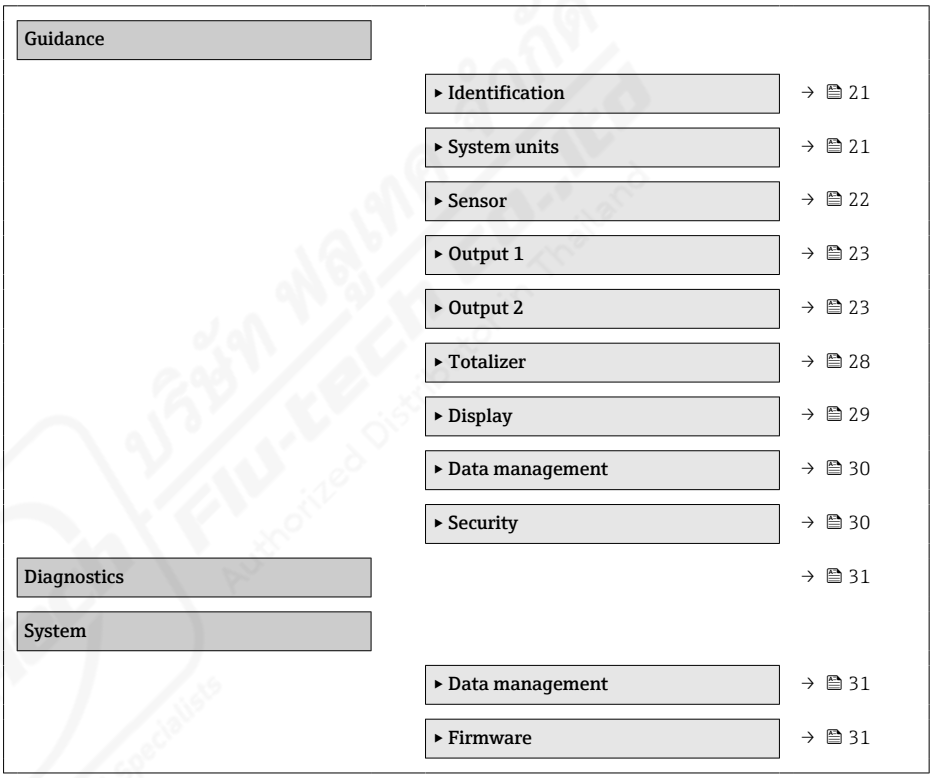
# 9 Commissioning

## 9.1 Switching ON the measuring device

Once the supply voltage has been switched on, the measuring device adopts the normal mode after a maximum of 4 s. During the start-up phase, the outputs are in the same state as the measuring device in the switched-off state.

## 9.2 Overview of the operating menu

*Overview of the operating menu*




## 9.3 Configuring the measuring device

### 9.3.1 Identification

The device tag and the user level can be changed in the **Identification** submenu.

**Navigation**

Menu: "Guidance" → Identification

### 9.3.2 Configuring system units

In the **System units** submenu, you can configure the units of all measured values.

**Navigation**

Menu: "Guidance" → System units

*Parameter overview with brief description*

| Parameter | Description | Selection | Factory setting |
|---|---|---|---|
| Volume flow unit | Select the unit for the volume flow. | ▪ l/s, m³/h, l/min, l/h<br>▪ gal/min (us), fl. oz/min | l/min |
| Volume unit | Select the unit for the volume. | ▪ ml, l, m³<br>▪ fl. oz (us), gal (us) | ml |
| Temperature unit | Select the unit for the temperature. | ▪ °C<br>▪ °F | °C |
| Totalizer unit | Select the unit for the totalizer. | ▪ ml, l, m³<br>▪ kl, Ml<br>▪ fl. oz (us), gal (us)<br>▪ kgal (us) | m³ |
| Conductivity unit | Select the unit for conductivity. | ▪ µS/cm<br>▪ S/m<br>▪ mS/cm | µS/cm |

### 9.3.3 Setting the installation direction and measurement

The **Sensor** submenu contains parameters for specific settings of the measuring device.

**Navigation**

Menu: "Guidance" → Sensor

*Parameter overview with brief description*

| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| Installation direction | Select the installation direction. | ▪ Flow in arrow direction (forwards)<br>Positive flow measurement in the direction of the arrow.<br>▪ Flow against arrow direction (backwards)<br>Positive flow measurement in the opposite direction of the arrow. | Flow in arrow direction (forwards) |
| On value | Enter the on value for low flow cut off. | Positive floating point number<br>A flow measured value that is less than the value of the on value forces the display to zero. In the event of plant downtime, this prevents the totalizer from continuing to totalize even though there is no flow.<br>The measured value flashes on the display when low flow cut off is active.<br>Low flow cut off is deactivated again as soon as the flow measured value exceeds 1.5 times the on value. | Depends on the nominal diameter:<br>DN 15 (½"):<br>0.05 l/min (0.013 gal/min)<br>DN 20 (¾"):<br>0.1 l/min (0.026 gal/min)<br>DN 25 (1"):<br>0.2 l/min (0.052 gal/min)<br>DN 50 (2"):<br>1.5 l/min (0.4 gal/min) |
| Damping | Enter the time constant for damping the flow measured value. | 0 to 10 s | 0 s |

### 9.3.4 Configuring the IO modules

The measuring device has two signal inputs or signal outputs that can be configured independently of one another:
- Current output → 🖹 23
- Pulse output → 🖹 24
- Switch output → 🖹 25
- Voltage output → 🖹 26
- Digital input → 🖹 27

**Navigation**

Menu: "Guidance" → Output 1

Menu: "Guidance" → Output 2

*Parameter overview with brief description*

| Parameter | Description | Selection | Factory setting |
|---|---|---|---|
| Output 1 | Select the operating mode of output 1. | ▪ Pulse output<br>▪ Current output<br>▪ Switch output<br>▪ Voltage output<br>▪ Digital input<br>▪ IO-Link<br>▪ Off | IO-Link |
| Output 2 | Select the operating mode of output 2. | ▪ Current output<br>▪ Switch output<br>▪ Voltage output<br>▪ Digital input<br>▪ Off | Off |

**Configuring the current output**

The Current output submenu contains all the parameters that must be configured for the configuration of the current output.

The output is used to output process variables by analog means in the form of a 4-20 mA current.

**Navigation**

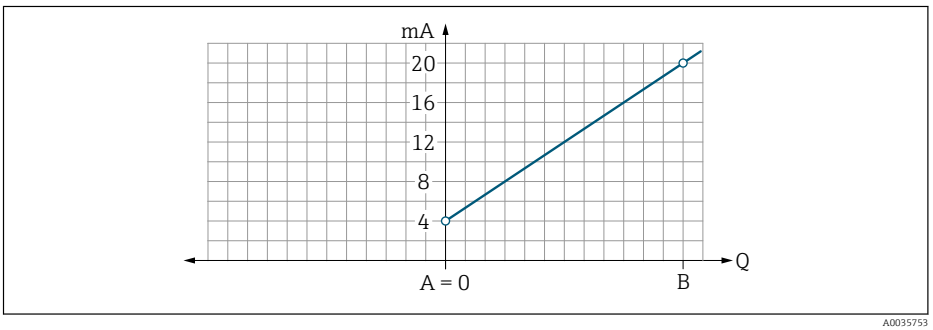
Menu: "Guidance" → Output 1 → Current output

Menu: "Guidance" → Output 2 → Current output

*Parameter overview with brief description*

| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| Assign current output | Select process variable for current output. | ▪ Off<br>▪ Volume flow<br>▪ Temperature<br>▪ Conductivity | Volume flow |
| 4 mA value | Enter 4 mA value. | Floating point number with sign | 0 l/min |
| 20 mA value | Enter 20 mA value. | Floating point number with sign | Depends on the nominal diameter:<br>DN 15 (½"): 25 l/min (6.6 gal/min)<br>DN 20 (¾"): 50 l/min (13.2 gal/min)<br>DN 25 (1"): 100 l/min (26.4 gal/min)<br>DN 50 (2"): 750 l/min (198.1 gal/min) |

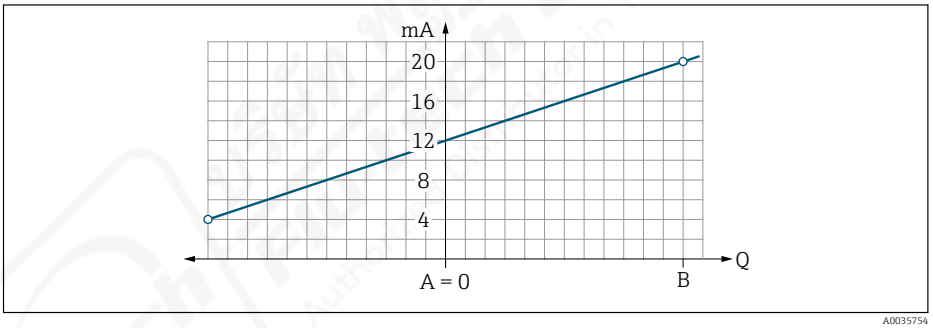
*Unidirectional flow measurement (Q), conductivity measurement (S)*




*A Lower range value = 0*
*B Upper range value*
*Q Flow*

- Current I is linearly interpolated between lower range value (A) and upper range value (B).
- The output range ends at 20.5 mA.

*Bidirectional flow measurement (Q), temperature measurement (T)*




*A Lower range value*
*B Upper range value*
*Q Flow*

- Current I is linearly interpolated between lower range value (A) and upper range value (B).
- Rather than having a hard upper and lower limit, the output range ends at 20.5 mA at the top end and at 3.8 mA at the bottom end

### Configuring the pulse output

The Pulse output submenu contains all the parameters that must be configured for the configuration of the pulse output.

### Navigation

Menu: "Guidance" → Output 1

*Parameter overview with brief description*

| Parameter | Description | User entry | Factory setting |
|---|---|---|---|
| Value per pulse | Enter the value for the pulse output. | Floating point number with sign | Depends on the nominal diameter:<br>DN 15 (½"): 0.5 ml<br>DN 20 (¾"): 1.0 ml<br>DN 25 (1"): 2.0 ml<br>DN 50 (2"): 10.0 ml |

The current pulse repetition frequency is calculated from the current flow and the configured pulse value:

Pulse repetition frequency = flow/pulse value

**Example**
- Flow: 24 l/min
- Pulse value: 0.001 l
- Pulse repetition frequency = 400 Pulse/s

The pulse output only outputs positive flow components in the set installation direction. Negative flow components are ignored and not balanced.

Low flow cut off → 22 resets the pulse output.

### Configuring the switch output

The Switch output submenu contains all the parameters that must be configured for the configuration of the switch output.

**Navigation**

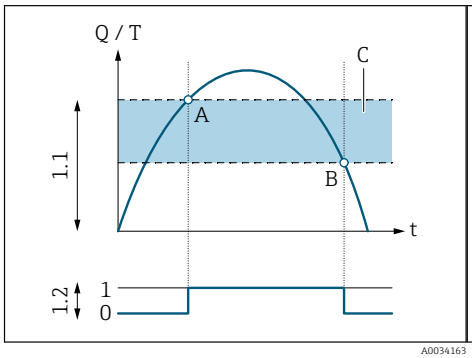
Menu: "Guidance" → Output 1

Menu: "Guidance" → Output 2

*Parameter overview with brief description*

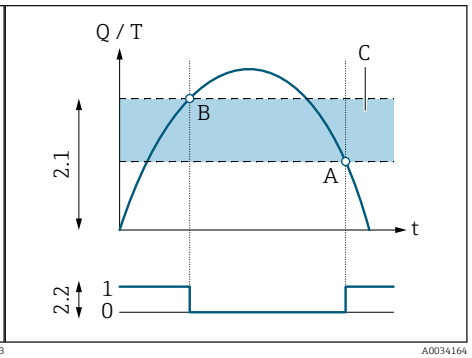
| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| Polarity | Select the switching behavior. | ▪ NPN (low-side-switch)<br>Switches load to low side to L-<br>▪ PNP (high-side-switch)<br>Switches load to high side to L+ | PNP (high-side-switch) |
| Switch output function | | ▪ Off<br>The switch output is permanently switched off (open, non-conductive).<br>▪ On<br>The switch output is permanently switched on (closed, conductive).<br>▪ Diagnostic behavior<br>The output switches off when an event with the status signal F occurs<br>▪ Limit volume flow<br>Indicates if a specified limit value has been reached for the process variable.<br>▪ Limit temperature<br>Indicates if a specified limit value has been reached for the process variable.<br>▪ Limit conductivity<br>Indicates if a specified limit value has been reached for the process variable.<br>▪ Limit volume totalizer<br>▪ Range volume flow<br>▪ Range temperature<br>▪ Range conductivity<br>▪ Range volume totalizer<br>▪ Empty pipe detection<br>Output switches off if empty pipe detection is activated. | Off |
| Switch-on value | Enter the measured value for the switch-on value. | Floating point number with sign | 1000 $m^3/h$ |
| Switch-off value | Enter the measured value for the switch-off value. | Floating point number with sign | 1000 $m^3/h$ |

Switch on if over the limit:



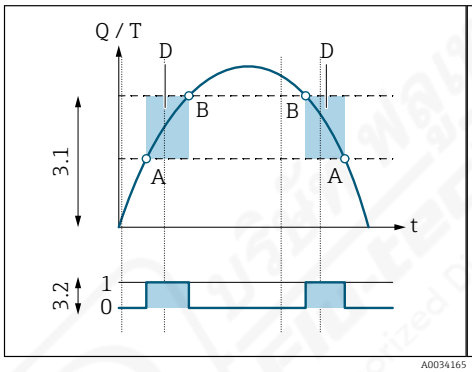

*1.1 Input variables*
*1.2 Switch output*
*A Switch-on point*
*B Switch-off point*
*C Hysteresis*

Switch off if over the limit:



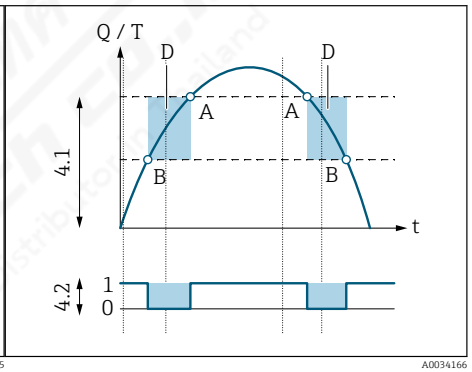

*2.1 Input variables*
*2.2 Switch output*
*A Switch-on point*
*B Switch-off point*
*C Hysteresis*

Switch on if within window:




*3.1 Input variables*
*3.2 Switch output*
*A On-value (lower range limit)*
*B Off-value (upper range limit)*
*D Window*

Switch off if within window:




*4.1 Input variables*
*4.2 Switch output*
*A On-value (lower range limit)*
*B Off-value (upper range limit)*
*D Window*

### Configuring the voltage output

The Voltage output submenu contains all the parameters that must be configured for the configuration of the voltage output.

### Navigation

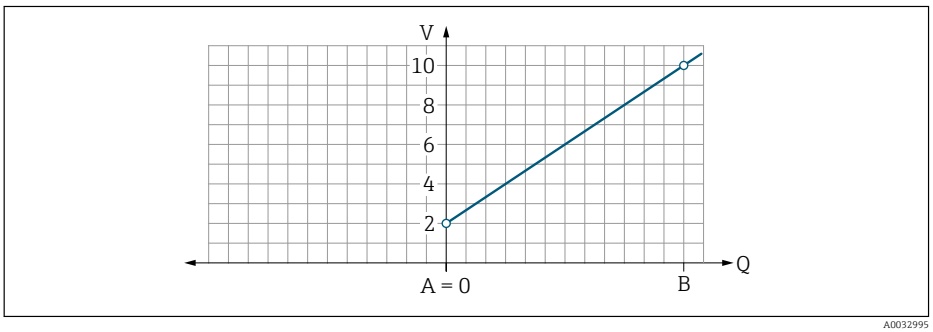
Menu: "Guidance" → Output 1

Menu: "Guidance" → Output 2

*Parameter overview with brief description*

| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| Assign voltage output | Select process variable for voltage output. | ▪ Off<br>▪ Volume flow<br>▪ Temperature<br>▪ Conductivity | Volume flow |
| 2 V value | Enter the lower range value. | Floating point number with sign | 0 l/min |
| 10 V value | Enter the upper range value. | Floating point number with sign | Depends on the nominal diameter:<br>DN 15 (½"): 25 l/min<br>DN 20 (¾"): 50 l/min<br>DN 25 (1"): 100 l/min<br>DN 50 (2"): 750 l/min |

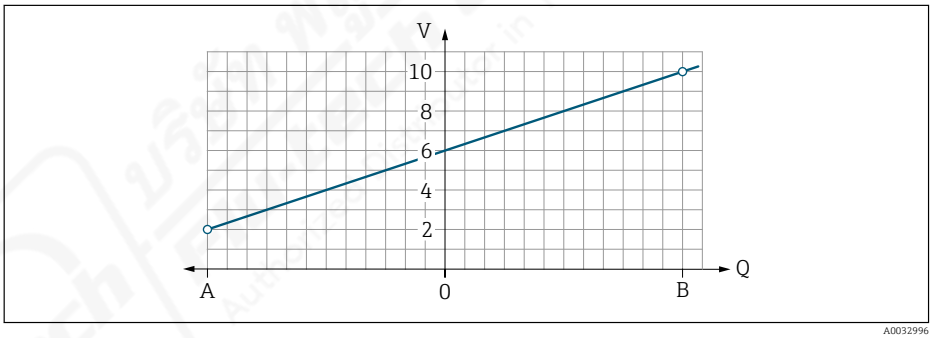
*Unidirectional flow measurement (Q), conductivity measurement*




*A Lower range value = 0*
*B Upper range value*
*Q Flow*

- Voltage U is linearly interpolated between lower range value (A) and upper range value (B).
- The output range ends at 10.25 V.

*Bidirectional flow measurement (Q), temperature measurement (T)*




*A Lower range value*
*B Upper range value*
*Q Flow*

- Voltage U is linearly interpolated between lower range value (A) and upper range value (B).
- Rather than having a hard upper and lower limit, the output range ends at 10.25 V at the top end and at 1.9 V at the bottom end

**Configuring the digital input**

The **Digital input** submenu contains all the parameters that must be configured for the configuration of the digital input.

The input is used to control an action with an external voltage signal. The minimum pulse duration is 100 ms.

**Navigation**

Menu: "Guidance" → Output 1

Menu: "Guidance" → Output 2

*Parameter overview with brief description*

| Parameter | Description | Selection | Factory setting |
|---|---|---|---|
| Active level | Select the switching behavior for the digital input. | ▪ High<br>Input reacts to high level/positive edge<br>▪ Low<br>Input reacts to low level/negative edge | High |
| Assign status input | Select the function for the digital input. | ▪ Off<br>▪ Reset totalizer<br>Reset the totalizer (edge controlled) (positive/negative edge)<br>▪ Flow override<br>▪ Flow measured value = 0<br>▪ No effect on temperature measurement (level controlled) (high/low level) | Reset totalizer |

### 9.3.5 Totalizer

The totalizer can be reset with the **Reset totalizer** submenu.

**Navigation**

Menu: "Guidance" → Totalizer

*Parameter overview with brief description*

| Parameter | Description | Display/options | Factory setting |
|---|---|---|---|
| Volume totalizer | Enter value. | Floating point number with sign | 0 $m^3$ |
| Reset totalizer | Reset the totalizer. | ▪ Cancel<br>The totalizer is not reset.<br>▪ Reset + totalize<br>The totalizer is reset. | Cancel |

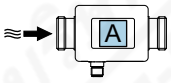
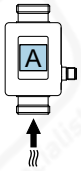
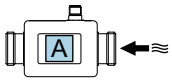
### 9.3.6 Configuring the display

The **Display** submenu contains all the parameters that can be configured for the configuration of the onsite display.

**Navigation**

Menu: "Guidance" → Display

*Parameter overview with brief description*

| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| Format display | Select how measured values are shown on the display. | Display value 1st line + display value 2nd line:<br>▪ Volume flow + temperature<br>▪ Volume flow + totalizer<br>▪ Temperature + totalizer<br>▪ Volume flow + conductivity<br>▪ Totalizer + conductivity<br>▪ Temperature + conductivity | Volume flow + temperature |
| | | 4 display values:<br>Volume flow + temperature + totalizer + conductivity | |
| | | 2 display values (multiplex):<br>Volume flow +totalizer / temperature + conductivity | |
| Rotation display | Select local display rotation. | ▪ Auto (automatic)<br>▪ The display rotates automatically depending on the installation position | Auto |
| | | ▪ 0°<br>▪ Can be read in the horizontal installation position with flow from left to right<br>  <br><br>A0033013 | |
| | | ▪ 90°<br>▪ Can be read in the vertical installation position with flow from bottom to top<br>  <br><br>A0033014 | |
| | | ▪ 180°<br>▪ Can be read in the horizontal installation position with flow from right to left<br>  <br><br>A0033015 | |

| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| | | ▪ 270°<br>▪ Can be read in the vertical installation position with flow from top to bottom<br>  <br><br>A0033016 | |
| Backlight | Set the intensity of the backlighting. | 0 to 100 % | 50 % |

### 9.3.7 Data management

**Export configuration as report**

The device configuration can be exported as a PDF report and saved in the mobile terminal or forwarded with this function.

**Save configuration to file**

The device configuration is saved in the app. The saved device configuration can be transferred to another measuring device using the System → "Load configuration from app" function.

**Navigation**

Menu: "Guidance" → Data management

### 9.3.8 Security

The **Security** submenu contains all the parameters needed to define the access code and configure the Bluetooth connection.

**Navigation**

Menu: "Guidance" → Security

*Parameter overview with brief description*

| Parameter | Description | Entry/selection/display | Factory setting |
|---|---|---|---|
| Define access code | Define a user-specific access code to restrict write access to parameters. | 4-digit string of numbers | 0000 |
| Bluetooth | Enable or disable the *Bluetooth*® wireless technology interface.<br>If the interface is disabled, it can only be re-enabled by tapping the device. | ▪ Disable<br>▪ Disable the interface.<br>▪ The connection to the measuring device is torn down.<br>▪ Enable | Enable |
| Change Bluetooth password | Change Bluetooth password<br>Keep the password safe. If it is lost access to the device cannot be restored. | Character string comprising numbers, letters and special characters | Device serial number |

**Enable Bluetooth by tapping the device**

1. Activate Bluetooth by tapping on the housing three times.
2. Establish a connection to the measuring device via the Wireless Field Device Configurator app.

## 9.4 Diagnostics

The **Diagnostics** menu enables you to simulate, without a real flow situation, various process variables in the process and the device alarm mode and to verify downstream signal chains (switching of valves or closed-control loops).

**Navigation**

"Diagnostics" menu

*Parameter overview with brief description*

| Parameter | Description | Selection/input | Factory setting |
|---|---|---|---|
| Actual diagnostic | A diagnostic event has occurred. | Displays the current diagnostic event along with the diagnostic information.<br>If two or more messages occur simultaneously, the message with the highest priority is shown on the display. | Symbol for diagnostic behavior, diagnostic code and short message. |
| Simulation process variable | Activate the simulation of process variables. | ▪ Off<br>Simulation is deactivated.<br>▪ On<br>Simulation is activated.<br>Deactivate the simulation again once the test has been performed. | Off |
| Volume flow value | Enter the value for volume flow simulation. | Positive floating point number | – |
| Temperature value | Enter the value for temperature simulation. | Positive floating point number | – |
| Conductivity value | Enter the value for conductivity simulation | Positive floating point number | – |

## 9.5 System

The **System** submenu contains all the parameters that can be used for the administration of the device.

**Navigation**

Menu: "System"

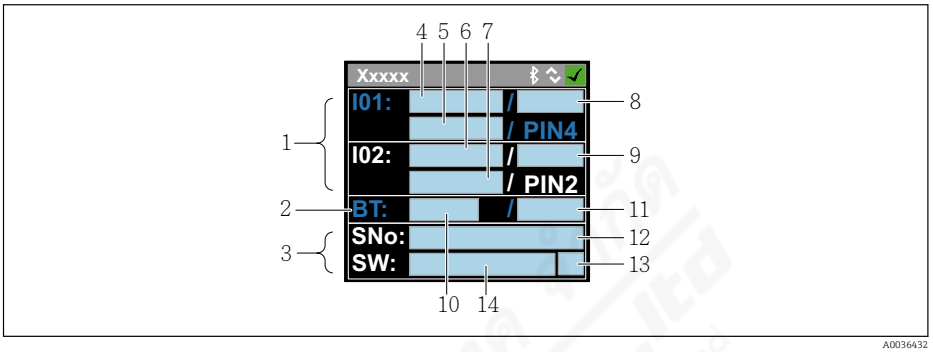
*Parameter overview with brief description*

| Parameter | Description | Entry/selection/display | Factory setting |
|---|---|---|---|
| Access status tooling | Displays the access status. No user entry/selection possible. | ▪ Operator<br>▪ Maintenance | Maintenance |
| Enter access code | Enter the defined access code.<br>Restrict write access to parameters in order to protect the device configuration from unauthorized modification. | 4-digit string of numbers | 0000 |
| Device reset | Reset the entire device configuration or some of the configuration to a defined state. | ▪ Cancel<br>▪ To factory defaults<br>▪ Restart device | Cancel |
| Export configuration as report | The device configuration can be exported as a PDF report and saved in the mobile device or forwarded with this function. | - | - |
| Save configuration to file | The device configuration is saved in the app. The saved device configuration can be transferred to another measuring device using the System → "Load configuration from file" function. | - | - |
| Load Configuration from file | The saved device configuration can be uploaded to a new measuring device with this function. | - | - |

# 10 Operation

## 10.1 Offline quick view of configuration

If you tap the top of the housing (e.g. on the arrow indicating the flow direction) with your fist or an object), the device displays an overview of the preset parameters.




7 *Information in the status layout, overview of the preconfigured parameters*

1 *I/O area*
2 *Bluetooth area*
3 *Identification area*
4 *I/O type 1*
5 *I/O current value type 1*
6 *I/O type 2*
7 *I/O current value type 2*
8 *I/O assignment type 1*
9 *I/O assignment type 2*
10 *Bluetooth module status*
11 *Bluetooth connection status*
12 *Serial number*
13 *User role: Operator (O), Maintenance (M)*
14 *Software version*

*I/O area (in brackets: item number → 7, 32)*

| I/O type ( 4, 6) | I/O assignment (8, 9) | | I/O current value (5, 7) | |
|---|---|---|---|---|
| S-Out | ▪ Alrt<br>▪ LimQ<br>▪ LimT<br>▪ LimV<br>▪ Lims<br>▪ WinQ | ▪ WinT<br>▪ WinV<br>▪ Wins<br>▪ EPD<br>▪ Off<br>▪ On | ▪ PNPOn<br>▪ PNPOff | ▪ NPNOn<br>▪ NPNOff |
| I-Out | ▪ s<br>▪ Q<br>▪ T | Off | xx.x mA | |
| U-Out | ▪ s<br>▪ Q<br>▪ T | Off | xx.x V | |
| S-In | ▪ RsT<br>▪ Ovrd | Off | Low | High |
| P-Out | Q | | PNPOn | PNPOff |
| IO-L | PD | | ▪ Dis.<br>▪ Start | ▪ Preop.<br>▪ Oper. |
| Off | – | | – | |

*Bluetooth area (in brackets: item number → 7, 32)*

| Bluetooth module status (10) | Bluetooth connection status (11) |
|---|---|
| On | Dis./Con. |
| Off | Dis. |

# 11 Diagnostics and troubleshooting

## 11.1 General troubleshooting

*For local display*

| Error | Possible causes | Remedial action |
|---|---|---|
| Local display dark and no output signals | Supply voltage does not match the voltage specified on the nameplate. | Apply the correct supply voltage → 🖹 39. |
| | Supply voltage has incorrect polarity. | Correct the polarity. |
| | The connecting cables are not connected correctly. | Check the cable connection and correct if necessary. |

*For output signals*

| Error | Possible causes | Remedial action |
|---|---|---|
| Device shows correct value on local display, but signal output is incorrect, though in the valid range. | Parametrization errors | Check parameterization and correct it. |
| Device measures incorrectly. | Configuration error or device is operated outside the application. | 1. Check and correct parameter configuration.<br>2. Observe limit values specified in the "Technical Data". |

*For access*

| Error | Possible causes | Remedial action |
|---|---|---|
| Measuring device not in smartphone or tablet live list | Bluetooth communication is disabled | 1. Check whether the Bluetooth logo is visible on the local display or not.<br>2. Re-enable Bluetooth communication by tapping the device three times. |
| Unable to communicate with device via the Wireless Field Device Configurator app | No Bluetooth connection | Enable Bluetooth function on smartphone or tablet. |
| | | The device is already connected to another smartphone/tablet. |
| Login not possible via the Wireless Field Device Configurator app | Device is being put into operation for the first time | Enter initial password (device serial number) and change. |
| Unable to operate the device via the Wireless Field Device Configurator app | Incorrect password entered | Enter correct password. |
| | Password forgotten | Contact the Service Department. |
| No write access to parameters | Current user role has limited access authorization | 1. Check user role<br>2. Enter the correct customer-specific access code → 🖹 19 |

## 11.2 Diagnostic information on local display

### 11.2.1 Diagnostic message

Faults detected by the self-monitoring system of the measuring device are displayed as a diagnostic message in alternation with the operational display.

| Diagnostic message | | |
|---|---|---|
| Alarm | Function check | Warning |
|  A0033011 |  A0033010 |  A0033009 |

If two or more diagnostic events are pending simultaneously, only the message of the diagnostic event with the highest priority is shown.

#### Diagnostic behavior

| Diagnostic message | Meaning |
|---|---|
|  | **Alarm**<br>▪ The measurement is interrupted.<br>▪ Signal outputs and totalizers assume the defined alarm condition.<br>▪ A diagnostic message is generated. |
|  | **Function check**<br>Process measured values are simulated to test the outputs/wiring.<br>▪ IO1/IO2 overload<br>▪ Flow override is active |
|  | **Warning**<br>▪ Measurement is resumed.<br>▪ Measuring operation with limited accuracy<br>▪ The signal outputs and totalizers are not affected.<br>▪ A diagnostic message is generated. |

*Diagnostic behavior of outputs*

| Output | Diagnostic behavior |
|---|---|
| Switch output | ▪ The output is switched off (fail-safe) if events with the status signal F occur<br>▪ No further response to events with other status signals |
| Pulse output | ▪ Pulse output stops if events with the status signal F occur<br>▪ No further response to events with other status signals |
| Totalizer | ▪ Totalizer stops if events with the status signal F occur<br>▪ No further response to events with other status signals |
| Current output | ▪ 3.5 mA is output to signal events with the status signal F<br>▪ No further response to events with other status signals |
| Voltage output | ▪ 1.75 V is output to signal events with the status signal F<br>▪ No further response to events with other status signals |
| IO-Link | ▪ All events reported to the Master<br>▪ Events read and processed further by the Master |

MAN 1000540741 EN Version: D Status: RL (released | freigegeben) printed: 11.09.2025

## 11.3 Overview of diagnostic events

| Diagnostic event | Event text | Cause | Remedial measures | Status signal [ex-factory] |
|---|---|---|---|---|
| 181 | Coil. circ. fail. | Coil/frequency failure Coil current PWM outside tolerance range | Replace the measuring device. | F |
| 180 | Temp. circ. fail. | Temperature sensor open circuit/short-circuit | Replace the measuring device. | F |
| 201 | Device fail. | Internal hardware error | Replace the measuring device. | F |
| 283 | Memory fail. | CRC failure | Reset to factory settings. | F |
| 446 | I/O 1 overload | Overload at output 1 | Increase load impedance. | C |
| 447 | I/O 2 overload | Overload at output 2 | Increase load impedance. | C |
| 485 | Simulation act. | Measured value simulation active (via remote configuration) | – | C |
| 453 | Flow override | Flow override active (via auxiliary input) | – | C |
| 441 | I-Out 1 range | I-output 1 at range limit | Adjust parameter or process. | S |
| 444 | U-Out 1 range | U-output 1 at range limit | Adjust parameter or process. | S |
| 443 | P-Out 1 range | P-output 1 at range limit | Adjust parameter or process. | S |
| 442 | I-Out 2 range | I-output 2 at range limit | Adjust parameter or process. | S |
| 445 | U-Out 2 range | U-output 2 at range limit | Adjust parameter or process. | S |
| 962 | Empty pipe | Pipe is completely or partially empty | Adjust the process. | S |
| 834 | Temperat. range | Medium temperature outside the permitted range | Adjust the process. | S |

For more information on the diagnostics: see the "Diagnostics information" → 47

## 11.4 Device information

The **Device info** submenu contains all parameters that display different information for device identification.

**Navigation**

Menu: "System" → Device info

*Parameter overview with brief description*

| Parameter | Description | Display |
|---|---|---|
| Device name | Displays the name of the measuring device. | 8050 |
| Device tag | Shows name of measuring point. | Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /). |
| Serial number | Displays the serial number of the measuring device. | Max. 11-digit character string comprising letters and numbers. |

| Parameter | Description | Display |
|---|---|---|
| Firmware version | Displays the device firmware version installed. | Character string in the format xx.yy.zz |
| Extended order code | Displays the extended order code. | Character string composed of letters, numbers and certain punctuation marks (e.g. /). |

The following information is shown on the display by tapping once on the housing:
- Status and values for output 1
- Status and values for output 2
- Bluetooth status (On/Off)
- Serial number
- Software version

## 11.5 Firmware history

| Release date | Firmware version | Firmware changes | Documentation type | Documentation |
|---|---|---|---|---|
| 05.2019 | 01.01.zz | ▪ Conductivity measurement<br>▪ Export configuration report<br>▪ Save/load configuration<br>▪ Bug fix | Operating Instructions | MA8050-Manual-EU-EN (BA02223O/06/EN/01.22) |

# 12 Accessories

Various accessories are available for the device, and can be ordered with the device or at a later stage. A current overview is available from your sales organization.

*Adapter set (suitable for devices with male thread)* [1)]

| Order number | Description |
|---|---|
| 00571196 | G½" to G⅜" male thread |
| 00571197 | G½" to R⅜" male thread |
| 00571198 | G½" to G½" female thread |
| 00571199 | G½" to R½" male thread |
| 00571200 | G½" to ½" TriClamp |
| 00571201 | G¾" to R¾" male thread |
| 00571202 | G¾" to G¾" female thread |
| 00571203 | G¾" to R¾" TriClamp |
| 00571204 | G1" to R1" male thread |
| 00571205 | G1" to G1" female thread |
| 00571206 | G1" to 1" TriClamp |
| 00571207 | G2" to R1½" male thread |
| 00571208 | G2" to R2" male thread |
| 00571209 | G2" to G1½" male thread |
| 00571210 | G2" to G2" female thread |
| 00571211 | G2" to 2" TriClamp |

1) When ordering, the corresponding seal made from aramid fibers is also supplied.

*Cable set*

| Order number | Description |
|---|---|
| 00571222 | 2m/6.5ft, straight, 4x0.34, M12, PUR |
| 00571223 | 5m/16.4ft, straight, 4x0.34, M12, PUR |
| 00571224 | 10m/32.8ft, straight, 4x0.34, M12, PUR |
| 00571225 | 2m/6.5ft, 90 degrees, 4x0.34, M12, PUR |
| 00571226 | 5m/16.4ft, 90 degrees, 4x0.34, M12, PUR |
| 00571227 | 10m/32.8ft, 90 degrees, 4x0.34, M12, PUR |

*Seal set (suitable for devices with male thread)*

| Order number | Description |
|---|---|
| 00571218 | DMA15 aramid fiber |
| 00571219 | DMA20 aramid fiber |
| 00571220 | DMA25 aramid fiber |
| 00571221 | DMA50 aramid fiber |

*Ground terminal set*

| Order number | Description |
|---|---|
| 00571217 | Ground terminal |

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# 13 Technical data

## 13.1 Input

| | |
|---|---|
| Measured variables | ▪ Volume flow<br>▪ Temperature<br>▪ Conductivity |
| Measuring range<br>Volume flow measurement | DN 15 (½"): 0.05 to 35 l/min (0.013 to 9.2 gal/min)<br>DN 20 (¾"): 0.1 to 75 l/min (0.026 to 19.8 gal/min)<br>DN 25 (1"): 0.2 to 150 l/min (0.052 to 39.6 gal/min)<br>DN 50 (2"): 1.5 to 750 l/min (0.4 to 198.1 gal/min) |
| Measuring range<br>Medium temperature measurement | −10 to +70 °C (+14 to +158 °F) |
| Measuring range<br>Conductivity measurement | DN 15 (½"): 20 to 30000 µS/cm<br>DN 20 (¾"): 20 to 30000 µS/cm<br>DN 25 (1"): 20 to 30000 µS/cm<br>DN 50 (2"): 20 to 10000 µS/cm |
| Digital input | ▪ High or low active<br>▪ Switch-on level 15 V<br>▪ Switch-off level 5 V<br>▪ Internal resistance 7.5 kOhm |

## 13.2 Output

| Output | Max. load |
|---|---|
| Current output | 500 Ω<br>Load must not be greater |
| Voltage output | 600 Ω<br>Load must not be smaller |
| Pulse output | Max. pulse rate: 10000 Pulse/s |
| Signal on alarm | ▪ Status signal (as per NAMUR Recommendation NE 107)<br>▪ Plain text display with remedial action |
| Switch output | ▪ Switching behavior: PNP or NPN<br>▪ Max. load 250 mA |

## 13.3 Power supply

| | |
|---|---|
| Supply voltage range | 18 to 30 $V_{DC}$ (SELV, PELV, Class 2) |
| Power consumption | Maximum 3 W<br>▪ Without outputs IO1 and IO2: 120 mA<br>▪ With outputs IO1 and IO2: 120 mA plus the effective load currents |

## 13.4 Performance characteristics

| Volume flow measurement | |
|---|---|
| Reference operating conditions | Water, +15 to +45 °C, 2 to 6 bar |
| Maximum measured error | ±0.8 % o.r. ±0.1 % o.f.s. |
| Repeatability | ±0.2 % o.r. |

| Medium temperature measurement | |
|---|---|
| Maximum measured error | ±2.5 °C |
| Repeatability | ±0.5 °C |
| Response time T90 | Typically 30 s |

| Conductivity measurement | |
|---|---|
| Repeatability | ±5 % o.r. ±5 µS/cm |

| Maximum measured error, current output | |
|---|---|
| Additional error | ±20 µA [1] |
| Repeatability | ±10 µA |
| Response time T90 | Typically 200 ms |

1) At a device temperature of25 °C.

| Maximum measured error, voltage output | |
|---|---|
| Additional error | ±60 mV [1] |
| Repeatability | ±10 mV |
| Response time T90 | Typically 200 ms |

1) At a device temperature of25 °C.

The response time T90 is the time a measuring system needs to display 90% of the change of the measured value.

The deviation of the measurement at the outputs can increase depending on the device configuration.

## 13.5 Installation

→ 13

## 13.6 Environment

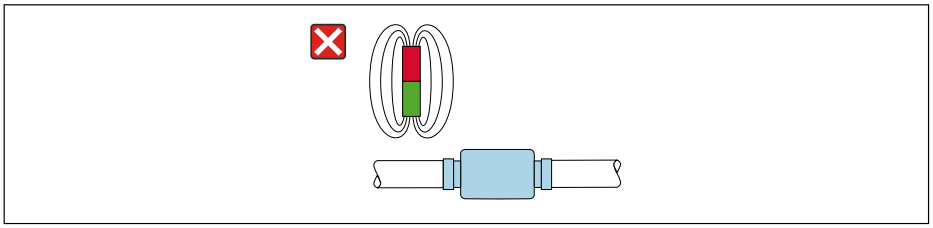
| | |
|---|---|
| Ambient temperature range | −10 to +60 °C (+14 to +140 °F) |
| Storage temperature | −25 to +85 °C (−13 to +185 °F) |
| Degree of protection | IP65/67, pollution degree 3 |
| Humidity and moisture | Suitable for indoor environments with up to 100% rh (wet and damp locations) |
| Operating altitude | up to 2 000 m |
| Shock resistance | 20 g (11 ms) in accordance with IEC/EN60068-2-27 |
| Vibration resistance | Acceleration up to 5 g (10 to 2 000 Hz) in accordance with IEC/EN60068-2-6 |
| Electromagnetic compatibility (EMC) | According to IEC/EN61326 and/or IEC/EN55011 (Class A) |

## 13.7 Process

| | |
|---|---|
| Medium temperature range | ▪ −10 to +70 °C (+14 to +158 °F)<br>▪ Permissible short-term temperature: maximum one hour 85 °C (185 °F) every 4 hours.<br>▪ Permissible short-term temperature with electronics switched off: maximum one hour 100 °C (212 °F) every 4 hours. |
| Medium properties | Liquid, conductivity ≥ 10 µS/cm |
| Pressure | Max. 16 $bar_{rel}$ |

Avoid cavitation in the process.

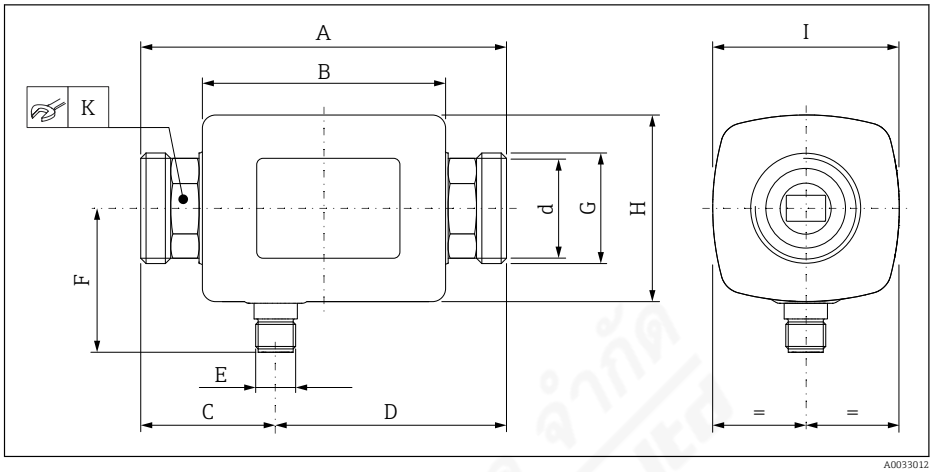
Magnetism and static electricity




8 *Avoid magnetic fields*

## 13.8 Mechanical construction

Measuring device with male thread




*Dimensions in SI units*

| DN | A [mm] | B [mm] | C [mm] | D [mm] | E | F [mm] | G | H [mm] | I [mm] | K [mm] | d [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 110 | 73 | 40.5 | 69.5 | M12 × 1 | 43 | G½" | 56 | 56 | SW 24 | 12 |
| 20 | 110 | 73 | 40.5 | 69.5 | M12 × 1 | 43 | G¾" | 56 | 56 | SW 27 | 15 |
| 25 | 110 | 73 | 40.5 | 69.5 | M12 × 1 | 43 | G1" | 56 | 56 | SW 27 | 15 |
| 50 | 200 | 113 | 80 | 120 | M12 × 1 | 58 | G2" | 86 | 86 | SW 52 | 43 |

*Dimensions in US units*

| DN | A [in] | B [in] | C [in] | D [in] | E | F [in] | G | H [in] | I [in] | K [in] | d [in] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 4.33 | 2.87 | 1.59 | 2.74 | M12 × 1 | 43 | G½" | 2.2 | 2.2 | AF 1 | 0.42 |
| 20 | 4.33 | 2.87 | 1.59 | 2.74 | M12 × 1 | 43 | G¾" | 2.2 | 2.2 | AF 1 1/16 | 0.59 |
| 25 | 4.33 | 2.87 | 1.59 | 2.74 | M12 × 1 | 43 | G1" | 2.2 | 2.2 | AF 1 1/16 | 0.59 |
| 50 | 7.87 | 4.45 | 3.15 | 4.72 | M12 × 1 | 58 | G2" | 3.39 | 3.39 | AF 2 1/16 | 1.69 |

*Weight in SI units*

| DN | [kg] |
|---|---|
| 15 | 0.34 |
| 20 | 0.35 |
| 25 | 0.36 |
| 50 | 1.55 |

*Weight in US units*

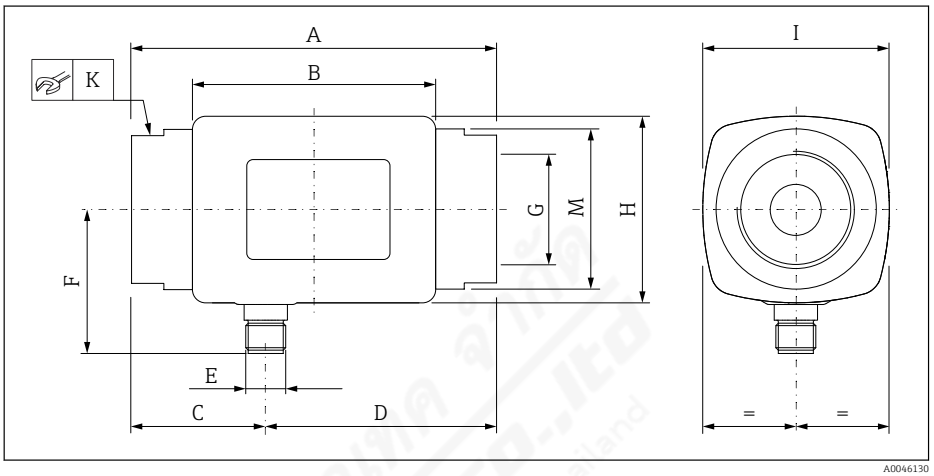
| DN | Weight [lbs] |
|---|---|
| 15 | 0.75 |
| 20 | 0.77 |
| 25 | 0.79 |
| 50 | 3.42 |

*Materials*

| Component | Material |
|---|---|
| Measuring tube | PEEK |
| Electrodes, temperature sensor | 1.4435/316L |
| Process connection | 1.4404/316L |

| Component | Material |
|---|---|
| Housing | 1.4404/316L, 1.4409/CF3M |
| Seal | FKM or EPDM |
| Display window | Polycarbonate |

Measuring device with female thread




*Dimensions in SI units*

| DN | A [mm] | B [mm] | C [mm] | D [mm] | E | F [mm] | G | H [mm] | I [mm] | K [mm] | ØM [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 110 | 73 | 40.5 | 69.5 | M12 × 1 | 43 | NPT½" | 56 | 56 | SW 27 | 29.5 |
| 20 | 110 | 73 | 40.5 | 69.5 | M12 × 1 | 43 | NPT¾" | 56 | 56 | SW 32 | 36 |
| 25 | 110 | 73 | 40.5 | 69.5 | M12 × 1 | 43 | NPT1" | 56 | 56 | SW 41 | 42 |
| 50 | 180 | 113 | 80 | 120 | M12 × 1 | 58 | NPT2" | 86 | 86 | SW 70 | 73.5 |

*Dimensions in US units*

| DN | A [in] | B [in] | C [in] | D [in] | E | F [in] | G | H [in] | I [in] | K [in] | ØM [in] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 4.33 | 2.87 | 1.59 | 2.74 | M12 × 1 | 1.69 | NPT½" | 2.2 | 2.2 | AF 1$^{1}/_{16}$ | 1.16 |
| 20 | 4.33 | 2.87 | 1.59 | 2.74 | M12 × 1 | 1.69 | NPT$^{3}/_{4}$" | 2.2 | 2.2 | AF 1¼ | 1.42 |
| 25 | 4.33 | 2.87 | 1.59 | 2.74 | M12 × 1 | 1.69 | NPT1" | 2.2 | 2.2 | AF 1$^{9}/_{16}$ | 1.65 |
| 50 | 7.09 | 4.45 | 2.76 | 4.33 | M12 × 1 | 2.28 | NPT2" | 3.38 | 3.38 | AF 2¾ | 2.89 |

*Weight in SI units*

| DN | [kg] |
|---|---|
| 15 | 0.34 |
| 20 | 0.35 |
| 25 | 0.36 |
| 50 | 1.55 |

*Weight in US units*

| DN | Weight [lbs] |
|---|---|
| 15 | 0.75 |
| 20 | 0.77 |
| 25 | 0.79 |
| 50 | 3.42 |

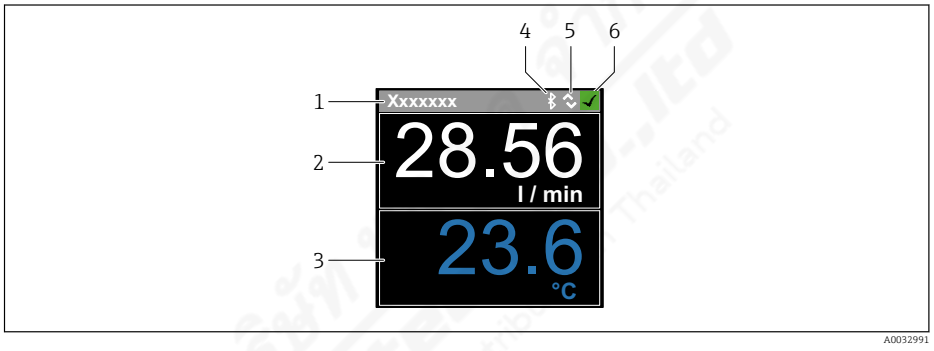
*Materials*

| Component | Material |
|---|---|
| Measuring tube | PEEK |
| Electrodes, temperature sensor | 1.4435/316L |
| Process connection | 1.4404/316L |
| Housing | 1.4404/316L, 1.4409/CF3M |
| Seal | FKM or EPDM |
| Display window | Polycarbonate |

## 13.9 Display and user interface

Local display

The device has an onsite display:




*1 Tag name (configurable)*
*2 Measured variable 1 (configurable) with sign → 29*
*3 Measured variable 2 (configurable) with sign → 29*
*4 Active Bluetooth connection*
*5 Active I/O-Link connection*
*6 Device status*

**Display element**

3 measured variables can be displayed (volume flow, temperature, conductivity).

Floating point numbers are saved in IEEE754 format and displayed with single precision format. The values are entered in the decimal system, however. As a result, extremely small, insignificant differences can arise between the value entered and the floating point number displayed, depending on the numerical values.

Operation

- Via Bluetooth® wireless technology
- Via IO-Link

Digital communication

Via IO-Link

Wireless Field Device Configurator app

The device has a *Bluetooth*® wireless technology interface and can be operated and configured using the Wireless Field Device Configurator app.

- The range under reference conditions is 10 m (33 ft)
- Incorrect operation by unauthorized persons is prevented by means of encrypted communication and password encryption
- The *Bluetooth*® wireless technology interface can be disabled

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## 13.10 Certificates and approvals

Current certificates and approvals for the product are available upon request.

| | |
|---|---|
| Standards and guidelines | The device is in conformity with the EC Directives according to the EC Declaration of Conformity (if applicable).<br>The applicable standards, that verify the conformity with the directives, are provided in the EC type examination certificate and/or the EC declaration of conformity (if applicable). |
| UKCA marking | The device meets the legal requirements of the applicable UK regulations (Statutory Instruments). These are listed in the UKCA Declaration of Conformity along with the designated standards. By selecting the order option for the UKCA marking Bürkert confirms the successful testing and assessment of the device by affixing to it the UKCA mark.<br>Contact address of Bürkert UK:<br>Burkert UK Limited<br>Fluid Control Centre<br>1 Bridge End<br>GL7 1QY Cirencester<br>United Kingdom<br>country.burkert.com |
| Radio approval | The measuring device has radio approval.<br>For detailed information on the radio approval, see the Appendix → 46 |
| Pressure Equipment Directive | Devices not bearing this marking (without PED or UKCA) are designed and manufactured according to sound engineering practice. They meet the requirements of<br>a) Art. 4 Para. 3 of the Pressure Equipment Directive 2014/68/EU or<br>b) Part 1, Para. 8 of Statutory Instruments 2016 No. 1105.<br>The scope of application is indicated<br>a) in diagrams 6 to 9 in Annex II of the Pressure Equipment Directive 2014/68/EU or<br>b) Schedule 3, Para. 2 of Statutory Instruments 2016 No. 1105. |
| $_{c}UL_{US}$ listing | The measuring device is UL-listed. |
| Drinking water approval | Current certificates and approvals for drinking water approval are available upon request. |

# 14 Appendix

## 14.1 Radio approvals

### 14.1.1 Europe

This device meets the requirements of the Telecommunications Directive RED 2014/53/EU.

### 14.1.2 Other countries

Other approvals in the following countries:

| | | | | |
|---|---|---|---|---|
| Argentina | Australia and New Zealand | Brazil | Chile | China |
| Hong Kong | India | Indonesia | Israel | Japan |
| Kazakhstan | Canada and United States | Columbia | Malaysia | Mexico |
| Namibia | Qatar | Russian Federation | Saudi Arabia | Singapore |
| South Africa | South Korea | Taiwan | Thailand | United Arab Emirates |
| Vietnam | – | – | – | – |

Detailed information and other national approvals are available upon request.

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## 14.2 IO-Link process data

### 14.2.1 Data structure

| Bit number | 119... 112 | 111... 104 | 103... 96 | 95... 88 | 87... 80 | 79... 72 | 71... 64 | 63... 56 | 55... 48 | 47... 40 | 39... 32 | 31... 24 | 23... 16 | 15... 8 | 7...0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Data | Conductivity in µS/cm | | | | Totalizer in l | | | | Volume flow in l/s | | | | Temperature in 1/10 °C | | Status |
| Data type | 32-bit floating point number with single precision (IEEE 754) | | | | 32-bit floating point number with single precision (IEEE 754) | | | | 32-bit floating point number with single precision (IEEE 754) | | | | 16-bit two's complement | | 8-bit |

*Data structure of the status bits 7 to 0*

| Bit | Description |
|---|---|
| 0 | Switches once per sampling rate |
| 1 | Reserved |
| 2 | Current status S-Out 1 |
| 3 | Current status S-Out 2 |
| 4 | Reserved |
| 5 | Reserved |
| 6 | Reserved |
| 7 | Reserved |

### 14.2.2 Diagnostic information

| Diagnostic code | | Display text | Coding (hex) | PDValid Validity | Priority |
|---|---|---|---|---|---|
| Status NE 107 | Diagnostic number | | | | |
| – | | SYSTEM OK | 0x0000 | 1 | 1 |
| F | 181 | COIL CIRC.FAIL. | 0x5000 | 0 | 2 |
| F | 180 | TEMP.CIRC.FAIL. | 0x5000 | 0 | 3 |
| F | 201 | DECICE FAIL. | 0x5000 | 0 | 4 |
| F | 283 | MEMORY FAIL. | 0x8C00 | 0 | 5 |
| C | 446 | I/O 1 OVERLOAD | 0x180C | 1 | 6 |
| C | 447 | I/O 2 OVERLOAD | 0x180C | 1 | 7 |
| C | 485 | SIMULATION ACT. | 0x8C01 | 1 | 8 |
| C | 453 | FLOW OVERRIDE | 0x180D | 1 | 9 |
| S | 441 | I-OUT 1 RANGE | 0x180A | 1 | 10 |
| S | 444 | U-OUT 1 RANGE | 0x1809 | 1 | 11 |
| S | 443 | P-OUT 1 RANGE | 0x180B | 1 | 12 |
| S | 442 | I-OUT 2 RANGE | 0x180A | 1 | 13 |
| S | 445 | U-OUT 2 RANGE | 0x1809 | 1 | 14 |
| S | 962 | EMPTY PIPE | 0x180E | 1 | 15 |
| S | 834 | TEMPERAT. RANGE | 0x8C20 | 1 | 16 |

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## 14.3 IO-Link ISDU parameter list

The individual parts of a parameter description are described in the following section:

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **Identification** | | | | | | | | |
| **Device Tag**<br>First 10 characters displayed (starting from left) | 0x0018 | 24 | 32 (max.) | string | r/w | | S-MAG_XYZZZZZ | |
| **Device Name** | 0x0012 | 18 | 16 (max.) | string | r | | 8050 | |
| **Device ID1** | 0x0009 | 9 | 1 | uint | r | | 0x1F | |
| **Device ID2** | 0x000A | 10 | 1 | uint | r | | 0x72 | |
| **Device ID3** | 0x000B | 11 | 1 | uint | r | | 0x01 | |
| **Vendor Name** | 0x0010 | 16 | 32 (max.) | string | r | | Buerkert_Werke_GmbH_CoKG | |
| **Vendor ID1** | 0x0007 | 7 | 1 | uint | r | | 0x00 | |
| **Vendor ID2** | 0x0008 | 8 | 1 | uint | r | | 0x78 | |
| **Device Serial No.**<br>e.g. (YMXXXXZZ) | 0x0015 | 21 | 11 (max.) | string | r | | see nameplate | |
| **Firmware Version**<br>e.g. 01.00.00 | 0x0017 | 23 | 8 (max.) | string | r | | | |
| **Order Code** | 0x0102 | 258 | 18 (max.) | string | r | | see nameplate | |
| **Device Type** | 0x0100 | 256 | 2 | uint | r | | | |
| **Diagnostics** | | | | | | | | |
| **Actual Diagnostics**<br>e.g. C485 (= SIMULATION ACT.) | 0x0104 | 260 | 4 | string | r | | | |
| **Last Diagnostics**<br>e.g. S962 (= EMPTY PIPE) | 0x0105 | 261 | 4 | string | r | | | |
| **Simulation Proc. Var.** | 0x015F | 351 | 2 | uint | r/w | enable=1<br>disable=0 | | |
| **Sim.Proc.Var.Value Volumeflow**<br>Unit selection list from **Unit Volumeflow** | 0x0166 | 358 | 4 | float | r/w | | 0.0 | $-10^6$<br>$10^6$ |
| **Sim.Proc.Var.Value Temperature**<br>Unit selection list from **Unit Temperature** | 0x0168 | 360 | 4 | float | r/w | | 0.0 | $-10^4$<br>$10^4$ |
| **Sim.Proc.Var.Value Conductivity**<br>Unit selection list from **Unit Conductivity** | 0x0167 | 359 | 4 | float | r/w | | 0.0 | 0<br>$10^6$ |
| **Measured Values** | | | | | | | | |
| **Volumeflow**<br>Current volume flow measured value | 0x0161 | 353 | 4 | float | r | | | |
| **Temperature**<br>Current temperature measured value | 0x0163 | 355 | 4 | float | r | | | |
| **Conductivity**<br>Current conductivity measured value | 0x0164 | 365 | 4 | float | r | | | |
| **Totalizer**<br>Current totalizer measured value | 0x0169 | 361 | 4 | float | r/w | | 0.0 | |

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **System Units** | | | | | | | | |
| **Unit Volumeflow** | 0x0226 | 550 | 2 | uint | r/w | l/s=0<br>l/h=5<br>fl. oz/min=4<br>$m^3$/h=1<br>l/min=2<br>Usgpm=3 | l/min | |
| **Unit Volume** | 0x0227 | 551 | 2 | uint | r/w | ml=0<br>USozf=1<br>l=2<br>$m^3$=3<br>Usgal=4 | ml | |
| **Unit Temperature** | 0x0228 | 552 | 2 | uint | r/w | °C=0<br>°F=1 | °C | |
| **Unit Conductivity** | 0x0229 | 553 | 2 | uint | r/w | µS/cm=0<br>S/m=1<br>mS/cm=2 | µS/cm | |
| **Unit Totalizer** | 0x016B | 363 | 2 | uint | r/w | USozf=1<br>l=2<br>$m^3$=3<br>Usgal=4<br>kl=5<br>Ml=6<br>kUsg=7 | $m^3$ | |
| **Sensor** | | | | | | | | |
| **Install. Direction**<br>In relation to direction of arrow on the device | 0x015E | 350 | 2 | uint | r/w | forward=0<br>reverse=1 | forward | |
| **Low Flow Cut Off**<br>The flow rate below the selected value is zero<br>Unit selection list from **Unit Volumeflow** | 0x0160 | 352 | 4 | float | r/w | | 0.4/0.75/1.2/5.0 l/min | 0<br>$10^6$ |
| **Damping**<br>Volume flow damping via the PT1 element<br>Unit: s | 0x01A4 | 420 | 4 | float | r/w | | 0 s | 0<br>100 |
| **Output 1** | | | | | | | | |
| **Operating Mode**<br>IO-Link is set if connected to a master | 0x01F4 | 500 | 2 | uint | r/w | P-Out=0<br>I-Out=1<br>S-In=2<br>S-Out=3<br>IO-Link=4<br>U-Out=5<br>off=6 | IO-Link | |
| **Current output I-Out 1** | | | | | | | | |
| **I - OUT Assign** | 0x0258 | 600 | 2 | uint | r/w | off=0<br>volume flow=1<br>temperature=2<br>conductivity=4 | volume flow | |
| **Q-Start-Value**<br>ASP [1] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x0259 | 601 | 4 | float | r/w | | 0 l/min | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **Q-End-Value**<br>AEP [2] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x025A | 602 | 4 | float | r/w | | 25/50/100/750 l/min | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **T-Start-Value**<br>ASP [1] for temperature<br>Unit selection list from **Unit Temperature** | 0x025F | 607 | 4 | float | r/w | | -10 °C | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **T-End-Value**<br>AEP [2] for temperature<br>Unit selection list from **Unit Temperature** | 0x0260 | 608 | 4 | float | r/w | | +70 °C | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **s-Start-Value**<br>ASP [1] for conductivity<br>Unit selection list from **Unit Conductivity** | 0x025D | 605 | 4 | float | r/w | | 0 | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **s-End-Value**<br>AEP [2] for conductivity<br>Unit selection list from **Unit Conductivity** | 0x025E | 606 | 4 | float | r/w | | 1000 | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **Pulse output P-Out** | | | | | | | | |
| **Pulse Value**<br>Unit selection list from **Unit Volume** | 0x03E8 | 1000 | 4 | float | r/w | | 0.5/1.0/2.0/10.0 ml | $10^{-9}$<br>$9.9 \cdot 10^9$ |
| **Switch output S-Out 1** | | | | | | | | |
| **Switch Polarity** | 0x032B | 811 | 2 | uint | r/w | pnp=0<br>npn=1 | pnp | |
| **Switch Function** | 0x0320 | 800 | 2 | uint | r/w | alarm=0<br>off=1<br>on=2<br>lim.vol.flow=3,<br>lim.temp.=4<br>lim.vol.=5<br>lims=11<br>win.vol.flow=6<br>win.temp.=7<br>win.vol.=8<br>wins=13<br>epd=9 | off | |
| **Q-ON-Value**<br>Unit selection list from **Unit Volumeflow** | 0x0321 | 801 | 4 | float | r/w | | 20/40/80/600 l/min | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **Q-OFF-Value**<br>Unit selection list from **Unit Volumeflow** | 0x0322 | 802 | 4 | float | r/w | | 15/30/60/450 l/min | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **T-ON-Value**<br>Unit selection list from **Unit Temperature** | 0x0327 | 807 | 4 | float | r/w | | + 60 °C | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **T-OFF-Value**<br>Unit selection list from **Unit Temperature** | 0x0328 | 808 | 4 | float | r/w | | + 50 °C | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **V-ON-Value**<br>Unit selection list from **Unit Totalizer** | 0x0329 | 809 | 4 | float | r/w | | 0.2/0.4/0.8/6.0 $m^3$ | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **V-OFF-Value**<br>Unit selection list from **Unit Totalizer** | 0x032A | 810 | 4 | float | r/w | | 0.15/0.3/0.6/4.5 $m^3$ | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **s-ON-Value**<br>Unit selection list from **Unit Conductivity** | 0x0325 | 805 | 4 | float | r/w | | 500 | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **s-OFF-Value**<br>Unit selection list from **Unit Conductivity** | 0x0326 | 806 | 4 | float | r/w | | 200 | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **Voltage output U-Out 1** | | | | | | | | |
| **U - OUT Assign** | 0x02BC | 700 | 2 | uint | r/w | off=0<br>volume flow=1<br>temperature=2<br>conductivity=4 | volume flow | |
| **Q-Start-Value**<br>ASP [1] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x02BD | 701 | 4 | float | r/w | | 0 l/min | |
| **Q-End-Value**<br>AEP [2] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x02BE | 702 | 4 | float | r/w | | 25/50/100/750 l/min | |
| **T-Start-Value**<br>ASP [1] for temperature<br>Unit selection list from **Unit Temperature** | 0x02C3 | 707 | 4 | float | r/w | | -10 °C | |
| **T-End-Value**<br>AEP [2] for temperature<br>Unit selection list from **Unit Temperature** | 0x02C4 | 708 | 4 | float | r/w | | +70 °C | |
| **s-Start-Value**<br>ASP [1] for conductivity<br>Unit selection list from **Unit Conductivity** | 0x02C1 | 705 | 4 | float | r/w | | 0 µS/cm | |
| **s-End-Value**<br>AEP [2] for conductivity<br>Unit selection list from **Unit Conductivity** | 0x02C2 | 706 | 4 | float | r/w | | 1000 µS/cm | |

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **Digital input D-In 1** | | | | | | | | |
| **D-IN Polarity** | 0x0385 | 901 | 2 | uint | r/w | low=0<br>high=1 | high | |
| **D-IN Function** | 0x0384 | 900 | 2 | uint | r/w | off=0<br>res.tot.=1<br>zero ret.=2 | res.tot. | |
| **IO-Link** | | | | | | | | |
| **IO-LINK Vendor Name** | 0x0010 | 16 | 32 (max.) | string | r | | Buerkert_Werke_GmbH_CoKG | |
| **IO-LINK Product Name** | 0x0012 | 18 | 16 (max.) | string | r | | 8050 | |
| **IO-LINK RevisionID** | 0x0004 | 4 | 1 | uint | r | | 0x11 | |
| **Output 2** | | | | | | | | |
| **Operating Mode** | 0x01F5 | 501 | 2 | uint | r/w | I-Out=1<br>S-In=2<br>S-Out=3<br>U-Out=5<br>off=6 | off | |
| **Current output I-Out 2** | | | | | | | | |
| **I - OUT Assign** | 0x028A | 650 | 2 | uint | r/w | off=0<br>volume flow=1<br>temperature=2 | volume flow | |
| **Q-Start-Value**<br>ASP [1] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x028B | 651 | 4 | float | r/w | | 0 l/min | |
| **Q-End-Value**<br>AEP [2] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x028C | 652 | 4 | float | r/w | | 25/50/100/750 l/min | |
| **T-Start-Value**<br>ASP [1] for temperature<br>Unit selection list from **Unit Temperature** | 0x0291 | 657 | 4 | float | r/w | | -10 °C | |
| **T-End-Value**<br>AEP [2] for temperature<br>Unit selection list from **Unit Temperature** | 0x0292 | 658 | 4 | float | r/w | | +70 °C | |
| **s-Start-Value**<br>ASP [1] for conductivity<br>Unit selection list from **Unit Conductivity** | 0x028F | 655 | 4 | float | r/w | | 0 | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |
| **s-End-Value**<br>AEP [2] for conductivity<br>Unit selection list from **Unit Conductivity** | 0x0290 | 656 | 4 | float | r/w | | 1000 | $-9.9 \cdot 10^9$<br>$9.9 \cdot 10^9$ |

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **Switch output S-Out 2** | | | | | | | | |
| **Switch Polarity** | 0x035D | 861 | 2 | uint | r/w | pnp=0<br>npn=1 | pnp | |
| **Switch Function** | 0x0352 | 850 | 2 | uint | r/w | alarm=0<br>off=1<br>on=2<br>lim.vol.flow=3<br>lim.temp.=4<br>lim.vol.=5,<br>win.vol.flow=6<br>lims=11<br>win.temp.=7<br>win.vol.=8<br>wins=13<br>epd=9 | off | |
| **Q-ON-Value**<br>Unit selection list from **Unit Volumeflow** | 0x0353 | 851 | 4 | float | r/w | | 20/40/80/600 l/min | |
| **Q-OFF-Value**<br>Unit selection list from **Unit Volumeflow** | 0x0354 | 852 | 4 | float | r/w | | 15/30/60/450 l/min | |
| **T-ON-Value**<br>Unit selection list from **Unit Temperature** | 0x0359 | 857 | 4 | float | r/w | | + 60 °C | |
| **T-OFF-Value**<br>Unit selection list from **Unit Temperature** | 0x035A | 858 | 4 | float | r/w | | + 50 °C | |
| **V-ON-Value**<br>Unit selection list from **Totalizer** | 0x035B | 859 | 4 | float | r/w | | 0.2/0.4/0.8/6.0 m³ | |
| **V-OFF-Value**<br>Unit selection list from **Totalizer** | 0x035C | 860 | 4 | float | r/w | | 0.15/0.3/0.6/4.5 m³ | |
| **s-ON-Value**<br>Unit selection list from **Conductivity** | 0x0357 | 855 | 4 | float | r/w | | 500 | |
| **s-OFF-Value**<br>Unit selection list from **Conductivity** | 0x0358 | 856 | 4 | float | r/w | | 200 | |
| **Voltage output U-Out 2** | | | | | | | | |
| **U - OUT Assign** | 0x02EE | 750 | 2 | uint | r/w | off=0<br>volume flow=1<br>temperature=2 | volume flow | |
| **Q-Start-Value**<br>ASP [1] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x02EF | 751 | 4 | float | r/w | | 0 l/min | |
| **Q-End-Value**<br>AEP [2] for volume flow<br>Unit selection list from **Unit Volumeflow** | 0x02F0 | 752 | 4 | float | r/w | | 25/50/100/750 l/min | |
| **T-Start-Value**<br>ASP [1] for temperature from **Unit Temperature** | 0x02F5 | 757 | 4 | float | r/w | | -10 °C | |
| **T-End-Value**<br>AEP [2] for temperature from **Unit Temperature** | 0x02F6 | 758 | 4 | float | r/w | | +70 °C | |

| Designation | ISDU (dec) | ISDU (hex) | Size (byte) | Data type | Access | Value range | Factory setting | Range limits |
|---|---|---|---|---|---|---|---|---|
| **s-Start-Value**<br>ASP [1] for temperature from **Conductivity** | 0x02F3 | 755 | 4 | float | r/w | | 0 µS/cm | |
| **s-End-Value**<br>AEP [2] for temperature from **Conductivity** | 0x02F4 | 756 | 4 | float | r/w | | 1000 µS/cm | |
| **Digital input D-In 2** | | | | | | | | |
| **D-IN Polarity** | 0x0395 | 917 | 2 | uint | r/w | low=0<br>high=1 | high | |
| **D-IN Function** | 0x0394 | 916 | 2 | uint | r/w | off=0<br>res.tot.=1<br>zero ret.=2 | res.tot. | |
| **Display** | | | | | | | | |
| **Display Layout** | 0x01C3 | 451 | 2 | uint | r/w | QV=0<br>QT=1<br>Qs=3<br>VT=2, Vs=4<br>Ts=5<br>QVTs=6<br>QVTs_m=7 | QT | |
| **Display Rotation** | 0x01C4 | 452 | 2 | uint | r/w | 0 °=0<br>90 °=1<br>180 °=2<br>270 °=3<br>auto=4 | Auto | |
| **Display Backlight** | 0x01C2 | 450 | 2 | uint | r/w | 0...100 | 50 | |
| **Bluetooth configuration** | | | | | | | | |
| **Bluetooth Function** | 0x041A | 1050 | 2 | uint | r/w | on=1<br>off=0 | on | |
| **Bluetooth Tx Pwr Level** | 0x041B | 1051 | 2 | uint | r | 0...4 | | |
| **Bluetooth Conn. Status** | 0x041C | 1052 | 1 | uint | r | | | |
| **Administration** | | | | | | | | |
| **Set Access Code**<br>Define access code | 0x0108 | 264 | 2 | uint | w | | 0000 | |
| **Access Code**<br>Enter access code | 0x0107 | 263 | 2 | uint | w | | | |
| **Reset Device** | 0x010E | 270 | 2 | uint | w | cancel=0<br>restore fact.=1<br>restart=4 | cancel | |
| **Product Specific Process Values** | | | | | | | | |
| **Status IO 1** | 0x0386 | 902 | 2 | uint | r | low=0<br>high=1 | | |
| **Status IO 2** | 0x0396 | 918 | 2 | uint | r | low=0<br>high=1 | | |

1) Analog Start Point
2) Analog End Point

# Index

## U



## V



## W



MAN 1000540741 EN Version: D Status: RL (released | freigegeben) printed: 11.09.2025