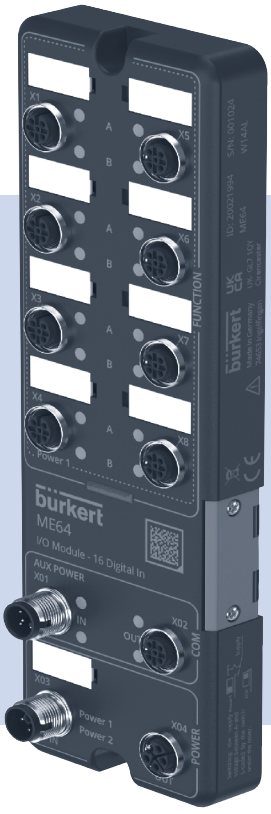
bürkert
FLUID CONTROL SYSTEMS

Type ME64
FieldConnect

I/O module 16DI



Operating instructions

MAN 1000430787 EN Version: D Status: RL (released | freigegeben) printed: 07.03.2024

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Operating Instructions 2302/04_EUen_00815301 / Original DE

Content

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1 THE OPERATING INSTRUCTIONS

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

Important safety information!

- Carefully read these instructions.
- Above all, observe the safety instructions, intended use and operating conditions.
- Persons who work 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.

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

Indicates important additional information, tips and recommendations.

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

▶ Highlights 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 FieldConnect
büS	Bürkert system bus; a communication bus developed by Bürkert, based on the CANopen protocol

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2 INTENDED USE

The I/O module Type ME64 FieldConnect 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 conditions of use. These specifications can be found in the contract documents, the operating instructions and on the device.

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3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances or events that occur during installation, operation and 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 perfect condition 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.

ATTENTION

Notes for UL certified devices:

- Device is only suitable for operation at SELV/PELV voltages (Class III).
- Device is suitable for indoor areas (dry areas) and not for wet areas.
- Observe the national and international guidelines for setting up electrical systems.
- External circuits connected to the connections must be galvanically isolated from the network, with the aid of double or reinforced isolation (SELV/PELV).
- Make sure that overcurrent protection is available during final installation.
- Device belongs to Overvoltage Category II, Degree of Contamination 2.

ATTENTION

Electrostatically sensitive components and assemblies.

The device contains electronic components that are susceptible to the effects of electrostatic discharging (ESD). Components that come into contact with electrostatically charged persons or objects are at risk. In the worst case scenario, these components will be destroyed immediately or fail 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.

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4 GENERAL NOTES

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
E-mail: info@burkert.com

International

You can find the international contact addresses on the Internet at: country.burkert.com

4.2 Warranty

A precondition for the warranty is that the device is used as intended in consideration of the specified operating 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

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5 PRODUCT DESCRIPTION

The I/O module Type ME64 FieldConnect 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 diagnostic 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 eliminates the need for a further protective housing.

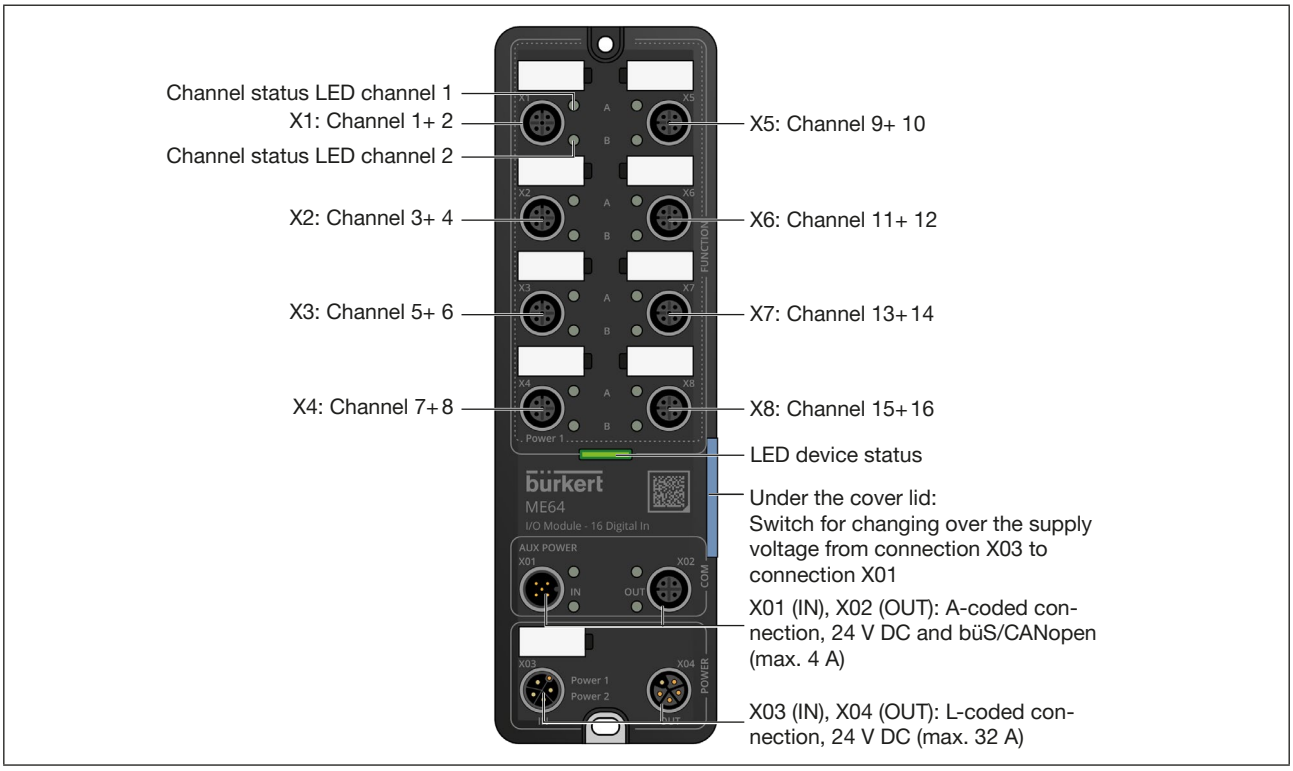

Fig. 1: View of the I/O module Type ME64 FieldConnect

Connection	Channel	Operating mode	optional operating modes
X1 to X8	2, 4, 6, 8, 10, 12, 14 and 16	Multi-function input	Digital Pulse counter Frequency Flow Flow totaliser
X1 to X8	1, 3, 5, 7, 9, 11, 13 and 15	Digital	

Supply voltage	Pin assignment
X01 (IN), X02 (OUT)	24 V DC and büS/CANopen
X03 (IN), X04 (OUT)	24 V DC

5.1 Switch for changing over the voltage supply

Underneath the light blue side panel there is a switch for changing over the operating voltage from connection X03 to connection X01.

Connection X03 is activated upon delivery. If the modules are only supplied by connection X01, the switch must be changed over.
For further information, see Chapter „1.1 Symbols“.

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/ UK Declaration of Conformity.

6.2 Operating conditions

ATTENTION

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 ⎓ + 20 %/- 15 %
Power consumption of the module	4.12 W
max. power	32 A/740 W for all outputs
Degree of protection	IP65, IP67 and IP69k according to EN 60529/IEC 60529 (for connected cables and using protective caps for unused connections)
UL devices	SELV/PELV with overcurrent protection recognised by UL, configuration in accordance with UL/IEC 61010-1 Table 18
Protection class	3 according to DIN EN 61140 (VDE 0140)

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6.4 Digital inputs

Number of inputs	16
Connection	Socket M12, 5-pole, A-coded
max. current consumption	< 7 mA
Voltage input	0…30 V
Suitable for 2-wire proximity switches	Yes
Suitable for 3-wire proximity switches	yes
Short circuit-proof proximity switch feed	yes
Number of frequency inputs	8
Frequency	Max. 2.5 kHz
Switching threshold	V_{ON} = 10…30 V, V_{OFF} = 0…5 V

6.5 Diagnostics

Possible data	3-wire sensors	2-wire sensors	Mech. limit switches
Short circuit	X	–	–
Wire break	–	X	–

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6.6 Dimensions

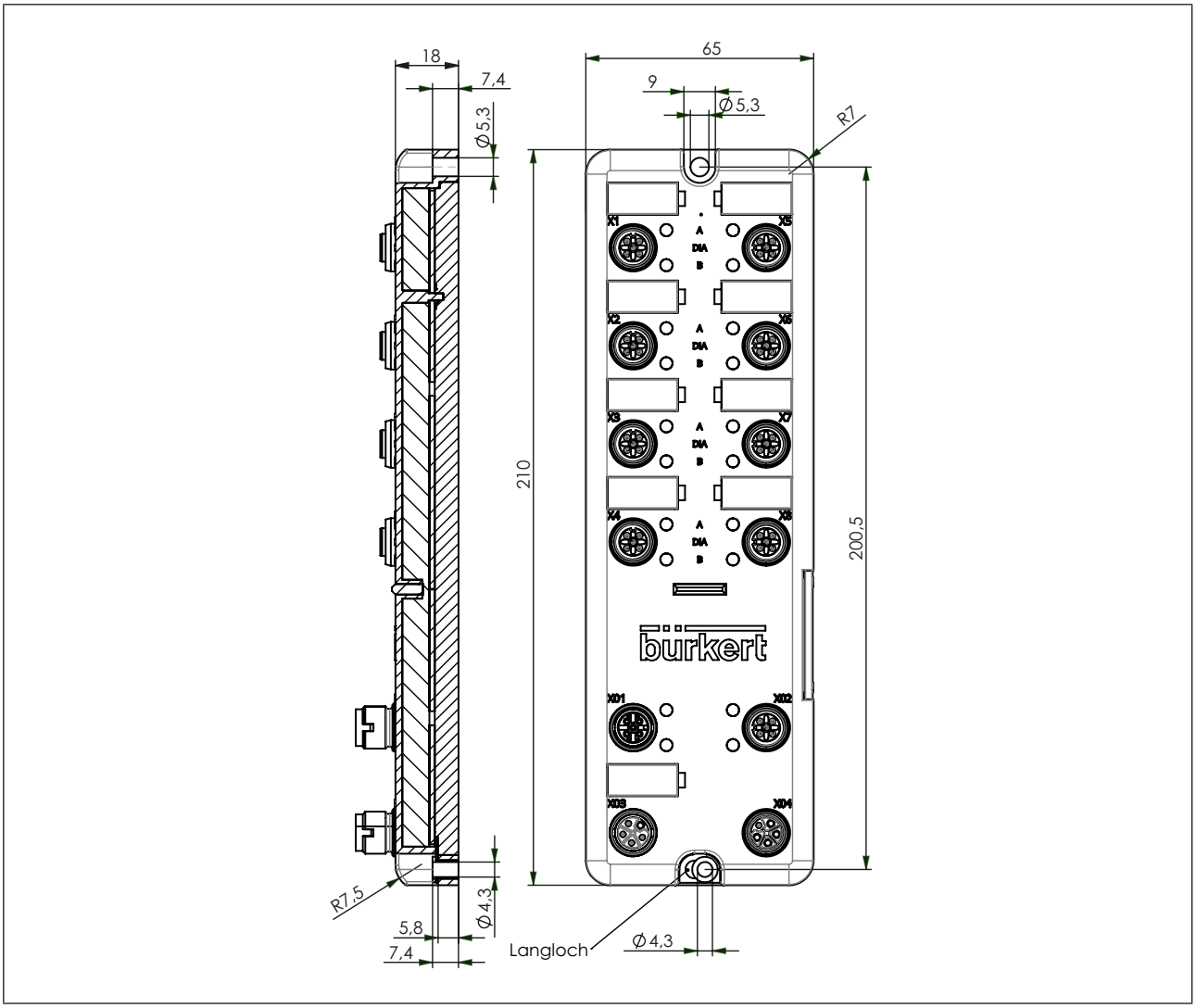

Fig. 2: Dimensions of I/O module Type ME64 FieldConnect

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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 flat washers (according to DIN 125). Observe the maximum tightening torque of 1Nm.

→ 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 electro-magnetic fields.

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

- ▶ 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

Guarantee 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.**

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7.3 Electrically connecting the device

Requirements for UL-certified devices:

- Only connect devices with a UL-certified cable (CYJV or PVVA) with suitable nominal values.
- Maximum permitted cable temperature is 105° C.
- Do not lay Ethernet cables used for communication outside buildings.
- Galvanically isolate external circuits connected to ports from mains circuits, in order to protect them against isolation breakdown in the communication network.

ATTENTION

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

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

Ensuring the degree of protection

- Fit unused connections with protective caps.

7.3.1 Assigning the connections

Connections X01 (IN), X02 (OUT)

Function: CAN + operating voltage 24 V

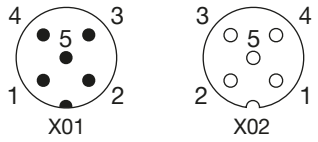
View	Pin	Assignment	Function
	1	CAN_GND	Shielding
	2	24 V	Supply
	3	GND	Supply
	4	CAN_H	büS communication
	5	CAN_L	büS communication

Table 1: Connections X01, X02

Connections X03 (IN), X04 (OUT)

Function: operating voltage 24 V

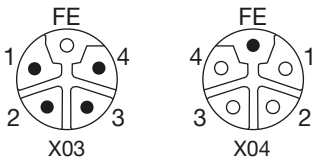
View	Pin	Assignment	Function
	1	24 V	Supply
	2	GND	Supply
	3	GND	Supply
	4	24 V	Supply
	5	FE	Shielding

Table 2: Connections X03, X04

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Connections X1-X8 (IN)

Function: digital inputs A/B, operating voltage 24 V

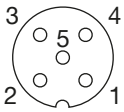
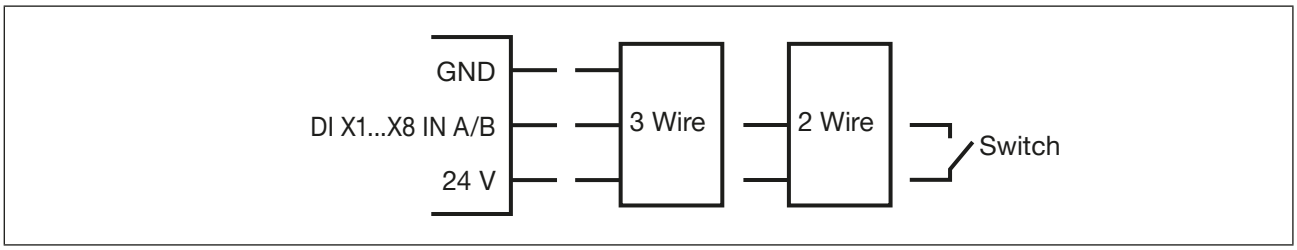
View	Pin	Assignment	Function
	1	24 V	Supply
	2	IN B	Digital input channel B
	3	GND	Supply
	4	IN A	Digital input channel A
	5	FE	Shielding

Table 3: Connections X1 to X8

7.3.2 Connecting the external sensors

→ See assignment of the connections X01 (IN), X02 (OUT) in Chapter „7.3“ auf Seite 14.

Connecting 2-wire and 3-wire sensors



7.3.3 Terminating resistor

In the büS network, use a termination resistor at connection X02, if required.

Notes on planning büS networks can be found in the Cabling guideline.

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7.4 Combining ME6x modules

7.4.1 Module connections for the power supply

Fig. 3: Power supply via büS connection

ME63		ME64 & 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	**X01**	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	**X02**	M12-A, socket, büS/CANopen OUT, max. 4 A, for the integration of other büS/ CANopen devices

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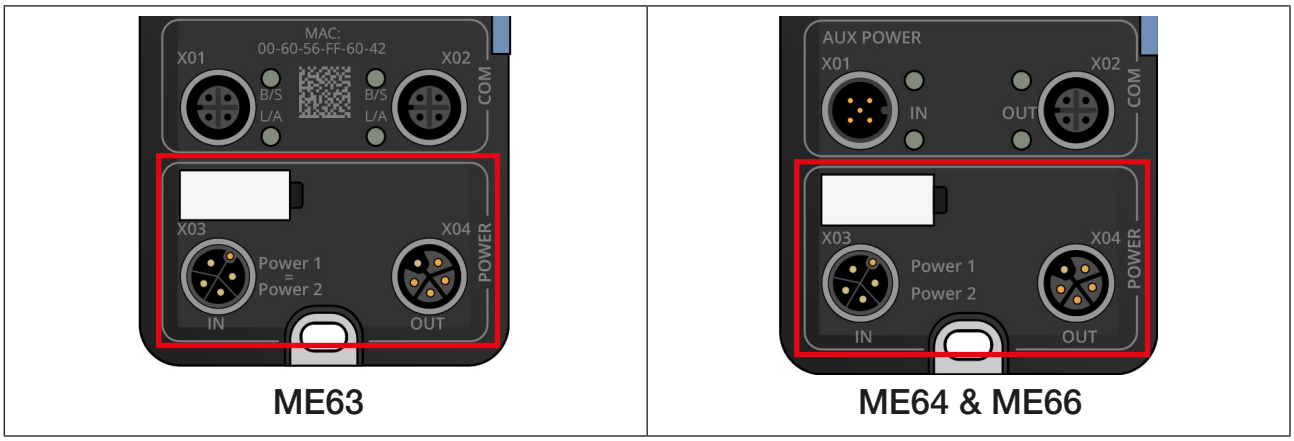

Fig. 4: Power supply via X03

Connection	Description
X03 (IN)	M12-L, plug, power IN, max. 32 A, for power supply input
X04 (OUT)	M12-L, socket, power OUT, max. 32 A, for power supply for other devices

ATTENTION

Damage to device

- The L-coded M12 connection (X03, X04) is designed for connecting 2 power supplies, each up to max. 16 A. Do not exceed these values.

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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.

For type **ME63,** the supply can be either via X03 (max. 2x16A) or X4 (max. 4A).

- **Attention:** A supply via both is prohibited.

For Type **ME64**, Power 1 and Power 2 are two separate circuits with common ground.

- Both supplies are routed separately to the module. Power 1 supplies ports X1-X8 (and the internal electronics assembly of the module).
- The switch must be closed if the supply comes via AUX power.
- **Attention:** Only max. 4A will then be available for the entire module. It must be guaranteed that the module is not supplied via X03 if the supply comes via AUX power.

For Type **ME66**, Power 1 and Power 2 are two separate circuits with common ground.

- Power 1 supplies ports X1-X4, Power 2 supplies ports X5-X8
- Power supply via port X03 with a current of 2 x 16A (16A per circuit).
- Switch may only or must be closed when supplied via X01 (AUX). With supply via X03, do NOT close the switch!

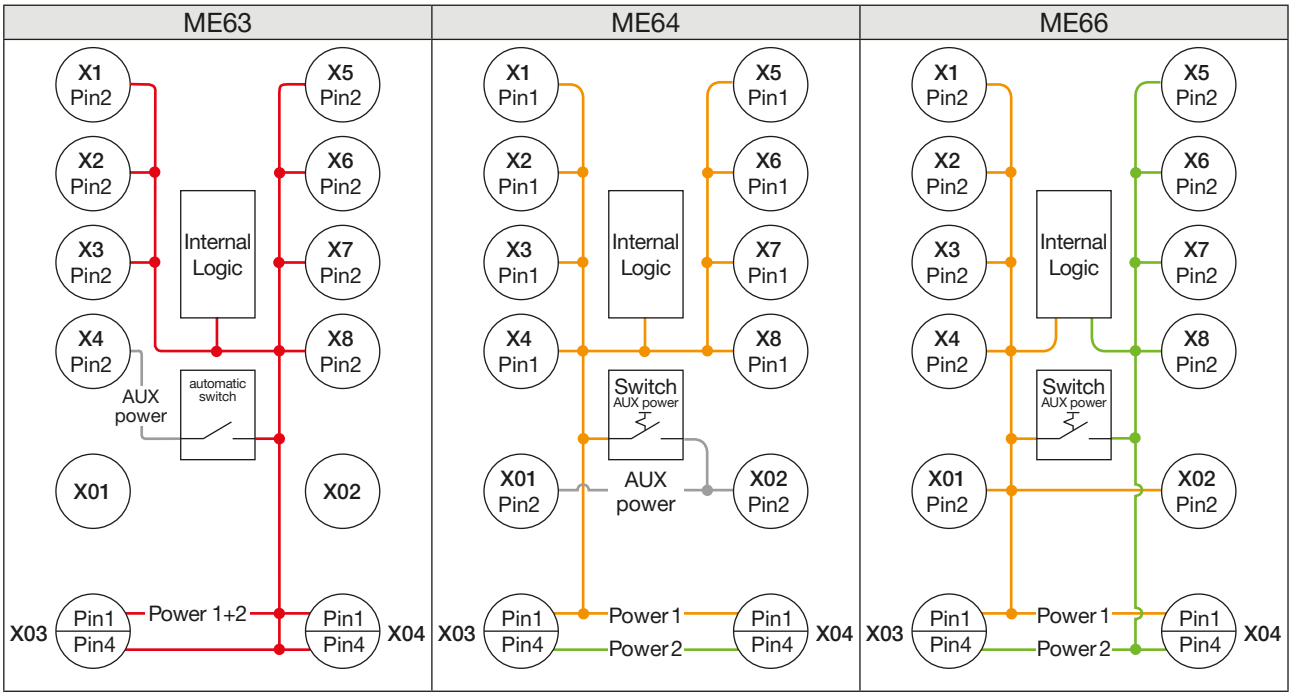

Fig. 5: Simplified circuit diagram

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

Table 4: Simplified circuit diagram key

Reverse protection - ME63

If both supplies (A-coded and L-coded) are connected, it is not permitted for any return flow to occur via the A-coded supply. With the ME63 type, this is prevented via reverse protection.

If the modules are only supplied via the M12 A-coded (X4) supply, the reserve protection function switches over automatically.

Power supply via X01 (AUX power) - ME64 & ME66

The power supply is activated via port X03 for the modules in delivery condition.

ATTENTION

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

If the modules are supplied via port X01, the switch must be changed over.

Underneath the light blue side panel, there is a switch for changing over the module supply from X03 to port X01 (AUX power). „7.4.2 Simplified power supply plan“

ATTENTION

Damage to the switch for AUX power.

A current >4A will damage the switch.

- When switching over to AUX power, make sure that the maximum current is no greater than 4 A, otherwise the switch will be damaged.

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7.4.3 Combining ME66 modules

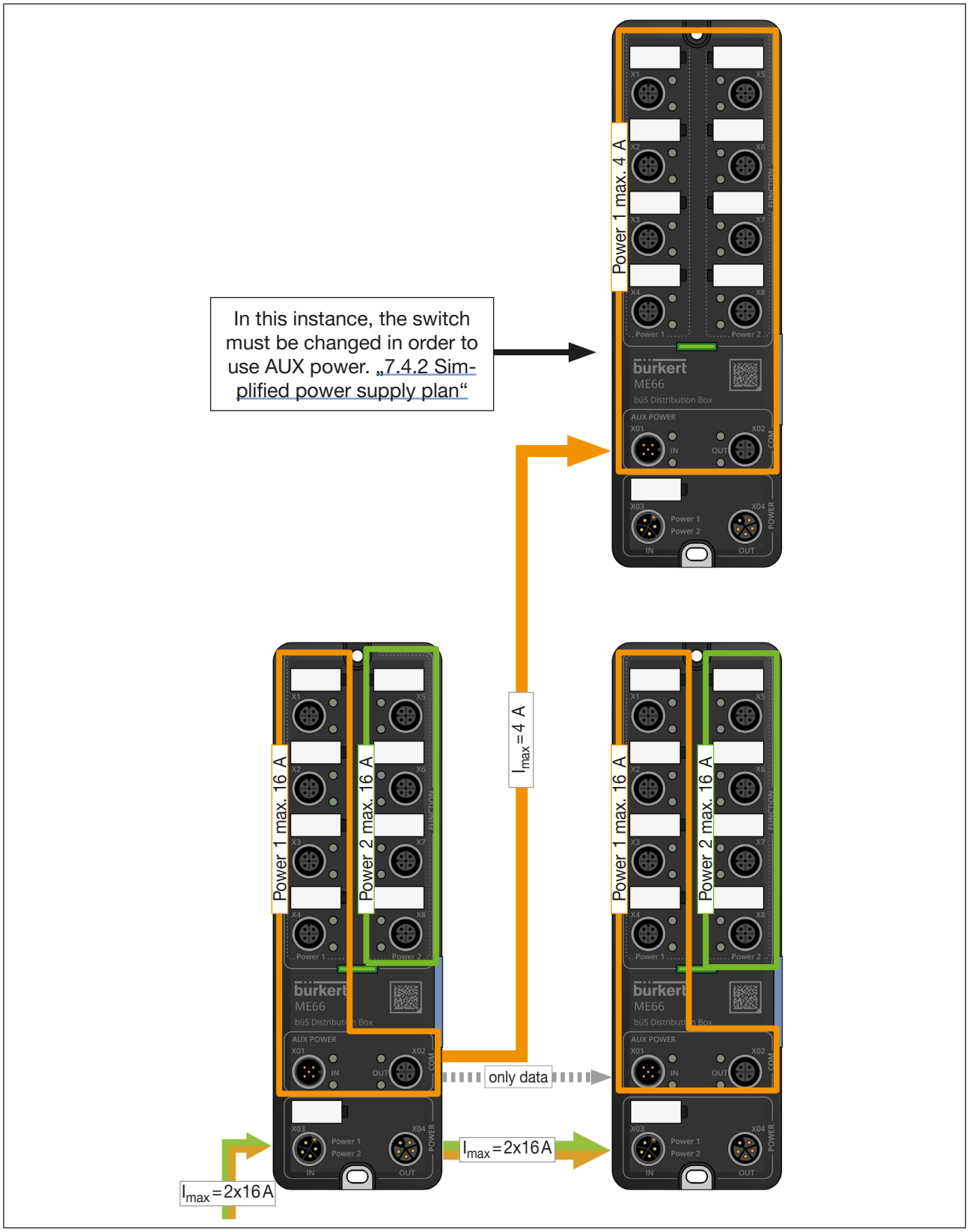

Fig. 6: Example for the combination of ME66 modules

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7.5 Combining different ME modules

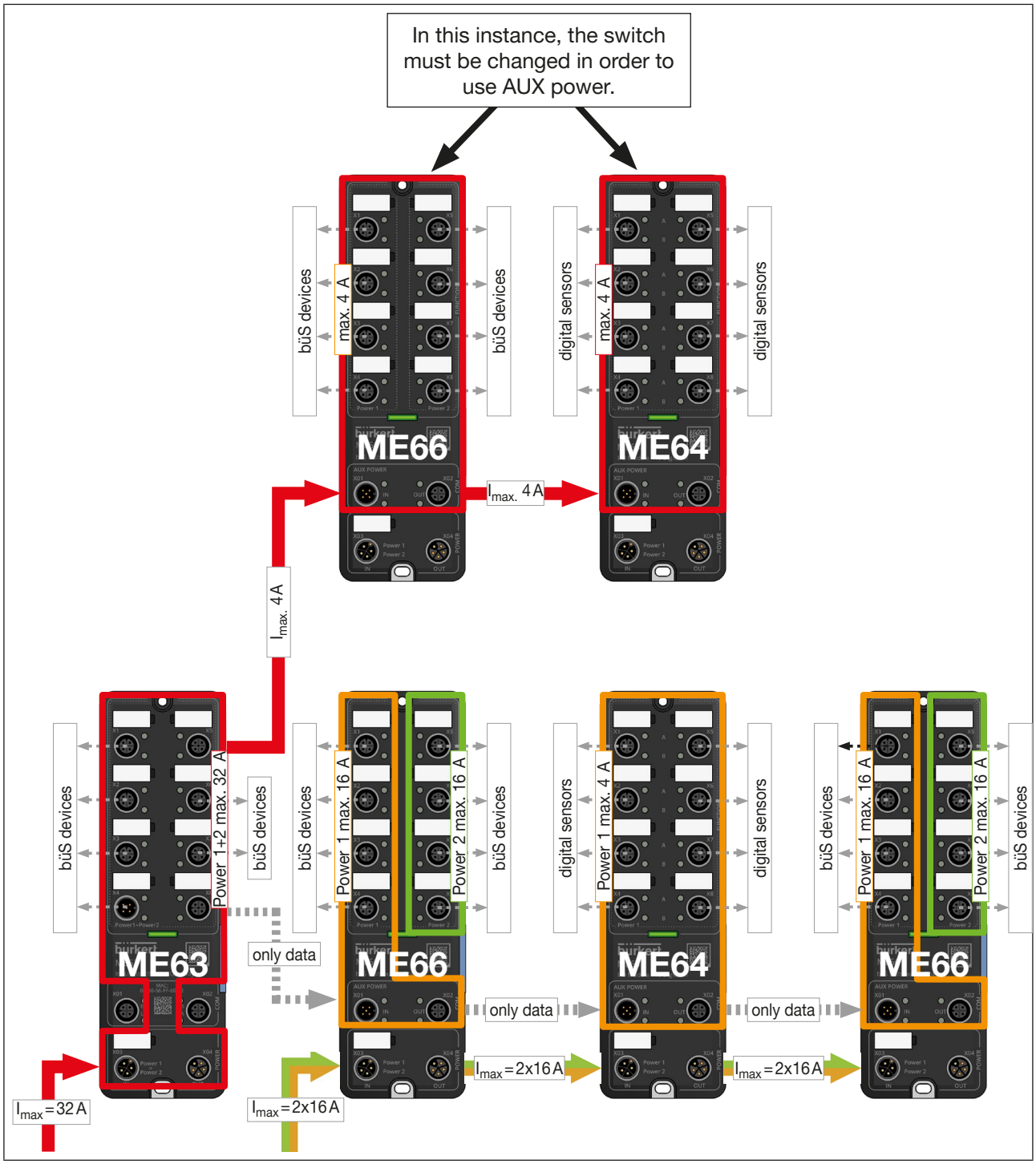

Fig. 7: Example for the combination of different ME modules

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8 START-UP WITH AN EXTERNAL CONTROLLER

The I/O module Type ME64 FieldConnect can be used in büS networks or CANopen networks.

Information on CANopen can be found at:
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

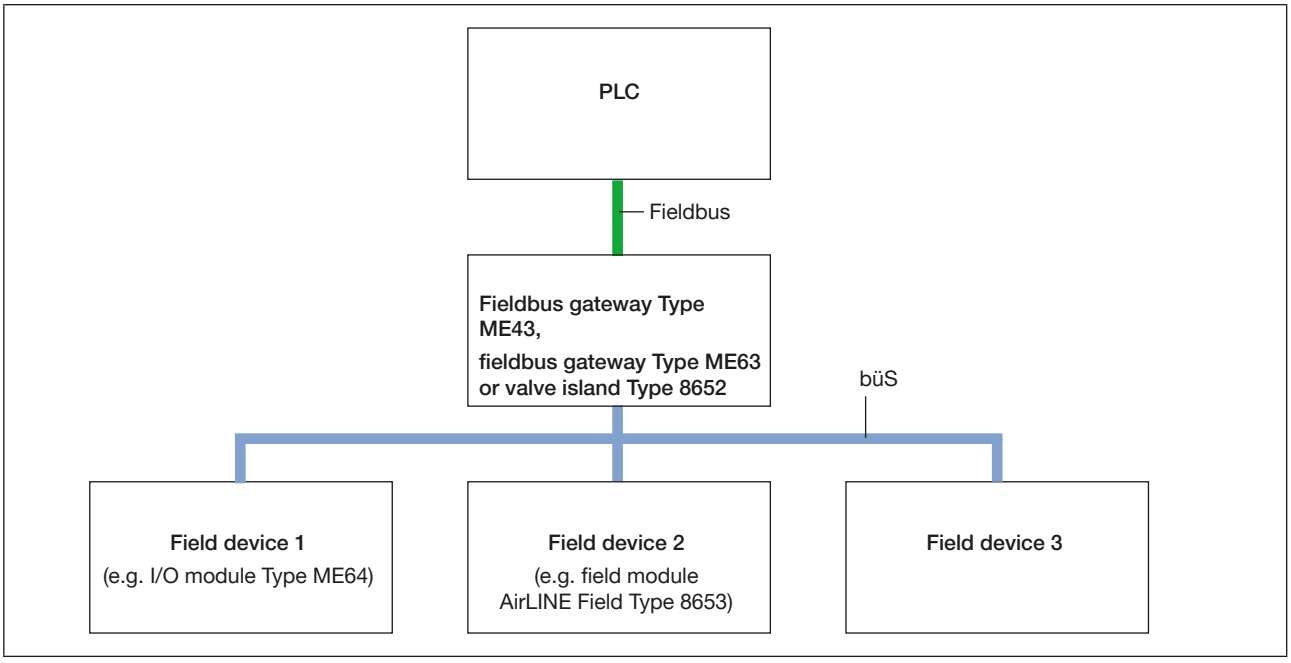

Fig. 8: Schematic structure of a bus system with various expansion devices

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 → ME43 or ME63

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9 START-UP WITH BÜRKERT COMMUNICATOR

The Bürkert Communicator software can be downloaded free of charge from the Bürkert website. In addition to the software, the USB-büS interface kit, available as an accessory, is required.

The USB-büS interface kit can be ordered from Bürkert as an accessory (see Page 38).

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 → 8920 → Downloads “Operating instructions”

9.1 Bürkert Communicator user interface

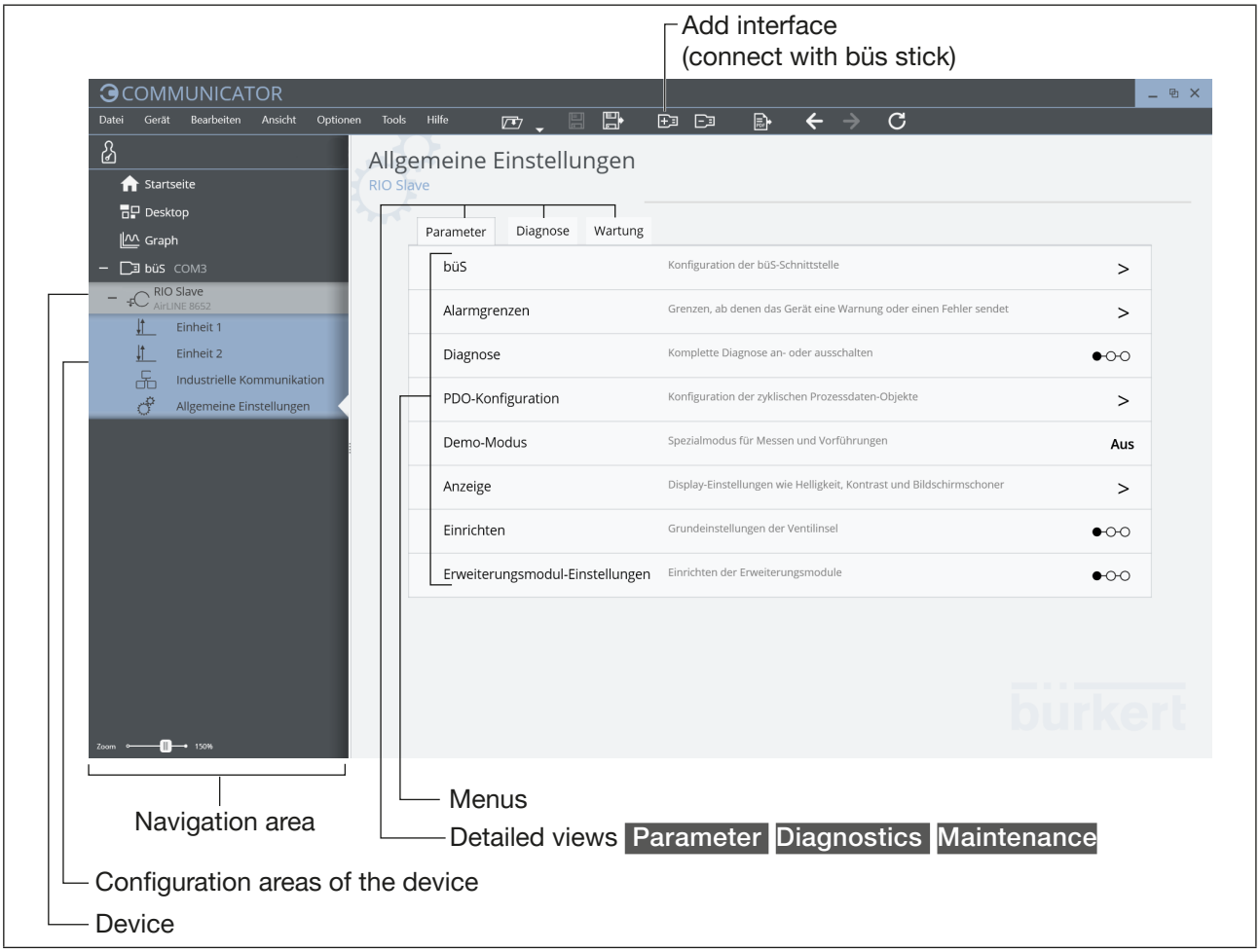

Fig. 9: Example of a user interface of the Bürkert Communicator software

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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 the Bürkert Communicator on the PC.

→ Use the USB-büS-interface to establish the connection between the device and the PC.
Not required for the devices in a büS network.

→ Start the 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	• Standard user • often only reading right, can change a few values • not all menus/values are displayed	no password
	Advanced user	• can change certain values • can perform simple calibrations • not all menus/values are displayed	5678
	Installer	• has all rights to operate the Communicator • all menus/values are displayed	1946

Table 5: User levels in ascending order from top to bottom

9.3.1 Change 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 5“.

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.

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9.3.3 Set 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 disabled	User
“Advanced user” disabled	Advanced user
“Installer” disabled	Installer

9.4 Base settings of the input module

A wizard, which guides you through the menu and the required operating steps, is available for the base settings.

→ Select 16DI in the navigation area. Click + to open the configuration areas.

→ Select Digital inputs > Parameter > Setup.

A wizard guides you through the base device settings.

9.4.1 Sampling time configuration

The shorter the sample time, the faster a signal change is detected.
The longer the sample time, the more accurate the frequency measurement.
The longer the sample time, the lower the bus load.

→ Enter the sample time.

9.4.2 Configuration of nominal operating mode

Channels 2, 4, 6, 8, 10, 12, 14 and 16 are multifunction inputs that offer additional functionality. Along with operating mode “Digital”, these channels also have the following operating modes to choose from:

Operating mode	Function
Pulse counter	Counting of the incoming pulses over the entire operating period. The counter can be reset to 0 at: Digital Inputs > Maintenance > Reset totaliser > Pulse counter
Frequency	Frequency measurement at input in [Hz].
Flow	Calculated flow rate in [l/min].
Flow totaliser	Counting of the flow rate in [l] over the entire operating period. The counter can be reset to 0 at: Digital Inputs > Maintenance > Reset totaliser > Flow totaliser

Table 6: Configuration of multi-function inputs

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9.4.3 Configuration of input filter

For nominal operating mode “Frequency”, “Flow” or “Flow totaliser”.

To reduce signal fluctuations, one input filter with PT1 behaviour can be enabled per channel. The filter response time can be set from 1 to 10,000 ms, but must be greater than the set sample time. Inputting 0 ms deactivates the filter.

9.4.4 Configuration of flow input

For nominal operating mode “Flow” or “Flow totaliser”.

→ Enter K factor in [Pulses / Litre].
A 2-point calibration is subsequently possible under:
Digital inputs > Maintenance > Flow input calibration.

9.4.5 Configuration of channel name

A user-specific name can be entered here for each channel.

9.4.6 Configuration of inversion

For inverting sensor signals in “Digital” nominal operating mode.

9.4.7 Configuration of wire break detection

For activating or deactivating a wire break detection in “Digital” nominal operating mode.

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10 BÜRKERT COMMUNICATOR MENUS

The overview below describes the device-specific settings of Type ME64 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 → 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.

10.1 Menus in the “Digital Inputs” configuration area

Detailed view “Parameter”

Menu	Description
Setup	Execute the base settings of the input module using a wizard (see section „9.4 Base settings of the input module“ auf Seite 25).
Sample time	The shorter the sample time, the faster a signal change is detected. The longer the sample time, the more accurate the frequency measurement. The longer the sample time, the lower the bus load.
Mark bus-outputs as invalid	To detect faulty bus output values, the faulty values can be marked as invalid. All other (correct) bus output values are not marked.
Channels 1 to 16	
Operating mode	Channels 2, 4, 6, 8, 10, 12, 14 and 16 are multi-function inputs. The following operating modes are possible for these channels: Digital, Pulse counter, Frequency, Flow or Flow totaliser Channels 1, 3, 5, 7, 9, 11, 13 and 15 only have the “Digital” operating mode.
Channel name	A user-specific name can be entered here for each channel. 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 „Fig. 9“.)
Inversion	Menu only available for nominal operating mode “Digital”. The digital input is inverted if nominal operating mode is “Active”.
Wire break detection	Menu only available for nominal operating mode “Digital”. Activate or deactivate wire break detection for this channel. Wire break recognition activated: In the case of a wire break, the device status “Error” is displayed depending on the LED mode set. The channel status LED is glowing red. An error message is entered in the logbook.

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Menu	Description
Filter response time	Menu only available for nominal operating modes “Frequency”, “Flow” and “Flow totaliser”. The filter response time can be set from 1 to 10,000 ms, but must be greater than the set sample time. Inputting 0 ms deactivates the filter.
K factor	Menu only available for nominal operating modes “Flow” and “Flow totaliser”. 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 ≠0 is entered, the values of the 2-point calibration (following 4 menu options) are ignored.
Lower flow rate Lower frequency Upper flow rate Upper frequency	Menus only available for nominal operating modes “Flow” and “Flor totaliser”. **2-point calibration** Input of the value in [l/min] or [Hz] The value can also be recorded in the calibration assistant under Digital inputs > Maintenance > Calibration of flow inputs. If the K factor contains a value ≠0 in the menu, the inputs of the 2-point calibration are ignored!

Table 7: Configuration area “Digital inputs”, menus of the detailed view “Parameter”

Detailed view “Diagnostics”

Menu	Description
Short circuit	Indicates whether a short circuit is present.
Wire break	Menu only available for nominal operating mode “Digital”, and only if wire break detection has been enabled for at least 1 channel under Digital inputs > Parameter. A wire break is displayed when wire break detection is enabled.
Multi function input status	Menu only available for nominal operating modes “Frequency”, “Flow” and “Flow totaliser”. Shows the current status of the multifunction inputs.
Out of specification	Indicates whether the input frequency is outside the specified range (> 4.5 kHz).
Error	If the input frequency is too high, the input is disabled and an error is displayed (> 6 kHz). Restart the device to resolve the error.

Table 8: Configuration area “Digital inputs”, menus of the detailed view “Diagnostics”

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Detailed view “Maintenance”

This detailed view is not available for nominal operating mode “Digital”.

Menu	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.
Reset pulse counters	It is only possible to reset the pulse counters when the nominal operating mode “Pulse counter” has been configured. Configuration is carried out in Digital inputs > Parameter > Setup
Reset totalizer	Reset counters to 0 for nominal operating mode “Flow totalizer input” and “Pulse counter”.

Table 9: Configuration area “Digital inputs”, menus of the detailed view “Maintenance”

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10.2 Menus in the “General settings” configuration area

Detailed view “Parameter”

Menu	Description
Status LED	
Operation mode	Setting the various operating modes: NAMUR, fixed colour and LED off.
büS	Parameterisation of the device as a büS participant.
Displayed name	Device name under which the device is displayed in Bürkert Communicator.
Location	Device location. Shown in Bürkert Communicator beneath the device name.
Description	The input window can be used to describe the device or for additional information on the device. No entry necessary.
Advanced	Further device settings as a participant in a network.
Unique device name	Communication ID for communication in the network. Should not be changed. In case of changes, the assigned partnership to another participant is lost.
Baud rate	Transmission speed for the device as a büS participant or a CANopen participant. Must be identical for all the devices in a network.
(Fixed) CANopen address (node ID)	Manually selected device address.
CANopen address (Node ID)	Currently applied device address.
Bus operating mode	Configuring the various bus modes: büS, CANopen or single device. Single device: If the device is not operated in a network.
CANopen status	Communication state of the device. Pre-operational: Only acyclic (SDO) communication is possible with the fieldbus participant. Cyclic (PDO) communication is inactive. Operational: Acyclic (SDO) and cyclic (PDO) communication are possible with the participant. (Menu is only available for bus operation mode “CANopen”.)
Deallocation delay	Time from the loss of a partner to deletion of its configuration.
Alarm limits	Setting the threshold values at which the device generates an error message or a warning if they are exceeded or undercut.

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Menu	Description
PDO configuration	Configuration of the cyclic process data objects:
PDO 1 PDO 2 PDO 3	The information from channels 1 to 16 is transmitted as bit fields in the PDO 1 object. This includes multifunction inputs 2, 4, 6, 8, 10, 12, 14 and 16, when they are configured as digital inputs. When the multifunction inputs are assigned another input function (e.g. Frequency), the information from these channels are transmitted in other PDO objects: PDO 2 for channels 1 and 2, and PDO 3 for channels 9 and 10. The corresponding bit values in the PDO 1 object are invalid in this case and are to be ignored. PDO 2 and PDO 3 are then only generated by the device if the multi-function inputs are not configured as digital inputs. 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. However, if the user is required to perform manual adjustment, the link to the sampling time is suspended.
Configuration client	Backup of device configuration in an external device. (Menu is only available for bus mode “büS”.)
Operating mode	Indicates the current operation mode.
Change operation mode	Active: The configuration client is active and expects that a provider is also available. If this is not the case, a message appears. Automatically switch on: The configuration client is in standby mode until a provider is available. The device then switches automatically to “Active”.

Table 10: Configuration area “General settings”, menus of the detailed view “Parameter”

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Detailed view “Diagnostics”

Menu	Description
Device status	Information on the device status.
Operating duration	Indicates the operating duration over the entire life cycle of the device.
Operating duration since last boot	Indicates the operating duration since the last boot.
Device temperature	Current device temperature (not the ambient temperature!).
Voltage drops	Indicates the number of voltage drops since the last reboot.
Min./Max. values	
Min. temperature	Minimum temperature
Max temperature	Maximum temperature
Device boot counter	Indicates the number of device reboots over the entire life cycle.
Transferable memory status	Indicates whether an active provider is available.
büS status	Information on the büS network.
Receive errors	Indicates the number of current receive errors.
Receive errors max.	Maximum number of reception errors since device startup.
Transmit errors	Indicates the number of current transmit errors.
Transmit errors max.	Maximum number of transmit errors since device startup.
Reset error counter	Resets both maximum values.
CANopen status	Current device operating state.
Logbook	List of all error messages, including the time of occurrence in operating hours. Up to 20 messages can be saved.
Configuration client	Current state of the configuration client.
Transferable memory status	Indicates whether an active provider is available.
Status	Current device status
Reconfiguration counter	Number of device reconfigurations

Table 11: Configuration area “General settings”, menus of the detailed view “Diagnostics”

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Detailed view “Maintenance”

Menu	Description
Device information	Indicates device-specific data.
Displayed name	Indicates the name entered for the device. The name is entered under General settings > Parameter > büS > Displayed name.
Identification number	Indicates the identification number of the device.
Serial number	Indicates the serial number of the device.
Firmware identification number	Display of firmware identification number.
Firmware version	Display of firmware version.
büS version	Display of büS version.
Hardware version	Display of hardware version.
Product type	Display of product type.
Manufacture date	Indicates the date on which the device was manufactured.
EDS version	Display of EDS version.
Device driver	Information on the device driver. This menu is only available in the Bürkert Communicator software.
Reset device	Menu for resetting and restarting the device.
Restart	Restart the device. A voltage reset is performed during the device reboot. The configuration and parameterisation settings for the device remain after the reboot.
Factory reset	Reset device to factory settings.

Table 12: Configuration area “General settings”, menus of the detailed view “Maintenance”

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11 DISPLAY ELEMENTS

Type ME64 has the following LEDs for diagnostics on the device status:

- LED for indicating the channel status (1 LED per channel).
- LED for indicating the device status.

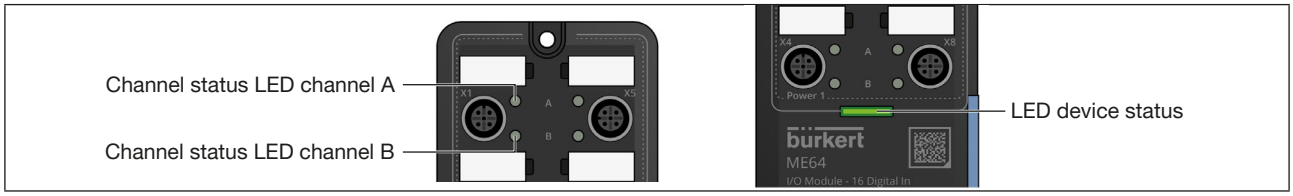

Fig. 10: Display elements Type ME64

11.1 LEDs for indicating the channel status

A 2-colour status display is assigned to each channel.

Colour	Meaning
green	Channel is active with input voltage > 10 V.
red	Error at channel (wire break or short circuit)
off	Channel is inactive or the input voltage is < 5 V.

Table 13: LEDs for indicating the channel status

11.2 LED 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.

Indication in line with 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 büS 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.

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Indication in line with 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 swapping 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 14: Indication of the device status in NAMUR operation mode

11.3 Diagnostics of the device status

The device status can be determined from the LED displays for the device status and the channel status:

Colour of device status LED	Colour of channel status LED	Meaning
green	green	Device is in error-free operation. Channel is active with input voltage > 10 V.
green	off	Device is in error-free operation. Channel is inactive or the input voltage is < 5 V.
red	red	Device faulty. The following errors may occur: • Wire break at channel • Short circuit at channel
red	X	General error, e.g. • Temperature error • Bus connection lost • ...

Table 15: Diagnostics of the device status

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12 TROUBLESHOOTING

Problem	Possible cause	Measure
Namur LED remains off despite operating voltage being applied.	Switch for changing over the operating voltage (underneath light blue panel) 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.	Reboot 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 16: Troubleshooting

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13 DEVICE REPLACEMENT

For further information on replacing devices, see the operating instructions "Central configuration management of Bürkert devices" at country.burkert.com (Type ME64)

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 is the client, fieldbus gateway ME63 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 glows blue.
- A blue maintenance alert appears in Bürkert Communicator.

The maintenance message appears 180 s after the start.

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14 ACCESSORIES

ATTENTION

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	Quantity	Order no.
USB-büS interface kit 1 (including power supply unit, büS stick, termination resistor, Y-distributor, 0.7 m cable with M12 plug)		772426
USB-büS interface kit 2 (including büS stick, termination resistor, Y-distributor, 0.7 m cable with M12 plug)		772551
büS cable, angled M12 (stranded wire to female connector)	0.7 m	772626
büS cable (stranded wire 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

Electrical accessories

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

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15 TRANSPORTATION, STORAGE, DISPOSAL

ATTENTION

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…+80 °C

Environmentally friendly disposal

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

Further information at country.burkert.com.

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