

# Type ME64

Universal I/O



## Operating Instructions

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

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Operating Instructions 2604/00\_ENgb\_60043525 / Original DE

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# 1 OPERATING INSTRUCTIONS

The operating instructions apply to the entire life cycle of the device. Keep these instructions ready to hand at the operating site.

## Important safety information!

- ▶ Read these instructions carefully.
- ▶ Above all, observe the safety instructions, intended use and usage conditions.
- ▶ All persons working on the device must read and understand these instructions.

## 1.1 Symbols



### WARNING

Warns of a potential danger.

- ▶ Failure to observe may result in death or serious injuries.



### CAUTION

Warns of a potential danger.

- ▶ Failure to observe may result in slight or minor injuries.

### NOTE

Warns of damage to property.

- ▶ Failure to observe may result in damage to the device or the system.



Indicates important additional information, advice and recommendations.



Refers to information in these operating instructions or in other documentation.

- ▶ Indicates instructions to avoid a danger.
- Designates a procedure which you must carry out.
- ✓ Designates a result.

**MENU** Symbol for software interface texts.

## 1.2 Definition of terms

The following definition of terms applies in these instructions:

Term	Meaning
Device, module	I/O module, Type ME64 Universal I/O
büS	Bürkert system bus; a communication bus developed by Bürkert, based on the CANopen protocol

## 2 INTENDED USE

The I/O module, Type ME64 universal I/O collects, converts and compares physical measurement data from external sensors and transfers this data to external actuators or bÜS participants via the bÜS interface.

- ▶ Use the device only as intended. Non-intended use of the device may be dangerous to people, nearby equipment and the environment.
- ▶ Use the device only in conjunction with third-party devices and components recommended or approved by Bürkert.
- ▶ Only operate the device when it is in perfect condition.
- ▶ Prerequisites for safe and trouble-free operation are correct transportation, correct storage, installation, start-up, operation and maintenance.
- ▶ To use the device, observe the permitted data, operating conditions and usage conditions. These specifications can be found in the contract documents, the operating instructions and on the device.

### 3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances or events that occur during installation, operation or maintenance. The operator is responsible for observing the location-specific safety regulations, also with reference to personnel.



#### General hazardous situations.

To prevent injuries, observe the following:

- ▶ Use the device only when it is in a perfect state and in accordance with the operating instructions.
- ▶ Do not modify the device.
- ▶ Do not mechanically load the device.
- ▶ Secure the device or system to prevent unintentional activation.
- ▶ Only trained technicians may perform installation and maintenance work.
- ▶ Install the device according to the regulations applicable in the respective country.
- ▶ After an interruption in the power supply, ensure that the process is restarted in a controlled manner.
- ▶ Observe the general rules of technical equipment.

#### NOTE

##### Electrostatically sensitive components and assemblies.

The device contains electronic components that are susceptible to the effects of electrostatic discharging (ESD). Components are at risk if they come into contact with electrostatically charged persons or objects. In the worst case scenario, can result in either immediate irreparable damage to the components, or to their failure after start-up.

- ▶ Meet the requirements specified by EN 61340-5-1 to minimise or avoid the possibility of damage caused by a sudden electrostatic discharge.
- ▶ Do not touch electronic components while the operating voltage is switched on.
- ▶ Cap all unused electrical interfaces with covers.

## 4 GENERAL INFORMATION

### 4.1 Contact address

Germany

Bürkert Fluid Control Systems  
Sales Center  
Christian-Bürkert-Str. 13–17  
D-74653 Ingelfingen  
Phone: +49 (0) 7940-10-91 111  
Fax: +49 (0) 7940-10-91 448  
Email: info@burkert.com

#### International

You can find the international contact addresses on the Internet at: [country.burkert.com](https://country.burkert.com).

### 4.2 Warranty

A precondition for the warranty is that the device is used as intended in consideration of the specified usage conditions.

### 4.3 Information on the Internet

Operating instructions and data sheets for the Bürkert products can be found on the Internet at:  
[country.burkert.com](https://country.burkert.com).

## 5 PRODUCT DESCRIPTION

The I/O module, Type ME64 universal I/O collects digital values of physical measurement data from external sensors and transfers this data to external actuators or bÜS participants via the bÜS interface.

The module is designed for decentralised use in the process environment. It is easy to install and increases process reliability due to integrated monitoring and diagnostics functions. For example, it can be used to evaluate feedback when using the Type 8653 AirLINE Field field module.

The I/O module can be integrated into existing control systems via the fieldbus gateways Type ME63 or Type ME43 and the valve island Type 8652 AirLINE.

The housing with degree of protection IP65/67 and IP69k eliminates the need for a further protective housing.



Figure 1: View of the I/O module, Type ME64 universal I/O

Connection	Operating mode	Optional operating modes
Connections X1–X4 (AI or DI)	AI	4...20 mA
		0...20 mA
		0...10 V
		0...5 V
		0...2 V
Connections X5–X8 (DO or DI)	DO	On-Off
		Threshold value
		PWM
Connections X5–X8 (DO or DI)	DI	PFM
		Impulse
		Dosing
Connections X5–X8 (DO or DI)	DI	On-Off
		Frequency
		Flow + Totaliser

Supply voltage <sup>1)</sup>	Assignment
XG1 (IN), XG2 (OUT)	24 V DC and büS/CANopen
XD1 (IN), XD2 (OUT)	24 V DC

## 5.1 Switch for changing over the power supply

There is a switch for connecting the “Power 1” and “Power 2” power supplies under the light blue cover on the side.

The module is powered via XD1 as supplied. If the module is powered solely via connection XG1, the switch must be set to the correct position. For further information, see chapter [“7.4 Combining ME6x modules”](#).

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<sup>1)</sup> In an earlier version of the module, the connections were labelled as follows: XD1/XD2 = X03/X04, XG1/XG2 = X01/X02.

## 6 TECHNICAL DATA

### 6.1 Standards and directives

The device complies with the valid EU harmonisation legislation. In addition, the device also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity.

### 6.2 Operating conditions

#### NOTE

**Malfunction due to heat and heavy frost.**

- ▶ Do not use the device outside the specified ambient temperature.

Ambient temperature	-20 °C...+60 °C
Storage temperature	-30 °C...+80 °C
Material	Polycarbonate
Height above sea level	max. 2000 m

### 6.3 Electrical data

Operating voltage	24 V $\overline{=}$ +20%/-15%
Power consumption of the module	4.8 W
Maximum sensor supply	250 mA per connection
Degree of protection	IP65, IP67 and IP69k according to EN 60529/IEC 60529 (for connected cables and using protective caps for unused connections)
Protection class	3 according to DIN EN 61140 (VDE 0140)

## 6.4 Analogue inputs (X1-X4 configured as analogue inputs)

Power supply	Power 1
Electric variant	Current input or voltage input
Diagnostics	Detection of fault conditions (at 3.5 mA and 22 mA in accordance with NAMUR NE43)
	Detection of an interruption in the power supply (open loop)
Operating mode	0...20 mA
	4...20 mA
	0...10 V
	0...5 V
	0...2 V
Accuracy	±0.5 % of full scale (10 V/20 mA)
Input impedance	Current measurement at 25 °C ≤ 110 Ω
	Voltage measurement at 25 °C ≥ 115 kΩ
Sampling time	1 ms...4 s (recommended value: 100 ms)

## 6.5 Digital outputs (P-switching (X5-X8))

Power supply	Power 2
Electric variant	Voltage output
Diagnostics	Short circuit detection
Operating mode	On-Off
	Threshold value
	PWM (pulse-width modulation)
	PFM (pulse frequency modulation)
	Impulse (switching for a specified high-resolution impulse duration)
	Dosing (switching based on the programmed dosing quantity)
Clock frequency	Adjustable to 20 kHz
Maximum current output	1 A (per connection)

## 6.6 Digital inputs (X1–X8 configured as digital inputs)

Electric variant	2-wire sensor, 3-wire sensor, mechanical limit switch
Power supply	Power 1 (X1–X4), Power 2 (X5–X8)
Diagnostics	Wire break detection for 2-wire sensors
	Short circuit detection for 3-wire sensors
Operating mode	On-Off
	Frequency
	Flow + Totaliser
Switching threshold	V <sub>OFF</sub> = 0...5 V
	V <sub>ON</sub> = 10...30 V
Input current when switched on	I <sub>ON</sub> ≥ 2.4 mA
Input type	Type 1 and Type 3 in accordance with IEC 61132-2
Number of frequency inputs	8
Frequency input	Up to 2.5 kHz
Sampling time	1 ms...4 s (recommended value: 100 ms)

## 6.7 Device labelling

### 6.7.1 Device top side labelling

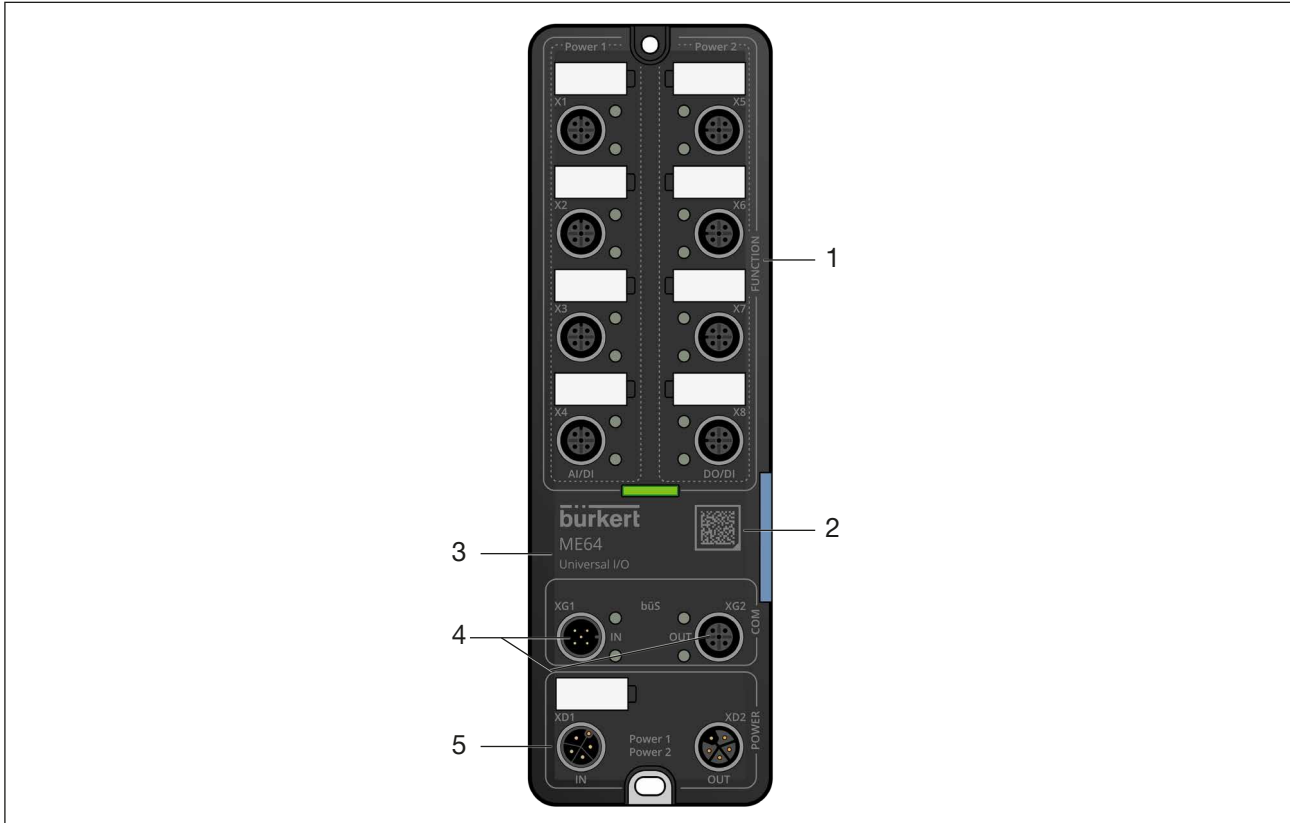


Figure 2: Device top side labelling

Item	Designation
1	Device-specific function
2	Data matrix code with link to Bürkert product page
3	Type und device designation
4	IN (XG1): bus IN for alternative supply via A-coded M12 plug OUT (XG2): bus OUT for integration of more bus/CANopen devices via A-coded M12 socket
5	Power supply IN: XD1; OUT: XD2, each M12 L-coded

### 6.7.2 Left and right device side labelling

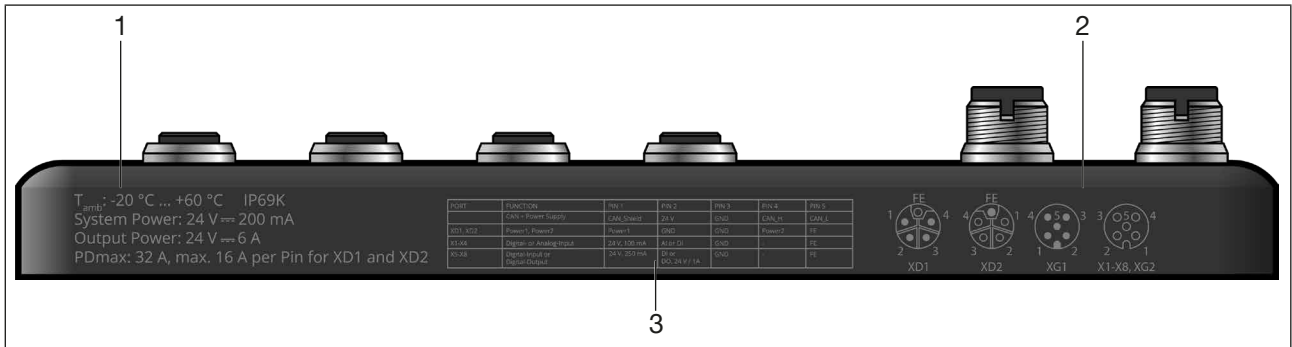


Figure 3: Labelling on the left side of the device

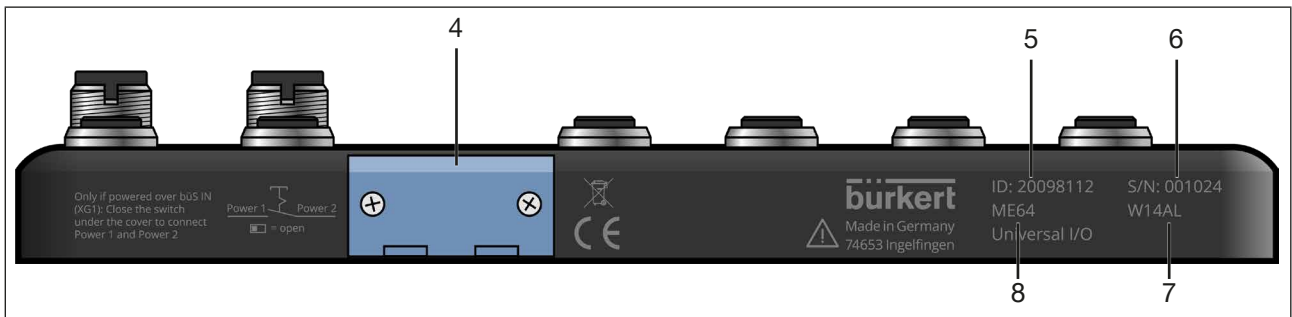


Figure 4: Labelling on the right side of the device

Item	Designation
1	Performance data (ambient temperature, IP degree of protection for voltage, power consumption)
2	Symbols of push-in connectors
3	Pin assignment
4	When supplying power via bus IN (XG1), close the switch (located under the blue cover)
5	Article number
6	Serial number
7	Manufacture code (encrypted)
8	Type

## 6.8 Dimensions

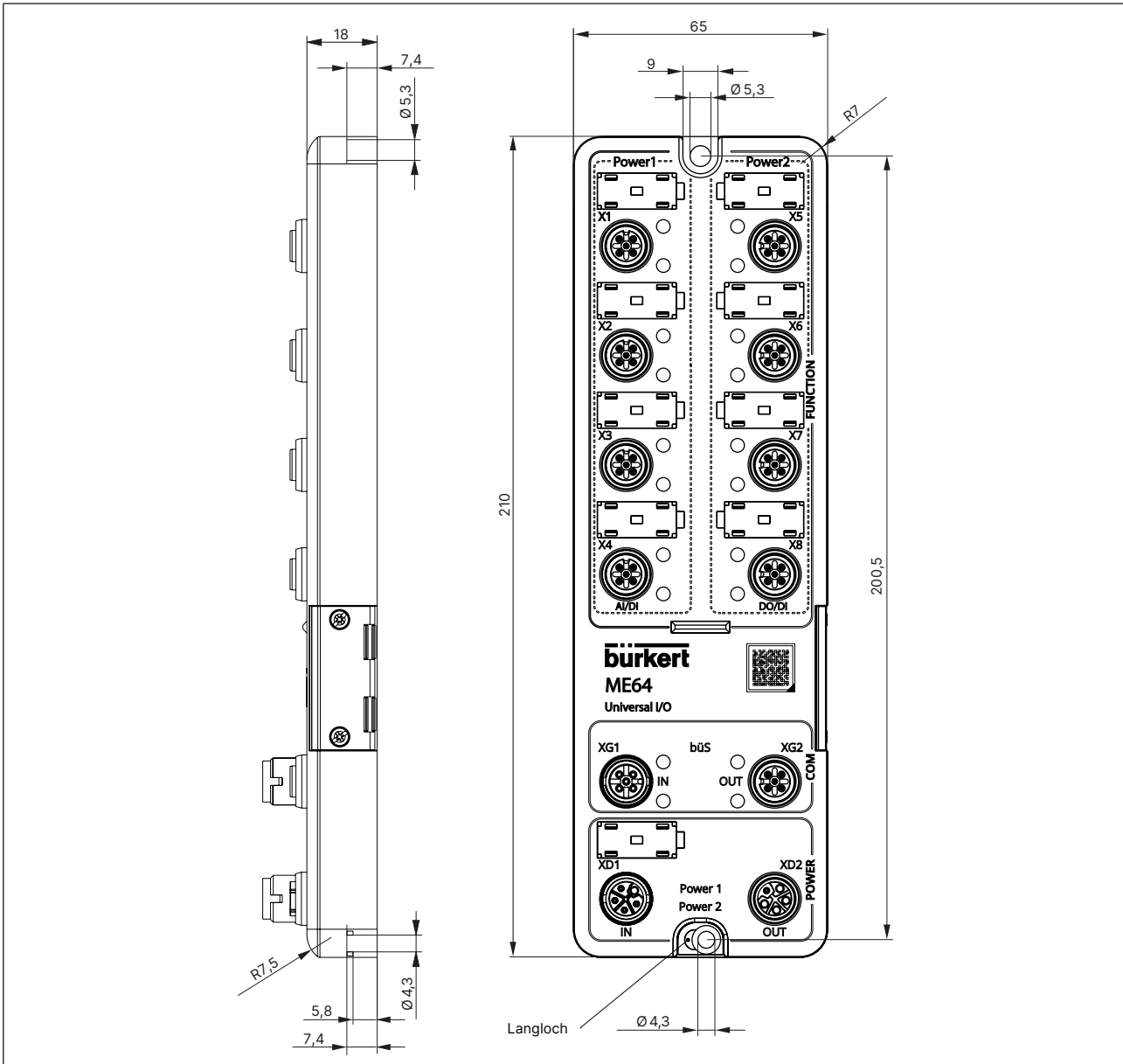


Figure 5: Dimensions of the I/O module, Type ME64 Universal I/O

## 7 INSTALLATION



### WARNING

Risk of injury due to improper installation.

- ▶ Only trained technicians may perform installation work.
- ▶ Perform installation work using suitable tools only.

### 7.1 Installing the device



The device will be delivered fully installed. Modifications to the device are only permitted to be carried out by Bürkert.

- Install the device on a level surface using 2 screws (M4) and 2 plain washers (according to DIN 125). Observe the maximum tightening torque of 1 Nm.
- Earth the device via the earthing lead. The earthing lead is located at the lower device attachment.



### CAUTION

Malfunction due to electrostatic discharge.

Electrostatic discharge on the device may cause malfunctions.

- ▶ Connect the device to the functional earth.

Danger due to electromagnetic fields.

If the functional earth (FE) is not connected, this represents an infringement of the legal regulations of EMC directive.

- ▶ Connect the device to the functional earth.
- ▶ If the installation surface is not grounded, use an earthing strap or FE line. Connect the earthing strap or the FE line to the earthing lead of the device attachment.

### 7.2 Opening or closing the side panel

- To open or close the side panel, unfasten or fasten both screws using a cross-tip screwdriver.

### NOTE

Ensure the degree of protection when screwing on the cover.

- ▶ Ensure that the seal is correctly fitted.
- ▶ When screwing on the cover, observe a maximum tightening torque of 0.4 Nm.

## 7.3 Electrically connecting the device

### NOTE

Prerequisite for the fault-free functioning of the device and to avoid interference issues:

- ▶ Use only shielded cables with a braided or foil shield.

Ensure the degree of protection.

- ▶ Fit unused connections with protective caps.

### 7.3.1 Assignment of the connections

Connections XG1 (IN), XG2 (OUT)

Function: CAN + operating voltage 24 V

View	Pin	Assignment	Function
	1	CAN_GND	büS/CANopen shielding
	2	24 V	Power 1 power supply
	3	GND	Power supply
	4	CAN_H	büS/CANopen communication
	5	CAN_L	büS/CANopen communication

Table 1: Assignment of connections XG1, XG2

Connections XD1 (IN), XD2 (OUT)

Function: operating voltage 24 V

View	Pin	Assignment	Function
	1	24 V	Power 1 power supply
	2	GND	Power supply
	3	GND	Power supply
	4	24 V	Power 2 power supply
	5	FE	Shielding

Table 2: Assignment of connections XD1, XD2

Connections X1–X4

Function: analogue inputs (configurable as DI)

View	Pin	Assignment	Function
	1	24 V	Power 1 power supply
	2	A/DI	Analogue input/digital input
	3	GND	Power supply
	4	-	-
	5	FE	Shielding

Table 3: Assignment of connections X1 to X4

Connections X5–X8

Function: digital outputs (configurable as DI)

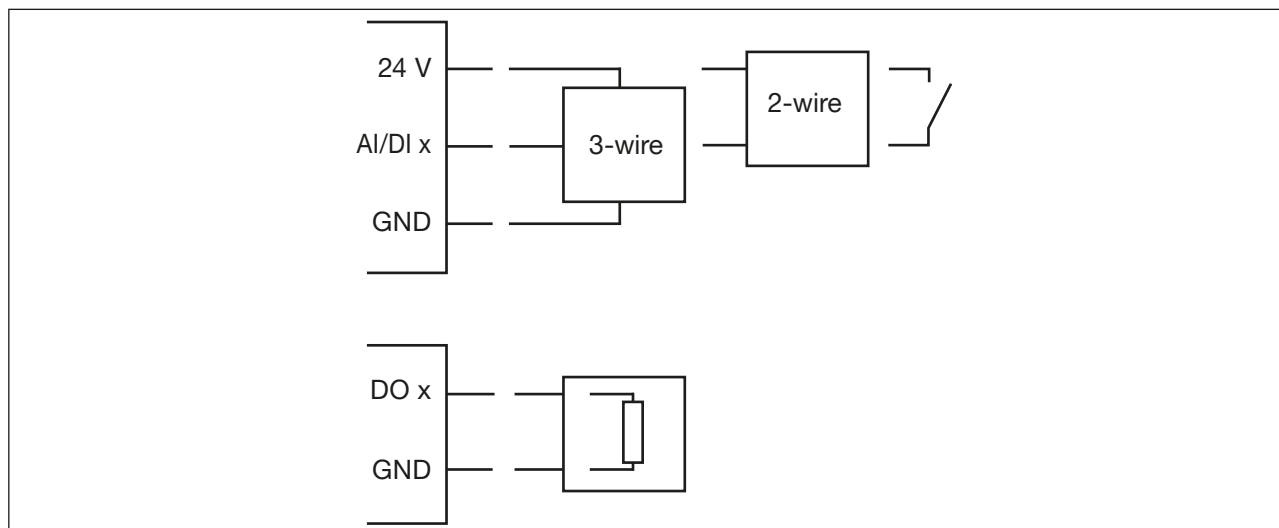
View	Pin	Assignment	Function
	1	24 V	Power 2 power supply
	2	DO/DI	Digital output/digital input
	3	GND	Power supply
	4	-	-
	5	FE	Shielding

Table 4: Assignment of connections X5 to X8

### 7.3.2 Connecting the external sensors

→ See “Table 3: Assignment of connections X1 to X4”.

Circuit diagram



### 7.3.3 Terminating resistor

In the bÜS network, connect a terminating resistor to the XG2 connection if required.



Detailed information on cabling bÜS networks is available online.

- ▶ Open the website for the **ME64** device type.
- ▶ Go to the **Downloads** section.
- ▶ In the operating instructions, select “*Supplementary Instructions | bÜS/EDIP Cabling Guide.*”

## 7.4 Combining ME6x modules

### 7.4.1 Module connections for the power supply



Figure 6: Power supply via bÜS connection

ME63 REV.2		ME64 Universal I/O & ME66	
X1–X3; X5–X8	M12-A, socket, bÜS/CANopen and 24 V DC, max. 4 A, for connection of a device via bÜS/CANopen	XG1	M12-A, plug, bÜS/CANopen IN, max. 4 A, for connection of bÜS/CANopen network
X4	M12-A, plug, bÜS/CANopen and 24 V DC, max. 4 A, preferably for bÜS/CANopen connection	XG2	M12-A, socket, bÜS/CANopen OUT, max. 4 A, for the integration of other bÜS/CANopen devices

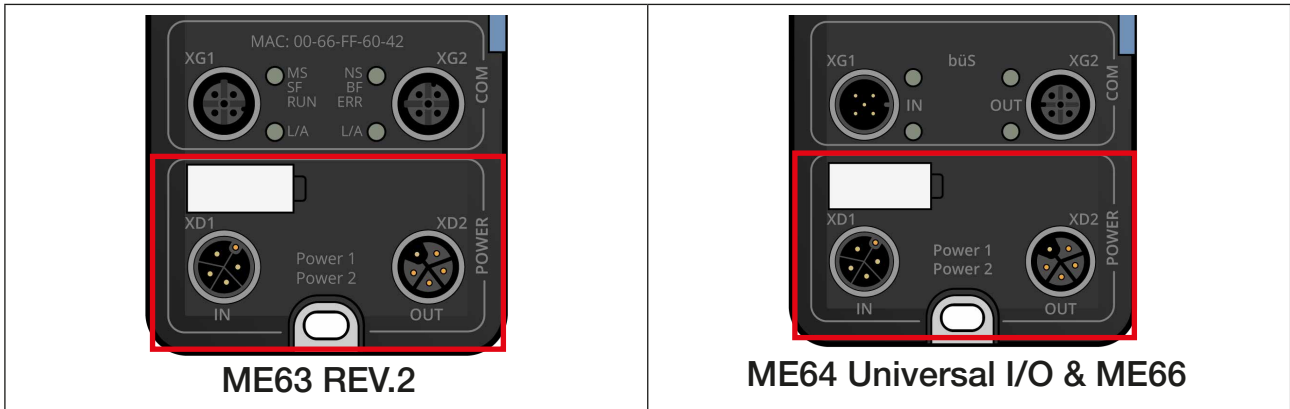


Figure 7: Power supply via XD1

Connection	Description
XD1 (IN)	M12-L, plug, power IN, max. 32 A, for power supply input
XD2 (OUT)	M12-L, socket, power OUT, max. 32 A, for power supply for other devices

**NOTE**

Damage to device.

- ▶ The L-coded M12 connection (XD1, XD2) is designed for connecting 2 power supplies, each up to max. 16 A. Do not exceed these values.

## 7.4.2 Simplified power supply plan

When modules in the ME6x product series are combined, the information provided in this chapter must be followed.



### Important compatibility note:

For optimal function and secure connection, the ME64 Universal I/O module should only be used in conjunction with the ME63 REV.2 and ME66 modules, where the L-coded connections are labelled XD1 and XD2.

This reduces the susceptibility to errors that can arise from the combination of different device versions and ensures reliable operation.

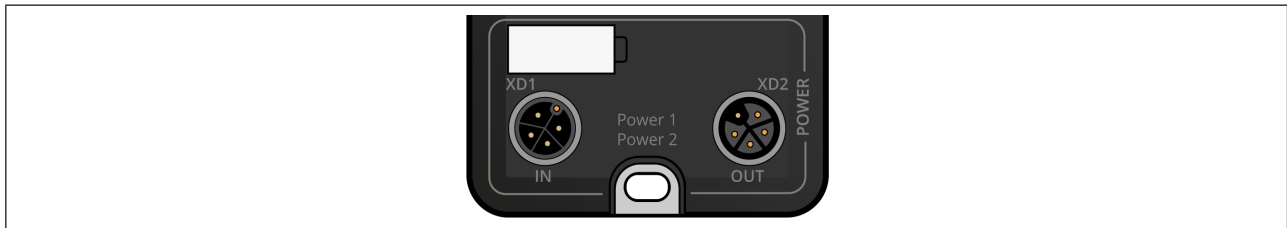


Table 5: Connection designation of the L-coded connections



For Type ME63 REV.2, the supply can be made via either XD1 (max. 2 x 16 A) or X4 (max. 4 A). The module must not be supplied simultaneously via XD1 (Power 1 and Power 2) and X4 (bÜS power).

- If the module is supplied via XD1, make sure that Power 1 and Power 2 are always available.
- If the module is supplied via X4, only a total of 4 A are available at connections X1–X3 and X5–X8.



For Types ME64 Universal I/O and ME66, Power 1 and Power 2 are two separate circuits with common ground.

### ME64 Universal I/O and ME66

Power 1 supplies connections X1–X4, Power 2 supplies connections X5–X8.

- Supply via XD1
  - Switch is **not closed**.
  - Power supply via connection XD1 with a current of max. 2 x 16 A.
- Supply via XG1 (bÜS power)
  - Switch under the blue cover **must be closed**.
  - **Note:** Only max. 4 A will then be available for the entire module.

When supplied via bÜS power, it must be ensured that the module is not supplied simultaneously via XD1.

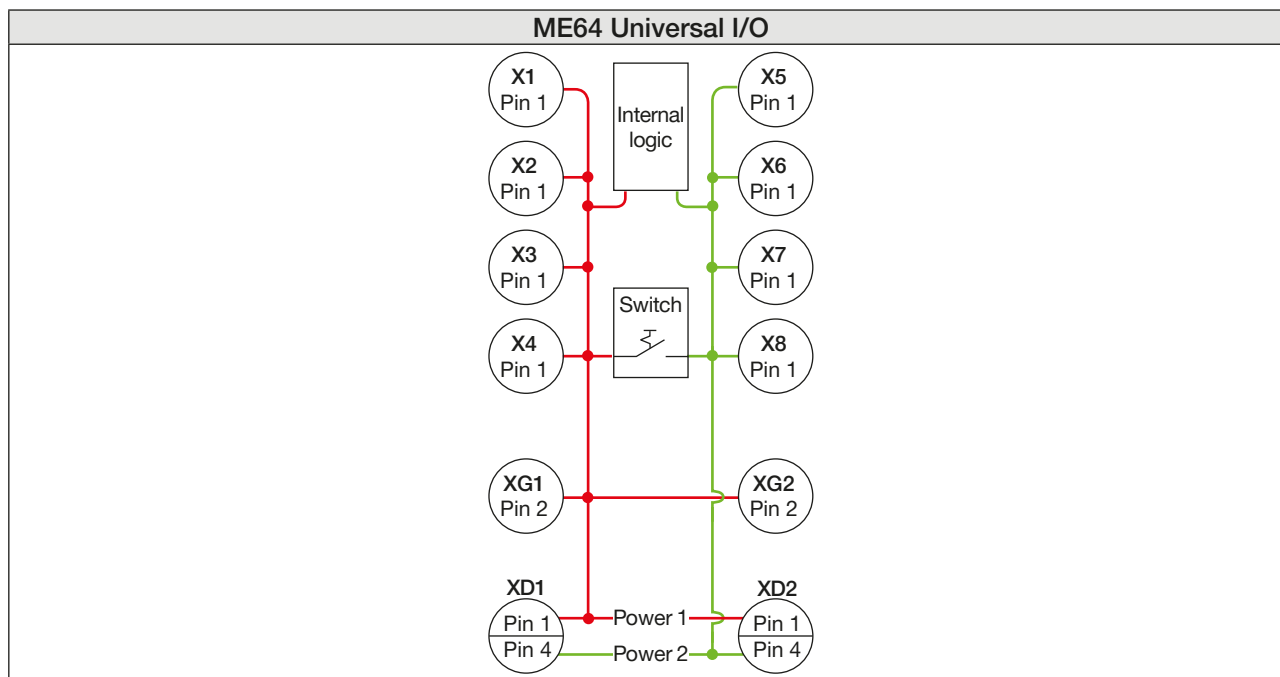


Figure 8: Simplified circuit diagram for ME64 Universal I/O

Colour	Description
	Power 1 = Power 2 (both circuits are connected)
	Power 2

Table 6: Legend of simplified circuit diagram for ME64 Universal I/O

### Power supply via XG1 (bÜS IN) – ME64 Universal I/O und ME66

The power supply is enabled via connection XD1 for the modules in delivery condition.

#### NOTE

Input cannot be made via both connections at the same time.

If the modules are supplied via connection XG1, the switch must be changed over.

Underneath the light blue cover, there is a switch for changing over the module supply from XD1 to connection XG1 (bÜS IN). [“7.4.2 Simplified power supply plan”](#)

#### NOTE

**Damage to the switch for supply via XG1 (bÜS IN).**  
 A current > 4 A will damage the switch.  
 ▶ When switching to power supply via bÜS IN, make sure that the maximum current is no greater than 4 A, otherwise the switch will be damaged.

### 7.4.3 Combining different ME modules

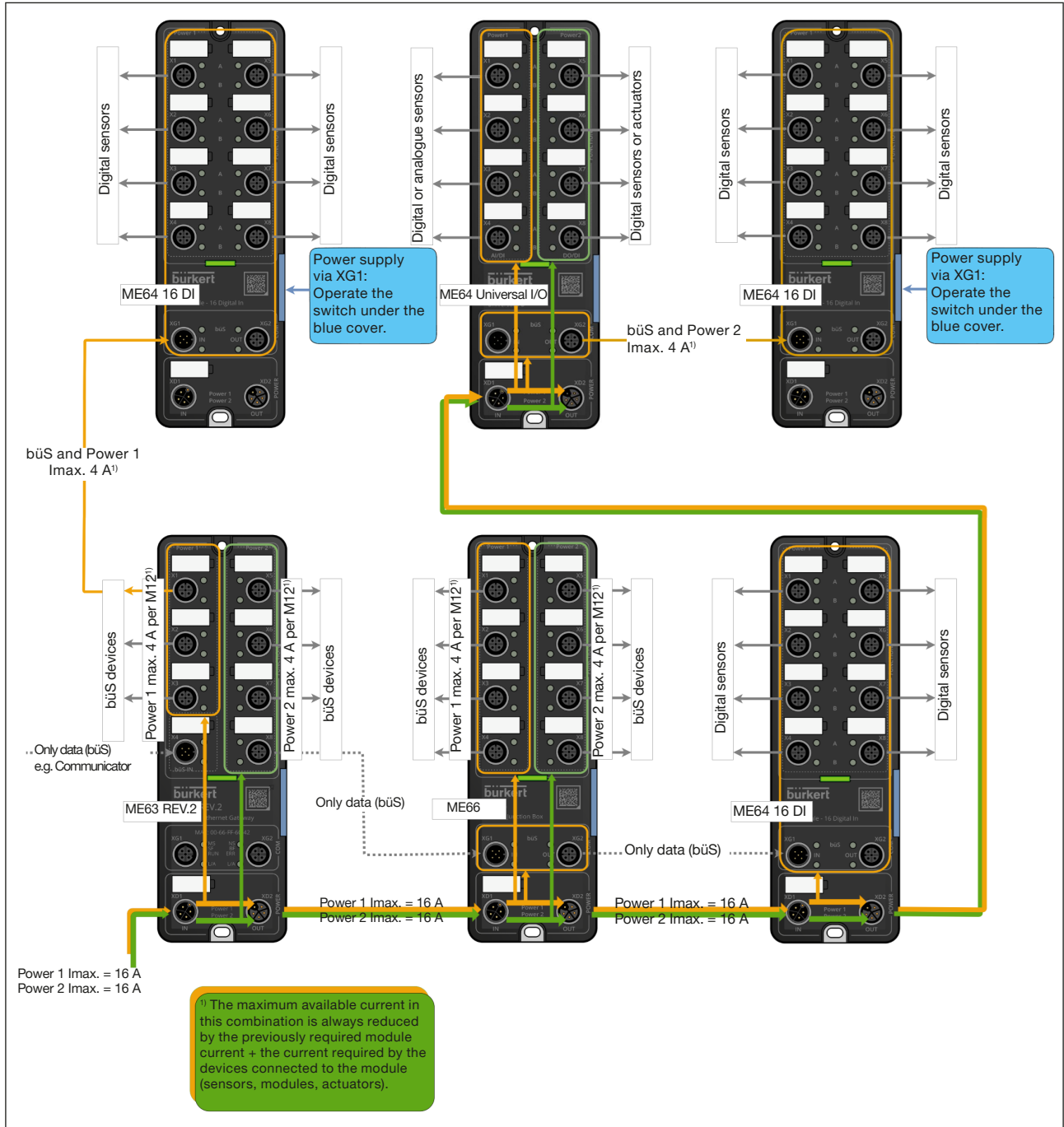


Figure 9: Example for the combination of different ME modules

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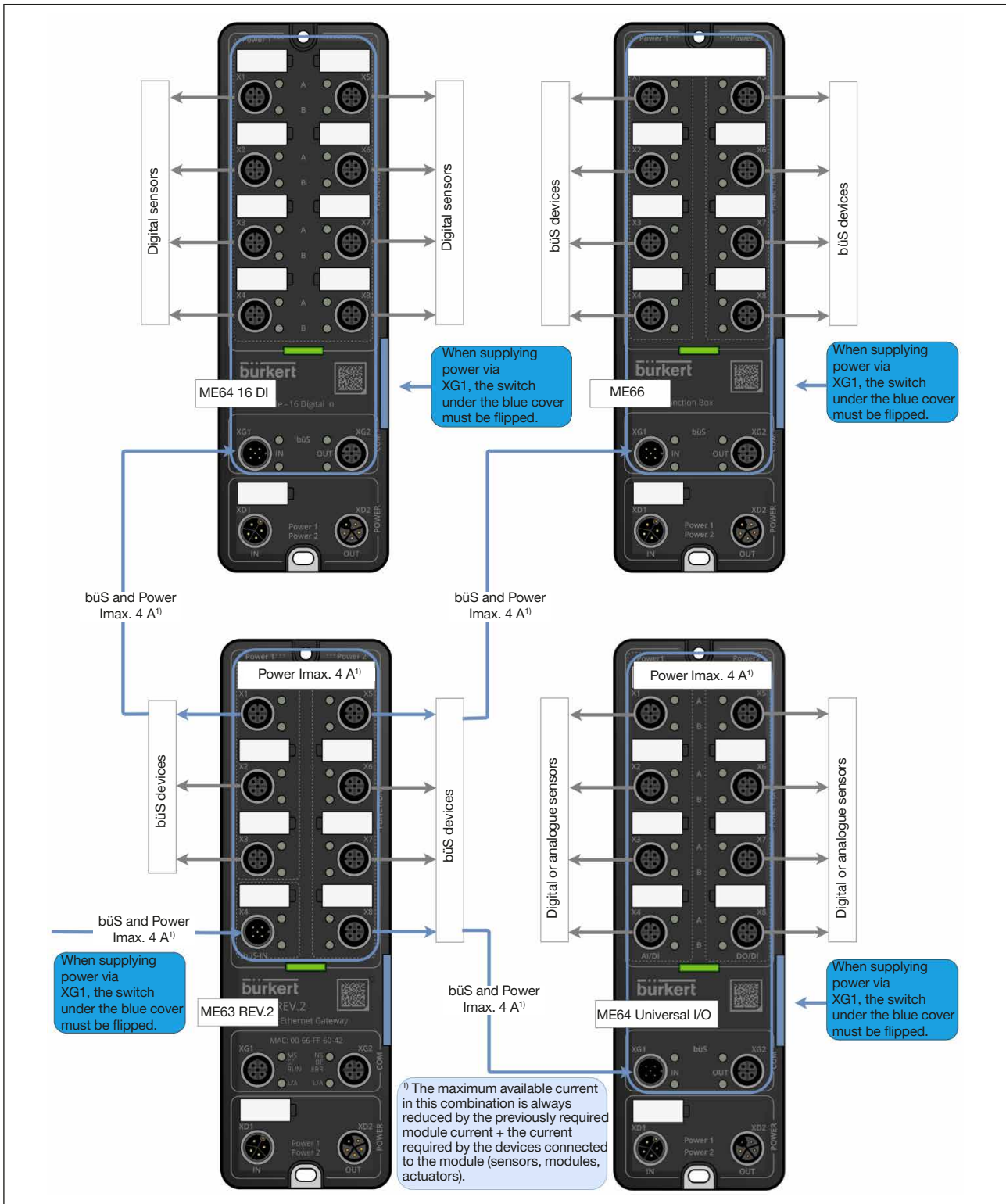


Figure 10: Example of power supply via bùS

## 8 START-UP WITH AN EXTERNAL CONTROLLER

The I/O module, Type ME64 Universal I/O can be used in bÜS networks or CANopen networks.



Information on CANopen can be found at:

[country.burkert.com](https://country.burkert.com) → 🔍 ME64 → Downloads “Operating instructions” →  
CANopen network configuration.

In conjunction with the following Bürkert devices, the I/O module can be integrated into existing control systems:

- Fieldbus gateway, Type ME43
- Fieldbus gateway, Type ME63 FieldConnect
- Valve island, Type 8652 AirLINE with bÜS and fieldbus connection

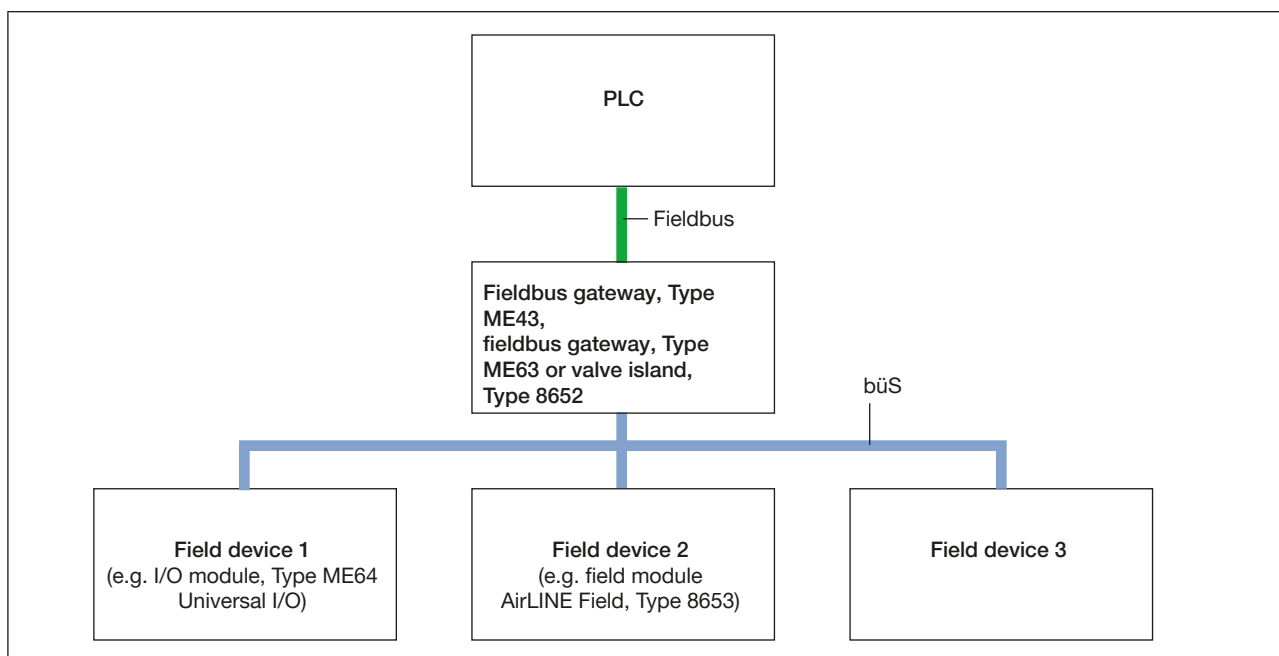


Figure 11: Schematic structure of a bus system with various expansion devices

The process for configuring the network is described in the operating instructions of the Type ME43 or Type ME63.



The operating instructions can be found at: [country.burkert.com](https://country.burkert.com) → 🔍 ME43 or ME63.

## 9 START-UP WITH BÜRKERT COMMUNICATOR



The Bürkert Communicator software can be downloaded free of charge from the Bürkert home page. In addition to the software, the USB bÜS interface set, available as an accessory, is required.

The USB bÜS interface set can be ordered from Bürkert as an accessory (see Page 56).



This chapter only describes basic use of the Bürkert Communicator. Detailed information on using the Bürkert Communicator software can be found on the Bürkert website at: [country.burkert.com](http://country.burkert.com) → Q 8920 → Downloads “Operating instructions”.

### 9.1 Bürkert Communicator user interface

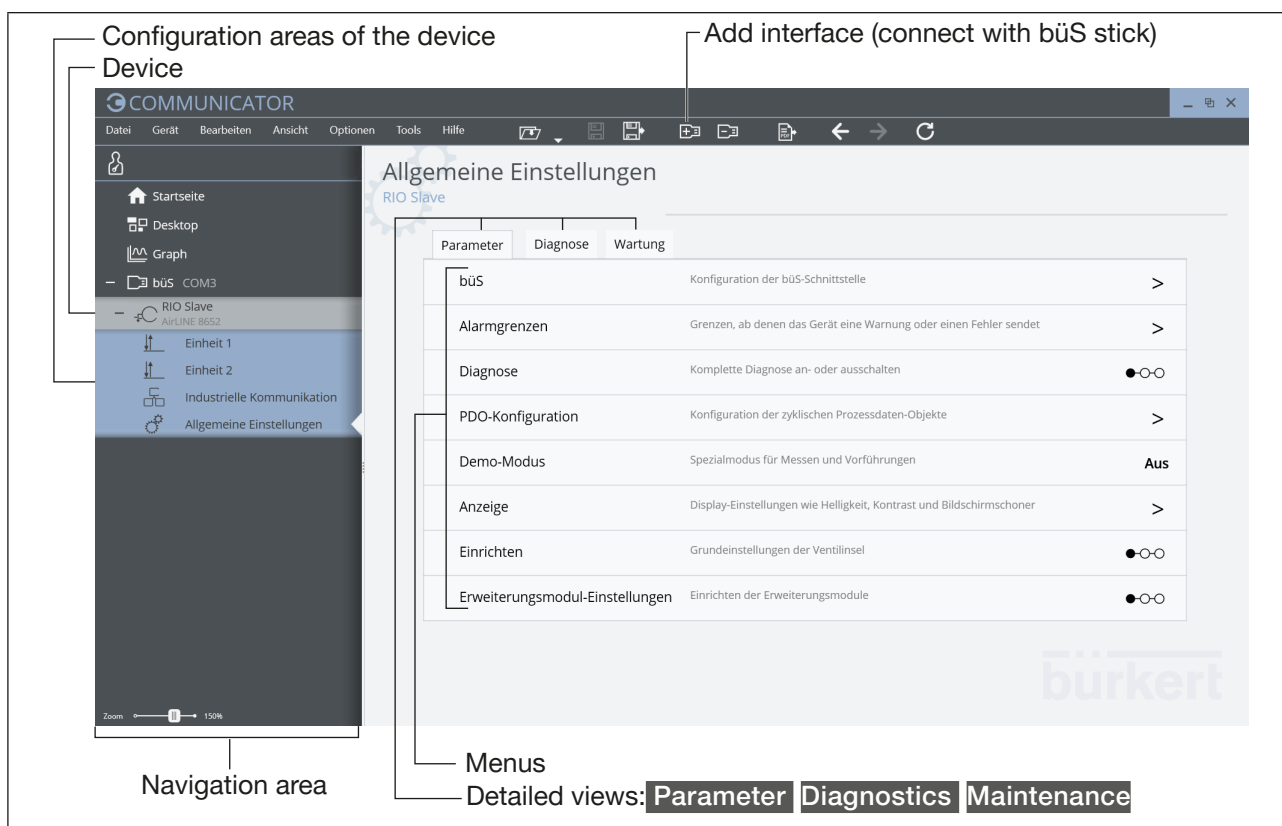


Figure 12: Example of a user interface of the Bürkert Communicator software

### 9.2 Connecting the device to the Bürkert Communicator

The Bürkert Communicator can be connected to the device via a bÜS network or with the bÜS stick.

→ Install Bürkert Communicator on the PC.

→ Use the USB bÜS interface set to establish the connection between the device and the PC.

Not required for the devices in a bÜS network.

→ Start Bürkert Communicator.

→ In the menu bar, click the icon for **Add interface**.

→ Select **bÜS stick** or **bÜS via the network**.

→ **Complete**.

✓ The device is connected to Bürkert Communicator and is displayed in the navigation area.

## 9.3 User levels in the Communicator

Bürkert Communicator is operated within user levels. There are 3 user levels, and each one has certain reading rights and writing rights.

The active user level is indicated by an icon on the upper left margin of the program window.




Icon	User level	Description	Standard password
	User	<ul style="list-style-type: none"> <li>Standard user</li> <li>Often only reading right, can change a few values</li> <li>Not all menus/values are displayed</li> </ul>	No password
	Advanced user	<ul style="list-style-type: none"> <li>Can change certain values</li> <li>Can perform simple calibrations</li> <li>Not all menus/values are displayed</li> </ul>	5678
	Installer	<ul style="list-style-type: none"> <li>Has all rights to operate the Communicator</li> <li>All menus/values are displayed</li> </ul>	1946

Table 7: User levels in ascending order from top to bottom

### 9.3.1 Changing user level

→ Click on the user levels icon on the upper left margin of the program window.

The **User password** window appears.

→ Enter the password for the desired user level in the input field.

The standard passwords are listed in [“Table 7”](#).

### 9.3.2 Changing user password

Required user level: “Installer”

**Options** > **Password manager ...**

→ If necessary, enter the installer password.

The **Change user password** window appears.

→ Enter desired password.

With the **Password manager**, passwords can also be reset to the standard settings.

### 9.3.3 Setting active user level

Required user level: “Installer”

**Options** > **Password manager ...**

→ If necessary, enter the installer password.


The **Change user password** window appears.

→ **Disable** the password at the desired user level.

User password	Active user level during program start
No user password deactivated	User
“Advanced user” deactivated	Advanced user
“Installer” deactivated	Installer

# 10 BÜRKERT COMMUNICATOR MENUS

The overview below describes the device-specific settings of Type ME64 Universal I/O with the Bürkert Communicator software. It does not describe the basic operation of the software.

 Detailed information on using the Bürkert Communicator software can be found on the Bürkert website at: [country.burkert.com](http://country.burkert.com) → 🔍 8920 → Downloads 📄 “Operating instructions”.

The overview below shows the menus that are displayed in the “Installer” user level. This user level has the highest authorisation level.

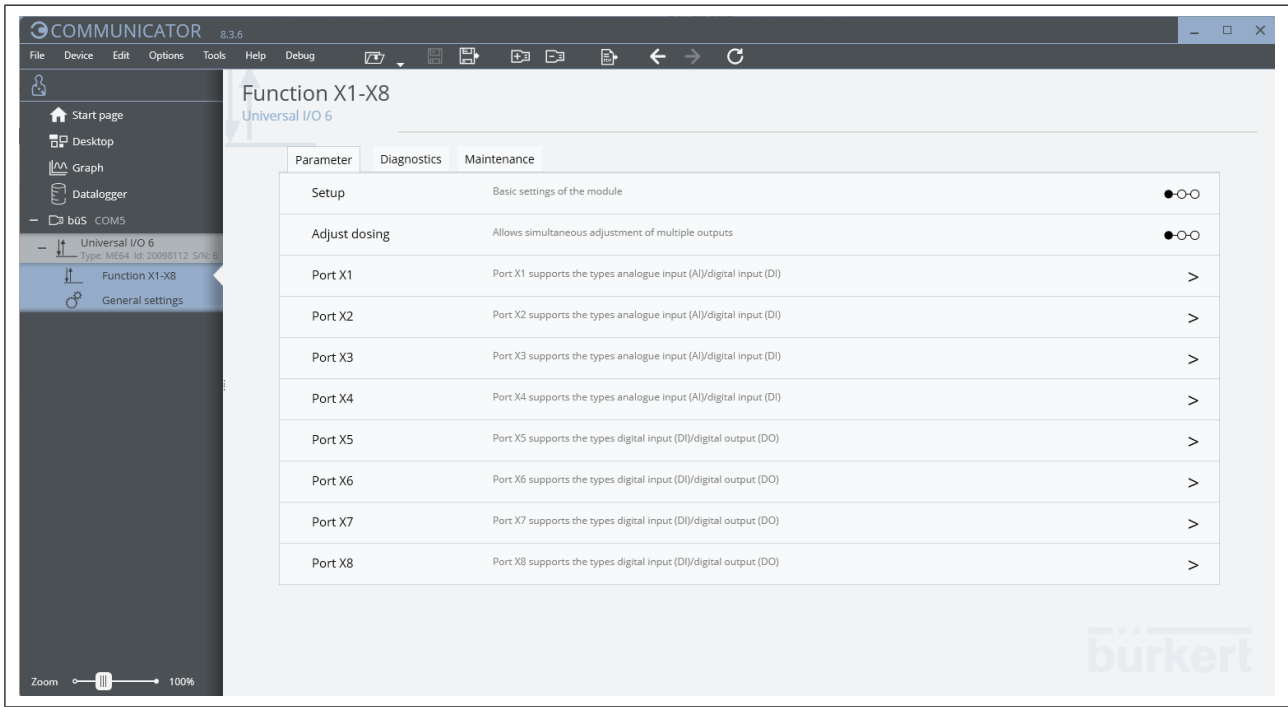


Figure 13: Overview of user levels for Type ME64 Universal I/O

# 11 “PARAMETER” MENU IN THE “FUNCTION X1–X8” CONFIGURATION AREA



Connections X1–X4 support analog inputs (AI) and digital inputs (DI).  
Connections X5–X8 support digital inputs (DI) and digital outputs (DO).

Open menu:

- Select **Universal I/O** in the navigation area.  
Click to open the configuration areas.
- In the configuration section, select **Function X1–X8**.
- Select **Parameter** detailed view.

## 11.1 Setting up configuration

A wizard can guide you through the menu and the required operating steps for the base settings.

Type of I/O

Designation	Description	
I/O types X1, X2, X3, X4	<ul style="list-style-type: none"> <li>• Not configured</li> <li>• Analogue input (AI)</li> <li>• Digital input (DI)</li> </ul>	
Operating modes X1, X2, X3, X4	<b>Analogue input</b> <ul style="list-style-type: none"> <li>• Not configured</li> <li>• 4...20 mA</li> <li>• 0...20 mA</li> <li>• 0...10 V</li> <li>• 0...5 V</li> <li>• 0...2 V</li> </ul>	<b>Digital input</b> <ul style="list-style-type: none"> <li>• Not configured</li> <li>• On-Off</li> <li>• Frequency</li> <li>• Flow + Totaliser</li> </ul>
I/O types X5, X6, X7, X8	<ul style="list-style-type: none"> <li>• Not configured</li> <li>• Digital output (DO)</li> <li>• Digital input (DI)</li> </ul>	
Operating modes X5, X6, X7, X8	<b>Digital input</b> <ul style="list-style-type: none"> <li>• Not configured</li> <li>• On-Off</li> <li>• Frequency</li> <li>• Flow + Totaliser</li> </ul>	<b>Digital output</b> <ul style="list-style-type: none"> <li>• Not configured</li> <li>• On-Off</li> <li>• Threshold value</li> <li>• PWM</li> <li>• PFM</li> <li>• Impulse</li> <li>• Dosing</li> </ul>

The wizard has been successfully completed. Additional settings can be configured directly in the menutree.

## 11.2 Adjusting dosing configuration

**!** The dosing operation mode requires adjustment before use. To carry out the adjustment, the dosing quantity must be measured. For this purpose, a sufficiently accurate scale can be used. The entire adjustment process is carried out in the Communicator. Once the adjustment has been initiated, the user will be guided step by step through the process with instructions displayed on the screen. Based on the correlation between impulse duration and the resulting dosing quantity determined during adjustment, extrapolation can be performed. For optimal results, the adjustment should be as close as possible to the desired dosing quantity in the application.

→ **Select Function** > Parameters > Adjusting dosing.

✓ A wizard will guide you through the dosage adjustment.

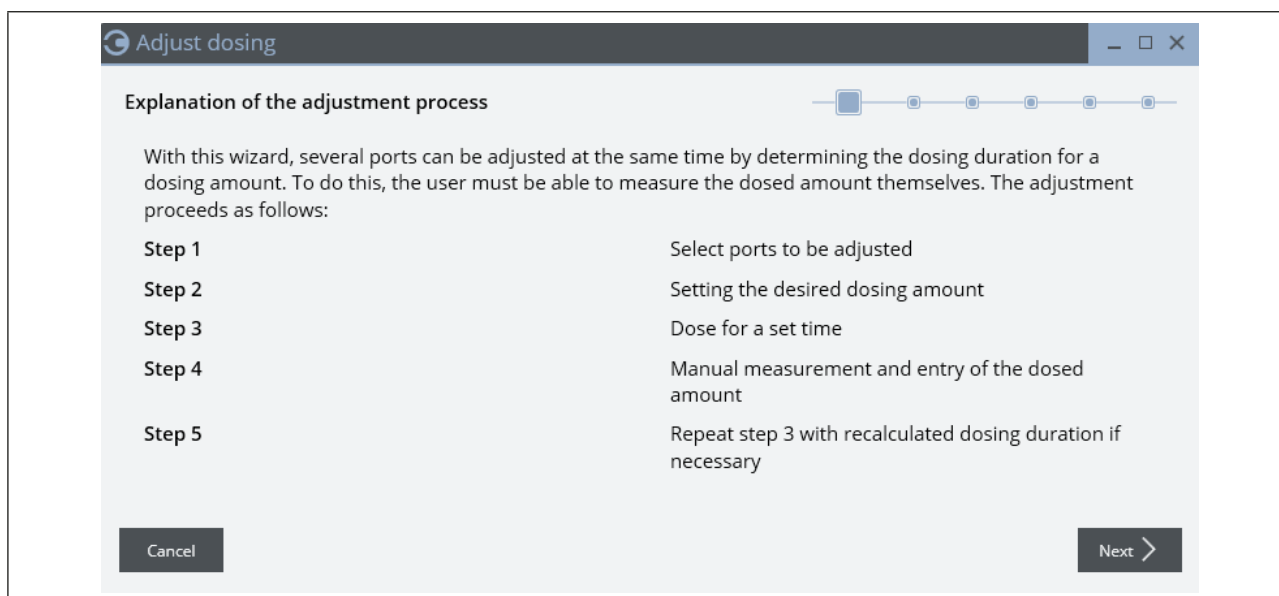


Figure 14: Explanation of the adjustment process

The wizard for adjusting the quantity or volume for a dosing operation allows you to adjust multiple outputs simultaneously.

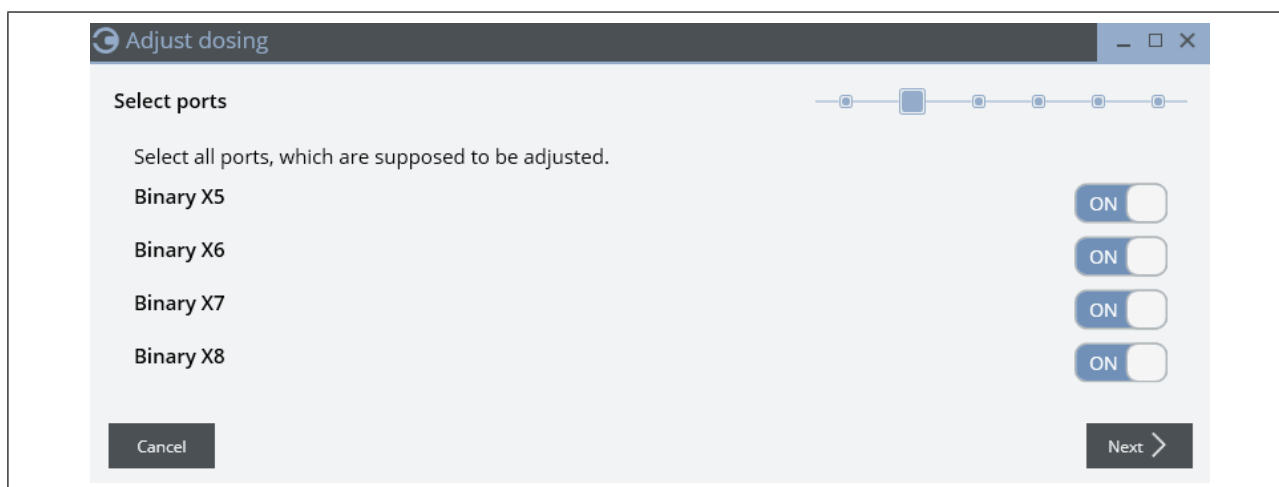


Figure 15: Selecting connections

**!** The adjustment is an iterative process. The accuracy of the dosing can be improved by repetition.

- Select dosing dimension (volume or mass).
- Set the target dosing quantity and duration.

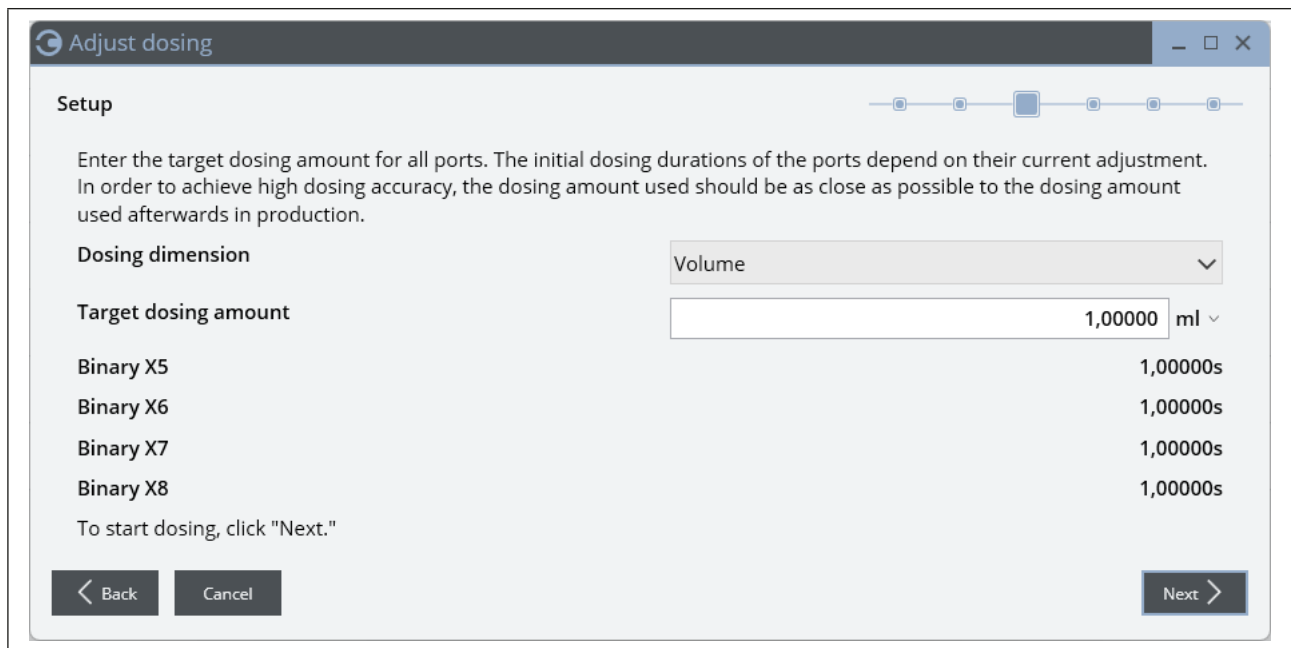


Figure 16: Adjusting dosing

- **Save the adjustment**, if the measured dosing quantity matches the target dosing quantity.

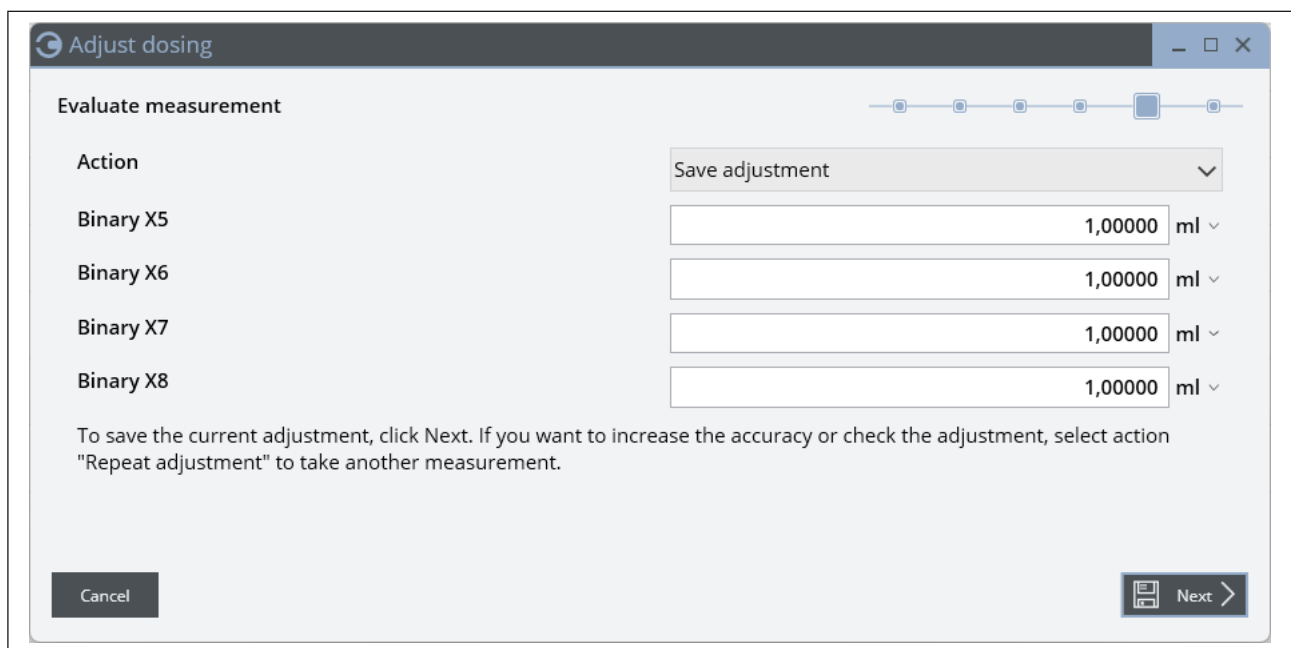


Figure 17: Saving adjustment

- **Repeat the adjustment** if the measured dosing quantity does not match the target dosing quantity. Input the measured value under **Measured quantity**.

The relative error and the next impulse duration are automatically calculated.

→ **“Next”** option then triggers the next dosing operation.

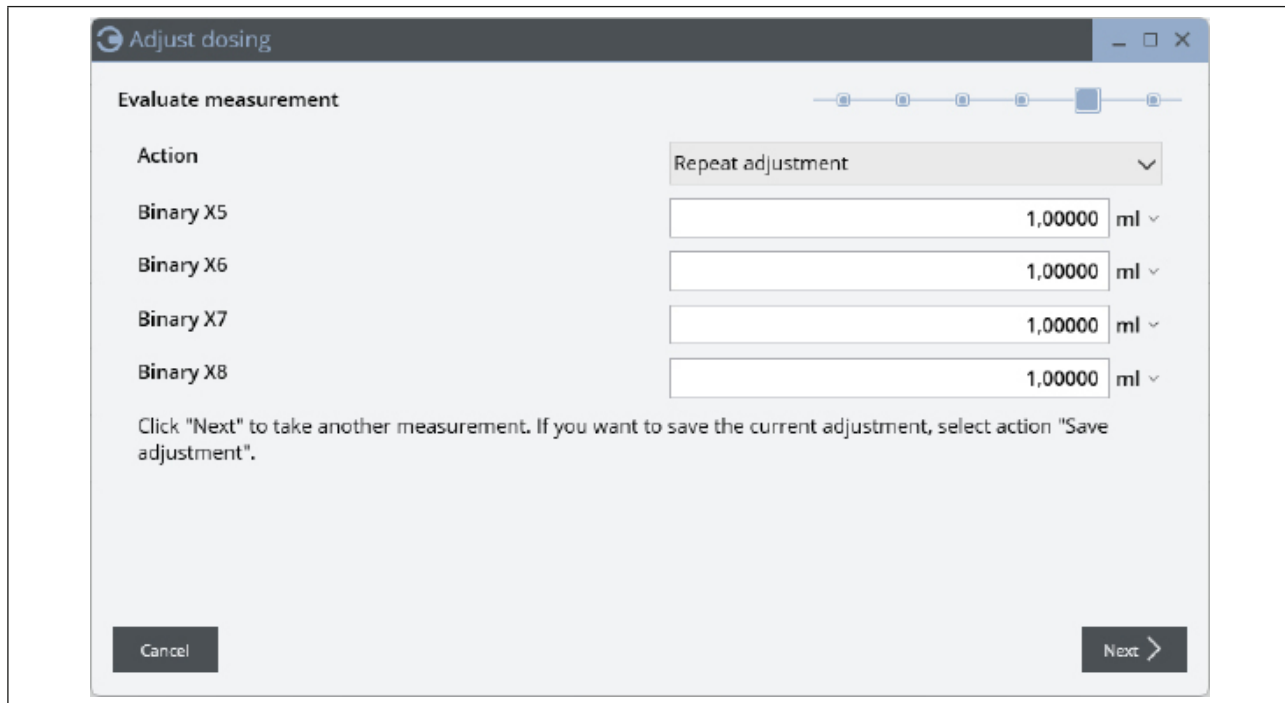


Figure 18: Repeating the adjustment

Repeat the process and enter the measured quantity until the desired target dosing quantity is reached.

→ Action: switch to **Saving adjustment**.

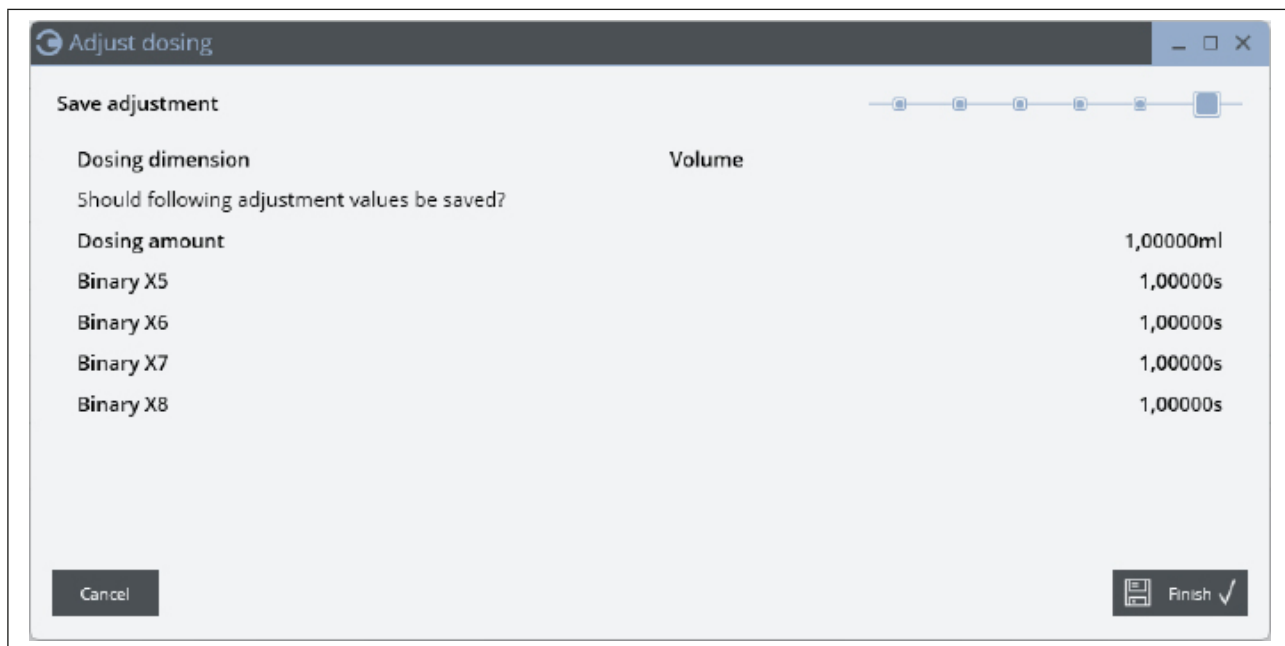


Figure 19: Completing the wizard

✔ The dosing quantity is set.

### 11.3 Configuring connections X1 through X4 as digital inputs

Designation	Description
<b>Type of I/O</b>	Connections X1–X4 configured as digital inputs
<b>Operating mode</b>	The following operating modes are available for these connections: <ul style="list-style-type: none"> <li>• On-Off</li> <li>• Frequency</li> <li>• Flow + Totaliser</li> </ul>
<b>Connection name</b>	A user-specific name can be entered here for each connection. The name then appears on the overview page of the Communicator. (The overview page can be found by clicking on the device in the navigation area; see “Figure 12”.)
<b>Sampling time</b>	The sampling time sets the time frame in which the data from the input are read. <ul style="list-style-type: none"> <li>• The shorter the sampling time, the faster a signal change is detected.</li> <li>• The longer the sampling time, the more accurate the frequency measurement.</li> <li>• The longer the sampling time, the lower the bus load.</li> </ul>
<b>Filter response time</b>	<i>This menu is available only in “Frequency” and “Flow + Totaliser” modes.</i> The filter response time can be set from 1 to 10,000 ms, but must be greater than the set sampling time. Inputting 0 ms deactivates the filter.
<b>Configure value</b>	<i>This menu is available only in “Flow + Totaliser” mode.</i> Configure the flow measurement method. Choose between no unit, volume or mass.
<b>Warnings and errors</b>	
<b>Process warnings</b>	<i>This menu is available only in “Frequency” and “Flow + Totaliser” modes.</i> Set and enable the warning limits for the output value. <b>Enable lower limit warning</b> The process must not fall below the defined threshold. <b>Enable upper limit warning</b> The process must not exceed the defined threshold.
<b>Input error</b>	<i>This menu is available only in “On-Off” mode</i> (Only for connections 1–4). <b>Wire break detection</b> Enable or disable wire break detection for this connection. Wire break detection enabled: In the case of a wire break, the device status “Error” is displayed depending on the LED mode set. The connection status LED lights up red. An error message is entered in the logbook.

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Designation	Description
<b>Inversion</b>	<i>This menu is available only in “On-Off” mode.</i> The digital input is inverted if the operating mode is “Active”.
<b>K factor</b>	<i>Menus are available only in “Flow + Totaliser” mode AND if a unit has been selected under “Configure value”.</i> The K factor is a value [pulses/litre] by which the signal value of the sensor is multiplied to convert it to the real process value [l/min]. If a value $\neq 0$ is entered, the values of the 2-point calibration (following 4 menu options) are ignored.
<b>Lower flow rate</b>	<i>Menus are available only in “Flow + Totaliser” mode AND if a unit has been selected under “Configure value” (volume or mass, and the K factor value is not 0).</i> 2-point calibration Input of the value in [l/min] or [Hz] The value can also be recorded in the calibration assistant under <b>Digital inputs</b> > <b>Maintenance</b> > <b>Flow input calibration</b> . If the <b>K factor</b> contains a value $\neq 0$ in the menu, the inputs of the 2-point calibration are ignored!
<b>Lower frequency</b>	
<b>Upper flow rate</b>	
<b>Upper frequency</b>	

Table 8: Configuring connections X1 through X4 as digital inputs

## 11.4 Configuring connections X1 through X4 as analogue inputs

Designation	Description
<b>Type of I/O</b>	Connections X1–X4 configured as analogue inputs
<b>Operating mode</b>	The following operating modes are available for these connections: <ul style="list-style-type: none"> <li>• 4...20 mA</li> <li>• 0...20 mA</li> <li>• 0...10 V</li> <li>• 0...5 V</li> <li>• 0...2 V</li> </ul>
<b>Connection name</b>	A user-specific name can be entered here for each connection. The name then appears on the overview page of the Communicator. (The overview page can be found by clicking on the device in the navigation area; see “Figure 12”.)
<b>Sampling time</b>	The sampling time sets the time frame in which the data from the input are read. <ul style="list-style-type: none"> <li>• The shorter the sampling time, the faster a signal change is detected.</li> <li>• The longer the sampling time, the more accurate the frequency measurement.</li> <li>• The longer the sampling time, the lower the bus load.</li> </ul>

Designation	Description
<b>Filter response time</b>	<p>The filter response time determines the damping ratio for current or voltage fluctuations in the analogue input.</p> <p>It can be set from 1 to 10,000 ms, but must be greater than the set sampling time. Inputting 0 ms deactivates the filter.</p>
<b>Configure value</b>	<p>Value types that can be selected:</p> <ul style="list-style-type: none"> <li>• No unit</li> <li>• Flow rate</li> <li>• Mass flow rate</li> <li>• Resistor</li> <li>• Conductivity</li> <li>• Specific resistance</li> <li>• Concentration</li> <li>• Voltage</li> <li>• Current</li> <li>• Density</li> <li>• Spectral absorption</li> <li>• General number, %</li> <li>• Volume</li> <li>• Mass volume</li> <li>• Turbidity</li> <li>• Turbidity (FAU)</li> <li>• Frequency</li> <li>• Pressure</li> <li>• Units per time</li> <li>• Speed</li> <li>• Temperature</li> <li>• pH value</li> <li>• Length</li> <li>• Dynamic viscosity</li> <li>• Kinematic viscosity</li> <li>• Mass</li> <li>• Mass flow</li> </ul>

Designation	Description
<b>Warnings and errors</b>	Warning and error messages for deviations from the process set-point value can be enabled. Define the lower and upper limits that will trigger an alert when entered.
<b>Process warnings</b>	<p><i>This menu is available only in “Frequency” and “Flow + Totaliser” modes.</i></p> <p>Set and enable the warning limits for the output value.</p> <p><b>Enable lower limit warning</b> The process must not fall below the defined threshold.</p> <p><b>Enable upper limit warning</b> The process must not exceed the defined threshold.</p>
<b>Input error</b>	An error alert for deviations in the input signal can be enabled. Define the lower and upper electrical limits that trigger an error alert when entered.
<b>4...20 mA</b>	<p>Lower electrical limit    -0.25 mA</p> <p>Upper electrical limit    21 mA</p>
<b>0...20 mA</b>	<p>Lower electrical limit    3.6 mA</p> <p>Upper electrical limit    21 mA</p>
<b>0...10 V</b>	<p>Lower electrical limit    -0.25 V</p> <p>Upper electrical limit    10.25 V</p>
<b>0...5 V</b>	<p>Lower electrical limit    -0.25 V</p> <p>Upper electrical limit    5.25 V</p>
<b>0...2 V</b>	<p>Lower electrical limit    -0.25 V</p> <p>Upper electrical limit    2.25 V</p>
<b>Value at 0 V</b> <b>Value at 0 mA</b> <b>Value at 4 mA</b>	Value of the output signal on the fieldbus, representing the lower limit of the analogue input value. The unit of value is set under <b>Configure unit</b> .
<b>Value at 2 V</b> <b>Value at 5 V</b> <b>Value at 10 V</b> <b>Value at 20 mA</b>	Value of the output signal on the fieldbus, representing the upper limit of the analogue input value. The unit of value is set under <b>Configure unit</b> .

Table 9: Configuring connections X1 through X4 as analogue inputs

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## 11.5 Configuring connections X5 through X8 as digital outputs

Designation	Description
<b>Type of I/O</b>	Connections X5–X8 configured as digital outputs
<b>Operating mode</b>	<p>The following operating modes are available for these connections:</p> <ul style="list-style-type: none"> <li>• On-Off</li> <li>• Threshold value</li> <li>• PWM</li> <li>• PFM</li> <li>• Impulse</li> <li>• Dosing</li> </ul>
<b>Set-point value source</b>	<p><i>This menu is available only in "Impulse" and "Dosing" modes.</i></p> <p>Determines the impulse duration or the dosing quantity, depending on the selected operating mode.</p>
<b>Impulse duration</b>	<p><i>This menu is available only in "Impulse" mode.</i></p> <p>Impulse duration of the connection.</p>
<b>Threshold mode</b>	<p><i>This menu is available only in "Threshold value" mode.</i></p> <p>Mode for switching the output.</p> <p>Possible selection:</p> <ul style="list-style-type: none"> <li>• Hysteresis</li> <li>• Window</li> </ul>
<b>Dosing quantity</b>	<p><i>This menu is available only in "Dosing" mode.</i></p> <p>The accuracy can be improved by adjustment.</p>
<b>Adjustment</b>	<p><i>This menu is available only in "Dosing" mode.</i></p> <p><i>Manual adjustment for dosing.</i></p>
<b>Independent input</b>	<p><i>This menu is available only in "On-Off", "Impulse" and "Dosing" modes.</i></p> <p>Check this box to use a separate input value for this connection instead of a bit from the bit field.</p>
<b>PWM operation mode</b>	<p><i>This menu is available only in "PWM" mode.</i></p> <p>In "PWM" mode, toggling of the digital output is controlled by a pulse-width-modulated signal. The activation time is based on the frequency (period duration) and the duty cycle.</p> <p>Setting operation mode for pulse-width modulation:</p> <ul style="list-style-type: none"> <li>• <b>Fast PWM</b></li> <li>• <b>Slow PWM</b></li> </ul>

Designation	Description
<b>Connection name</b>	A user-specific name can be entered here for each connection. The name then appears on the overview page of the Communicator. (The overview page can be found by clicking on the device in the navigation area; see “Figure 12”.)
<b>Error handling</b>	The error handling determines which state the digital output will take on in the event of an error.  <b>Error value</b> Possible selection: <ul style="list-style-type: none"> <li>• <b>Last valid value</b>: output of the last valid value.</li> <li>• <b>Off</b>: the digital output remains off or is deactivated.</li> <li>• <b>On</b>: the digital output remains on or is enabled.</li> </ul> <b>Short circuit detection</b> Error handling in the event of a short circuit can be enabled or disabled.
<b>Inversion</b>	The inversion reverses the circuit function of the digital output.
<b>Delay</b>	<i>This menu is available only in “On-Off” and “Threshold value” modes.</i> The delay sets the time between receiving a signal and switching the output. If the delay lasts longer than the applied signal, the output is unchanged.
<b>Power reduction</b>	<i>This menu is available only in “On-Off”, “Threshold value”, “Impulse” and “Dosing” modes.</i> The power reduction saves energy, because a parametrisable PWM signal is activated instead of a permanent “On” signal. 2 parameters are set for the power reduction: <ul style="list-style-type: none"> <li>• The time frame until the power reduction becomes active [T<sub>d</sub>].</li> <li>• The duty cycle of the PWM signal.</li> </ul>
<b>Lower threshold value</b>	<i>This menu is available only in “Threshold value” mode.</i> Lower limit for the state change of the digital output.
<b>Upper threshold value</b>	<i>This menu is available only in “Threshold value” mode.</i> Upper limits for the state change of the digital output.
<b>Period duration</b>	<i>This menu is available only in “PWM” mode.</i>
<b>Minimum activation time</b>	<i>This menu is available only in “PWM” mode.</i>
<b>Maximum frequency</b>	<i>This menu is available only in “PFM” mode.</i> Maximum number of impulses per unit of time.
<b>Impulse width</b>	<i>This menu is available only in “PFM” mode.</i> The pulse width is used to set the activation time per pulse for the digital output.

Designation	Description
Value at 0%	<p><i>This menu is available only in “PWM” and “PFM” modes.</i></p> <p>The value of the input signal from the fieldbus at which the PWM/PFM output signal corresponds to 0%.</p>
Value at 100%	<p><i>This menu is available only in “PWM” and “PFM” modes.</i></p> <p>The value of the input signal from the fieldbus at which the PWM/PFM output signal corresponds to 100%.</p>

Table 10: Configuring connections X5 through X8 as digital outputs

## 11.6 Configuring connections X5 through X8 as digital inputs

The configuration of connections X5 through X8 as digital inputs is essentially the same as for connections X1 through X4 (see [“11.3 Configuring connections X1 through X4 as digital inputs”](#)).

### Differences from X1–X4

Under the **Warnings and errors** menu option, the **Input error** option is not available for connections X5 through X8. Therefore, unlike for connections X1–X4, **Wire break detection** cannot be enabled.

## 12 “DIAGNOSTICS” MENU IN THE “FUNCTION X1–X8” CONFIGURATION SECTION

Open menu:

- Select **Universal I/O** in the navigation area.  
Click to open the configuration areas.
- In the configuration section, select **Function X1–X8**.
- Select **Diagnostics** detailed view.

### 12.1 Connections X1–X4 (DI or AI)

Designation	Description
<b>Type of I/O</b>	Digital input (DI) or analog input (AI), depending on what was configured in “Parameters”.
<b>Operating mode</b>	Display of the operating mode set in “Parameters”.
<b>Input value</b>	This menu is available only for the “Analogue input (AI)” I/O type. Indicates the voltage or current strength applied to the analogue output. The displayed electrical size depends on the selected output signal.  The modules are generally correctly calibrated by the manufacturer. If it is determined that the displayed output value deviates from the actual value, recalibration is required.
<b>Output value</b>	This menu is available only for the “Analogue input (AI)” I/O type. Indicates the process value issued on the fieldbus.
<b>Raw value</b>	This menu is available only for the “Analogue input (AI)” I/O type. Value of the unscaled input signal.

Table 11: Connections X1–X4 (DI or AI)

### 12.2 Connections X5–X8 (DO or DI)

Designation	Description
<b>Type of I/O</b>	Digital input (DI) or digital output (DO), depending on what was configured in “Diagnostics”.
<b>Operating mode</b>	Display of the operating mode set in “Diagnostics”.
<b>Impulse accuracy</b>	This menu is available only in “Impulse” mode. Absolute accuracy of the connection impulse
<b>Minimum impulse duration</b>	This menu is available only in “Impulse” mode. Minimum possible impulse duration of the connection
<b>Maximum impulse duration</b>	This menu is available only in “Impulse” mode. Maximum possible impulse duration of the connection
<b>Short circuit detection</b>	Short-circuit diagnostics, input by input (inputs must be configured under “Parameters”)

Table 12: Connections X5–X8 (DO or DI)

## 13 “MAINTENANCE” MENU IN THE “FUNCTION X1–X8” CONFIGURATION SECTION



This detailed view is available only for connections X1–X4 and only if they are configured as analogue inputs (AI) or digital inputs (DI) with the “Flow + Totaliser” mode.

This detailed view is generally not available for connections X5–X8.

Open menu:

→ Select **Universal I/O** in the navigation area.

Click to open the configuration areas.

→ In the configuration section, select **Function X1–X8**.

→ Select **Maintenance** detailed view.

### 13.1 Analogue input (AI)

#### 13.1.1 Configuration and hardware adjustment

Designation	Description
<b>2-point hardware adjustment</b>	<p><b>Analogue signal adjustment wizard</b></p> <p>The 2-point hardware adjustment is performed via a linear equation calculated with the specified values for points 1 and 2.</p> <p><b>Menu options:</b></p> <ul style="list-style-type: none"> <li>• Input value for point 1</li> <li>• Raw value: indicates the raw value (value of the unscaled analogue signal).</li> <li>• Input value for point 2</li> <li>• Raw value: indicates the raw value (value of the unscaled input signal).</li> </ul>
<b>Offset</b>	Recalculated offset: indicates the offset recalculated for the input signal via the linear equation.
<b>Slope</b>	Recalculated slope: indicates the slope recalculated for the input signal via the linear equation.
<b>Reset to factory settings</b>	Reset hardware adjustment of the corresponding connection to the factory setting.

Table 13: Configuration and hardware adjustment

### 13.1.2 Process value scaling configuration

Scaling based on real process values.

Process value scaling wizard

Designation	Description
Scaling point 1	<ul style="list-style-type: none"> <li>Process value to lower analogue value</li> <li>Raw value: indicates the raw value (value of the unscaled input signal).</li> </ul>
Scaling point 2	<ul style="list-style-type: none"> <li>Process value to upper analogue value</li> <li>Raw value: indicates the raw value (value of the unscaled input signal).</li> </ul>
Complete	<ul style="list-style-type: none"> <li>Saving new values</li> </ul>

Table 14: Process value scaling configuration

### 13.2 Digital input (DI) with “Flow + Totaliser” mode

Designation	Description
Flow input calibration	2-point calibration of flow inputs. Calibration data will not be applied if the K factor is valid (not 0). A wizard guides users through the menu.
Resetting the totalisers	Reset impulse counter totalisers and flow totalisers.

Table 15: Digital input (DI) with “Flow + Totaliser” mode

## 14 “PARAMETERS” MENU IN THE “GENERAL SETTINGS” CONFIGURATION AREA

Open menu:

- Select **Universal I/O** in the navigation area.  
Click to open the configuration areas.
- In configuration area select **General settings**.
- Select **Parameter** detailed view.

### 14.1 Status LED

Setting the LED to display the device status

Designation	Description
<b>Mode</b>	
<b>NAMUR operation mode</b>	For a description see <a href="#">“17.2 LEDs for indicating the device status”</a>
<b>Fixed colour</b>	<ul style="list-style-type: none"> <li>• White</li> <li>• Red</li> <li>• Orange</li> <li>• Yellow</li> <li>• Green</li> <li>• Turquoise</li> <li>• Blue</li> <li>• Pink</li> </ul>
<b>Demo operation mode</b>	The different solid colours appear one after another.
<b>LED off</b>	LED not lit.

Table 16: Configuration area “General settings”, menus of the detailed view “Parameter”; status LED

### 14.2 Device name and location

Configuration of names and locations

Designation	Description
<b>Displayed name</b>	Device name under which the device is displayed in Bürkert Communicator.
<b>Location</b>	Device location. Shown in Bürkert Communicator beneath the device name.
<b>Description</b>	The input window can be used to describe the device or for additional information on the device.  No entry required.

Table 17: Configuration area “General settings”, menus of the detailed view “Parameter”; device name and location

### 14.3 bÜS


Parameterisation of the device as a bÜS participant.

Designation	Description
<b>Unique device name</b>	Communication ID for communication in the network. Should not be changed. In case of changes, the assigned partnership to another participant is lost.
<b>Baud rate</b>	Transmission speed for the device as a bÜS participant or a CANopen participant. Must be identical for all the devices in a network.
<b>Fixed CANopen address (Node ID)</b>	Manually selected device address.
<b>CANopen address (Node ID)</b>	Currently applied device address.
<b>Bus operation mode</b>	Configuring the various bus modes: bÜS, CANopen or single device. Single device: if the device is not operated in a network.
<b>Show errors from bÜS consumers</b>	The device will also display errors if one of its consumers (producer and/or consumer) has an error.
<b>Deallocation delay</b>	Time from the loss of a consumer to deletion of its configuration.

Table 18: Configuration area “General settings”, menus of the detailed view “Parameter”; bÜS

### 14.4 Warning limits

Display and setting of the limits that, when exceeded or not reached, cause the device to trigger an error alert or warning.

Designation	Description				
<b>Supply voltage</b>	Indicates the limit values for the supply voltage.				
<b>Error below</b>	Indicates the limit value for supply voltage, the failure to meet which triggers an error alert from the device. Note hysteresis!				
<b>Error above</b>	Indicates the limit value for supply voltage, the exceedance of which triggers an error alert from the device. Note hysteresis!				
<b>Warning below</b>	Set the limit value for the supply voltage, and a warning from the device is triggered if this limit value is not reached. Note hysteresis!				
<b>Warning above</b>	Set the limit value for the supply voltage, the exceedance of which triggers a warning from the device. Note hysteresis!				
<b>Hysteresis</b>	Display of the hysteresis for the limit values of the supply voltage.  The hysteresis is centrally assigned to the limit value. Example: <table border="0"> <tr> <td><b>Error above</b></td> <td>26.4 V</td> </tr> <tr> <td><b>Hysteresis</b></td> <td>0.5 V</td> </tr> </table> The error is output at a supply voltage > 26.9 V and cancelled again at a supply voltage < 25.9 V.	<b>Error above</b>	26.4 V	<b>Hysteresis</b>	0.5 V
<b>Error above</b>	26.4 V				
<b>Hysteresis</b>	0.5 V				


Designation	Description
<b>Device temperature</b>	Indicates and sets the limits for device temperature.
<b>Error below</b>	Indicates the limit value for device temperature, the failure to meet which triggers a warning from the device. Note hysteresis!
<b>Error above</b>	Indicates the limit value for device temperature, the exceedance of which triggers an error alert from the device. Note hysteresis!
<b>Warning below</b>	Setting the limit value for device temperature, the failure to meet which triggers a warning from the device. Note hysteresis!
<b>Warning above</b>	Setting the limit value for device temperature, the exceedance of which triggers a warning from the device. Note hysteresis!
<b>Hysteresis</b>	<p>Indicates the hysteresis for the device temperature limits.</p> <p> The hysteresis is centrally assigned to the limit value.</p> <p>Example:</p> <p><b>Warning above</b>      80 °C</p> <p><b>Hysteresis</b>            4 °C</p> <p>The warning is issued for a device temperature &gt; 82 °C and is resolved with a device temperature &lt; 78 °C.</p>

Table 19: Configuration area “General settings”, menus of the detailed view “Parameter”; warning limits

## 14.5 Diagnostics

Menu for enabling and deactivating the diagnostics function.

Designation	Description
<b>ON</b>	<p><b>Diagnostics function enabled:</b></p> <ul style="list-style-type: none"> <li>• The LED for the device status display shows the device status depending on the operation mode that has been set.</li> <li>• Alerts are entered in the logbook.</li> </ul>
<b>OFF</b>	<p><b>Diagnostics function disabled:</b></p> <ul style="list-style-type: none"> <li>• The LED for the device status display does not show the device status.</li> <li>• There is no entry of errors in the logbook.</li> </ul>

Table 20: Configuration area “General settings”, menus of the detailed view “Parameter”; diagnostics

## 14.6 PDO configuration

Configuration of the cyclic process data objects:

Designation	Description
<b>PDO 1</b>	The information of connections X1–X8 is transmitted as bit fields in the PDO 1 object.
<b>PDO 2</b>	<p>When the multifunction inputs are assigned another input function (e.g. “Frequency”), the information from these connections is transmitted in other PDO objects:</p> <p><b>PDO 2 for</b></p> <ul style="list-style-type: none"> <li>• Connection X1</li> <li>• Connection X2</li> </ul> <p><b>PDO 3 for</b></p> <ul style="list-style-type: none"> <li>• Connection X3</li> <li>• Connection X4</li> </ul> <p>The corresponding bit values in the PDO 1 object are invalid in this case and are to be ignored.</p> <p>PDO 2 and PDO 3 are then only generated by the device if the multifunction inputs are not configured as digital inputs.</p> <p>The values for “Inhibit time” shown here are linked to the setting of the sampling time in their default state, are automatically adjusted when the sampling time is changed, and should thus not be changed manually.</p> <p>However, if the user is required to perform manual adjustment, the link to the sampling time is suspended.</p>
<b>PDO 3</b>	
<b>Multiplexed PDO</b>	

Table 21: Configuration area “General settings”, menus of the detailed view “Parameter”; PDO configuration

## 14.7 Configuration client

Menu is only available for bus operation mode “būS”.

Backup of device configuration in an external device.

Designation	Description
<b>Mode</b>	Indicates the current operation mode.
<b>Change operation mode</b>	<p><b>Active:</b> The configuration client is active and expects that a provider is also available. If this is not the case, a message appears.</p> <p><b>Automatic switch on:</b> The configuration client is in standby mode until a provider is available. The device then switches automatically to “Active”.</p>

Table 22: Configuration area “General settings”, menus of the detailed view “Parameter”; configuration client

## 15 “DIAGNOSTICS” MENU IN THE “GENERAL SETTINGS” CONFIGURATION AREA

Designation	Description
<b>Device status</b>	Information on the device status.
<b>Total operating time</b>	Indicates the operating time over the entire life cycle of the device.
<b>Operating time since last boot</b>	Indicates the operating time since the last boot.
<b>Device temperature</b>	Current device temperature ( <u>Not</u> the ambient temperature!).
<b>Supply voltage</b>	Current supply voltage
<b>Voltage drops</b>	Indicates the number of voltage drops since the last reboot.
<b>Min./max. values</b>	
<b>Min. temperature</b>	Minimum temperature
<b>Max temperature</b>	Maximum temperature
<b>Min. supply voltage</b>	Minimum supply voltage
<b>Max. supply voltage</b>	Maximum supply voltage
<b>Device start counter</b>	Indicates the number of device reboots over the entire life cycle.
<b>Removable storage medium status</b>	Indicates whether an active provider is available.
<b>büS status</b>	Information on the büS network.
<b>Receive errors</b>	Indicates the number of current receive errors.
<b>Receive errors max.</b>	Maximum number of receive errors since device start-up.
<b>Transmission errors</b>	Indicates the number of current transmission errors.
<b>Transmission errors max.</b>	Maximum number of transmission errors since device start-up.
<b>Reset error counter</b>	Resets both maximum values.
<b>CANopen status</b>	Current device operating state.
<b>Logbook</b>	List of all error messages, including the time of occurrence in operating hours. Up to 20 messages can be saved.
<b>Configuration client</b>	Current state of the configuration client.
<b>Removable storage medium status</b>	Indicates whether an active provider is available.
<b>Status</b>	Current device status
<b>Reconfiguration counter</b>	Number of device reconfigurations

Table 23: Configuration area “General settings”, menus of the detailed view “Diagnostics”

## 16 “MAINTENANCE” MENU IN THE “GENERAL SETTINGS” CONFIGURATION AREA

Designation	Description
<b>Device information</b>	Indicates device-specific data.
<b>Identification number</b>	Indicates the identification number of the device.
<b>Serial number</b>	Indicates the serial number of the device.
<b>Firmware identification number</b>	Indicates the firmware identification number.
<b>Firmware version</b>	Indicates the firmware version.
<b>büS version</b>	Indicates the büS version.
<b>Hardware version</b>	Indicates the hardware version.
<b>Product type</b>	Indicates the product type.
<b>Manufacture date</b>	Indicates the date on which the device was manufactured.
<b>EDS version</b>	Indicates the EDS version.
<b>Device driver</b>	Information on the device driver. This menu is only available in the Bürkert Communicator software.
<b>All values</b>	Displays all device values. <b>No changes may be made here.</b>
<b>Reset device</b>	Menu for resetting and restarting the device.
<b>Restart</b>	Restart the device. A voltage reset is performed during the device reboot. The configuration and parameterisation settings for the device remain after the reboot.
<b>Factory reset</b>	Reset device to factory settings.

Table 24: Configuration area “General settings”, menus of the detailed view “Maintenance”

## 17 DISPLAY ELEMENTS

Type ME64 universal I/O has the following LEDs for diagnostics on the device status:

- LEDs as an indicator of the connection status.
- LED for indicating the device status.



Figure 20: Type ME64 Universal I/O display elements

### 17.1 LEDs as an indicator of the connection status

A 2-colour status indicator is assigned to each connection.

Colour	Meaning
Green	Connection is enabled with input voltage > 10 V.
Red	Fault at the connection (wire break or short circuit)
Off	Connection is disabled or input voltage is < 5 V

Table 25: LEDs as an indicator of the connection status

### 17.2 LEDs for indicating the device status

Indication of the device status occurs in line with NAMUR NE 107. The displayed status always corresponds to the highest priority device status.

Indicator based on NE 107		Device status	Meaning
Colour code	Colour		
5	Red	Failure, error or fault	Functional fault. The functionality of the device is not guaranteed.
4	Orange	Function check	Device is searching for a bus participant. The 2-point calibration is active. This status is exited after a few seconds.
3	Yellow	Out of specification	Environment conditions or process conditions are not within the specified range. Internal device diagnostics indicate problems within the device or with the process properties. Data sheet values cannot be complied with.

Indicator based on NE 107		Device status	Meaning
Colour code	Colour		
2	Blue	Device configuration cannot be managed	Updated device configuration cannot be saved. Not possible to transfer the configuration when replacing devices.
1	Green	Diagnostics active	Device is in error-free operation. Status changes are highlighted in colour. Messages are transmitted via bÜS/CANopen.
0	White	Diagnostics inactive	Device is switched on. Status conditions are not displayed. Messages are not included in the message list and are not transmitted via bÜS/CANopen.

Table 26: Indication of the device status in NAMUR operation mode

## 17.3 Diagnostics of the device status

The device status can be determined from the LED displays for the device status and the connection status.

### 17.3.1 Meaning of LED colours for analogue inputs

Colour of LED device status	Connection status LED colour	Meaning
Green	Off	<b>Device is in error-free operation.</b> The connection is disabled
Green	Green	<b>Device is in error-free operation.</b> Connection is active and has a valid value.
Red	Red	<b>Device is faulty.</b> Connection is enabled, but the following errors may occur: • Input signal outside the permissible range.

Table 27: Meaning of LED colours for analogue inputs

### 17.3.2 Meaning of LED colours for digital inputs

Colour of LED device status	Connection status LED colour	Meaning
Green	Off	<b>Device is in error-free operation.</b> Connection is disabled or input voltage is < 5 V.
Green	Green	<b>Device is in error-free operation.</b> Connection is enabled with input voltage > 10 V.
Red	Red	<b>Device is faulty.</b> Connection is enabled, but the following errors may occur: <ul style="list-style-type: none"> <li>• Wire break at the connection.</li> <li>• Short circuit at the connection.</li> </ul>

Table 28: Meaning of LED colours for digital inputs

### 17.3.3 Meaning of LED colours on digital outputs

Colour of LED device status	Connection status LED colour	Meaning
Green	Off	<b>Device is in error-free operation.</b> <ul style="list-style-type: none"> <li>• The connection is disabled.</li> <li>• The connection is enabled in the state = low.</li> </ul>
Green	Green	<b>Device is in error-free operation.</b> <ul style="list-style-type: none"> <li>• The connection is enabled in the state = high.</li> <li>• <b>In “PWM” and “PFM” modes:</b> The connection processes signals according to the configuration.</li> </ul>
Green	Red	<b>Device is in error-free operation.</b> <ul style="list-style-type: none"> <li>• The connection is enabled and the mapped value from the producer is invalid.</li> <li>• (NAMUR stays green if consumer emergency setting (0x2003sub9) = 0 (none)).</li> </ul>
Red	Red in “On-Off” mode	<b>Device is faulty.</b> Connection is enabled, but the following errors may occur: <ul style="list-style-type: none"> <li>• Short circuit/overload (no short circuit detection in low power operation mode).</li> <li>• Mapped producers not found.</li> <li>• Mapped value from the producer is invalid (NAMUR also red when consumer emergency setting (0x2003sub9) != 0 (none)).</li> </ul>
	Red/orange flashing in “PWM”/“PFM” modes	

Table 29: Meaning of LED colours on digital outputs

## 18 TROUBLESHOOTING

Problem	Possible cause	Measure
Namur LED remains off despite operating voltage being applied.	Switch for changing over the operating voltage (underneath light blue cover) set incorrectly.	Set correct voltage input.
	Incorrect voltage input connection used.	Use the correct connection.
NAMUR LED goes out periodically.	The power supply drops out periodically; the device implements a reset each time.	Use power supply with adequate power.
	The voltage drop in the connection cable is too great.	Increase cable cross-section. Reduce cable length.
Device loses connection to network.	Poor bus connection, line too long, incorrect termination.	Check receive errors, check logbook.
The process values cannot be assigned to the bÜS participants.	The process values are not configured.	Check the configuration of the process values.
	The transfer of the configuration must be ended with a restart of the device.	Restart the device after configuration.
	The process values are assigned to different classes.	Check the assignment to ensure that the bÜS participants are using process values of the same class.
	The input and output direction must be observed as the assignment.	Check that the direction of the input and output is correct.
An incorrect value is applied or the value is zero.	The process values are not assigned or are assigned to the wrong participants.	Check the assignment of the process values.

Table 30: Troubleshooting

## 19 DEVICE REPLACEMENT



Detailed information about device replacement is available online.

- ▶ Open the website for the [ME64](#) device type.
- ▶ Go to the **Downloads** section.
- ▶ In the operating instructions, select “*Software guide | Central configuration management*”.

Clients can be replaced in a bÜS network without configuration work. The provider reads and saves the configurations of a connected client. If the client is replaced, the provider detects the replacement and transfers the saved configuration to the new device.

Type ME64 Universal I/O is the client, fieldbus gateway ME63 REV.2 is the provider.

### Prerequisites

The following prerequisites must be met for the configuration to be transferred to a replacement device:

- The replacement device has the same identification number and a different serial number from the predecessor device.
- The function “Configuration provider” is enabled in the provider (via Bürkert Communicator).
- The provider has an SD card.

### Device replacement process

- Device is replaced.
- Provider detects the replacement and transfers the configuration to the client.
- Client reboots 1 minute after integration into the network.

### Error messages

If the configuration is incorrectly transferred:

- Client status LED is lit blue.
- A blue maintenance message appears in Bürkert Communicator.

The maintenance message appears 180 s after the start.

## 20 ACCESSORIES

### NOTE

Property damage due to incorrect parts.

Incorrect accessories and unsuitable spare parts may cause damage to the device.

► Use only original accessories and original spare parts from Bürkert.

### büS accessories

Article	Length	Order No.
USB büS interface set 1 (including power supply unit, büS stick, terminating resistor, Y-distributor, 0.7 m cable with M12 plug)		772426
USB büS interface set 2 (including büS stick, terminating resistor, Y-distributor, 0.7 m cable with M12 plug)		772551
büS cable, angled M12 (strand to female connector)	0.7 m	772626
büS cable (strand to M12 female connector)	1.0 m	772409
	3.0 m	772410
	5.0 m	772411
	10.0 m	772412
büS cable drum	50.0 m	772413
	100.0 m	772414
büS extension cable	0.1 m	772492
	0.2 m	772402
	0.5 m	772403
	1.0 m	772404
	3.0 m	772405
	5.0 m	772406
	10.0 m	772407
	20.0 m	772408
büS service cable M12 to micro USB		773254

### Accessories for push-in connectors

Article	Quantity [unit]	Article No.
Terminating resistor, M12 male connector	1	772424
Terminating resistor, M12 female connector	1	772425
Gender changer, M12, male-male	1	772867
Y-distributor	1	772420
Y-distributor with interrupt	1	772421

## 21 TRANSPORTATION, STORAGE, DISPOSAL

### NOTE

#### Transport damages.

Inadequately protected devices may be damaged during transport.

- ▶ Use shock-resistant packaging to protect the device against moisture and dirt during transport.
- ▶ Avoid exceeding or dropping below the permitted storage temperature.

#### Incorrect storage may damage the device.

- ▶ Store the device in a dry and dust-free location.
- ▶ Storage temperature:  $-30\dots+80$  °C

### Environmentally friendly disposal



- ▶ Follow national regulations regarding disposal and the environment.
- ▶ Separate electrical and electronic devices and dispose of them as special waste.

Further information at [country.burkert.com](https://country.burkert.com).