

Type ME63 FieldConnect

Fieldbus gateway



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Operating Instructions 2412/03_EUen_00815318 / Original DE

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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.

- ▶ Read these instructions carefully.
- ▶ Observe in particular 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 potentially hazardous situation.

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



CAUTION

Warns of a potential danger.

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

NOTE

Warns of damage.

- ▶ Failure to observe these instructions 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.



Designates instructions to avoid danger.



Designates a procedure which you must carry out.



Designates a result.



Symbol for software interface texts.

1.2 Definition of terms

Term	Description
Device	ME63 type fieldbus gateway
büS	Bürkert system bus; a communication bus developed by Bürkert, based on the CANopen protocol.

2 INTENDED USE

The ME63 type fieldbus gateway is used as a fieldbus converter for the process values between bus participants and an industrial Ethernet PLC. The ME63 type supports the fieldbus protocols PROFINET, EtherNet/IP, Modbus TCP EtherCAT, and CC-Link IE field basic.

- ▶ 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.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances and events which 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 make any changes to the device and do not subject it to mechanical stress.
- ▶ Secure device or system to prevent unintentional activation.
- ▶ Make sure only trained technicians carry out 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 technology.

NOTE

Notes for UL certified devices:

- ▶ Device is only suitable for operation on SELV/PELV voltages (Class III).
- ▶ Device is suitable for indoor use (dry area) and not for wet areas.
- ▶ Observe the national and international regulations for the installation of electrical equipment.
- ▶ Provide galvanic isolation to separate external circuits connected to the ports from main circuits to protect against insulation (SELV/PELV).
- ▶ Provide overcurrent protection in the final installation.
- ▶ Device is classified in overvoltage category II, pollution degree number 2.

NOTE

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 are destroyed immediately or fail after start-up.

- ▶ Meet the requirements specified by EN 61340-5-1 to minimize or avoid the possibility of damage caused by sudden electrostatic discharge.
- ▶ Do not touch electronic components when the supply voltage is connected.

4 GENERAL NOTES

4.1 Contact addresses

Germany

Bürkert Fluid Control Systems
Sales Centre
Christian-Bürkert-Str. 13-17
D-74653 Ingelfingen
Tel. + 49 (0) 7940 - 10-91 111
Fax + 49 (0) 7940 - 10-91 448
E-mail: info@burkert.com

International

The contact addresses can be found online at:

www.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 online at:

www.burkert.com

5 PRODUCT DESCRIPTION

5.1 General description

The fieldbus gateway represents the central control unit for Bürkert products. The ME63 type FieldConnect consists of a fieldbus gateway which transmits the internal communication of the Bürkert field devices to all common industry standards for industrial Ethernet.

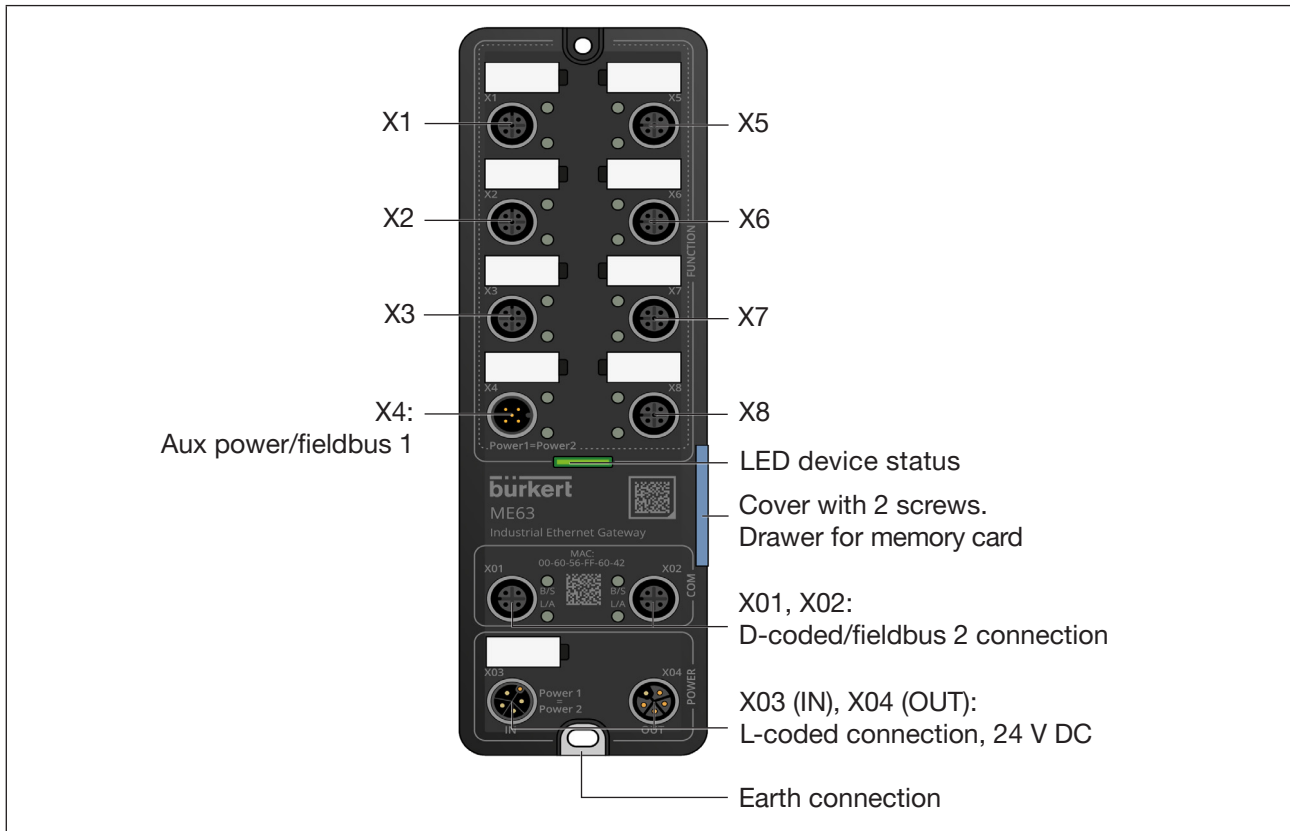


Fig. 1: View of ME63 type

5.2 Device functions

- Fieldbus converter between büS and Industrial Ethernet,
- Exchange process values between participants of fieldbus 1 and fieldbus 2.

Device	Fieldbus 1	Fieldbus 2
ME63	büS	PROFINET
ME63	büS	EtherNet/IP
ME63	büS	Modbus TCP
ME63	büS	EtherCAT
ME63	büS	CC-Link IE field basic
ME63	büS	OPC UA

Table 1: Application range of fieldbus gateway

5.3 System monitoring

The system monitoring checks the gateway as well as the connected bÜS devices using the NAMUR status. The system monitoring is in Bürkert Communicator at:

General settings > **Parameter** > **System monitoring**

The **Diagnostics** menu option is used to set which type of messages of the bÜS devices is transferred by the gateway as the overall status. If all types are set, one message per type appears on the gateway. For example, if a connected device is in "Maintenance" status, the gateway displays the message "At least one bÜS device is in the status: Maintenance", and the NAMUR LED adopts the status, assuming there are no errors with a higher priority.

The function is ensured when the following operating conditions are met:

- Gateway configuration has been created with a Communicator version higher than 6
- The product catalogue has been used for the configuration. In this process, each device is assigned a device ID
- For each bÜS device, the NAMUR status has been added to the gateway configuration as a cyclical value
- The NAMUR status of the individual devices is connected to the gateway

Special features for PROFINET:

The following is set under the menu option

General settings > **System monitoring** > **Single diagnostics of the system devices**: An error in a connected bÜS device means that (with "PROFINET alarms active"), an alarm is sent to the corresponding slot of the NAMUR status.

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

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

Supply voltage	24 V $\overline{=}$ ±20 %/ -15 %
Power consumption	3.6 W
Max. output	32 A/740 W for all outputports
Degree of protection	IP65, IP67 and IP69k according to EN 60529 / IEC 60529 (for connected cables and while using protective caps for unused connections)
UL devices	SELV/ PELV with UL Recognized Overcurrent Protection, dimensioned according to UL/IEC 61010-1 Table 18
Protection class	3 according to DIN EN 61140 (VDE 0140)

6.4 Device labelling

6.4.1 Device top side labelling

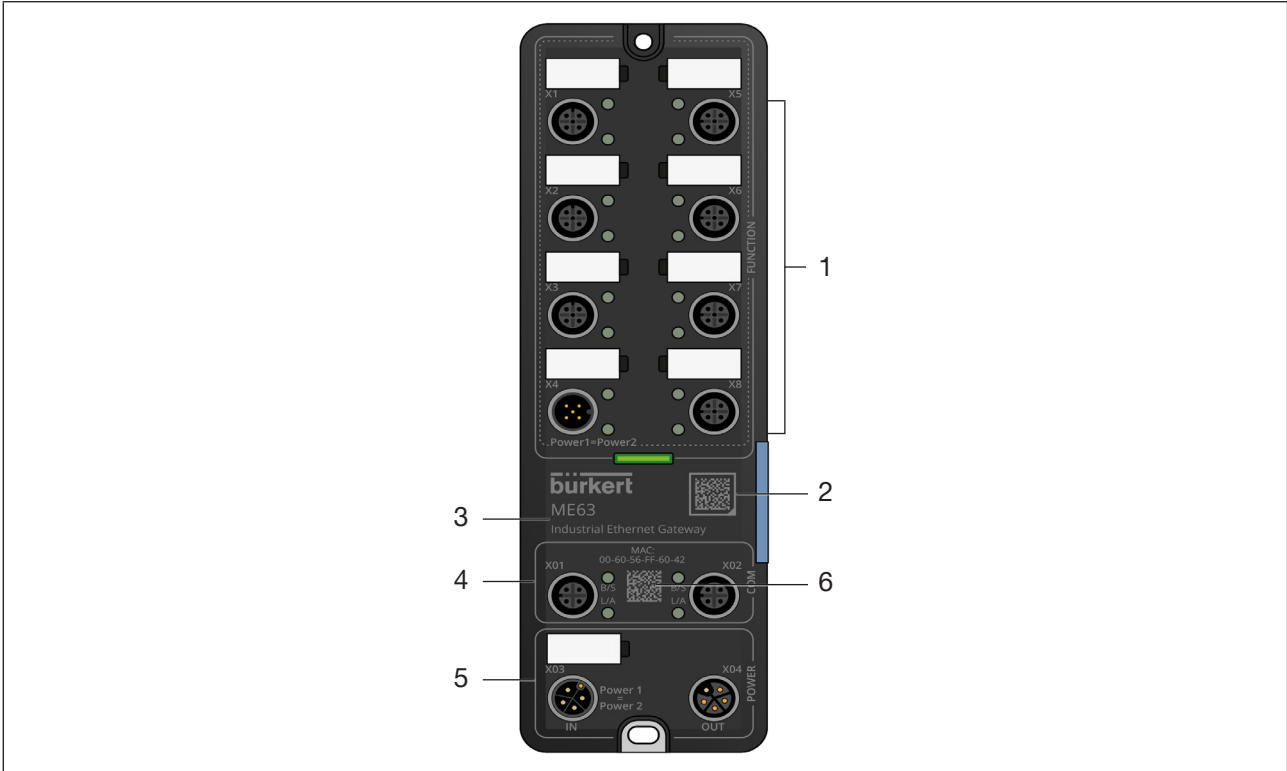


Fig. 2: Device top side labelling

Item	Designation
1	Device-specific function
2	Data matrix code with link to Bürkert product page
3	Type & device designation
4	Connections for industrial Ethernet (2-port switch)
5	Power supply
6	MAC address (clear text and data matrix code)

6.4.2 Left and right device side labelling

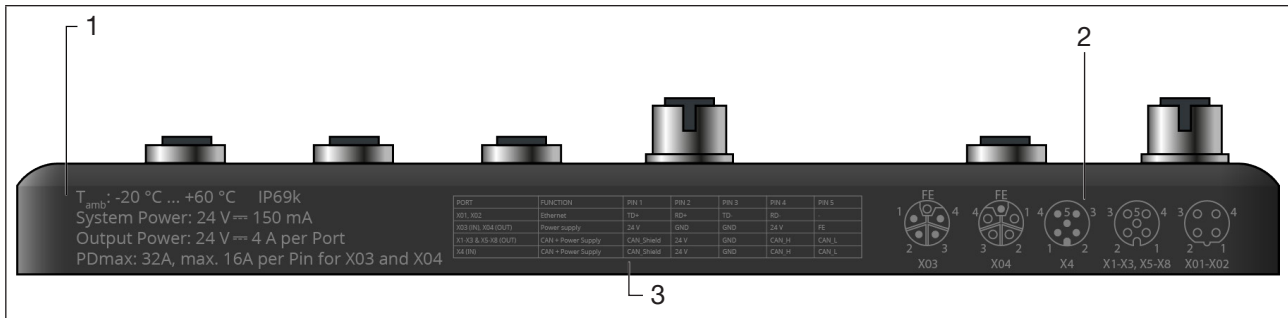


Fig. 3: Labelling on the left side of the device

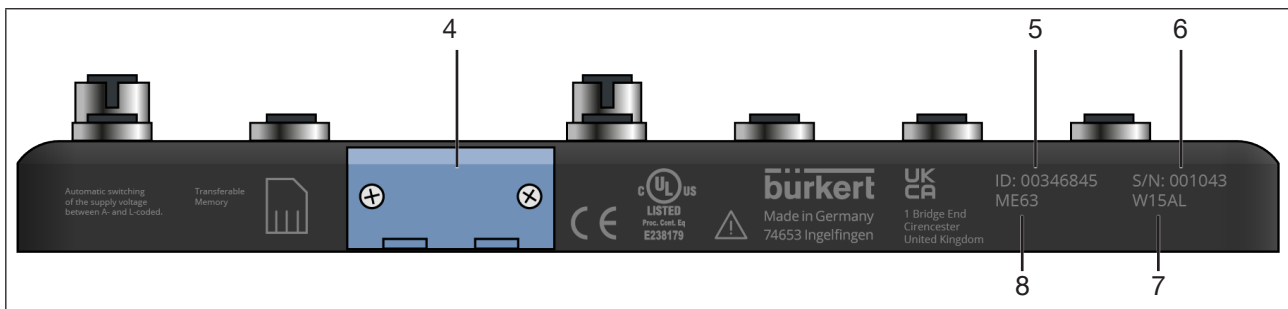


Fig. 4: Labelling on the right side of the device

Item	Designation
1	Performance data (ambient temperature, IP degree of protection for voltage, power consumption)
2	Push-in connector icons
3	Pin assignment
4	Slot for memory card (located under the blue cover)
5	Order number
6	Serial number
7	Manufacture code (encrypted)
8	Type

6.5 Industrial Ethernet

6.5.1 PROFINET IO

Topology recognition	LLDP, SNMP V1, MIB2, Physical Device
Minimum cycle time	10 ms
IRT	not supported
MRP media redundancy	MRP client is supported
Other supported functions	DCP, VLAN Priority Tagging, Shared Device
Transmission speed	100 MBit/s
Data transport layer	Ethernet II, IEEE 802.3
PROFINET IO specification	V2.3
(AR) Application Relations	The device can simultaneously process up to 2 IO-ARs, 1 Supervisor AR and 1 Supervisor-DA AR
PROFINET interface	2 x M12 sockets

6.5.2 EtherNet/IP

Pre-defined standard objects	Identity Object (0x01) Message Router Object (0x02) Assembly Object (0x04) Connection Manager (0x06) DLR Object (0x47) QoS Object (0x48) TCP/IP Interface Object (0xF5) Ethernet Link Object (0xF6)
DHCP	supported
BOOTP	supported
Transmission speed	10 and 100 MBit/s
Duplex modes	Half duplex, full duplex, auto-negotiation
MDI modes	MDI, MDI-X, Auto-MDIX
Data transport layer	Ethernet II, IEEE 802.3
Address Conflict Detection (ACD)	supported
DLR (ring topology)	supported
Integrated switch	supported
CIP reset service	Identity Object Reset Service types 0 and 1
EtherNet/IP interface	2 x M12 sockets

6.5.3 Modbus TCP

Modbus function codes	1, 2, 3, 4, 6, 15, 16, 23
Operation mode	Message mode: Server
Transmission speed	10 and 100 MBit/s
Data transport layer	Ethernet II, IEEE 802.3

6.5.4 EtherCAT

Maximum number of cyclical input and output data	512 Bytes
Maximum number of cyclical input data	1024 Bytes
Maximum number of cyclical output data	1024 Bytes
Acyclic communication (CoE)	SDO SDO Master-Slave SDO Slave-Slave (depending on master capacity)
Type	Complex Slave
FMMUs	8
Sync Managers	4
Transmission speed	100 MBit/s
Data transport layer	Ethernet II, IEEE 802.3

6.5.5 CC-Link IE field basic

Number of occupied stations	1 to 16
Acyclic communication	SLMP Server
Transmission speed	100 MBit/s
Data transport layer	Ethernet II, IEEE 802.3
CC-Link interface	Cyclic data 61450 (UDP) Discovery and SLMP Server 61451 (UDP) SLMP Parameter 45237 (UDP) SLMP Communication 20000 (UDP)

6.5.6 OPC UA

On delivery, the OPC UA server is not enabled.

The OPC UA server runs in the background with the following protocols:

- PROFINET IO
- EtherNet/IP
- Modbus TCP

The function for enabling or disabling the OPC UA server can be set in Bürkert Communicator:

OPC UA > **Parameter** > **Enable OPC UA**

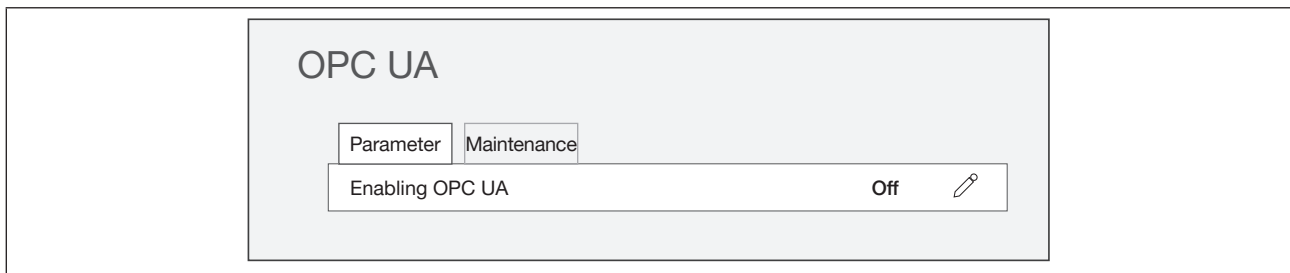


Fig. 5: Enabling OPC UA

After enabling the OPC UA, other OPC UA server settings will become visible (see chapter „12 OPC UA“).

! When the OPC UA server is activated, the f(x) configuration is not available

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 1 Nm.



To discharge interference currents and EMC resistance, the devices have an earth connection.



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 FE line to the earthing point using an M4 screw.

7.2 Electrical connection of the device



Requirements for UL certified devices:

- ▶ Connect devices only with a UL certified (CYJV or PVVA) cable with suitable ratings.
- ▶ Maximum permissible temperature of the cable is 105 °C.
- ▶ Do not lay Ethernet cables used for communication outdoors.
- ▶ Provide galvanic isolation to separate external circuits connected to the ports from main circuits to protect against insulation breakdown into the communication network.

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.

→ Connect pins according to the variant.

Port	Function	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
X01 (IN), X02(OUT)	EtherNet	TD+	RD+	TD-	RD-	-
X03 (IN), X04(OUT)	Power supply	(+24 V)	GND	GND	(+24 V)	FE
X1–X3, X5–X8 (OUT)	CAN + power supply	CAN_GND	24 V	GND	CAN_H	CAN_L
X04 (IN)	CAN + power supply	CAN_GND	24 V	GND	CAN_H	CAN_L

Table 2: Assignment of the connections

7.2.1 Assignment of the connections

Connections X01, X02

	Pin	Assignment	Function
	1	TD+	Send data +
	2	RD+	Receive data +
	3	TD-	Send data -
	4	RD-	Receive data -

Table 3: Connections M12, X01, X02 (socket), D-coded

Connections X03, X04

	Pin	Assignment	Function
	1	24 V (Power 1)	Power supply
	2	GND (Power 1)	Power supply
	3	GND (Power 2)	Power supply
	4	24 V (Power 2)	Power supply
5	FE	Shielding	

Table 4: Connections M12, X03 (plug), X04 (socket), L-coded

Connections X1-X3, X5-X8

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

Table 5: Connections M12, X1-X3, X5-X8 (socket), A-coded

Connection X4

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

Table 6: Connection M12, X4 (socket), A-coded

7.3 Combining ME6x modules

7.3.1 Module connections for the power supply



Fig. 6: Power supply via bus connection

ME63		ME64 & ME66	
X1-X3; X5-X8	M12-A, socket, bus/CANopen and 24 V DC, max. 4 A, for connection of a device via bus/CANopen	X01	M12-A, plug, bus/CANopen IN, max. 4 A, for connection of bus/ CANopen network
X4	M12-A, plug, bus/CANopen and 24 V DC, max. 4 A, preferably for bus/CANopen connection	X02	M12-A, socket, bus/CANopen OUT, max. 4 A, for the integration of other bus/ CANopen devices

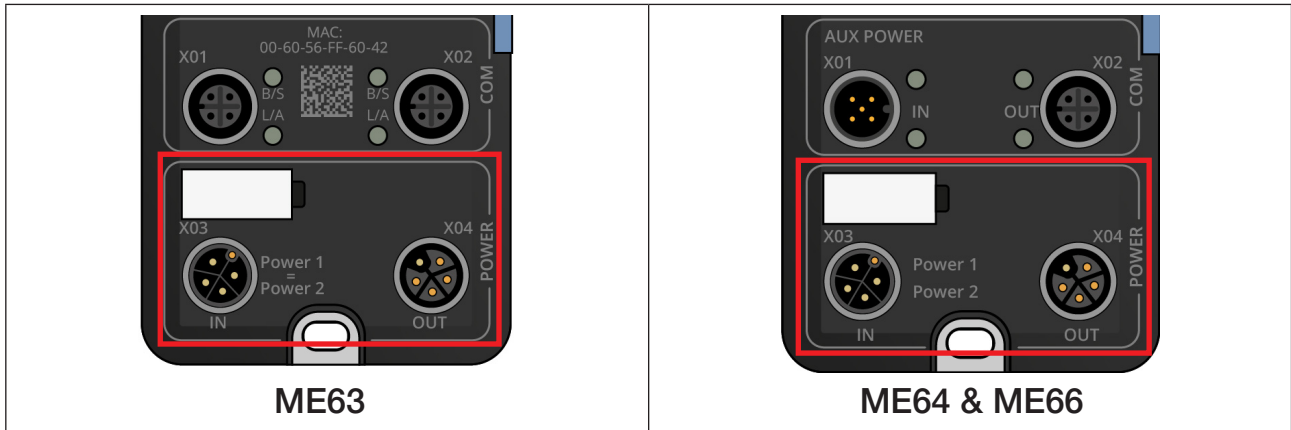


Fig. 7: Power supply via X03

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.

7.3.2 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!

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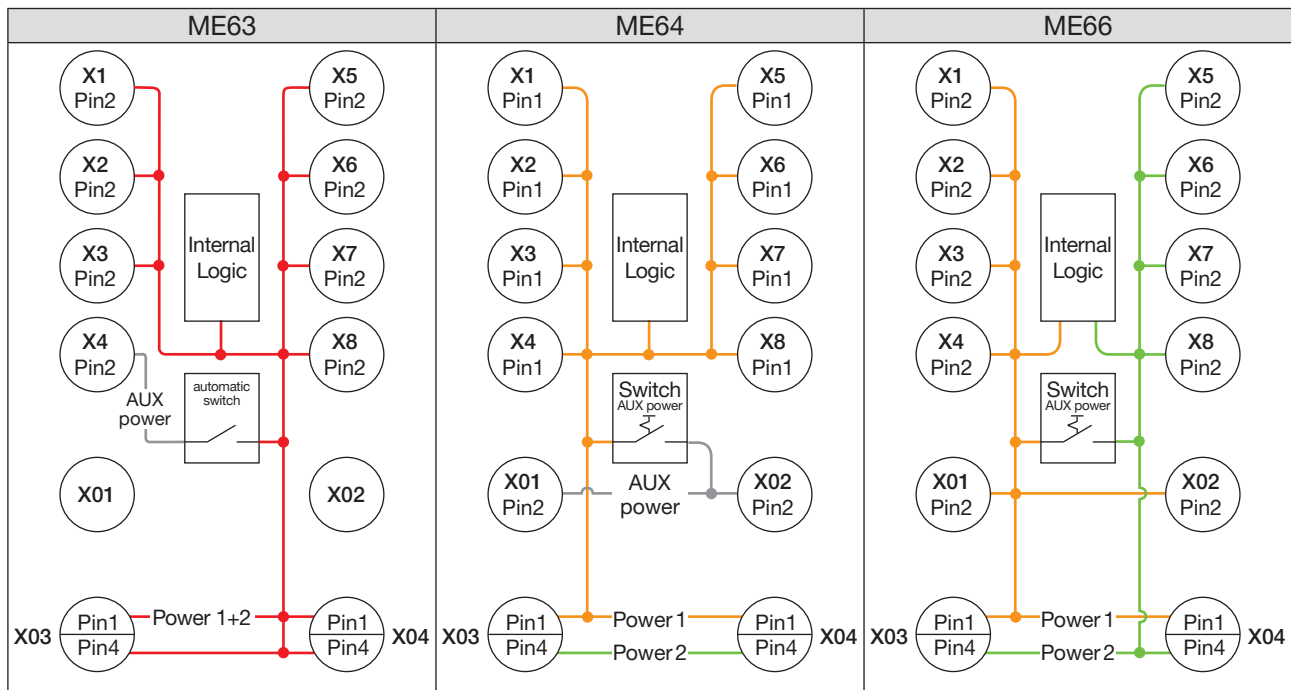


Fig. 8: Simplified circuit diagram

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

Table 7: 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). „[7.3.2 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.

7.3.3 Combining ME66 modules

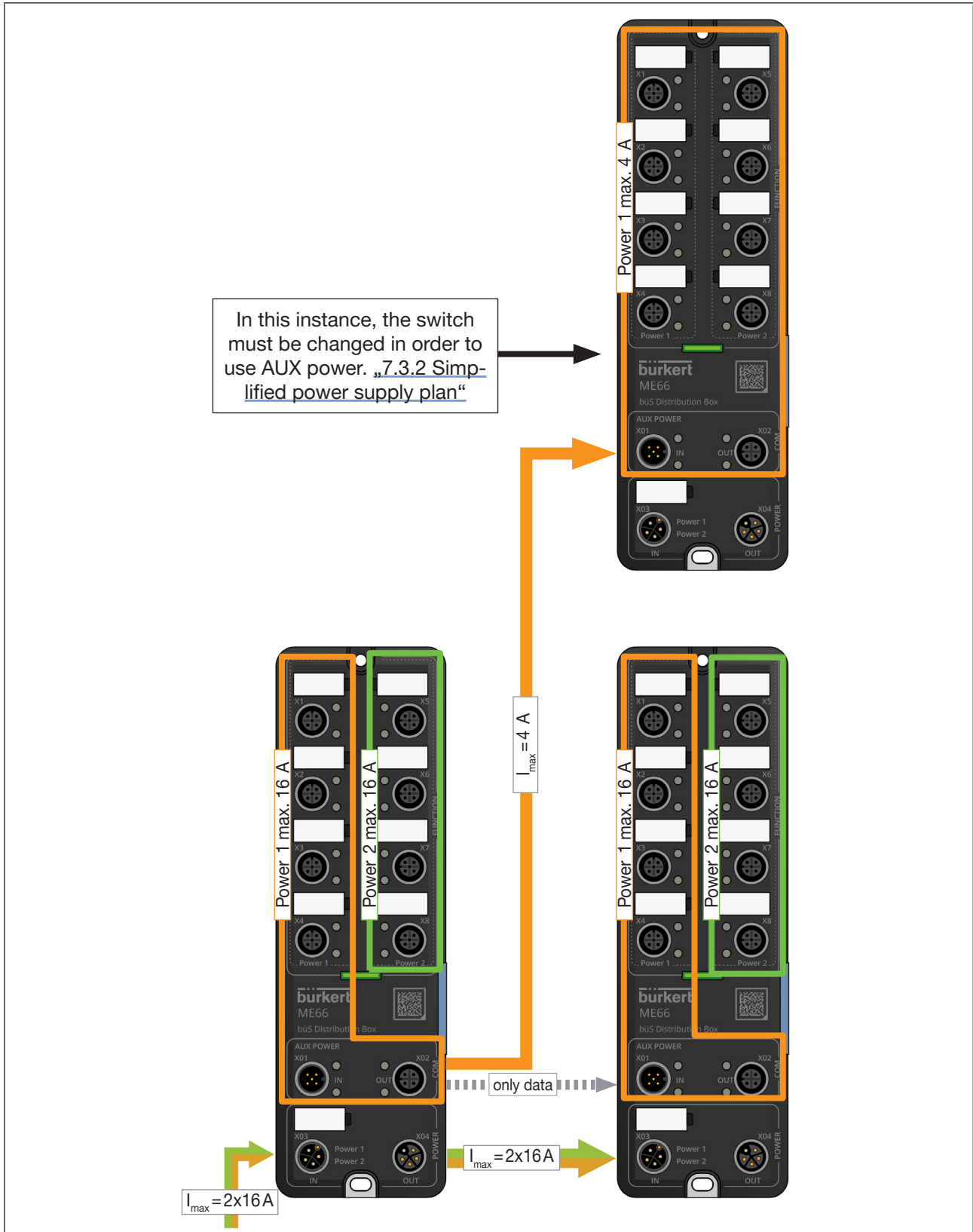


Fig. 9: Example for the combination of ME66 modules

7.4 Combining different ME modules

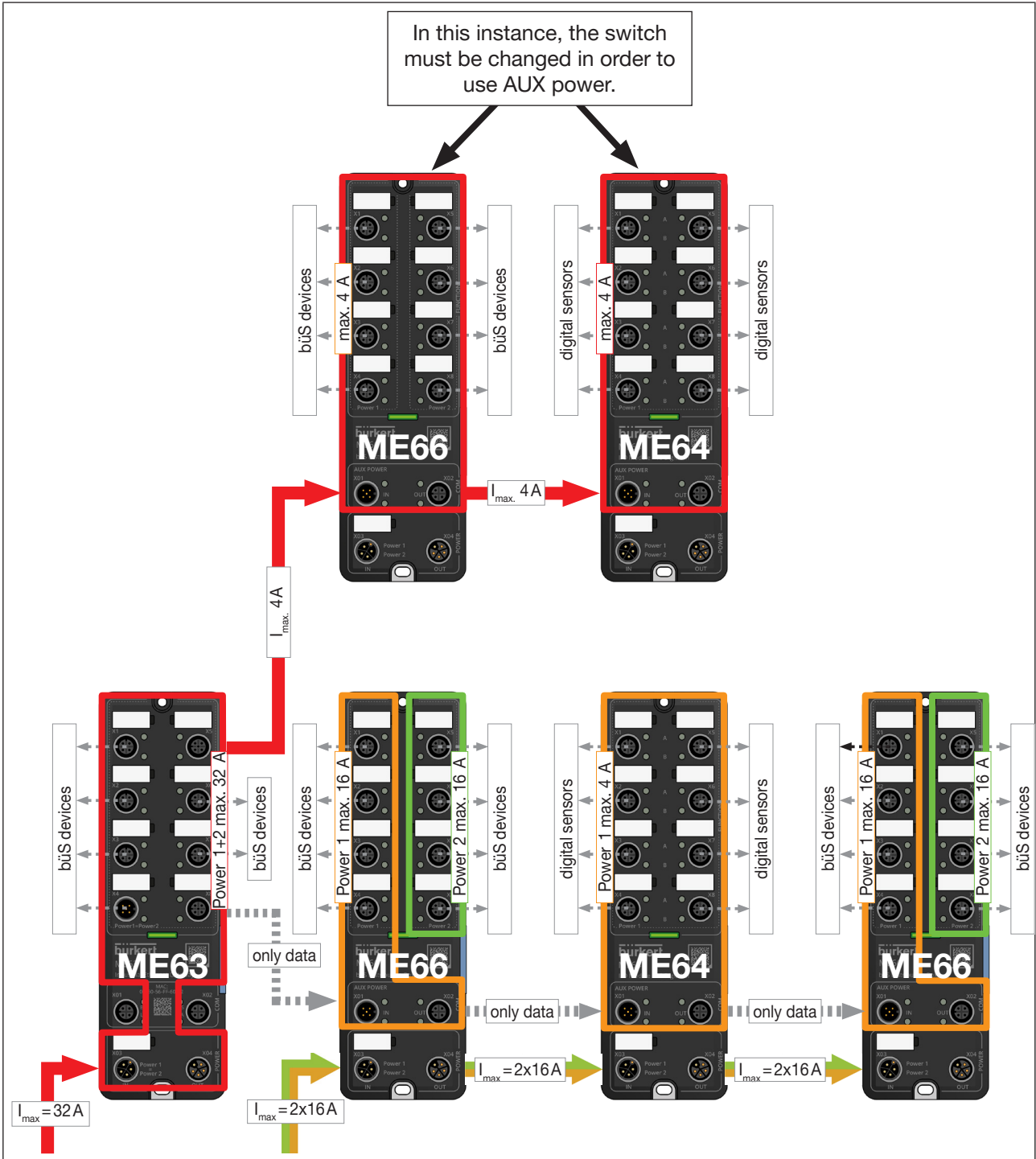


Fig. 10: Example for the combination of different ME modules

8 MEMORY CARD

The memory card can be used to store device-specific values and user settings and transfer them to another device. The memory card is part of the accessories and is not enclosed as a standard.

! The memory card is not suitable for back-ups. If the memory card of the device is re-inserted at a later stage, the data last saved are not restored. The function of the memory card is limited to data exchange.

Note!

By resetting the device to the factory settings, the data saved on the SD card are also reset.

A newly created memory card is checked for the presence of existing data when the device is re-started. This data will be transferred or overwritten accordingly:

The memory card does not contain any data.	The existing device-specific values are saved to the memory card.
The memory card contains data compatible with the device	The data on the memory card are transferred by the device. The existing device-specific values are saved to the memory card.
The memory card contains data that are not compatible with the device.	Attention! The device overwrites the data on the memory card with its own device-specific values and user settings.

NOTE

The memory card used is a special industrial version that offers additional durability and temperature-resistance.

- ▶ Do not use a standard memory card for the device. Only purchase the memory card for the device from your Bürkert sales department.

Inserting the memory card

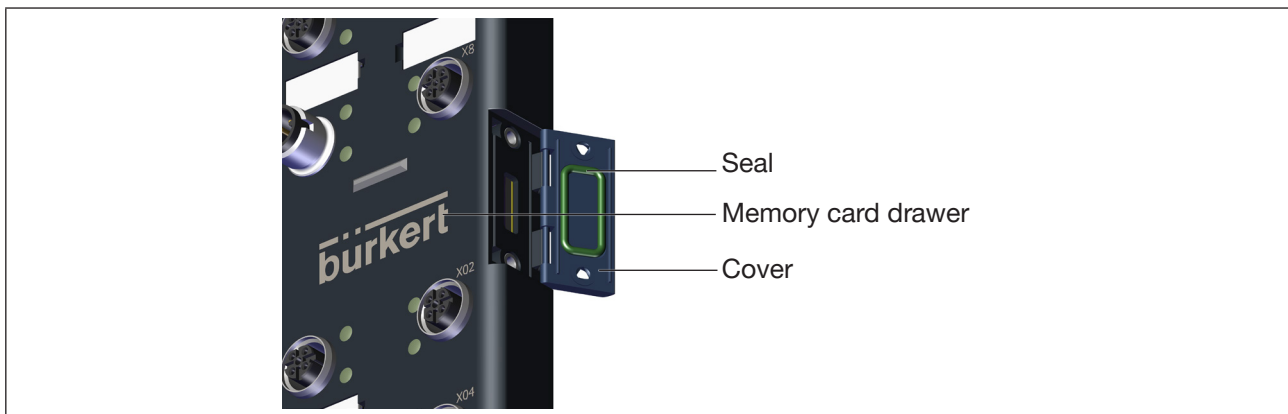


Fig. 11: Inserting the memory card

NOTE

If the memory card is removed while the supply voltage is applied, data may be lost and the memory card may be damaged.

- ▶ Do not remove the memory card while the device is connected to the supply voltage.



The memory card can be inserted while the device is connected to the supply voltage. A restart is required to ensure that the device detects the memory card.

Removing the memory card:

- Unfasten the 2 screws using a cross-tip screwdriver and open the cover.
- To unlock, press on the edge of the engaged memory card.
- Remove the memory card.

Insert the memory card into the replacement device:

 Observe the direction of insertion when inserting the card.

- Slide the memory card into the card slot. Make sure that the memory card locks into position.

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.

- Screw on the cover.

9 START-UP WITH AN EXTERNAL CONTROLLER

9.1 Cabling of bÜS networks



Additional information about cabling for bÜS networks is available at the following link:
[Guideline for planning bÜS networks](#)

9.2 Start-up files and description of the process data and parameters



The start-up files required by the project design software are either created during the configuration process or provided by the configurator.

Please refer to the documentation of your project design software for instructions regarding the installation of the start-up files.

9.3 Advanced gateway functionalities



Information on Control Mode (communications settings), Control Word (running cyclical commands) and Object Route Function (access to other bÜS objects) can be found at: www.burkert.com → ME63 type → Operating instructions “Fieldbus description”

10 START-UP WITH BÜRKERT COMMUNICATOR

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

i This chapter describes the basic use of the Bürkert Communicator. Detailed information on using the Bürkert Communicator software can be found on the Bürkert website at: www.burkert.com → 8920 → “Operating instructions” downloads.

10.1 User interface

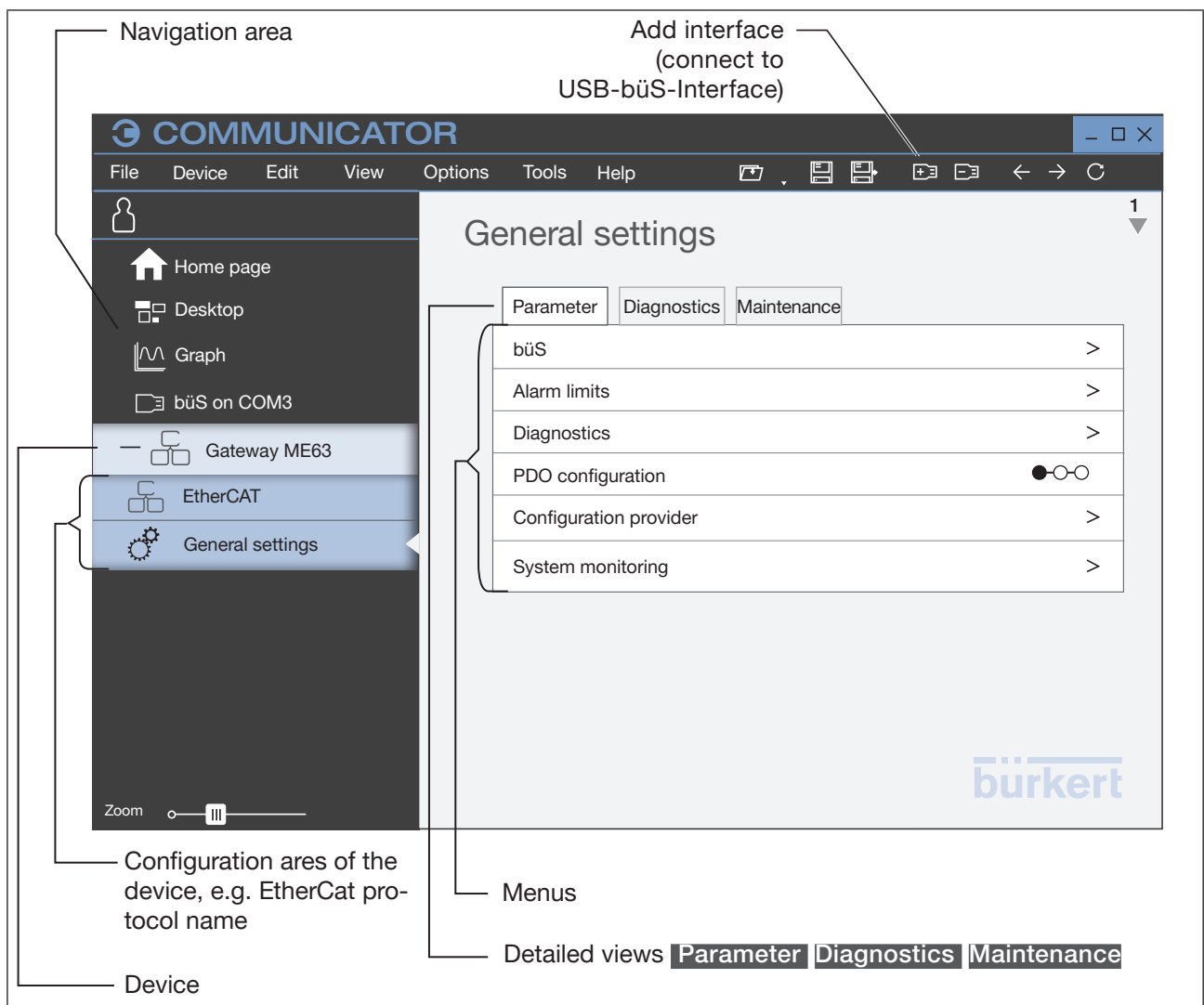


Fig. 12: Explanation of the terms in Bürkert Communicator

10.2 Connecting the device to the Bürkert Communicator

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

→ Install Bürkert Communicator on the PC.

→ Use the USB-bus-Interface to establish the connection between the device and PC.

Not required for the devices on a bus network.

→ Start Bürkert Communicator.

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

→ Select **bus stick** or **bus via network**.

→ **Complete**.

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

10.3 Protocol settings for connecting the device to the PLC network

10.3.1 Selecting the protocol

(Protocol name) > **Parameter** > **Change protocol** > **Protocol**

→ In the drop-down menu on the right, select the protocol.

10.3.2 Entering the EtherCAT address (Station Alias)

The EtherCAT addressing runs by default via the physical connection to the EtherCAT port. If required, and if set on the controller, the station alias of the gateway can also be set.

(Protocol name) > **Parameter** > **EtherCAT settings** > **Station Alias** or **Wizard**

→ Enter address. Valid addresses: 0...65536.

If an address outside the valid range has been set, the device will issue an error message.

10.3.3 Entering a PROFINET, EtherNet/IP, Modbus TCP or CC-Link IE field basic address



With Modbus TCP, it is essential to set the Ethernet parameters.

(Protocol name) > **Parameter** > **(Protocol name) settings** > **Start setup wizard**

→ Enter parameter.

Ethernet parameters:

- **IP operation mode** can only be set with EtherNet/IP, factory setting: **Fixed IP address**
- **DNS compatible name** can only be set with PROFINET
- **Fixed IP address** factory setting: 192.168.0.100
- **Network mask** factory setting: 255.255.255.0
- **Standard gateway** factory setting: 192.168.0.1

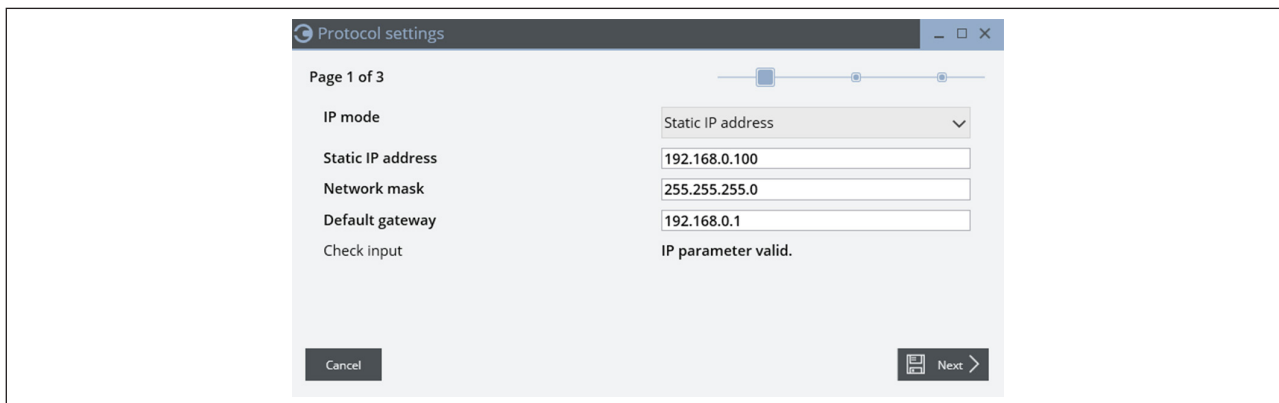


Fig. 13: Protocol setting, Ethernet parameters

The **IP parameter settings** menu option is used to check the IP parameters entered.

10.4 Configuring the fieldbus gateway

The name of the set protocol (protocol name) appears in the configuration area of Bürkert Communicator.



For configurations with more than 120 values, we recommend using a second gateway. This ensures that the state of function of the gateway is not impaired.

Fieldbus protocol	Input values	Output values	Total number of values	Input bytes	Output bytes	Total number of bytes
PROFINET	128	128	256	512	512	1024
EtherNet/IP	128	128	256	504	504	1008
Modbus TCP	128	128	256	512	512	2048
EtherCAT	128	128	130	512	512	520
CC-Link field basic	128	128	256	512	512	2048

The two additional standard values (Namur status and control word) from the gateway itself are included.

Table 8: Maximum number of process values

10.4.1 Downloading a gateway configuration

If a configuration file from an earlier project is present, the device can be configured directly using this.

(Protocol name) > Parameter > Gateway configuration > Download a gateway configuration file

→ **Select Load device configuration to device.**

10.4.2 Editing a gateway configuration

(Protocol name) > Parameter > Gateway configuration > Creating a gateway configuration

→ Select **Edit existing configuration** .

→ Edit configuration. Note chapter „10.4.3 Creating a new gateway configuration“ on this topic.

10.4.3 Creating a new gateway configuration

(Protocol name) > Parameter > Gateway configuration > Creating a gateway configuration

→ Select protocol.

→ Select **Start new configuration** .

✓ A configuration wizard will open. The following settings can be made in the configuration wizard.

10.4.3.1 Edit general settings

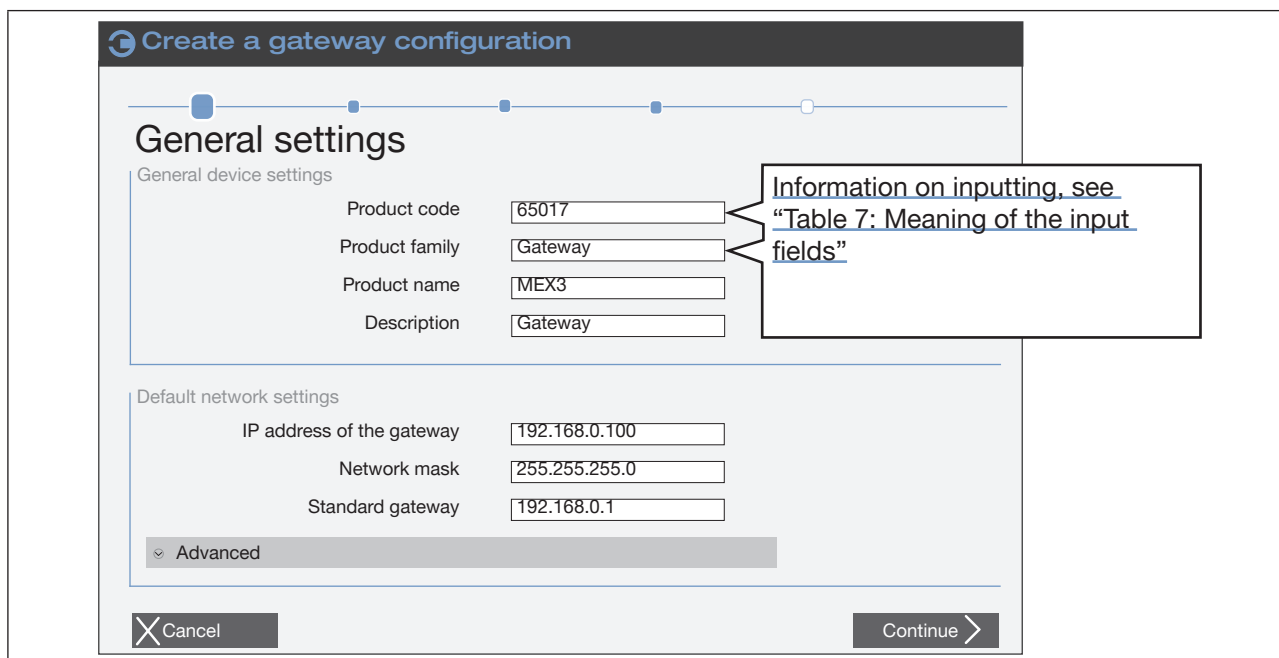


Fig. 14: Gateway configuration, general settings

Designation	Meaning
General settings	
Product code	Unique device number. e.g. identification number or custom defined code. Important when using multiple devices: Assign a separate code for each device.
Product family	Used for assignment to a device group in the PLC.
Product name	Name used to display the device on the PLC.
Description	Description of the device

Table 9: Meaning of the input fields

→ Adjust general settings for device description file of the target system (PLC) (if required).

→ Press **Continue**.

10.4.3.2 Declare inputs and outputs for the gateway configuration

1. Selecting the products (devices) as well as the input values and output values

2. Declaring inputs and outputs

Example: selected output to be declared (highlighted in grey)

Overview of the selected inputs and outputs

Display of the selected devices/device groups (to delete, click on the X)

Fig. 15: Gateway configuration, declare inputs and outputs

1. Selecting the inputs and outputs:

The inputs and outputs to be declared are specified by selecting products or process values.

→ Open the list of products and process values by clicking on

The process values on the büS network are highlighted.

Adding products:

→ Add products by drag-and-drop or double-clicking.

Values for declaring inputs and outputs have been predefined in the **Add device(s)** dialog box.

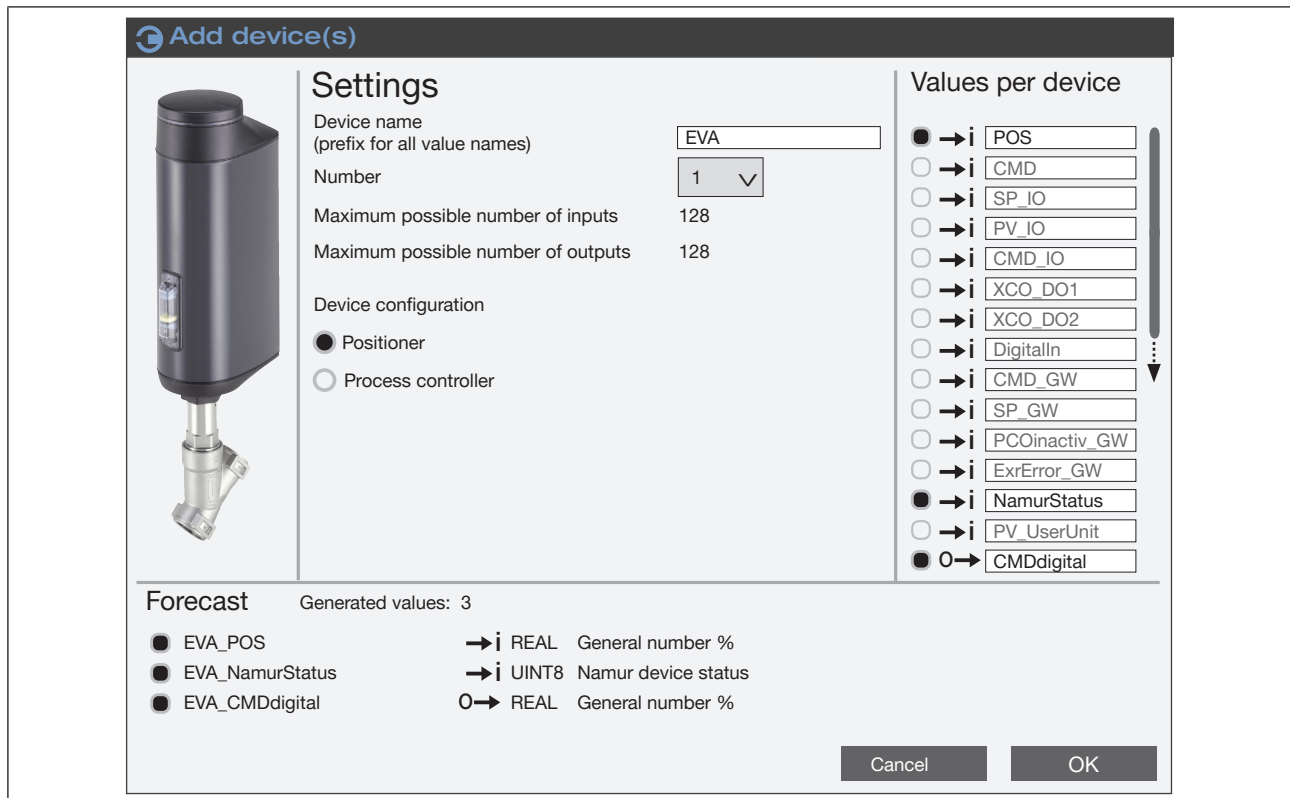


Fig. 16: Gateway configuration, add products

Make the following settings in the dialog box:

- Accept or change **Device name** (max. 20 characters)
The name is used for protocol-specific grouping and to improve assignment on the network.
- Select **Number** of devices.
- Select **Device configuration** (if selection option available).
- Apply **Values per device** or select other values.
- ⚠ The name of the value can be changed by overwriting it.

Adding process values:

- Add input values and output values via drag-and-drop or double-clicking.

Adding multiple values of the same unit simultaneously:

- Right-click on the unit and then on the **Add multiple** window.

Context-related definition of the values

- Input values

Icon: **→i**

Input values are values which come from the büS participant and are read by the PLC (büS participant → Fieldbus gateway → PLC)

- Output values

Icon: **○→**

Output values are values which are written from the PLC to the büS participant/fieldbus gateway.

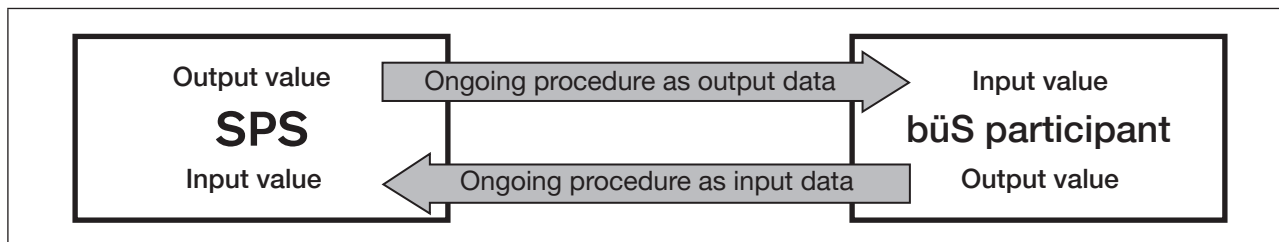


Fig. 17: Configuration; type of implementation for process values from the PLC to the büS participant

2. Adjusting properties of the values:



The properties for the values only require adjustment if deviations from the standard are requested.

→ In the overview click on the input value or output value to be declared.
The selected value is highlighted in grey.
The default values for the declaration are shown at the bottom right.



Meaning of the default values.

The default values are used when the device starts or if the partner device was not found.

For the declaration input or select the following:

- Accept or adjust **Name**. These names appear via the device description file in the target control.
- Select **Value type**. Specify physical size or device status for the input or output.
- Select or do not select **Default value**.
The standard value is accepted if no signal arrives from the partner device.
- Select or do not select **CANopen compatible**.
Is selected when the values are consumed by a CANopen device.
- Select **Unit conversion**.
Specifies in which physical unit the value is received or sent by the PLC.



You have selected and declared the inputs and outputs for the gateway configuration.

→ Press **Continue** to open the menu for the fieldbus-specific address mapping.

10.4.3.3 Fieldbus-specific address mapping

→ Check editable fields and complete if required.

The protocol-specific settings are explained in the following screen shots.

→ Press **Continue**.

Address mapping for PROFINET:

Create a gateway configuration

Profinet

Header info

Main family: Gateway v Information: Gateway

Device ID: 0x23

Device access point info

v Advanced

Module ID: 0x100 Minimum cycle time of the gateway: 4 ms

Hardware version: A.01.01.00 Software version: 580515

Maximum input length: 1400 Byte Maximum output length: 1400 Byte

Information: Gateway Compatible DNS name: MEX3

Addressing

Automatic PROFINET addressing

Start Reset devices Slot and subplot description: These fields become

Assign module ID independently

v Advanced

Advanced table restore by loading the GSDML file

Cyclic	Name	Index	Subindex	Slot	Subslot	Subslot index	Module ID	GSDML slot description	GSDML subplot description
<input checked="" type="checkbox"/>	Device status NamurNE107	0x2004	0x01	1	1	0	201		
<input checked="" type="checkbox"/>	Control word	0x3C32	0x01	2	1	0	202		

Back Cancel Continue

Overview of PROFINET addressing

Automatic PROFINET addressing

Start: Perform automatic PROFINET addressing again

Reset device: Resets the values of columns 5 to 8 back to 0.

! Existing Profinet addressing can be restored by loading the GSDML file.

Fieldbus-specific device data and access data

Fig. 18: Gateway configuration; PROFINET address mapping

Address mapping for EtherNet/IP:

Create a gateway configuration

EtherNet/IP settings

EthernetIP Data

Major revision Minor revision

Order number

EtherNet/IP EDS revision EtherNet/IP product type

EtherNet/IP product code

Addressing

Automatic EtherNet/IP addressing

Cyclic	Name	Index	Subindex	Assembly	Connection	Class (hex)	Instance (hex)	Attribute (hex)
<input checked="" type="checkbox"/>	Device status NamurNE107	0x2004	0x01	0x66	2	0x66	0x01	0x03
<input checked="" type="checkbox"/>	Control word	0x3C32	0x01	0x67	2	0x67	0x01	0x03

EtherNet/IP addressing overview

Automatic EtherNet/IP addressing

Start: Perform automatic EtherNet/IP addressing again

Reset device: Resets the values of columns 5 to 9 back to 0.

Fieldbus-specific device data and access data

Fig. 19: Gateway configuration; EtherNet/IP address mapping

Address mapping for ModbusTCP:

Overview of Modbus TCP addressing

Automatic modbus TCP addressing

Start: Perform automatic Modbus TCP addressing again

Reset device: Resets the values of columns 5 to 8 back to 0.

Settings:

Coil/register addressing **Register addressing:**
Coil addressing:

A few controllers do not support coil addressing. For this reason, it may be appropriate to use only register addressing -> then press Start

Use Modbus FC03 if possible:

Fieldbus-specific device data and access data

Fig. 20: Gateway configuration; ModbusTCP address mapping

Address mapping for EtherCAT:

EtherCAT

EtherCAT data

EtherCAT product code Product code of the EtherCAT device must be a whole number, e. g.: 12345678

EtherCAT revision EtherCAT revision of the device must be an 8-digit hex number beginning with #x ...

Addressing

Automatic EtherCAT addressing

Start **Reset devices**

Cyclic	Name	Index	Subindex	
<input checked="" type="checkbox"/>	Device status NamurNE107	0x2004	0x01	
<input checked="" type="checkbox"/>	Control word	0x3C32	0x01	

< Back **X Cancel** **Continue**

Overview of EtherCAT addressing

Automatic EtherCAT addressing

Start: Perform automatic EtherCAT addressing again

Reset device: Resets the values

Fieldbus-specific device data and access data

Fig. 21: Gateway configuration; EtherCAT address mapping

Address mapping for CC-Link IE field basic:

Create a gateway configuration

CC-Link IE Field Basic

Addressing

Automatic CC-Link addressing

Start **Reset devices**

Cyclic	Name	Index	Subindex	Start addressing
<input checked="" type="radio"/>	AI_AI1	0x2540	0x01	
<input checked="" type="radio"/>	AI_AI2	0x2541	0x01	
<input checked="" type="radio"/>	AI_AI3	0x2542	0x01	
<input checked="" type="radio"/>	AI_AI4	0x2543	0x01	
<input checked="" type="radio"/>	AI_AlasDI	0x2544	0x01	
<input checked="" type="radio"/>	AI_NAMUR	0x2545	0x01	
<input type="radio"/>	AI_DeviceStatusNamurNe107	0x2004	0x01	
<input type="radio"/>	AI_DeviceSupplyVoltage	0x2004	0x03	
<input type="radio"/>	AI_DeviceTemperature	0x2004	0x02	

< Back **X Cancel** **Continue**

Overview of CC-Link IE field basic addressing

Automatic CC-Link IE field basic addressing

Start Perform automatic CC-Link IE field basic addressing again

Reset device: Resets the values

Fig. 22: Gateway configuration; CC-Link IE field basic address mapping

10.4.3.4 Saving the gateway configuration

→ Select the output directory in the **Final settings** dialog box.

→ Press **Continue**.

The gateway configuration is saved.

The download onto the device runs in the background.

The existing device description file is also located on the specified path in the subfolder.

→ Press **Complete**.

- ✔ The configuration of the device is complete. The connection between the PLC and fieldbus gateway is established. The folder in which the description files are located opens automatically. The following overview shows which files are generated during the gateway configuration.

Gateway configuration files	Storage folder	Description
Protocol-independent files		
Buerkert-Gateway-date-.bgc	No folder	Gateway configuration container
Buerkert-Gateway-Mapping-date-.xml	BGC	Gateway mapping file. The file is automatically downloaded to the device
Buerkert-Gateway-date-.eds	EDS	Gateway expansion file. The file is automatically downloaded to the device
Files for EtherCAT		
EtherCAT-Buerkert-Gateway-date-.xml	PLC_EtherCAT	Device description file. Optional: Import to the PLC
help_ethercat.csv	PLC_EtherCAT	Overview of the cyclical and acyclic device values
Files for EtherNet/IP		
EthernetIP-Buerkert-Gateway-date-.eds	PLC_EtherNetIP	Device description file. Import to the PLC
help_ethernetip.csv/txt	PLC_EtherNetIP	Overview of the cyclical and acyclic device values
Connection-X-In/Out_Importdata.L5X	PLC_EtherNetIP	Data type for Rockwell users. Used for each assembly
Files for Modbus TCP		
ModbusTCP-Buerkert-Gateway-date-.txt	PLC_ModbusTCP	Device description file
help_modbusTcp.csv/txt	PLC_ModbusTCP	Overview of the cyclical and acyclic device values

Gateway configuration files	Storage folder	Description
Files for PROFINET		
GSDML-V2.32-Buerkert-Gateway-date-.xml	PLC_Profinet	Device description file. Import to the PLC
GSDML-0078-0023-icon.bmp	PLC_Profinet	Icon used together with the device description file.
help_profinet.csv/txt	PLC_Profinet	Overview of the cyclical and acyclic device values.

Table 10: Overview of the files which are generated during the gateway configuration

10.5 Configuring the büS network

→ Select - **büS** in the navigation area.

→ Select Detailed view **Network configuration**.

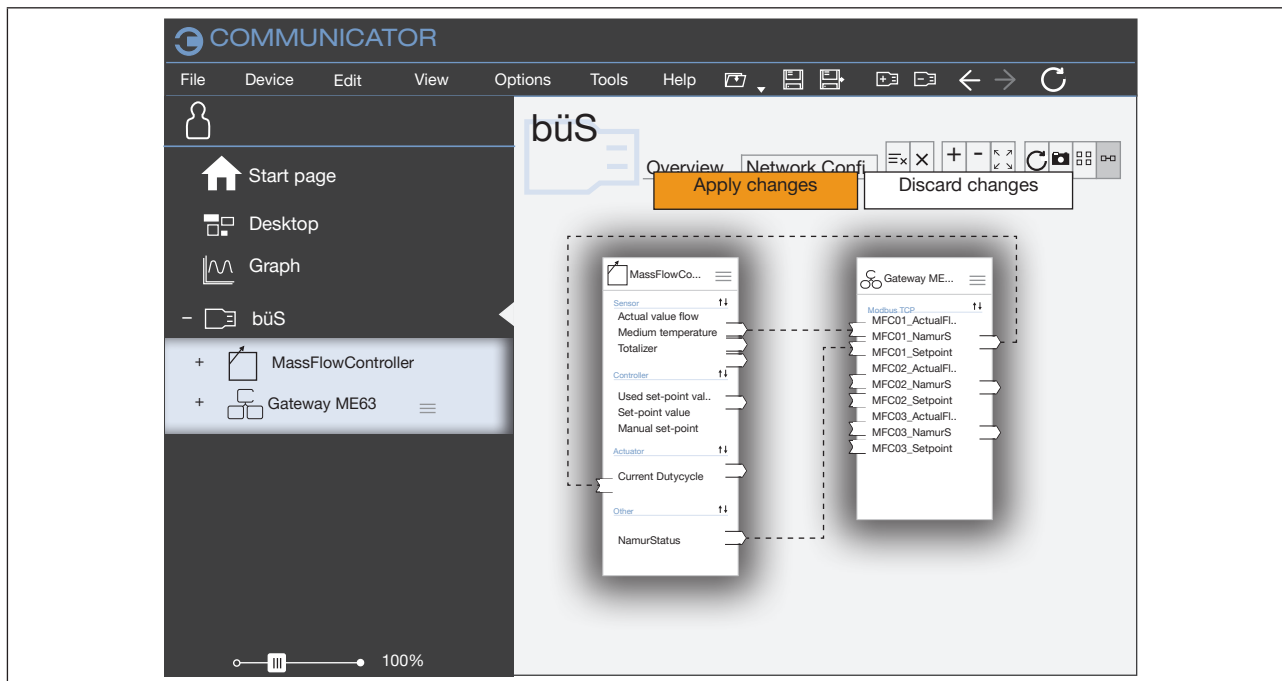


Fig. 23: Network configuration

→ Connect the inputs and output via drag-and-drop.

Compatible connection points are highlighted in blue.

Dotted connections have not yet established an active connection between the devices.

→ Click **Apply changes**.

All configured devices are re-started.

✔ The büS network is configured..

11 START-UP USING A WEB SERVER

The ME63 type FieldConnect has an integrated web server that provides functions for configuring and displaying status information.

The web server can be used for the following protocols:

- PROFINET
- EtherNet/IP
- Modbus TCP

The IP address of the device is used for access via the web server.

NOTE

Unauthorized access to the web server.

- ▶ To prevent unauthorized access by third parties, operate the device only within a protected network.

11.1 Function of the web server

The web server can be used to specify a number of settings (such as the IP address).

If the gateway configuration is created with Communicator (version 5.1 or higher), the web server shows an image of the entire system. The connected devices are depicted on an overview page. Clicking a device will open a device-specific page.

The web server displays basic data such as serial number, device type, etc. In addition, all cyclical and acyclic data declared during the gateway configuration are displayed. This only functions when the corresponding devices are also connected to the gateway during the web server access and connected via bÜS mapping. If a device is not present during access, a gap is left on the web server for the assigned device ID.

11.2 Making a connection to the web server via Bürkert Communicator

Web server can be enabled or disabled via Bürkert Communicator.

Web server > Parameter > Activate web server

11.3 Establishing a connection to the web server

→ Connect the PC to the device via a network cable.

→ Enter the IP address in the address line of the web browser.

The IP address of the device upon delivery is 192.168.0.100.

If the IP address is changed to an unknown value, the current IP address can be requested from the display of the device or determined with the help of Bürkert Communicator.

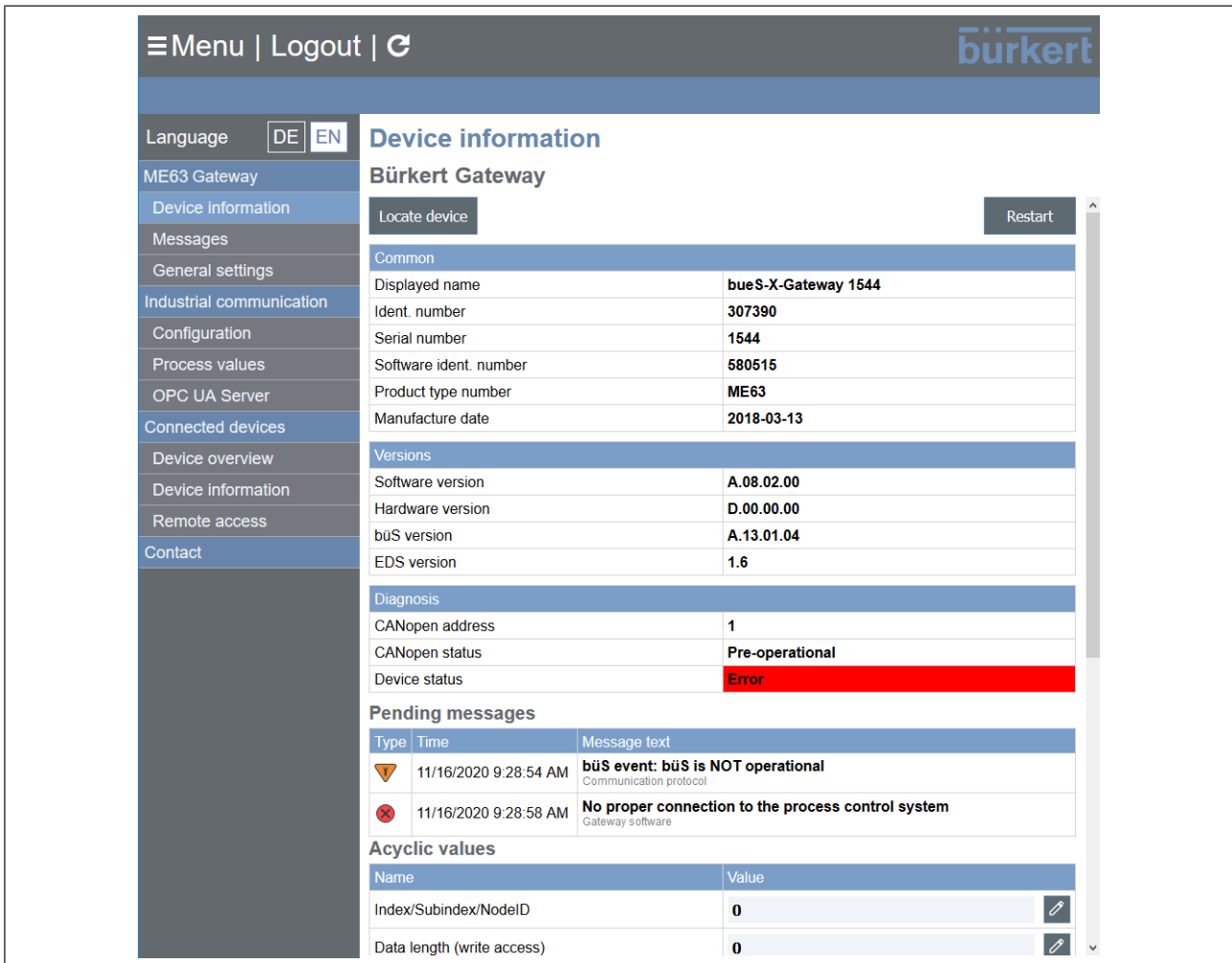


Fig. 24: Web server view

11.4 Logging onto the web server

- On the home page, click on **Login** on the top left.
- Enter your user name and password: User name: admin
Password: admin (or MAC address)
- Click on **Login**.

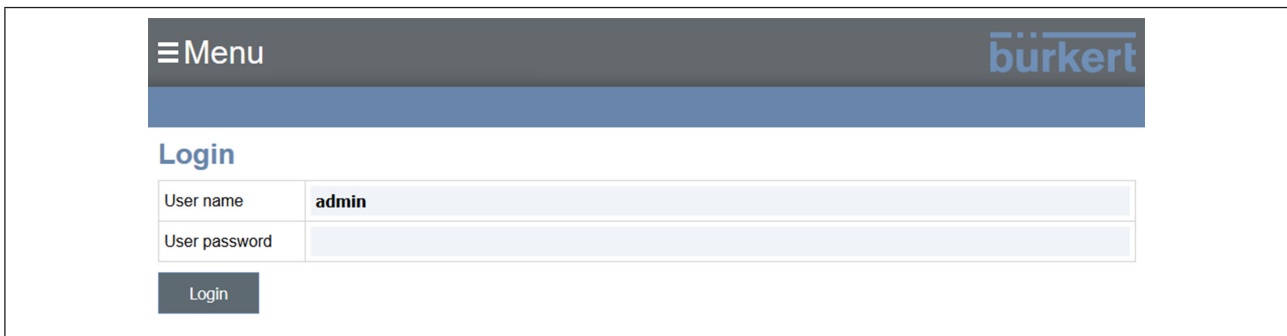


Fig. 25: Logging onto the web server

11.5 Passwords

NOTE

Security risk due to standard passwords.

Unauthorized persons can log in to the web server and make changes to the system.

- ▶ Please change standard passwords.
- ▶ If the web server is not needed, disable access via Bürkert Communicator.

Web server > Parameters > Deactivate web server.

The user name and password are factory set to **admin**. When resetting the passwords, these settings are reset to the default values.

11.5.1 Change password

- Logging onto the web server.
- Enter and confirm the new password in the menu **General settings**.

11.5.2 Factory reset of password

- Click on **Login**.
- On the bottom right of the login window, click on **Reset** passwords.

The device must be rebooted within 3 minutes so that the passwords can actually be reset. A restart can be triggered via the fieldbus gateway display, the Bürkert Communicator software or via a voltage reset.

11.6 Configuring the device



Configuring multiple devices:

Since the devices have the same IP address on delivery, only one unconfigured device is permitted in the network so that the device can be identified.

- ▶ Connect to the network and configure the devices individually in sequence.

- Enter the device name and IP address for the device.
The device name (DNS compatible name) is used in the planning process.

- Click **Apply**.

A voltage reset of the device is required to accept the changed parameters.

- Restart the device.

12 OPC UA

12.1 General description

The OPC UA server allows an OPC UA client to read and write values (cyclical and acyclic) determined by the gateway configuration.

To make the data from the ME63 and the connected bÜS devices on an OPC UA client, the following points are to be observed:

- A gateway configuration with Communicator version of 6 or higher (see point xy) must be carried out, meaning that acyclic values can also be selected as well.
- The values that are available on the controller via the set protocol and on the OPC client are identical and cannot be evaluated separately.
- After the gateway configuration, a bÜS mapping must be carried out. If bÜS devices are not connected to the gateway via mapping, the values and names of the devices cannot be exported.

12.2 Establishing a connection to OPC UA

The function for enabling or disabling the OPC UA server can be set in Bürkert Communicator:

OPC UA > Parameter > Enable OPC UA

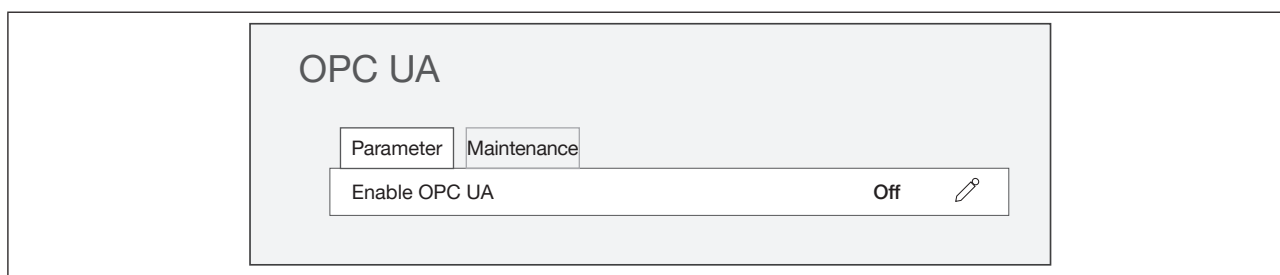


Fig. 26: Enabling OPC UA

After enabling the OPC UA, other OPC UA server settings will become visible.

When the OPC UA server is activated, the f(x) configuration is not available

12.2.1 Settings on the device

IP parameters are set in the protocol-specific settings.

Detailed view	Menu	
Parameter	Enable OPC UA	OPC UA can be enabled or disabled here. The setting takes effect the next time the de
	Serverport	Setting of the port for OPC UA communication. Status on delivery: 4840
	Number of monitored objects	Used to limit the maximum number of values to be monitored by the OPC UA server
	Event type	Setting whether and which type of events of the ME63 are to be sent. To be able to send events from connected bÜS devices, the corresponding types must be selected under General settings > System monitoring > Diagnostics

Table 11: Settings on the ME63 (OPC UA server)



After changing the settings on the ME63, a restart is essential.


12.2.2 Settings for the OPC UA client

Endpoint URL	opc.tcp://*IP address of the ME63*:*set server port (factory setting: 4840)* Example: opc.tcp://192.186.0.100:4840
Security settings	
Security policy	none
Message Security Mode	none
Authentication settings	Anonymous

12.3 Server certificate

The OPC UA server offers the user the option of exchanging the factory server certificate for their own. Exchange is only possible via the web server.

To change the certificate:

- Open the web server with the IP address of the ME63. The certificate can only be exchanged after login.
- Select **OPC UA Server**.
- Under **Server certificate** click on the  and select the file in „DER“ format.
- Select **Change certificate**.

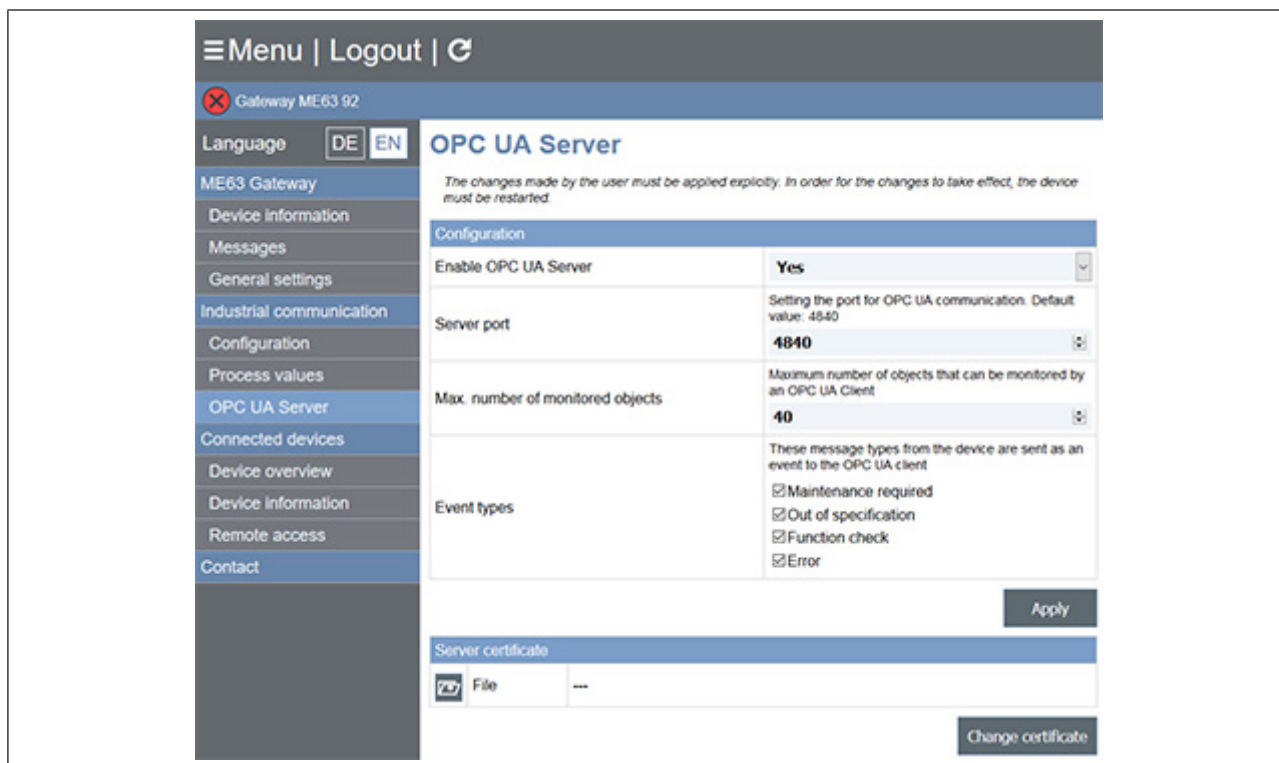


Fig. 27: Change the server certificate



The device must be restarted after a successful exchange.

To delete the user-specific certificate and set the factory certificate to active:

→ Click on **Change certificate**.

→ Confirmed with **OK**.

The factory certificate is loaded after the restart.

When restoring the factory settings, the user-specific certificate is deleted and the factory certificate set to active.

The user-specific certificate is not saved on a removable storage device and is therefore not transferred when the configuration is transferred to another device.

13 DISPLAY ELEMENTS

Type ME63 has the following LEDs for diagnostics on the device status:

- LEDs for indicating the bus status (communication status).
- LED for indicating the device status.

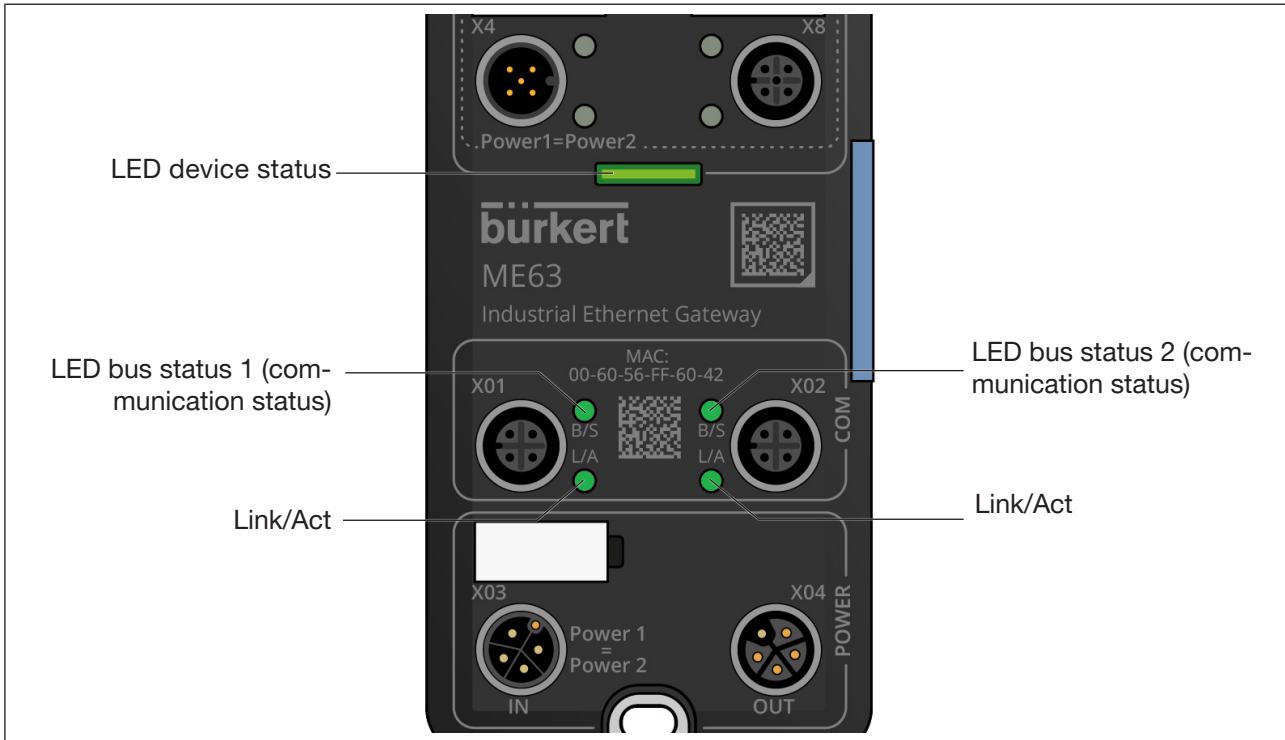


Fig. 28: Display elements for ME63 type

13.1 LEDs for indicating the bus status

Each bus status (communication status) is assigned a separate status indicator. The LEDs for indicating the communication status change between the colours green and red.

13.1.1 PROFINET IO

LED	Colour	State	Description
LED bus status 1 (system error)	Duo-LED red/green		
	off	off	no error
	red	flashing	DCP signal service is triggered via the bus
	red	on	Watchdog time-out, enhanced diagnostics present, system error
LED bus status 2 (bus error)	Duo-LED red/green		
	off	off	no error
	red	flashing	no data exchange
	red	on	no configuration, slow or no physical connection

Link/Act	LED green		
	green	on	The device has a connection to the Ethernet
	off	off	The device has no connection to the Ethernet
Link/Act	LED yellow		
	yellow	flickering	The device is sending/receiving Ethernet frames
	off	off	The device is not sending/receiving any Ethernet frames

Table 12: Description of the LEDs, PROFINET IO

13.1.2 EtherNet/IP

LED	Colour	State	Description
LED bus status 1 (module status)	Duo-LED red/green		
	green	on	Device in operation: The device is in operation and running correctly
	green	flashing	Standby: The device has not been configured
	green-red-green	flashing	Self-test: The device runs through its switch-on test. The test sequence for the module status display is carried out before the test sequence for the network status display, according to the following sequence: <ul style="list-style-type: none"> • Network status LED off • Module status LED lights up green for approx. 250 ms, turns red for approx. 250 ms and then lights back up in green (and maintains this status until the test has been completed) • Network status LED lights up green for approx. 250 ms, turns red for approx. 250 ms and then goes out (and maintains this status until the test has been completed)
	red	flashing	Serious solvable error: The device has determined a serious, solvable error, e.g., an incorrect or inconsistent configuration can be categorised as a serious, solvable error
	red	on	Serious non-solvable error: The device has determined a serious, non-solvable error
	off	off	Switched off: The device is switched off

LED bus status 2 (network status)	Duo-LED red/green		
	green	on	Connected: An IP address is configured, at least one CIP connection (any transport class) has been established, and the time limit has not been exceeded for an exclusive owner connection
	green	flashing	No connections: An IP address is configured, but no CIP connections have been established, and the time limit has not been exceeded for an exclusive owner connection
	green-red-off	flashing	Self-test: The device runs through its switch-on test
	red	flashing	Time-out of the connection: An IP address is configured and the time limit has been exceeded for an exclusive owner connection for which this device is the destination. The network status display is only permanently reset to green when all exclusive owner connections whose time limits have been exceeded have been restored.
	red	on	Duplicate IP: The device has determined that its IP address is already being used
	off	off	Switched off, no IP address: the device has no IP address (or is switched off)

Link/Act	LED green		
	green	on	The device has a connection to the Ethernet
	off	off	The device has no connection to the Ethernet
Link/Act	LED yellow		
	yellow	flickering	The device is sending/receiving Ethernet frames
	off	off	The device is not sending/receiving any Ethernet frames

Table 13: Description of the LEDs, EtherNet/IP

13.1.3 Modbus TCP

LED	Colour	State	Description
LED bus status 1 (run)	Duo-LED red/green		
	green	on	Connected: OMB task has communication. At least one TCP connection is established
	green	flashing	Ready, not yet configured: OMB task ready and not yet configured
	green	flashing	Wait for communication: OMB task is configured
	off	off	Not ready: OMB task not ready
LED bus status 2 (error)	Duo-LED red/green		
	off	off	no communication error
	red	flashing	System error
Link/Act	LED green		
	green	on	The device has a connection to the Ethernet
	off	off	The device has no connection to the Ethernet
Link/Act	LED yellow		
	yellow	flickering	The device is sending/receiving Ethernet frames
	off	off	The device is not sending/receiving any Ethernet frames

Table 14: Description of the LEDs, Modbus TCP

13.1.4 EtherCAT

LED	Colour	State	Description
LED bus status 1 (run)	Duo-LED red/green		
	off	off	The device is in INIT state
	green	flashing	The device is in PRE-OPERATIONAL state (before operation)
	green	single flashing	The device is in SAFE-OPERATIONAL state (in safe mode)
	green	on	The device is in OPERATIONAL state (in operation)
LED bus status 2 (error)	Duo-LED red/green		
	off	off	No error: The EtherCAT communication of the device is in operation
	red	flashing	Invalid configuration: General configuration error Possible cause: A status change specified by the master is not possible due to the register or object settings.
	red	single flashing	Local error: The slave device application has automatically changed the EtherCATStatus Possible cause: – A host watchdog timeout has occurred – Synchronisation error; the device changes automatically to safe-operational.
	red	double flashing	Process data watchdog timeout: A process data watchdog timeout has occurred Possible cause: Sync manager watchdog timeout
Link/Act	LED green		
	green	on	The device has a connection to the Ethernet, and is not sending or receiving any Ethernet frames
	green	flickering	The device has a connection to the Ethernet, and is sending or receiving Ethernet frames
	off	off	The device has no connection to the Ethernet
Link/Act	LED yellow		
	off	off	LED is not used

Table 15: Description of the LEDs, EtherCAT

13.1.5 CC-Link IE field basic

LED	Colour	State	Description
Run	Duo-LED red/green		
	green	on	Station in operation and ongoing cyclical communication
	green	flashing	Station in operation and stopped cyclical communication
	green	flickering	Station not configured
	off	off	Station is disconnected
Error	Duo-LED red/green		
	red	on	Communication error
	red	triple flashing	DPM watchdog has elapsed
	off	off	Station is disconnected
Link/Act	LED green		
	green	on	Link: The station has a connection to the Ethernet, and is not sending or receiving any Ethernet frames
	green	flickering	Activity: The device has a connection to the Ethernet, and is sending/receiving Ethernet frames
	off	off	The station has no connection to the Ethernet
Link/Act	LED yellow		
	off	off	LED is not used

Table 16: Description of the LEDs, CC-Link IE field basic

13.2 LED for indicating the device status

The LED for indicating the device status changes colour and status in accordance with NAMUR NE 107.

If several device statuses exist simultaneously, the device status with the highest priority is displayed. The priority is based on the severity of the deviation from standard operation (red = failure = highest priority).

Indicators in NAMUR operation mode:

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	The device is searching for a bÜS participant. This status is exited after a few seconds. Device simulation active.
3	yellow	Outside 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.
2	Blue	Maintenance required	The device has detected a deviation during ongoing diagnostics and has implemented a correction. → Perform device maintenance.
		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 sent via any fieldbus that may be connected.
0	white	Diagnostics inactive	Device is switched on. Status conditions are not displayed. Messages are not listed in the message list or transmitted via any connected fieldbus. Device is running within its specifications.

Table 17: Indication of the device status in NAMUR operation mode

14 BÜRKERT COMMUNICATOR MENUS

The overview below describes the device-specific settings of type ME63 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: www.burkert.com → 8920 → “Operating instructions” downloads.

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

14.1 f(x) configuration

The configuration area f(x) configuration includes the menu for the configuration of other device functions.

The f(x) configuration enables functional extensions through free programming using a graphical programming interface.

Examples of functions are e.g. a timer, a graphical programme or a controller.



Information and instructions for the f(x) configuration software can be found on the Bürkert homepage at: www.buerkert.de → 8922 → Downloads “Operating instructions”.



When the OPC UA server is activated, the f(x) configuration is not available

14.2 “Web server” and “OPC UA”

The menus for web server and OPC UA only appear with the following protocols:

- PROFINET IO
- EtherNet/IP
- Modbus TCP

Enabling or disabling the web server:

Web server > **Parameter** > **Activate web server**

Enabling or disabling the OPC UA server:

OPC UA > **Parameter** > **Enable OPC UA**



When the OPC UA server is activated, the f(x) configuration is not available

14.3 Menus in the configuration area “PROFINET”, “EtherNet/IP”, “Modbus TCP” and CC-Link IE field basic

Detailed view Parameter

Detailed view	Menu								
Parameter	PROFINET, EtherNet/IP, Modbus TCP or CC-Link IE field basic settings Wizard for specifying input check and start conditions for bÜS communication. IP parameter settings Set DNS compatible name . Set Fixed IP address . Set Network mask . Set Standard gateway . Specify Temporary IP address . MAC address is displayed. <table border="1" style="display: inline-table; vertical-align: top;"> <tr> <td>Advanced settings</td> <td>Alarm settings</td> </tr> <tr> <td></td> <td>Internal cycle time</td> </tr> <tr> <td></td> <td>Control mode settings</td> </tr> <tr> <td></td> <td>Firmware update protocol</td> </tr> </table>	Advanced settings	Alarm settings		Internal cycle time		Control mode settings		Firmware update protocol
	Advanced settings	Alarm settings							
		Internal cycle time							
		Control mode settings							
		Firmware update protocol							
	Gateway configuration	Download a gateway configuration file Create a gateway configuration							
	Unit conversion								
	Hide process values	Edit values to be hidden							
		Reset hidden values							
	Acyclic routing settings								
	Change protocol	Select Protocol							

Table 18: Settings in the “PROFINET” configuration area, parameter for detailed view

Detailed view Diagnostics

Detailed view	Menu
Diagnostics	Configuration file information
	Protocol
	Communication status
	Established connections to PLC
	Used internal cycle time
Advanced	Last status code
	In these menus, the current values are displayed, not set.

Table 19: Settings in the “PROFINET” configuration area, diagnostics detailed view

Maintenance detailed view

Detailed view	Menu		
Maintenance	Version number	Stack name	In these menus, the current values are displayed, not set.
		Stack version	
		Stack build	
		Stack revision	
		Stack date	
		ICom version	
	Hardware reset of industrial communication		

Table 20: Settings in the “PROFINET” configuration area, maintenance detailed view

14.4 Menus in the “EtherCAT” configuration area

Detailed view Parameter

Detailed view	Menu		
Parameter	EtherCAT settings	Wizard for specifying input check and start conditions for bÜS communication.	
		Station alias	
		MAC address is displayed.	
		Advanced settings	Alarm settings
			Internal cycle time
			Control mode settings
			Firmware update protocol
	Gateway configuration	Download a gateway configuration file	
		Create a gateway configuration	
	Unit conversion		
	Hide process values	Edit values to be hidden	
Reset hidden values			
Acyclic routing settings			
Change protocol	Select Protocol		

Table 21: Settings in the “EtherCAT” configuration area, parameter for detailed view

14.5 Menus in the “General settings” configuration area

Detailed view Parameter

Detailed view	Menu		
Parameter	Status LED	Set operation mode	
	bÜS	Configuration of the bÜS interface	
		Assign displayed name for display and Bürkert Communicator.	
		Location Specify location displayed for the device.	
		Description Enter description text for tooltips	
		Advanced	Unique device name for partner assignment.
			Specify Baud rate.
			Specify CANopen address.
			Bus mode Set operation mode of the bÜS interface
			Show errors from bÜS partners Set whether and from which partners errors are displayed.
		Deallocation delay Time from the loss of a partner until deletion of its configuration.	
	Alarm limits	Set limits after which the device issues a warning or error.	
		Supply voltage Set alarm limit for supply voltage.	
		Device temperature Set alarm limit for device temperature.	
		Warning of battery voltage below display of the value.	
	Diagnostics	Enabling or disabling diagnostics.	
	PDO configuration	Configuring process data objects	
		PDO 1	
		Reset to default values	
	Configuration provider	Status Enable or disable configuration provider.	
		Remove all device configurations Set response after device restart.	
		Force reconfiguration of all devices Set response after device restart.	
		Enable or disable ignore offline devices	
	Managing device functions	Disable industrial communication, web server and OPC UA to use the f(x) configuration.	
		Shows whether the f(x) configuration can be used with the current setting.	
	System monitoring	Diagnostics	
		Individual diagnostics of the system devices	

Table 22: Settings in the “General settings” configuration area, parameter detailed view

Detailed view Diagnostics

Detailed view	Menu			
Diagnostics	Device status	Operating duration	In these menus, the current values are displayed, not set.	
		Device temperature		
		Supply voltage		
		Voltage drops Number since restart.		
		Min./max. values		Max. temperature
				Min. temperature
				Max. Supply voltage
				Min. Supply voltage
		Device start counter		
		Removable storage medium status		
	Current system time			
	Battery voltage			
	büS status	Receive errors Number since restart.		
		Max. receive errors Most serious receive error that was issued in the same way as the device status is displayed. The display can be reset to 0.		
		Send errors Number since restart.		
		Max. send errors Most serious send error that was issued in the same way as the device status is displayed. The display can be reset to 0.		
		Reset error counter		
	CANopen status operational or pre-operational			
	Logbook	<p>The logbook lists all warning messages and error messages with details of the type, time and signature.</p> <p>The messages displayed in the logbook can be updated, saved and deleted.</p>		
	Configuration provider	Status	In these menus, the current values are displayed, not set.	
Number of managed devices				
- Number of which offline configurations				
- Number of which authorised reconfigurations				
Number of reconfigured devices				
Number of loaded device configurations				
Number of missing devices				
Number of faulty configuration load processes since restart				
Number of faulty reconfigurations				
Removable storage medium status				

Settings in the "General settings" configuration area, diagnostics detailed view

Maintenance detailed view

Detailed view	Setting				
Maintenance	Device information	Displayed name only displayed if a name was entered in the menu of the same name for the Parameter detailed view.		In these menus, the current values are displayed, not set.	
		Identification number			
		Serial number			
		Software ident. number			
		Software version			
		bùS version			
		Hardware version			
		Product type			
		Manufacturing date			
		eds version			
		f(x) version			
		Device driver			Driver version
					Firmware group
			DLL version		
			Place of origin		
Reset device	Restart				
	Factory reset				

Table 23: Settings in the "General settings" configuration area, maintenance detailed view

15 TROUBLESHOOTING

Problem	Possible cause	Measure
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.
No process values are transmitted between Industrial Ethernet and bÜS.	No cable connection	Check the Ethernet and bÜS cabling.
	The reading and writing of the values has not been enabled by the PLC in the control object of the device.	Enable the reading and writing of the values in the control object of the device.
	The process values are incorrectly configured.	Check the configuration of the process values.
	The process values are incorrectly assigned.	Check the assignment of the process values to the bÜS participants.
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.
Replacement device does not adopt any values of the memory card from the defective device.	The replacement device and the defective device have different device software identification numbers.	Only values between devices with the same ID can be transferred.
	The memory card is defective. The device was not able to write any values to the memory card.	Replace the memory card and try again to transfer the parameters from the defective device to the memory card.
Replacement device does not adopt all values of the memory card from the defective device.	The replacement device and defective device have different EDS device descriptions.	Only the existing values on the defective device can be copied to the replacement device. New replacement device values must be parameterised using the Bürkert Communicator software.

Table 24: Troubleshooting

15.1 Description of the error code

Error code	Description
1/3	Overload detected.
2/1	Overvoltage detected.
2/2	Undervoltage detected.
2/3	Voltage warning limit exceeded.
2/4	Voltage warning limit undershot.
2/5	Battery voltage warning limit undershot.
2/6	Voltage drop detected.
3/1	Excess temperature detected.
3/2	Low temperature detected.
3/3	Temperature warning limit exceeded.
3/4	Temperature warning limit undershot.
18/4	Memory card is defective.
18/7	Removable storage present.
18/8	No access to the removable storage possible.
18/9	Configuration is being successfully managed by another device.
18/10	Configuration is NOT being successfully managed by another device.
18/11	Unable to load device configuration via the configuration provider.
18/12	At least 1 device is missing.
18/13	Bürkert Communicator is required.
18/14	Device must be replaced.
18/15	Device cannot be replaced as there are too many options present. Reduce the number of compatible devices.
18/16	Problems when replacing device.
18/17	Problems when replacing device. Unable to write to at least 1 object.
18/18	Device replacement failed.
18/19	Device replacement completed successfully.
18/20	Configuration provider is not active as no memory card has been detected.
18/21	More than 1 configuration provider is active! Switch off the other provider functions.
32/1	Capacity of the internal message storage exceeded.
32/130	Initialisation of the device.
33/1	Switch to "Operation" state
33/2	Switch to "Diagnostics active" state.
33/3	Switch to "Maintenance" state
33/4	Switch to "Out of specification" state.
33/5	Switch to "Check function" state.
33/6	Switch to "Error" state
33/7	Switch to AUTO operating state.
33/8	Switch to MANUAL operating state.
33/9	Switch to special operation mode: LED flashing.
33/11	Switch to "off" state.

Error code	Description
33/12	Input value simulation active for at least 1 value.
33/13	Output value simulation active for at least 1 value.
33/14	Demo operation mode enabled.
33/32768	1 status message present.
35/1	EEPROM error detected.
35/2	At least 1 persistent memory cannot be used.
40/996	Error on 1 or more partner device(s).
45/256	büS event: büS is NOT operational.
45/257	büS event: initialisation of communication.
45/512	büS event: localisation.
45/768	büS event: a device is using the same address.
45/1024	büS event: bus connection lost/not available.
45/1792	büS event: partner search active.
45/1793	büS event: producer(s) not found.
45/1794	büS event: manually configured device without address. The search can take up to 1 minute.
45/1795	büS event: producer assignment faulty.
45/1796	büS event: removal of the producer failed.
45/1797	büS event: incorrectly configured CANopen device.
45/1798	büS event: GCV is configured on both büS interfaces.
45/1799	büS event: cyclical communication of the producer is not active.
45/2048	büS event: saving of persistent büS data (do not switch off device).
45/2049	büS event: deletion of persistent büS data (do not switch off device).
45/2304	büS event: router for acyclickonfigurier data active.
45/2560	büS event: incorrect serial number.
45/2561	büS event: incorrect configuration of cyclical inputs (not enough filters).
45/2562	büS event: incorrect configuration of cyclical values.
45/2816	büS event: manager is active.
45/3072	büS event: monitored device failed.
45/3584	Wait for addressing.
45/4096	Error when initialising the device parameters.
45/4097	Configured address is already being used.
51/1	No correct connection to the process control system.
51/2	The cyclical data traffic was slower than the set timeout parameters.
51/10	Initialisation of the industrial communication.
51/101	Error in the NetX configuration, e.g. when downloading the firmware.
51/102	The industrial communication is switched off.
51/103	No or incorrect mapping file present.
51/104	No protocol firmware available.
51/105	Please select a protocol and restart the device.
51/201	Protocol stack initialisation error.
51/202	Protocol stack configuration error.

Error code	Description
51/203	Error sending the MAC address.
51/204	Error registering the object data.
51/205	Error registering the connections, more than 5 specified.
51/206	Incorrect PROFIBUS address, only addresses 1–126 possible.
51/207	Incorrect CC-Link address, only addresses 1–64 possible.
51/208	Incorrect CC-Link baud rate.
51/300	The fieldbus master is in “Stop” state.
51/303	Error during cyclical data exchange.
51/400	The master attempted to connect a faulty module/sub-module.
52/2	Missing EDS extension entries for the f(x) function, reconfiguration required.
52/3	Function use data CRC error, re-configuration required.
52/4	Functionality could not be generated (unknown functionality?).
52/5	Functionality could not be initialised.
52/6	f(x) configuration incorrect, reconfiguration required.
52/7	Function number invalid, re-configuration required.
52/10	The usage data cache of f(x) is full; reduce the number of functions or the program size.
52/11	Error in calculating the function.
52/12	User message.
52/13	Function calculated for longer than its cycle time and has been disabled! Increase the cycle time where necessary.
52/15	The cycle times of the graphical f(x) program do not correspond to the associated function cycle time. Re-load the program back onto the device.
52/16	f(x) mapping is incorrect (mapping table invalid), reconfiguration required.
52/17	f(x) function is waiting for producers (are all inputs linked?)
52/18	Graphical program editor: no program loaded, load a program to the device.
52/19	f(x) function has an error! (Correct the other active errors).
52/20	The cycle time of one f(x) function is too long! The cycle time must be shortened to avoid irreparable damage to the device.
52/21	Graphical program editor: licence for program not adequate! To enable full functionality, please contact the Bürkert sales department!
52/22	Graphical program editor: invalid persistent data! Default values will be used.
52/23	Graphical program editor: program and program configuration do not match, re-configuration required.
52/24	Graphical program editor: no licence. The program will be disabled after running for one hour.
52/25	Graphical program editor: no licence. The program has been closed! To enable full functionality, please contact the Bürkert sales department!
52/26	Initialising f(x).
63/10	At least one bÜS device is in state: Maintenance.
63/11	At least one bÜS device is in state: Out of specification.
63/12	At least one bÜS device is in state: Functional test.
63/13	At least one bÜS device is in state: Error.
63/20	f(x) function cannot be used while OPC UA is enabled.

Table 25: Description of the error code

16 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.

Accessories	Order number
USB bÜS interface set 1 (including power supply unit, bÜS stick, terminating resistor, Y-distributor, 0.7 m cable with M12 plug)	00772426
USB bÜS interface set 2 (including bÜS stick, terminating resistor, Y-distributor, 0.7 m cable with M12 plug)	00772551

Table 26: Accessories

17 LICENCE ACTIVATION

The use of the f(x) function and/or the batch has been set by the manufacturer to only be available for an hour, for experimental purposes. In order to permanently use the functions without restrictions, a licence must be obtained.

The following steps must be completed to obtain this licence:

- Open Bürkert home page country.burkert.com and enter licence key or the identification number 567713 in the search field
- Start search
- Enable ordering/buying graphic programming





Please note:

- The article and serial number of the device on which the batch controller will later be used are required for the order.
- You can find the article number and serial number on the type label.

→ After the order has been completed, a delivery note containing a licence is generated (see „Fig. 29: Example of a delivery note with the generated code“)

MAN 1000436648 EN Version: C Status: RL (released | freigegeben) printed: 18.12.2024

Lieferschein

Bürkert GmbH & Co. KG, D-74653 Ingelfingen

Ihr Bürkert Vertriebs-Center München

Ihr Ansprechpartner:

Tel.:
FAX.:
Mail:

Ihre Bestellung zu Auftrag

Kunden Nr.
Auftrag Nr.
Lieferschein Nr.
Datum

Versandart: **DPD**
Lieferbedingung (INCO 2010): **FCA / ab prod. Werk**
ausschl. Verpackung


Unsere Kreditorennummer:
Warenausgang:

Auftraggeber

Pos.	Ident Nr.	Artikelbezeichnung	Auftragsmenge	Liefermenge	Restmenge
10	00567713	Freischaltung graphische Programmierung	1 ST	1 ST	0 ST
		8922-01			
		Ursprungsland: Frankreich (Rhin (Bas))			
		Stat. Warennummer: 90268020			
		kein Ursprungserzeugnis			
		Nettogewicht / ST 0,001 KG			

Die folgenden Lizenzcodes können unter der URL <http://communicator.burkert.com/deviceactivation> aktiviert werden.

X9\$Y-Yf9X-z\$@B-ZS?A



www.burkert.de/feedback
customer.feedback.cq@burkert.com

Christian-Börken-Strasse 13-17, D-74653 Ingelfingen
Telefon (07940) 10-91111, Telefax (07940) 10-91448
Internet www.burkert.de E-Mail info@burkert.de
Kommanditgesellschaft Sitz Ingelfingen
Registergericht Stuttgart HRB 590427
Personlich haftende Gesellschafterin: Bürkert GmbH
Sitz Ingelfingen Registergericht Stuttgart HRB 590379
Geschäftsführer: Herbert Röhbeck, Frank Hill, Dr. Udo Gatz
unsere Steuernummer: 76001/10131 OE146279899

Es gelten unsere Allgemeinen Geschäftsbedingungen.
Diese können unter www.burkert.de eingesehen und als
Datei heruntergeladen werden.
Bankverbindungen
Commerzbank AG Heilbronn
IBAN-NR. DE52 208 0012 0700 4175 00
BIC: COMDE33HAN
Sparkasse Hohenheimkreis
IBAN-NR. DE39 6225 1550 0007 6000 63
BIC: SOLADE33HAN

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Fig. 29: Example of a delivery note with the generated code

→ Open input mask at: <https://communicator.burkert.com/deviceactivation> and enter the following information:

- Licence code
- Article number of the product for which the f(x) function/batch function is to be enabled
- Item serial number

Fig. 30: Generate licence key

When the input mask is complete, a licence key (see „Fig. 31: Licence key“) that can be loaded into the Bürkert Communicator is generated.

Fig. 31: Licence key

- Open Bürkert Communicator
- **Tools**
- **Unlock device features** (see „Fig. 32: Activate licence“)

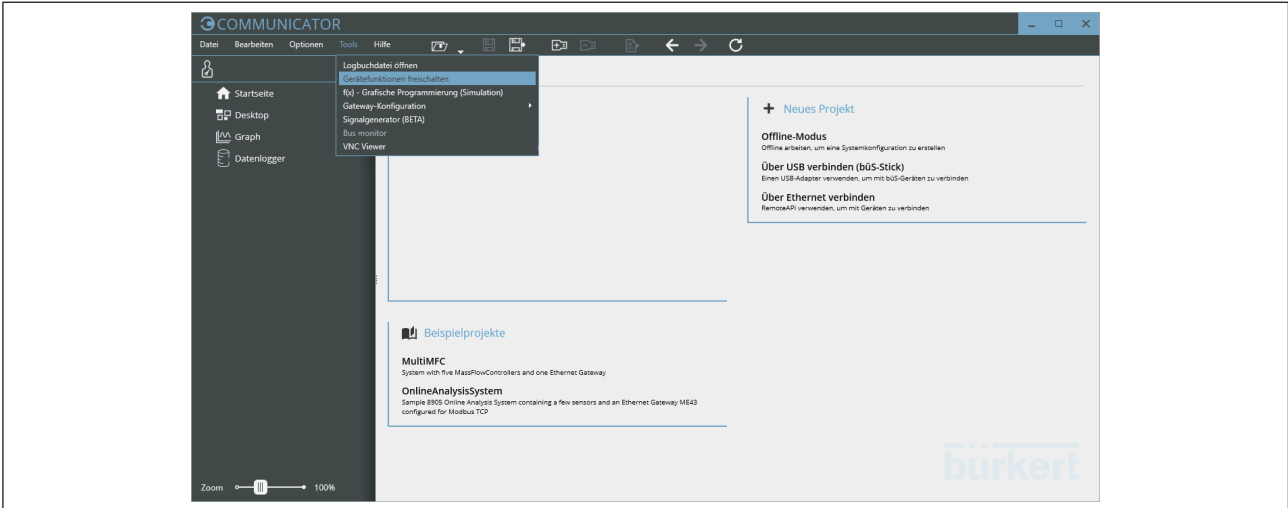


Fig. 32: Activate licence

- **Load licence** (see „Fig. 33: Load licence“)
- Open licence key

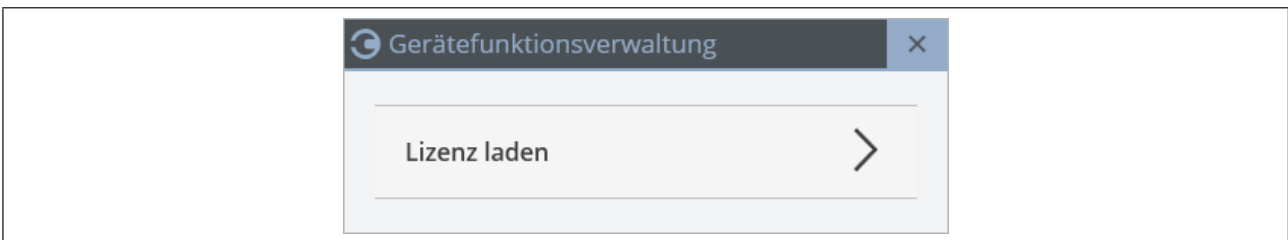


Fig. 33: Load licence

The unlimited f(x) function/batch function will be available after this procedure and can now be used.

18 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.

