

myGEZE Control

Building automation and control system

General information

- Hardware components
- Software
- myGEZE Control Configurator
- Config-files
- Commissioning a controller system

EN User manual

207493-01 12/2023



Contents

1	Introduction.....	4
1.1	Symbols and illustrations.....	4
1.2	Reference documents	4
2	Safety.....	5
2.1	Safety notes	5
2.2	Intended use	6
3	Functions and properties.....	7
3.1	Modular principle.....	7
3.2	Control unit components	7
3.2.1	Power supply (depending on the version)	7
3.2.2	Terminals	7
3.3	Standard control units.....	8
3.4	Distributor	8
4	Installation.....	9
4.1	Equipment and configuration of the control unit	9
4.1.1	Space required for the bus terminals and components on the top hat rail (width).....	10
4.1.2	Layout of the terminals on the top hat rail	11
4.1.3	Changing the module configuration/system state.....	11
4.1.4	Approved type of installation / minimum distances.....	12
4.1.5	Installation / removal.....	13
4.1.6	Wiring.....	14
4.2	Connection of the control unit.....	15
4.2.1	Mains connection.....	15
4.3	Connecting external components	15
5	Hardware description.....	16
5.1	myGEZE Control CPU MODULE 8191	16
5.2	myGEZE Control CAN MASTER TERMINAL.....	19
5.3	myGEZE Control CAN connector	21
5.4	myGEZE Control KNX-System	23
5.5	myGEZE Control 8-channel digital input terminal	28
5.6	myGEZE Control potential distribution terminal 24 V DC.....	30
5.7	myGEZE Control potential distribution terminal 0 V DC.....	31
5.8	myGEZE Control output terminal 2-channel relay	32
5.9	myGEZE Control output terminal 4-channel relay	34
5.10	myGEZE Control power supply terminal.....	36
5.11	myGEZE Control coupler.....	37
5.12	myGEZE Control extension	38
5.13	myGEZE Control 2-port junction.....	39
5.14	myGEZE Control bus end cover.....	40
5.15	Terminal name with myGEZE Control assignment to Beckhoff.....	40

6	System structure and system limits	41
6.1	Max. possible terminals in the template project	41
6.2	Technically possible order of terminals in the template project	42
6.3	System limits	43
6.4	Substations	43
6.5	Detached inputs and outputs with GEZE IO 420	44
6.6	Determination of the necessary hardware components	44
6.7	Electrical wiring diagram	44
6.8	Licence model	45
7	Putting the software into operation	46
7.1	Basic information about Beckhoff and TwinCAT 3	46
7.2	myGEZE Control Configurator	47
7.2.1	Introduction	47
7.2.2	Overview	47
7.2.3	Installation	68
7.2.4	Updating	68
7.2.5	Deinstallation	68
7.3	Preparations for a new controller	69
7.3.1	Settings that are set with this image	69
7.3.2	Preparations	70
7.4	Preparing an application for a project	74
7.4.1	IP addresses and BACnet settings of the controller	74
7.4.2	Loading a GEZE project	75
7.4.3	Preparing TwinCAT project	75
7.5	Checking BACnet objects and generating BACnet-EDE file with TwinCAT	83
7.5.1	Checking BACnet objects	83
7.5.2	Generating BACnet-EDE file	85
7.6	Expanded BACnet settings in TwinCAT	87
7.6.1	Assigning the BACnet device instance using the myGEZE Control Configurator	87
7.6.2	Setting the BACnet UDP port	88
7.6.3	Setting the BACnet Broadcast Management Device BBMD	90
7.7	CAN monitor application	92
8	Transportation and storage	99
9	Disposal	100
10	Technical data	101
11	List of figures	102




1 Introduction

1.1 Symbols and illustrations

Warning notices



In these instructions, warning notices are used to warn against material damage and injuries.

- ▶ Always read and observe these warning notices.
- ▶ Observe all the measures that are marked with the warning symbol and signal word.

Warning symbol	Warning	Meaning
	DANGER	Danger to persons. Non-compliance will result in death or serious injuries.
	WARNING	Danger to persons. Non-compliance can result in death or serious injuries.
	CAUTION	Danger to persons. Non-compliance can result in minor injuries.

Further symbols and means of representation

Important information and technical notes are highlighted to explain correct operation.

Symbol	Meaning
	means "important note" Information to prevent property damage, to understand or optimise the operation sequences.
	means "additional information"

1.2 Reference documents

Type	Name	Material no.
Description	myGEZE Control-BACnet module types data points	207847

2 Safety

2.1 Safety notes

The details in this description always refer to the factory standard configurations. Changes to the software configuration of the control unit can only be made by trained GEZE specialised personnel. No warranty claims may be made against the manufacturer or distributor of the control unit for damage that is due to interventions in the control unit which are not authorised by the manufacturer or its distributor.

The details in these instructions must be observed when connecting components. Planning and calculation of the power network is to be done by an installer and has to be carried out in accordance with the statutory regulations (in Germany for example in accordance with MLAR).

- Before the system is released for operation, an insulation measurement of the system's line network must be performed and logged.
- Contact GEZE if support is needed for planning and system set-up.



The information is subject to permanent technical development.

It is possible that the descriptions and drawings shown do not always correspond to the current status. For this reason, the current information must always be obtained from the manufacturer.



These instructions must be followed to ensure personal safety.

- ▶ Immediately resolve any system faults.
- ▶ Always keep the installation instructions on hand near the control unit (e.g. in a plastic sleeve directly on the front door)

Obligations of the operator

- Secure workplace against unauthorised entry.
- Installation, commissioning and maintenance may only be carried out by qualified personnel authorised by GEZE. If unauthorised changes are made to the system, GEZE cannot be made liable in any way whatsoever for any resulting damages.
- Only provide the control cabinet key to trained personnel.

Electrical system

- Before working on the electrical system, interrupt the power supply (mains and rechargeable battery) and verify the safe isolation from supply.
- The connection to the mains voltage must be performed by a qualified electrician. The power connection and protective earth conductor test must be carried out in accordance with DIN VDE 0100-600.
- Work may only be carried out by a qualified electrician or a "qualified electrician for restricted work".
- An on-site, 2-pole miniature circuit breaker with locking option is to be used as a line-side disconnecting device, in accordance with the permissible cable current load.

Live parts are exposed after the system housing has been opened. The system must be disconnected from the supply voltage before any intervention in the control unit. The connecting terminals for system components in parts have a low voltage of ≤ 50 V.

- Only switch mains voltage on after connection of all the system components.
- Protect the control unit against unauthorised access and prevent the unit from being opened.
- Use only the cables specified on the cable plan provided. Cables must be shielded in compliance with the wiring diagram.
- Determine cable types (e.g. fire protection cable) and the required IP rating in agreement with the local official approval authority.
- Insulate wires that are not used.
- Secure loose cables with cable ties.

Maintenance

A safety-related test with maintenance has to be carried out by a GEZE-authorized specialist as required. You will receive written verification about the check.

Spare parts

GEZE does not accept any warranty for combinations with third-party products.

- Use only original GEZE parts for repair and maintenance work.

Regulations and standards

Warranty claims require assembly, installation and service to be performed by a specialist company according to the manufacturer's specifications. The owner-operator and/or installer commissioned by the owner-operator must observe all relevant legal regulations and have been briefed on proper operation.

- ▶ Perform system maintenance according to legal regulations.
- ▶ Observe the maintenance specifications.
- ▶ Observe the latest versions of guidelines, standards and country-specific regulations, in particular:
 - ▶ DIN VDE 0100-600 "Setting up low-voltage systems"
 - ▶ DIN EN 60335-2-103 "Household and similar electrical appliances - Safety; Particular requirements for drives for gates, doors and windows"
 - ▶ Accident prevention regulations, especially DGUV regulation 1 "Accident prevention regulation, principles of prevention" and DGUV regulation 3 "Accident prevention regulation, electrical installations and equipment"
 - ▶ VDE 0815 "Installation cables and lines for remote and information processing systems"
 - ▶ MLAR "Model Guideline for Line Systems"

2.2 Intended use

The building automation and control system realises networking solutions. The networking control unit complies with recognised engineering practice and conforms to the applicable safety regulations. The system is designed solely for use in dry rooms.

3 Functions and properties

myGEZE Control is the central controller system to which the field products can be connected. The building automation and control system is used for connecting control units for emergency exits, electric locks, automatic door systems, smoke and heat extraction systems and automatic window systems as well as devices from adjacent product groups for use in building management and physical security information management systems.

Typical applications include:

- ▶ Using data concerning product statuses, events and error messages in other systems via BAC-net/IP
- ▶ Operation of the connected field level devices via software applications
- ▶ the possibility of evaluating building management systems data

For integration in building management systems, the field level devices must be connected via interface modules to a building automation controller, and the data that is needed for their integration must be provided via specific configuration files.

If a housing has been commissioned from GEZE, then all units will be in a lockable housing made of painted steel sheet (RAL 7035) with a seal insert with an IP rating of IP 30. The housing dimensions depend on the version and equipment of the control unit.

3.1 Modular principle

Hardware configuration

- ▶ The terminals are installed on a standard top hat rail (TS 35). The basic controller recognises the bus terminals connected to the system. These have to match the software configuration

Software configuration

- ▶ The basic controller recognises the bus terminals connected to the system. These have to match the software configuration

3.2 Control unit components

3.2.1 Power supply (depending on the version)

- ▶ 1x power supply (6.25 A-24 V DC) (standard equipment)
- ▶ 1x miniature circuit breaker B10
- ▶ 1x set of terminals for connection of the mains voltage 230 V AC
- ▶ 2x fuse terminals 24 V DC (4 A) for protection of the controller system + terminals
- ▶ Optional: Power supply (10 A-24 V DC) (special equipment for control cabinet size 4)

3.2.2 Terminals

- ▶ Basic controller
 - ▶ Powerful embedded PC / control unit with a switched Ethernet port which supports the BAC-net protocol.
- ▶ Bus terminals for communication with GEZE bus:
 - ▶ The terminal enables integration of the GEZE field products which have a GEZE bus connection in the terminal network.
 - ▶ Up to 5 x GEZE bus terminals can be installed.

- ▶ Bus terminals for communication with KNX:
 - ▶ 2 EIB/KNX bus terminals are required for connection of the GEZE window technology modules IQ box KNX. One for receiving, one for transmitting. The number of maximum possible group addresses in the application is only limited by the max. number of IQ box KNX that can be connected.
- ▶ Digital input terminals:
 - ▶ For the detection of potential-free binary status signals from the products connected
- ▶ Digital output terminals:
 - ▶ For switching binary control signals to the products connected
 - ▶ Available as relay output
 - ▶ Variants with 2 or 4 channels and normally open or change-over contact available
- ▶ Auxiliary terminals:
 - ▶ As a connection point for e.g. reference potential or tapping 24V DC
 - ▶ For internal functions e.g. refreshing bus signal or coupling terminals
- ▶ Bus end covers:
 - ▶ Every assembly must be completed by a bus end cover fitted on the right-hand side.

3.3 Standard control units

The following standard control units are available:

myGEZE Control standard control units				
	1	2	3	4
Control cabinet size W x H x D [mm]	300 x 400 x 200	400 x 500 x 200	600 x 600 x 250	600 x 800 x 250
Mat. No.	203991	203992	203993	203995
Spaces for additional terminals (in addition to the basic controller)	10	15	25	40

Extension options:

- ▶ Installation of a larger power supply is possible in the standard control unit size 4 in order to supply the components accordingly.

3.4 Distributor

The distribution cabinet offers the option of distributing networking technology decentrally throughout the building. Multiple distributors can be positioned in a project, for instance locally on a door system or in another sub-distributor. The local cables can then be connected there.

A bus connection is used for communication with the basic device.

The following distributor is available:

Standard distributor for myGEZE Control	
	1
Size W x H x D [mm]	361 x 254 x 165
Mat. No.	203996
Spaces for additional terminals (in addition to the basic controller or coupling terminal)	10

- ▶ The distribution cabinet can also be used for the installation of other / further electrical components e.g. installation of external input and output couplers.
- ▶ A distribution cabinet can also be used to install a basic device for small-scale applications.

4 Installation

Installation sequence (overview)



- ▶ Before starting work check the delivery slip to ensure the delivery is complete and correct (control unit size, terminals etc.). Later complaints will not be accepted.
- ▶ Have assistants hold the control cabinet while screwing in place.

- ▶ Check the equipment configuration of the control unit and adapt/supplement if necessary.
- ▶ Attach housing securely and keep easily accessible for servicing etc.
- ▶ Mark fixing holes.
- ▶ Select suitable fasteners for the substrate.
- ▶ Screw the control cabinet in place.
- ▶ Screw the control unit in place.
- ▶ Cut off the graduated nipples in accordance with the cable diameter.
- ▶ Route the cables through the graduated nipples into the control unit.
- ▶ Connect external components in accordance with wiring diagram.
- ▶ Connect mains power supply.
- ▶ Put the system into operation.

4.1 Equipment and configuration of the control unit

Minimum and maximum equipment

- ▶ The minimum equipment comprises power supply, 1x basic controller, 1x bus terminal depending on the function to be performed and a bus end cover to protect the electrical contacts.
- ▶ The housing size depends on the number and layout of the bus terminals.
- ▶ The maximum layout can contain up to 40 terminals. Control cabinet size 4 must be used in this case.

4.1.1 Space required for the bus terminals and components on the top hat rail (width)

Controllers / terminals

- ▶ Basic controller
 - ▶ 71 mm
- ▶ Bus terminals for communication with GEZE CAN-bus:
 - ▶ 24 mm
- ▶ Bus terminals for communication with IQ box KNX:
 - ▶ 2 x 12 mm + 1x 12 mm for couplers + 1x 12 mm for end terminals
- ▶ Digital input terminals:
 - ▶ 12 mm
- ▶ Digital output terminals:
 - ▶ 12 mm
- ▶ Auxiliary terminals:
 - ▶ 12 mm
- ▶ Bus end covers:
 - ▶ 6/12 mm

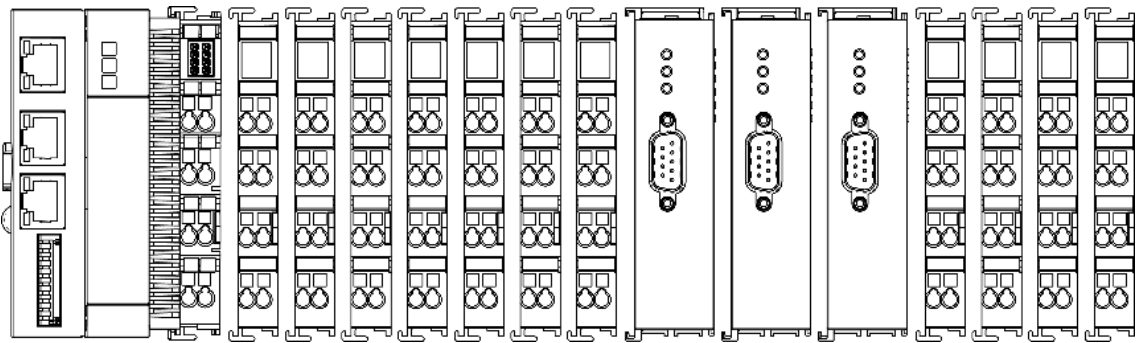


Fig. 1: Mounted terminals

Power supply (standard equipment)

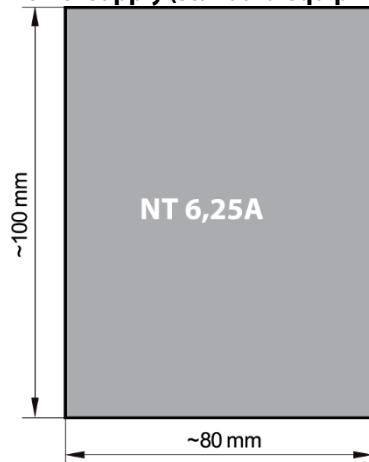


Fig. 2: Standard power supply



The power supply is located on a separate top hat rail.

4.1.2 Layout of the terminals on the top hat rail



It is imperative that the terminal layout on the top hat rail is observed. It is also precisely defined in the project-specific electric wiring diagram. For further information, see 6.2 Technically possible order of terminals in the **template project**, on page 42.

Potential sequence:

- ▶ Place the terminals on the top hat rail in the following order directly next to each other (from left to right):
 - ▶ Basic controller
 - ▶ Input and output terminals
 - ▶ Auxiliary terminals (if any)
 - ▶ Bus terminals for communication with GEZE CAN-bus
 - ▶ Coupler (if installed for KNX connection)
 - ▶ Bus terminals for communication with KNX (if installed for KNX connection)
 - ▶ Bus end terminal (if no internal couplers + KNX terminals installed)

4.1.3 Changing the module configuration/system state

If changes are made to the module configuration (number, type and order of the terminals), this must be adapted in the software configuration.

If the hardware configuration does not match the software configuration, the system does not enter runtime mode after start and ramp-up phase. Depending on the false configuration, the system remains in configuration mode (blue status LED) or error (red status LED).

A correct system state in run mode can be seen on the basis of the green status LED.



Only connect or disconnect the terminals in a de-energised state.
Switch the mains voltage off first.

4.1.4 Approved type of installation / minimum distances

4.1.4.1 Prescribed installation positions for temperatures up to 60°C

Mount the embedded PC horizontally in the control cabinet on a carrier rail so that the heat is discharged optimally.

The ventilation options are on the underside and top of the housing. This will ensure an optimum air flow vertically through the embedded PC. In addition, a clearance of at least 30 mm above and below the embedded PC is required to ensure sufficient ventilation.

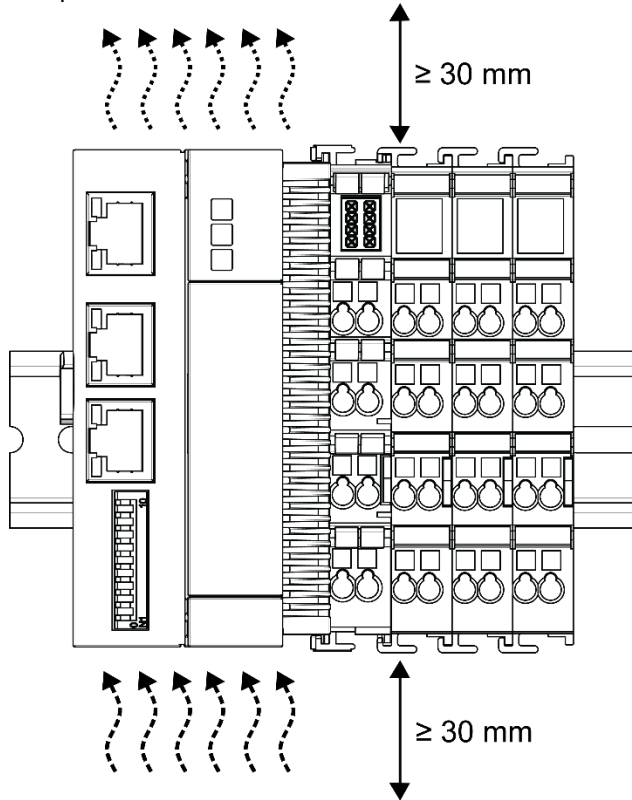


Fig. 3: Type of installation at temperatures up to 60°C.

4.1.5 Installation / removal

4.1.5.1 Installation and removal - lever release of the terminals

The terminal modules are mounted on top hat rails (35 mm) in accordance with EN 60715.

Installation

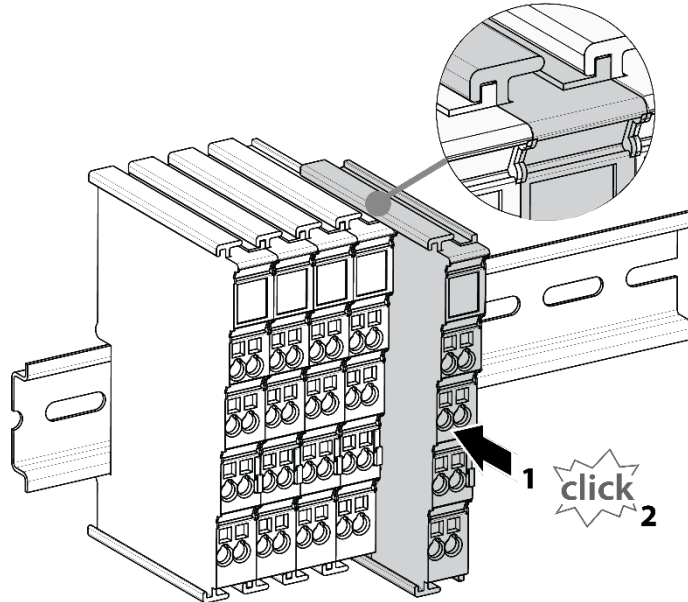


Fig. 4: Installation

Disassembly

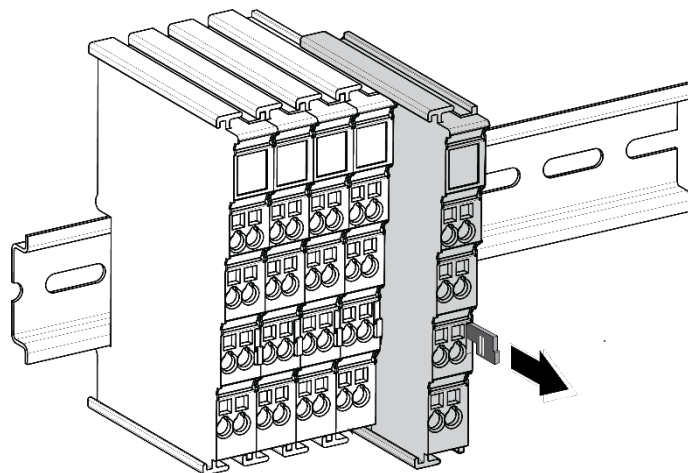


Fig. 5: Disassembly

Each terminal is secured by a locking mechanism on the top hat rail which must be released for removal:

1. Pull the terminal by its orange-coloured tabs approx. 1 cm down from the top hat rail. This automatically releases the top hat rail locking mechanism of this terminal and you can now pull the terminal out of the bus terminal block without having to apply a great deal of force.
2. To do this, grip the unlocked terminal with your thumb and index finger at the top and bottom of the housing areas of the same time and pull it out of the bus terminal block.

4.1.6 Wiring

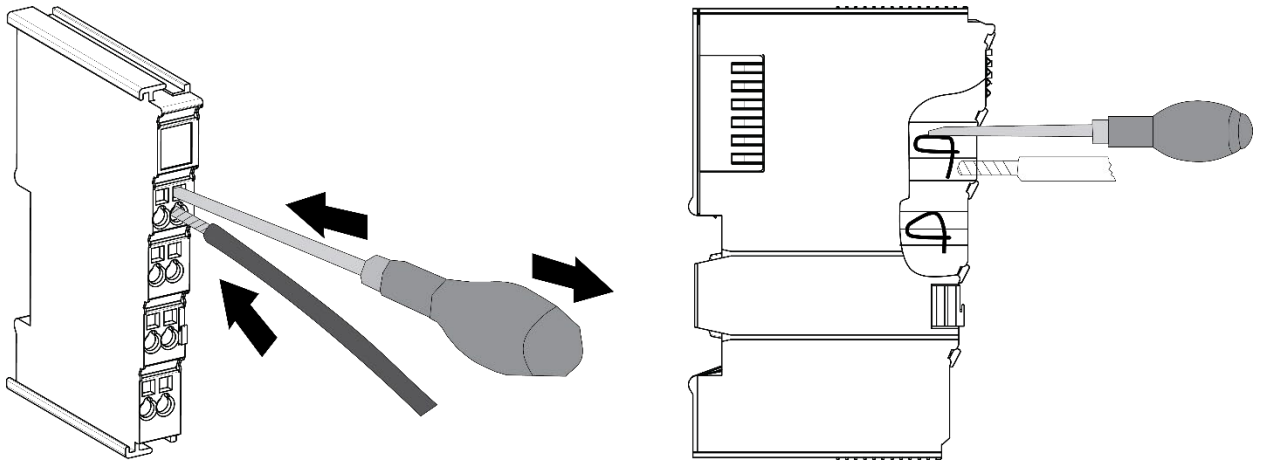


Fig. 6: Wiring

Up to eight terminal points make the connection of solid or finely stranded cables possible on the bus terminal. The terminal points use spring-loaded technology. Connect the cables as follows:

1. Open a terminal point by pressing a screwdriver straight up to the stop into the square opening above the terminal point. Do not turn the screwdriver, move it back and forth, or lever it. Use a size 0 screwdriver.
2. The wire can now be inserted without resistance into the round terminal opening.
3. Reducing the pressure closes the terminal point automatically and causes it to hold the wire securely and permanently.

Terminal housing	Input terminal
Cable cross-section (solid)	0.08...2.5 mm ²
Cable cross-section (finely stranded)	0.08...2.5 mm ²
Cable cross-section (single-core cable with wire end ferrule)	0.14...1.5 mm ²
Stripping length	8...9 mm

4.2 Connection of the control unit

4.2.1 Mains connection

Once all the components have been connected and configured and the connections checked, the mains voltage can be connected by a qualified electrician.

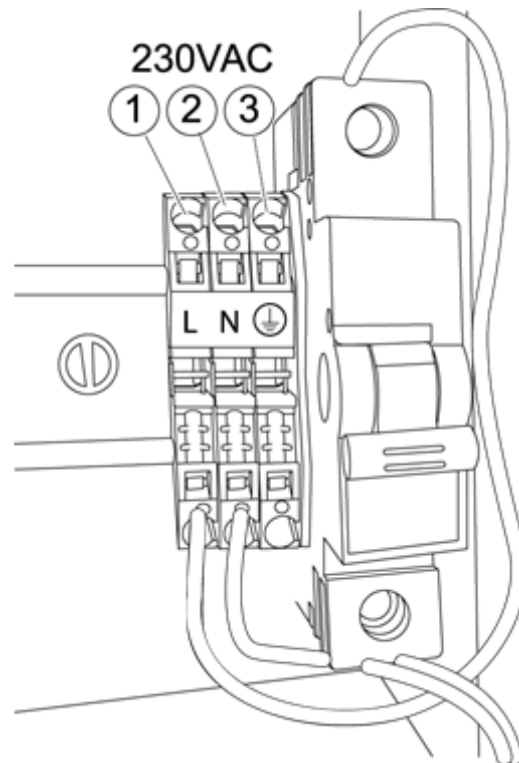


WARNING!

Risk of fatal injury due to electric shock!

- ▶ Switch off the power feed and ensure it is not switched back on before connecting the power supply.
- ▶ Ensure the on-site power supply circuit is de-energised.

- ▶ Connect the 230 V AC on-site power supply circuit to the mains connection terminals of the SHEV control panel.
Cable cross-section connection line:
1.5 mm²...2.5 mm²



1	L
2	N
3	PE

4.3 Connecting external components

The external components may only be connected to the system in accordance with the enclosed electric circuit.

- ▶ The system must be de-energised by releasing the on-site disconnector before any connection work is performed.
- ▶ Ensure isolation from supply in the control cabinet.



Basic controllers have a system-internal 1-second UPS to backup persistent data. In other words, when the power supply has been switched off, the system requires approx. 1 to 3 seconds before it is finally shutdown, depending on structure and thus capacity utilisation.



The electrical installation must be carried out in accordance with the applicable regulations and guidelines.

5 Hardware description

5.1 myGEZE Control CPU MODULE 8191

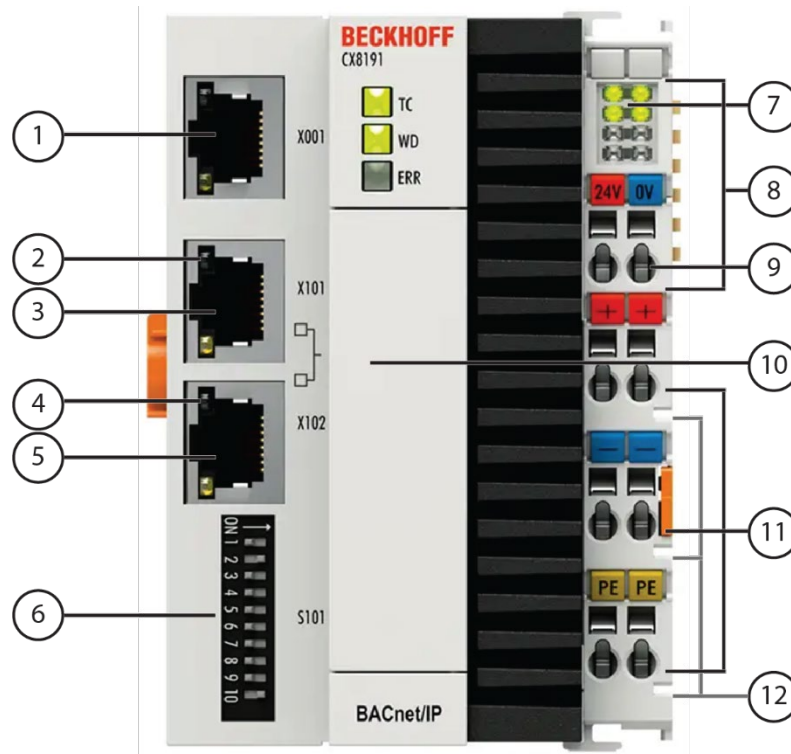



Fig. 7: myGEZE Control CPU MODULE 8191

- | | |
|----|---|
| 1 | Ethernet port |
| 2 | Link/Act |
| 3 | Ethernet RJ45 (switched) |
| 4 | Link/Act |
| 5 | Ethernet RJ45 (switched) |
| 6 | Address selection switch/DIP switch
The DIP switch can be used to set the IP address for the switched Ethernet interfaces X101/X102. |
| 7 | Power LEDs
Diagnosis of the power supply for embedded PC and terminal bus. Status of E-bus and K-bus communication. |
| 8 | E-bus or K-bus |
| 9 | Supply coupler |
| 10 | Front flap (the battery compartment and microSD card slot are under this flap)
Power supply for the battery-buffered clock for time and date. |
| 11 | Power contact feed |
| 12 | Power contacts, +24 V, 0 V, PE
Power contacts for bus terminals. |

The CPU 8191 is a control unit with a switched Ethernet port which supports the BACnet protocol. Either E-bus or K-bus terminals can be mounted side by side, the CPU 8191 recognises automatically during booting which system is connected. The control unit is programmed using TwinCAT 3 via the Ethernet interface.

Diagnosis LEDs

Display	LED	Meaning
	TC	TwinCAT status-LED TwinCAT is in run mode (green) TwinCAT is in stop mode (red) TwinCAT is in config mode (blue)
	WD	No function ex works. The LED can be configured for application-specific diagnostic messages.
	ERR	Lights up red following switch-on. Software is being loaded. Goes out when everything is OK. Parameters can be set for the LED for application-specific diagnosis messages.



Parameters can be set for the LED for application-specific diagnosis messages.

Reset button

You can activate config mode using the reset button. You can use this function if the PLC program unintentionally causes an error. You have to keep the reset button pressed for a longer time during the restart for this.

Enable config mode as follows:

- ▶ Open the front flap.
- ▶ Switch off the embedded PC.
- ▶ Start the embedded PC and hold the reset button down until the ERR LED lights up red and then yellow.



This puts the basic controller in config mode. You can no longer activate the device without a programming device with the software TwinCAT 3 in an appropriate version.

Setting the IP address with DIP switches

You can only use the DIP switches S101 to set the IP address for the switched Ethernet interfaces X101/ X102. The DIP switches have no meaning for the Ethernet interface X001.

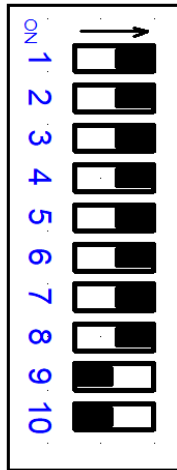


Fig. 8: DIP switch S101, switches 1 to 10.

Switch right-hand position: on "1".

Switch left-hand position: off "0".

You can edit the last byte of the IP address using DIP switches 1 to 8. The DIP switches take priority over the settings in the operating system. Changes are only applied after the embedded PC has been restarted.

DIP switch S101	Meaning
10 on and 9 off	DHCP active. Default setting ex works. The DIP switches 1 to 8 then have no meaning.
10 off and 9 off	DHCP inactive. By default, the fixed IP address 192.168.1.xxx and the subnet mask 255.255.255.0 are used. The last byte of the IP address 192.168.1.xxx is edited using DIP switches 1 to 8.
10 off and 9 off 1 to 8 all on	The complete IP address is adopted from the operating system or the web interface (Beckhoff Device Manager)

Example

If you wish to set the IP address 192.168.1. 67 for Ethernet interface X101/X102 with the DIP switches, you must configure the DIP switches as follows:

DIP1	DIP2	DIP3	DIP4	DIP5	DIP6	DIP7	DIP8	DIP9	DIP10
on	on	off	off	off	off	on	off	off	off

The value for the last byte of the IP address then results from the DIP switches switched on.

$$20 + 21 + 26 = 67$$

Values for the individual DIP switches:

	DIP1	DIP2	DIP3	DIP4	DIP5	DIP6	DIP7	DIP8
Value	2 ⁰	2 ¹	2 ²	2 ³	2 ⁴	2 ⁵	2 ⁶	2 ⁷

5.2 myGEZE Control CAN MASTER TERMINAL

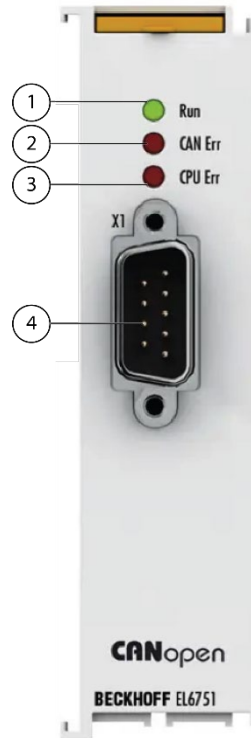


Fig. 9 : myGEZE Control CAN MASTER TERMINAL

- | | |
|---|----------------|
| 1 | LED Run |
| 2 | LED CAN Error |
| 3 | LED CPU Error |
| 4 | BUS connection |

The terminal makes it possible to integrate any CAN devices in the EtherCAT terminal system and can be used as a Master (EL6751) or Slave (EL6751-0010). In addition, general CAN messages can be sent and received without having to deal with CAN frames in the application program.

As a CAN Master, the terminal makes it possible to integrate bus-capable GEZE product systems. Telegrams can be transmitted and received via a channel. Up to 63 devices can be connected to a terminal. The max. possible bus length varies depending on the wiring, number of devices, disrupting influences due to circumstances on site.

Application

- ▶ Emergency exit system (EES) GEZE TZ 320, 321, 322
- ▶ Automatic door drives DCU 1,2,6,8 (DCU light)
- ▶ Smoke and heat extraction system (SHEV) GEZE MBZ 300

LED displays

The most important statuses of the terminal can be diagnosed quickly on the basis of the LEDs.

LED	Colour	Meaning
RUN	green	This LED indicates the operating status of the terminal:
		off Status of the EtherCAT State Machine INIT = Initialisation of the terminal; BOOTSTRAP = Function for firmware updates to the terminal
		Flashes with 2 Hz Status of the EtherCAT State Machine PREOP = Function set for mailbox communication and deviating standard settings.
		flashes at 1 Hz Status of the EtherCAT State Machine SAFEOP = Check the channels of the Sync Manager and Distributed Clock. Outputs always remain in safe status.
On	Status of the EtherCat State Machine OP = Normal operating status, mailbox and process data communication is possible.	
Err	red	off All configured bus devices fault-free (Box State=0), TwinCAT task or process is running.
		flashes at 1 Hz At least one Box State is not equal to zero (e.g. device not found, wrong configuration, device faulty).
		flashes at 10 Hz Configuration upload is carried out.
		On CAN controller is Bus OFF. Physical CAN problem. Possible causes of fault e.g. no terminating resistor, bus cable too long, wrong Baud rate, node address assigned twice, wiring fault, short-circuit. Restart necessary.
CPU Error	red	On Fault in the processor of EL6751.
		flashes at 10 Hz Processor of EL6751 starts.

5.3 myGEZE Control CAN connector



Fig. 10 : myGEZE Control CAN connector

The bus lines are connected to the bus terminal via a 9-pole D-sub connector for CAN with an integrated terminating resistor. Two cables can be connected to the connector. This is necessary if the bus terminal is NOT the end of a bus segment. In this case, the integrated switch for terminating resistor must be deactivated; OFF position.

If the bus terminal designated as the first or last device on the bus segment, in other words forms one end of the bus, the integrated switch for terminating resistor must be activated: ON position. In this case, connection of a cable is only possible at the first connection (PIN 1,2,3).

Terminal (X1)	D-sub PIN (X2)	Signal
1.6	3	CAN GND
2.4	2	CAN L
3.5	7	CAN H
-	5	CAN SHD

Tab. 1: myGEZE Control CAN connector assignment

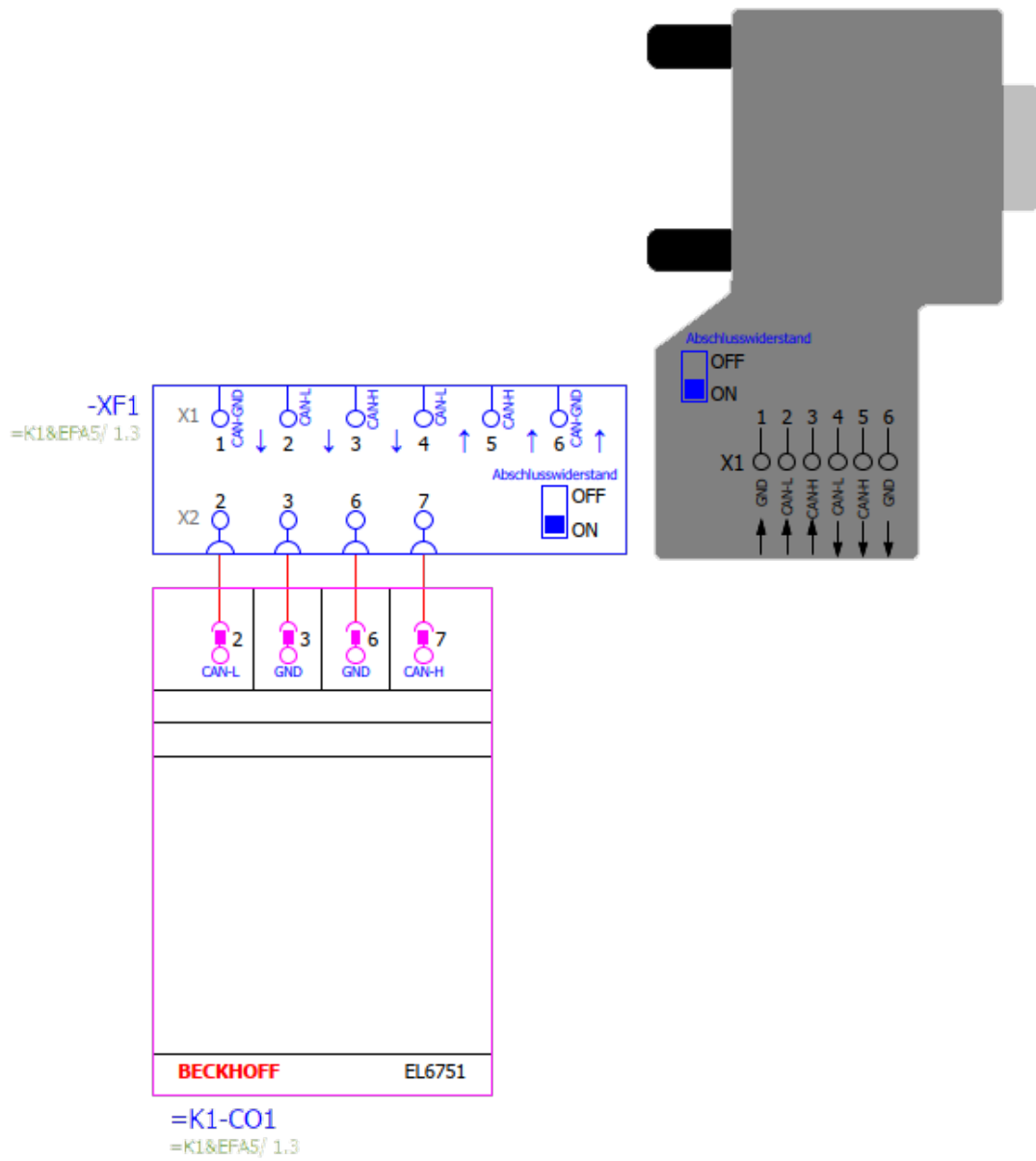


Fig. 11: myGEZE Control CAN connector connection illustration

5.4 myGEZE Control KNX-System

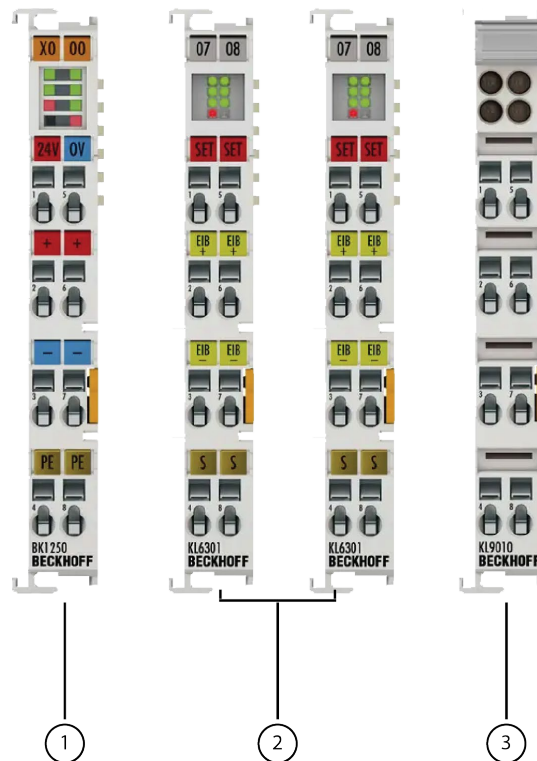


Fig. 12 : myGEZE Control KNX System

- ① myGEZE Control E-bus coupler
- ② myGEZE Control terminal KNX/EIB
- ③ myGEZE Control bus end terminal

A combination of these 4 terminals is necessary for KNX

- ▶ 1x myGEZE Control E-bus coupler
- ▶ 2x myGEZE Control terminal KNX/EIB
- ▶ 1x myGEZE Control bus end terminal
- ▶ Technically 2 EIB/KNX terminals are ALWAYS necessary.
- ▶ Is connected to a 2-wire KNX system (twisted pair)
- ▶ No configuration of this device in ETS necessary, terminal is a passive bus device.



In larger ETS projects, it may be necessary to adjust the line coupler and filter. The 4 terminals can only be used once per controller. With this connection, 200 x IQ box KNX can be connected.

Information for



- ▶ Wind alarm
- ▶ Wind value
- ▶ Rain alarm
- ▶ Safety

is used by KNX and mapped on BACnet (once, not per IQ box KNX).

Structure

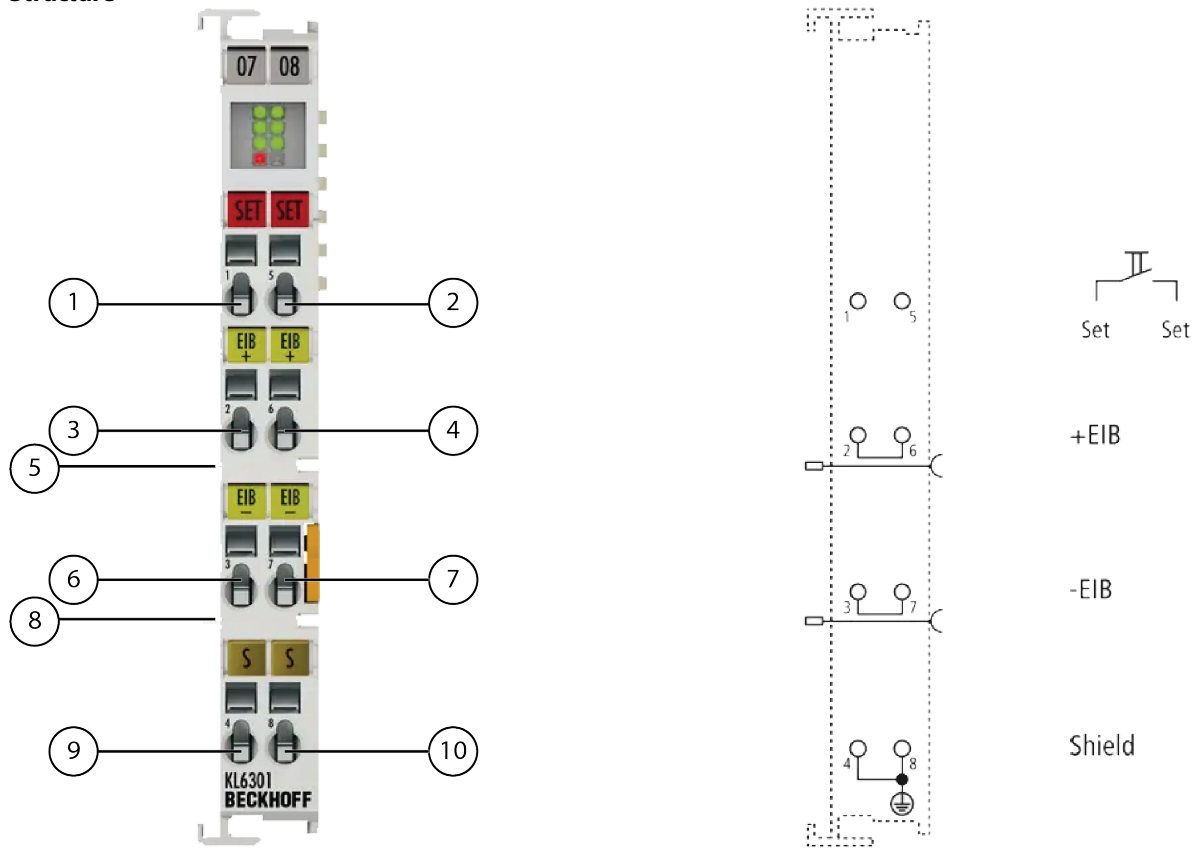


Fig. 13: Structure bus terminals for communication with KNX

- 1 Set
- 2 Set
- 3 EIB+
- 4 EIB+
- 5 Power contact +24 V
- 6 EIB-
- 7 EIB-
- 8 Power contact 0 V
- 9 Shield
- 10 Shield

This/these terminal(s) is/are required for communication with the GEZE IQ box KNX for connection of window drives. Two terminals are always needed.

Connection to a myGEZE Control system must always be via a coupler module since it is a different internal communication technology.

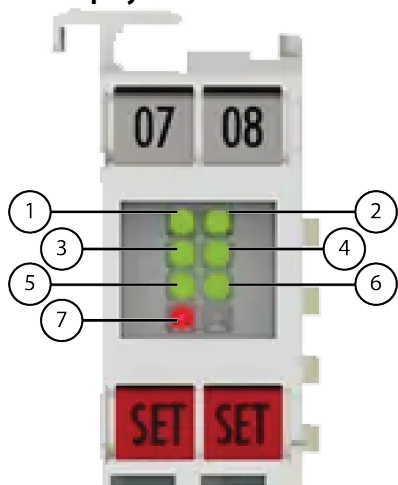
LED displays

Fig. 14: LED indicators KNX

- | | |
|---|-------------------|
| 1 | LED Run |
| 2 | LED Set |
| 3 | LED EIB-TXD |
| 4 | LED EIB-RXD/Power |
| 5 | LED Send |
| 6 | LED Receive |
| 7 | LED EIB Error |

Example

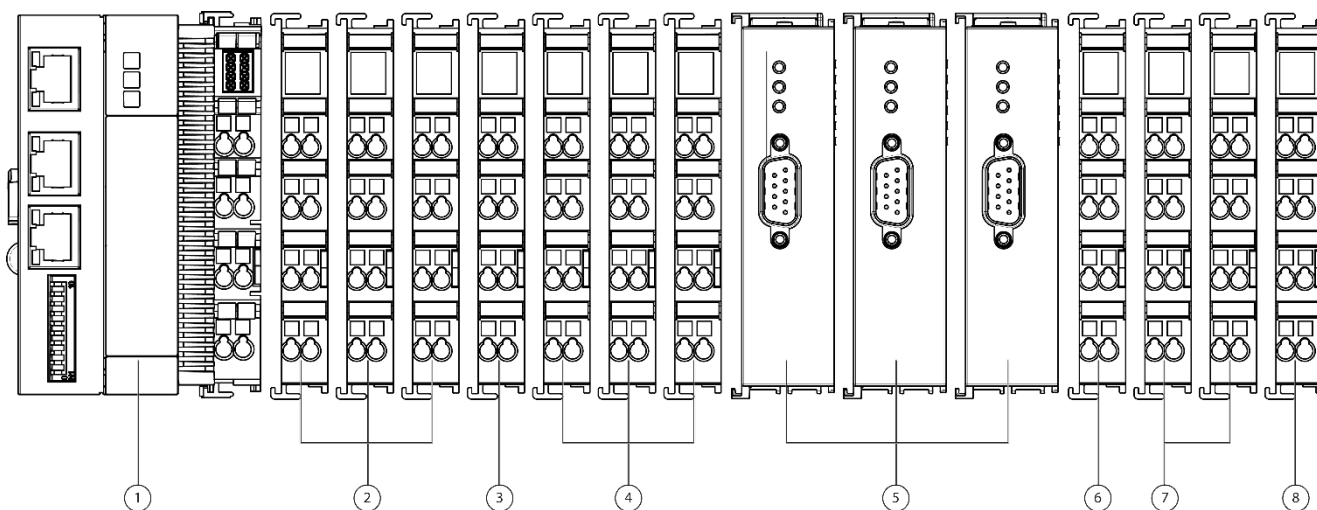


Fig. 15: Example structure for communication with KNX

- ① myGEZE Control Basic
- ② DI 8K.-DIGI-IN., 24 V DC
- ③ Potential dist. TE. 16x 24VDC
- ④ DO 4K.-REL.-OUT. 125 V DC
- ⑤ myGEZE Control CAN
- ⑥ Bus coupler
- ⑦ myGEZE Control KNX
- ⑧ Final terminal

LED displays

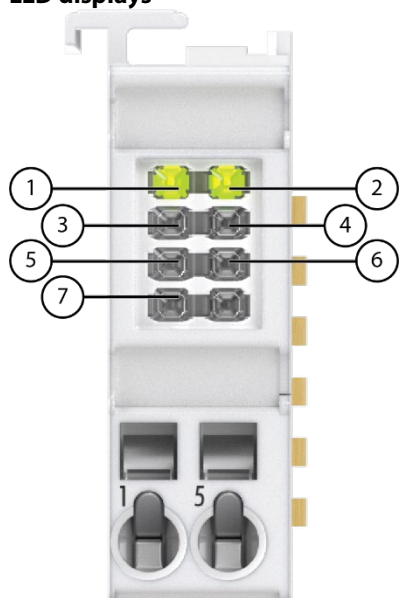


Fig. 16: LED indicators KNX

- 1 LED K-Bus Run
- 2 LED Set
- 3 LED EIB-TXD
- 4 LED EIB-RXD/Power
- 5 LED Send
- 6 LED Receive
- 7 LED Receive

LED	Col-our	Chan-nel	Status and meaning		
			on	off	flashes
K-Bus Run	green	1	Lights up weak to strong: K-Bus communication OK	None	K-Bus communication
Set	green				
EIB-TXD	green				
EIB-RXD / POWER	green				
SEND	green				
RECEIVE	green				
EIB ERROR	red				

5.5 myGEZE Control 8-channel digital input terminal

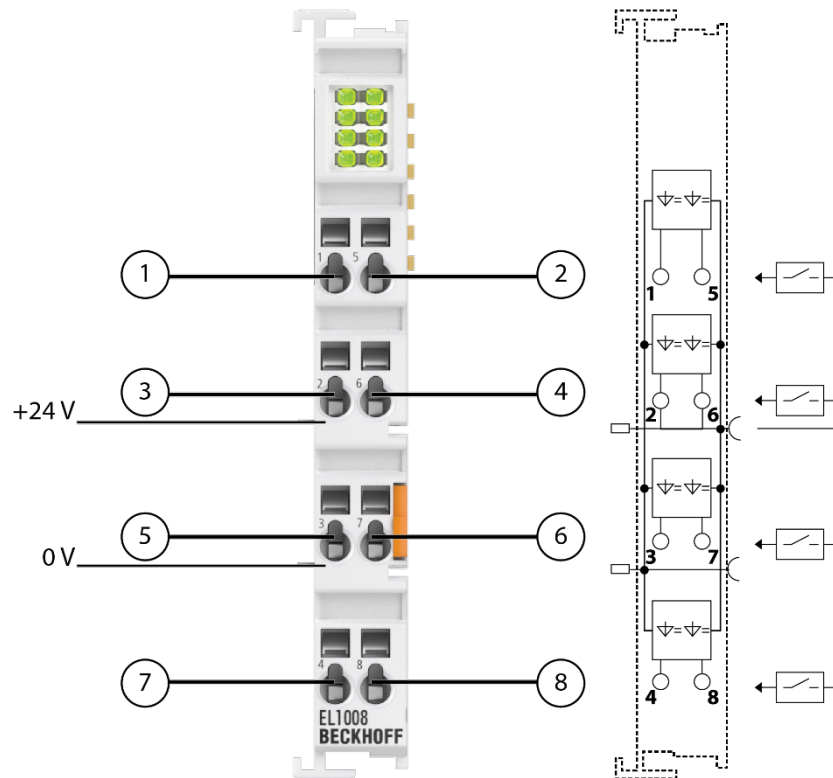


Fig. 17 : myGEZE Control 8-channel digital input terminal

Designation	Meaning
① INPUT 1	Input 1
② INPUT 2	Input 2
③ INPUT 3	Input 3
④ INPUT 4	Input 4
⑤ INPUT 5	Input 5
⑥ INPUT 6	Input 6
⑦ INPUT 7	Input 7
⑧ INPUT 8	Input 8

- ▶ Digital input terminal with eight inputs to detect binary control signals from the process level.
- ▶ Connection of non-bus-capable components to the GEZE building system.
- ▶ Eight channels that indicate their signal state through light emitting diodes.
- ▶ Up to ten digital inputs possible per basic controller.

LED displays

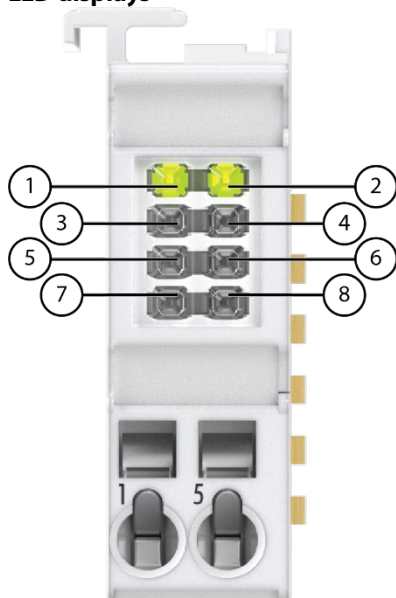


Fig. 18: LED indicators KNX

- ① Signal-LED 1
- ② Signal-LED 2
- ③ Signal-LED 3
- ④ Signal-LED 4
- ⑤ Signal-LED 5
- ⑥ Signal-LED 6
- ⑦ Signal-LED 7
- ⑧ Signal-LED 8

LED	Col-our	Meaning	
INPUT 1-8	green	off	Signal voltage "0" (-3 V ... 5 V)
		On	Signal voltage "1" (11 V...30 V)

5.6 myGEZE Control potential distribution terminal 24 V DC

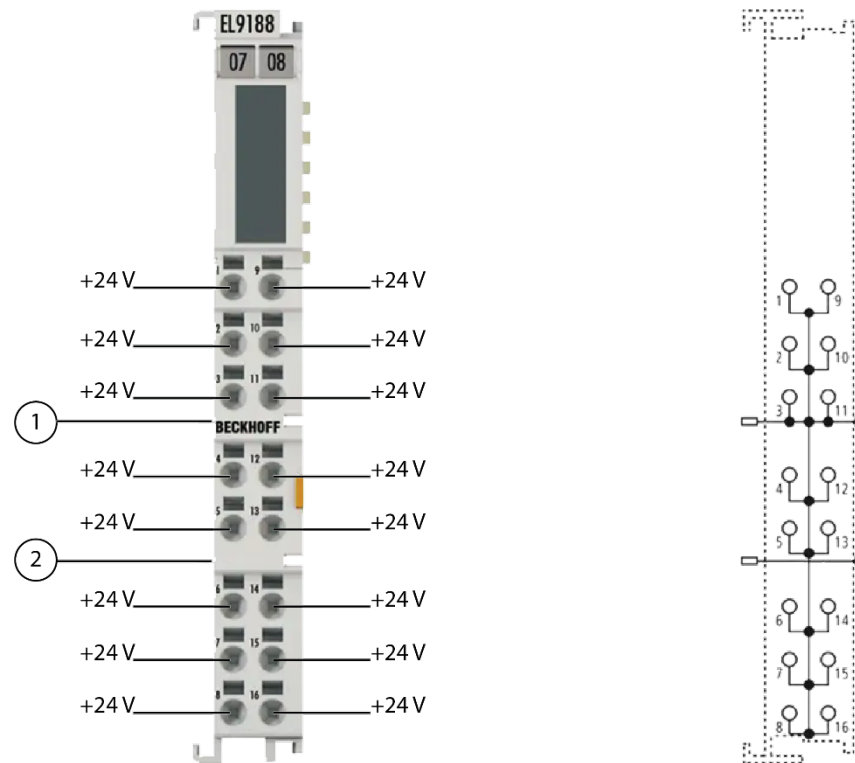


Fig. 19: myGEZE Control potential distribution terminal 24 V DC

- ① Power contact +24 V
- ② Power contact 0 V

The potential distribution terminal makes 16 terminal points with 24 V potential available at the front at the terminal contacts. The 24 V power contact is connected to the terminal contacts at the front and is passed through to the adjacent terminal. The 0 V power contact is not connected to the terminal contacts at the front, it is passed through to the adjacent terminal. This allows the use of additional terminal blocks on the terminal strip to be reduced.

5.7 myGEZE Control potential distribution terminal 0 V DC

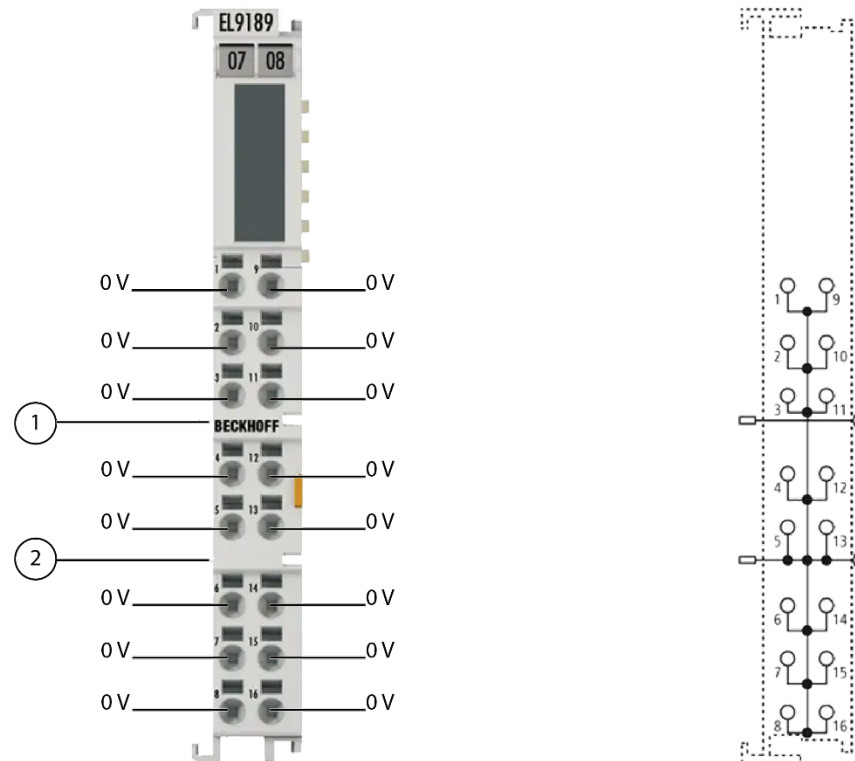


Fig. 20: myGEZE Control potential distribution terminal 0 V DC

- ① Power contact +24 V
- ② Power contact 0 V

The potential distribution terminal makes 16 terminal points with 0 V potential available at the front at the terminal contacts. The 0 V power contact is connected to the terminal contacts at the front and is passed through to the adjacent terminal. The 24 V power contact is not connected to the terminal contacts at the front, it is passed through to the adjacent terminal. This allows the use of additional terminal blocks on the terminal strip to be reduced.

5.8 myGEZE Control output terminal 2-channel relay

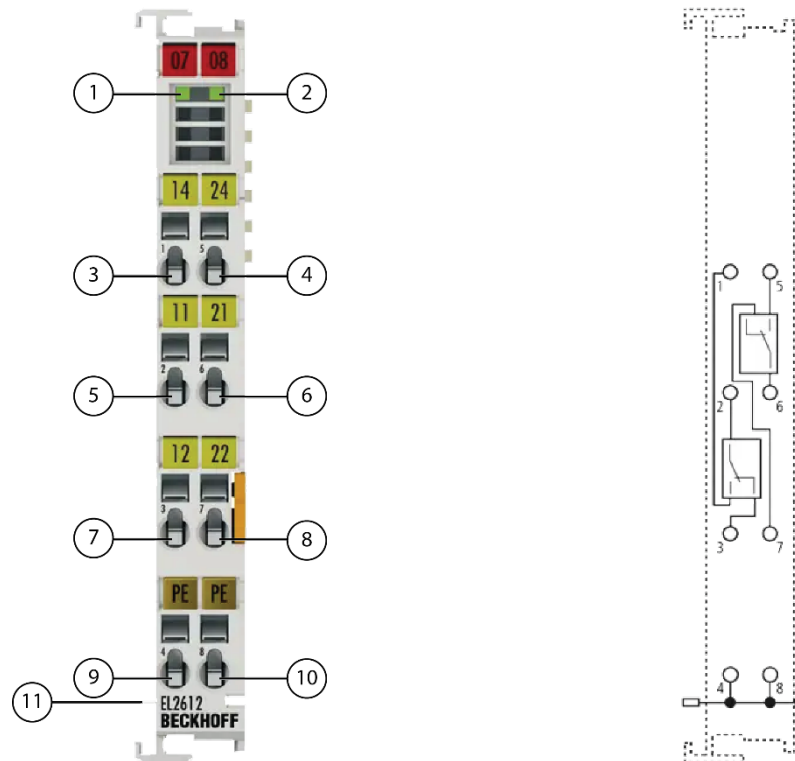


Fig. 21 : myGEZE Control output terminal 2-channel relay

- | | |
|----|---|
| 1 | LED relay 1 |
| 2 | LED relay 2 |
| 3 | Relay, 1 normally open contact |
| 4 | Relay, 2 normally open contact |
| 5 | Relay, 1 middle contact |
| 6 | Relay, 2 middle contact |
| 7 | Relay, 1 normally closed contact |
| 8 | Relay, 2 normally closed contact |
| 9 | PE (internally connected to terminal point 4) |
| 10 | PE (internally connected to terminal point 4) |
| 11 | Power contact PE |

LED displays

LED	Col-our	Meaning	
Relay 1, relay 2	green	off	Changeover contact between terminal points 2-3 (channel 1) or 6-7 (channel 2) closed.
		On	Changeover contact between terminal points 2-1 (channel 1) or 6-5 (channel 2) closed.

The output terminal has two relays with one change-over contact each. The signal state of the EtherCAT terminal is indicated by light emitting diodes. The output terminal is equipped with potential-free contacts, the power contacts are not passed through.

5.9 myGEZE Control output terminal 4-channel relay

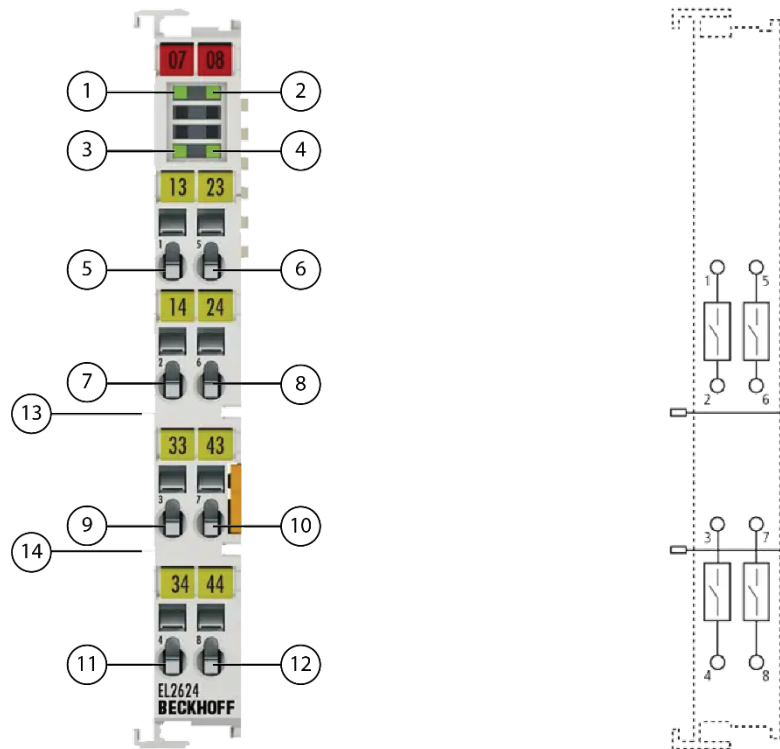


Fig. 22 : myGEZE Control output terminal 4-channel relay

- | | |
|----|--------------------------------|
| 1 | Signal LED 1 |
| 2 | Signal LED 2 |
| 3 | Signal LED 3 |
| 4 | Signal LED 4 |
| 5 | Relay, 1 normally open contact |
| 6 | Relay, 2 normally open contact |
| 7 | Relay, 1 normally open contact |
| 8 | Relay, 2 normally open contact |
| 9 | Relay, 3 normally open contact |
| 10 | Relay, 4 normally open contact |
| 11 | Relay, 3 normally open contact |
| 12 | Relay, 4 normally open contact |
| 13 | Power contact |
| 14 | Power contact |

LED displays

LED	Col-our	Meaning	
Signal 1 - 4	green	off	Terminal points 1-2 (channel 1), 5-6 (channel 2), 3-4 (channel 3) or 7-8 (channel 4) not connected.
		On	Terminal points 1-2 (channel 1), 5-6 (channel 2), 3-4 (channel 3) or 7-8 (channel 4) connected.

The output terminal has four relays with one single contact each. The relay contact can be used up to 125 V AC or 30 V DC. The signal state of the EtherCAT terminal is indicated by light emitting diodes. The output terminal is equipped with potential-free contacts. The power contacts are passed through.

5.10 myGEZE Control power supply terminal

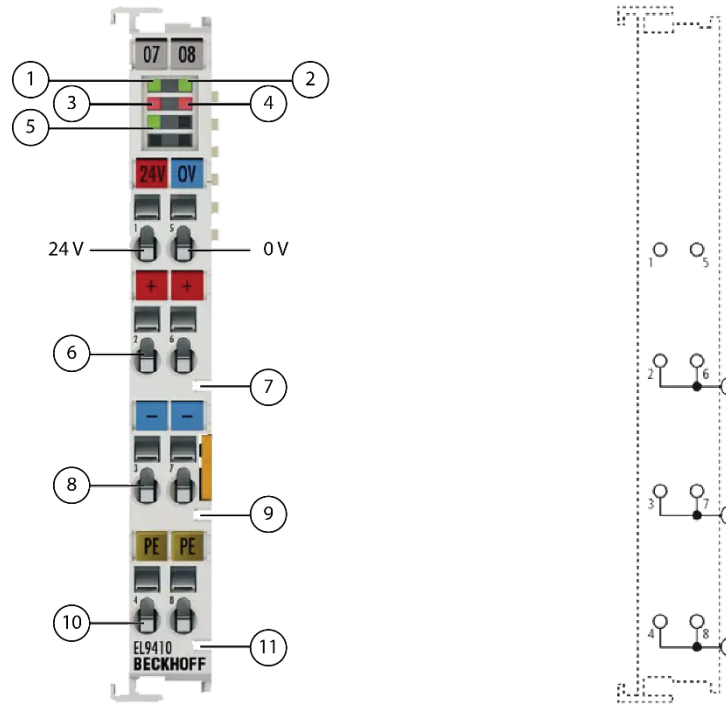


Fig. 23: myGEZE Control power supply terminal

- 1 Power LED (E-bus)
- 2 Power LED (power contacts)
- 3 Diagnostic LED (E-bus)
- 4 Diagnostic LED (power contacts)
- 5 Run LED
- 6 24 V feed
- 7 Power contact
- 8 0 V feed
- 9 Power contact
- 10 PE
- 11 Power contact

The EL9410 power supply terminal serves to regenerate the E-bus via which the data exchange between EtherCAT coupler and terminals takes place. Every EtherCAT terminal requires a certain current from the E-bus. This current is supplied by the power supply of the respective EtherCAT coupler to the E-bus. It can be used with configurations with a large number of EtherCAT terminals to increase the power supply of the E-bus by 2 A. The power supply terminal has a diagnosis function which is displayed by LED and in the process image.

5.11 myGEZE Control coupler

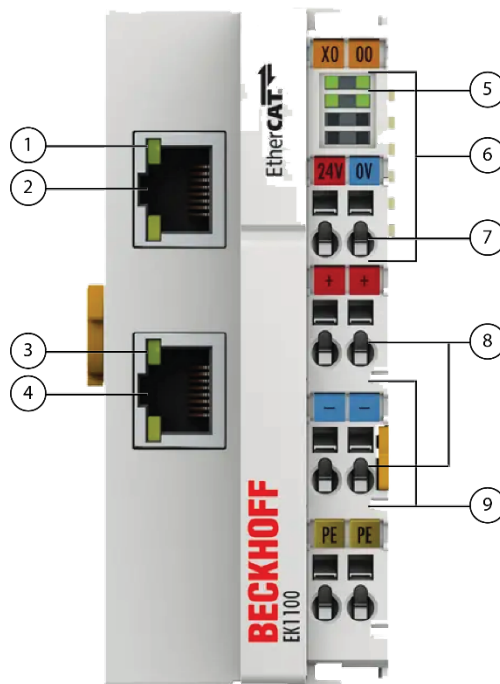


Fig. 24: myGEZE Control coupler

- | | |
|---|------------------------|
| 1 | Link/Act In |
| 2 | Signal input EtherCAT |
| 3 | Link/Act Out |
| 4 | Signal output EtherCAT |
| 5 | Power LEDs |
| 6 | E-bus |
| 7 | Supply coupler |
| 8 | Power contact feed |
| 9 | Power contacts |

The EtherCAT coupler is the link between the EtherCAT protocol on field bus level and the EtherCAT terminals. The coupler converts the telegrams from the Ethernet 100BASE-TX- to the E-bus signal representation in a pass. A station is made up of a coupler and any number of EtherCAT terminals which are automatically detected and shown individually on the process image.

The EtherCAT coupler has two RJ45 sockets. The coupler is connected to the network with the upper Ethernet interface, the lower socket is used for the optional connection of further EtherCAT devices in the same line. In addition, an EtherCAT junction or an EtherCAT extension can be used for the extension or to build up a line or star topology.

5.12 myGEZE Control extension

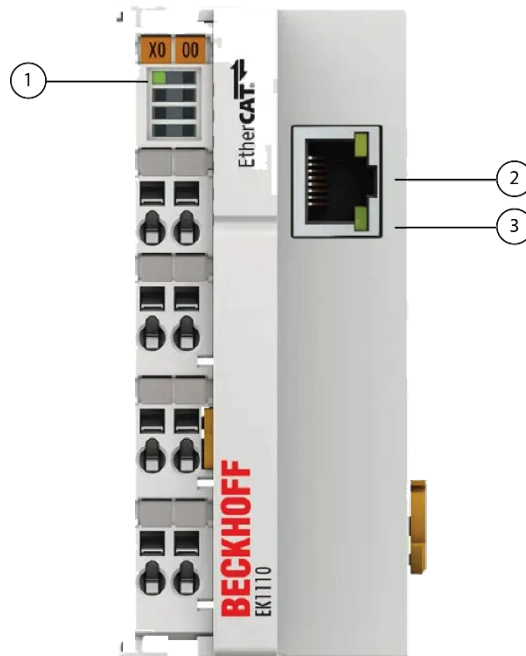


Fig. 25: myGEZE Control extension

- ① Run LED
- ② Signal output EtherCAT
- ③ Link/Act In

The EtherCAT extension is set at the end of an EtherCAT terminal line or an embedded PC of the CX series and offers the possibility of extending the EtherCAT network in line topology. The EtherCAT extension has an RJ45 socket which permits connection of an Ethernet cable with RJ45 connector and sets up a connection to a further EtherCAT line or to individual EtherCAT devices. The E-bus signals are converted to 100BASE-TX-Ethernet signal representation in a pass. The electronics are supplied via the E-bus. Parameter setting or configuration is not necessary.

5.13 myGEZE Control 2-port junction

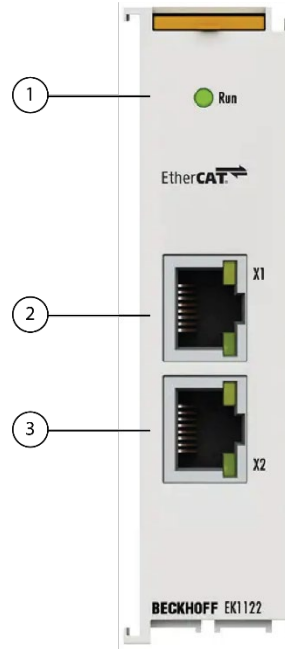


Fig. 26: myGEZE Control 2-port junction

- ① Run LED
- ② EtherCAT junction 1
- ③ EtherCAT junction 2

The 2-port EtherCAT junction can be used in an EtherCAT terminal line at any point between the EtherCAT terminals and makes it possible to build up EtherCAT star topologies. The use of several EK1122 in one station allows a modular EtherCAT star hub to be realised.

5.14 myGEZE Control bus end cover

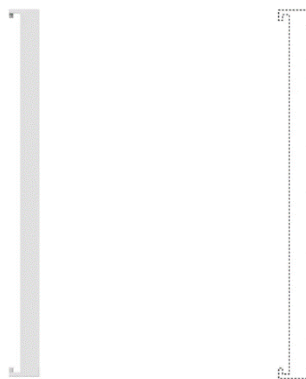


Fig. 27: myGEZE Control bus end cover

Each bus station must be completed by an end cover on the right-hand side.

Information (functional description, wiring diagram or explanation of the LED displays) about the individual terminals is available in the **Beckhoff information system**: <https://infosys.beckhoff.com/index.htm>

5.15 Terminal name with myGEZE Control assignment to Beckhoff

The table below shows the correct assignment of the terminal names:

Designation GEZE GmbH	Designation Beckhoff	Link
myGEZE Control CPU MODULE 8191	CX8191 Embedded-PC with BAC-net/IP	www.beckhoff.com/CX8191
myGEZE Control CAN MASTER TERMINAL	EL6751 EtherCAT terminal	www.beckhoff.com/EL6751
myGEZE Control CAN connector	ZS1051-3000 CANopen, bus interface connector	www.beckhoff.de/ZS1051-3000
myGEZE Control KNX-System	BK1250 Compact coupler between EtherCAT terminals and bus terminals	www.beckhoff.de/BK1250
	KL6301 Bus terminal, 1-channel communication interface, KNX/EIB	www.beckhoff.de/KL6301
	KL9010 End terminal	www.beckhoff.de/KL9010
myGEZE Control 8-channel digital input terminal	EL1008 EtherCAT terminal, 8-channel digital input	www.beckhoff.de/EL1008
myGEZE Control potential distribution terminal 24 V DC	EL9188 Potential distribution terminal	www.beckhoff.de/EL9188
myGEZE Control potential distribution terminal 0 V DC	EL9189 Potential distribution terminal	www.beckhoff.com/EL9189
myGEZE Control output terminal 2-channel relay	EL2612 EtherCAT terminal, 2-channel relay output	www.beckhoff.com/EL2612
myGEZE Control output terminal 4-channel relay	EL2624 EtherCAT terminal, 4-channel relay output	www.beckhoff.com/EL2624
myGEZE Control power supply terminal	EL9410 Power supply terminal for E-bus regeneration with diagnosis function	www.beckhoff.com/EL9410
myGEZE Control coupler	EK1100 EtherCAT coupler	www.beckhoff.com/EK1100
myGEZE Control extension	EK1110 EtherCAT extension	www.beckhoff.com/EK1110
myGEZE Control 2-port junction	EK1122 2-Port-EtherCAT junction	www.beckhoff.com/EK1122
myGEZE Control bus end cover	EL9011 End cover for E-bus contacts	www.beckhoff.com/EL9011

6 System structure and system limits

The software application created by GEZE has a defined number of max. possible terminals for each function. The maximum system structure for the software template is used to create a project-specific customer configuration.

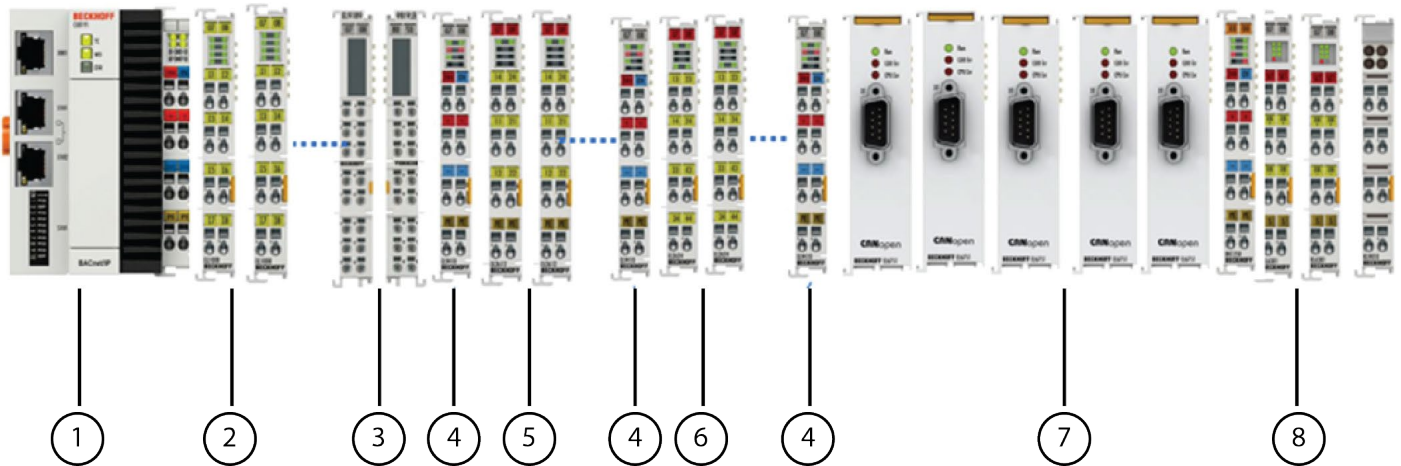
The software template prescribes a certain sequence for the different terminal types. This is necessary for functional reasons. A communication terminal, for example, does not forward certain potentials and signals in the terminal system. For this reason, it must not be inserted at the beginning of the terminal system.

To set up the function of the controller system, different auxiliary terminals are necessary, which make voltage potentials available, feed the internal bus supply in larger systems or create transitions (couplers) for internal bus supplies.

6.1 Max. possible terminals in the template project

- ▶ 1 x basic device
- ▶ 10 x digital input 8-channel potential-free
- ▶ 10x digital relay output 2-channel change-over contact
- ▶ 10x digital relay output 4-channel normally open contact
- ▶ 5x CAN bus terminal
- ▶ 1x connection to KNX system comprising 4 terminals

6.2 Technically possible order of terminals in the template project



- 1 Basic device**
System structure starts with the basic device as controller. The controller serves all internal terminal bus systems incl. the necessary voltage and signal supplies.
- 2 8-channel digital input**
1... 10 terminals
One or more potential distribution terminals 24V DC or 0V DC are necessary for the potential supply of the inputs. These must be inserted in the connection.
- 3 Potential distribution terminal 24V DC / 0V DC**
1... 5 terminals
Allows for tapping of the potential without additional terminal blocks or wiring work. 16 contacts can be tapped per terminal.
- 4 Power supply terminals**
The power supply terminal serves to refresh the Ebus that handles the data exchange between the coupler and terminals. Each terminal requires a certain current from the E-bus. This current is fed into the E-bus by the power supply terminal or the controller. Also necessary for transmitting potential via contacts for output terminals. This terminal needs a supply with supply voltage.
- 5 Output terminal 2-channel relay change-over contact**
- 6 Output terminal 4-channel relay normally open contact**
- 7 CAN master terminal**
This is a communication terminal. It must not be installed in order before I/O terminals.
- 8 KNX system**
Comprising the 4 terminals in the K-bus system. Must always be installed at the end of the system.



Power supply terminals:

- ▶ This terminal needs a supply with supply voltage.
- ▶ Always necessary upstream of the terminals 2K.-REL-OUTPUT (PE contact)
- ▶ Always between the terminals 2K.-REL-OUTPUT and 4K.-REL-OUTPUT (power contacts).
- ▶ Optional upstream of the terminals REL-OUTPUT or CAN terminal for refreshing the E-bus, if more than a total of 10 terminals are installed.

6.3 System limits

200 GEZE product systems can be connected to one controller system. The product systems refer to the defined module types; see the attachment to the user manual 207846 BACnet Definition.

This results on average – depending which products are connected – in approx. 3000 BACnet data points.

The connection of MBZ300 control units is an exception.

Here, the maximum number of 250 MBZ modules is the limit, independently of the number of MBZ systems these are distributed across.

No other product system may be connected to this terminal.

6.4 Substations

The system offers the possibility of building up a decentralised structure through substations.

This makes it possible to reduce the cable connections to the connected product systems by building up substations locally with the corresponding terminal systems.

The connection to the controller is by means of a passive connection with CAT-5 cable / RJ45 socket.

The max. length between two stations is 100 m (100BASE-TX).

It is possible to build up almost any substation structure through the necessary couplers. 200 substations at maximum can be connected to the basic controller system.

A special version of the template software is necessary to compile the application. This must be requested through project processing.

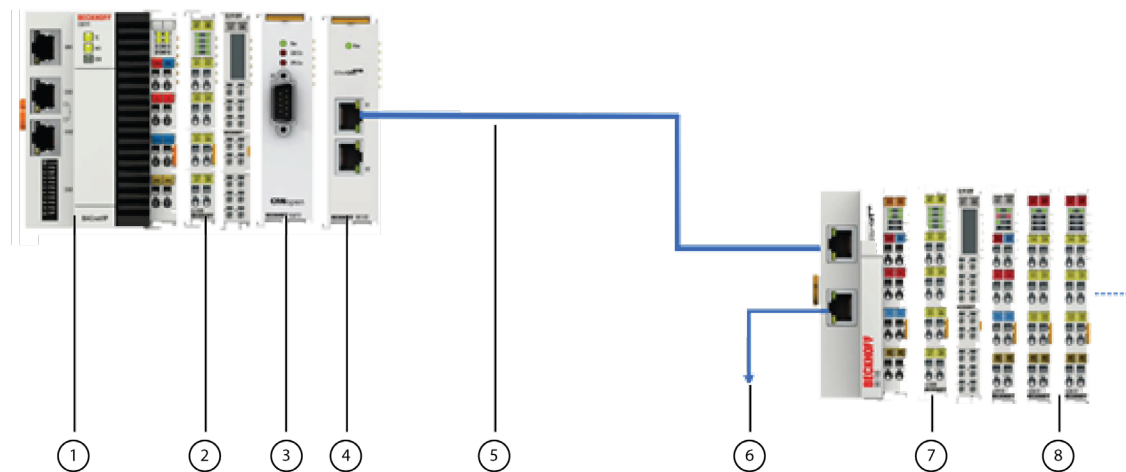


Fig. 28: Example of substation system structure

- | | |
|---|--|
| 1 | Basic device |
| 2 | 8-channel digital input + potential |
| 3 | CAN master terminal |
| 4 | 2-Port. junction |
| 5 | CAT 5 – wiring, passive (length max. 100 m) |
| 6 | To additional substations |
| 7 | 8-channel digital input + potential |
| 8 | Output terminal 2-channel relay change-over contact |

6.5 Detached inputs and outputs with GEZE IO 420

The system also offers the option of detecting digital inputs and outputs via the IO 420 interface module. This makes it possible to reduce the cable connections to the connected product systems by building up substations locally with the corresponding terminal systems.

4 digital inputs and outputs can be detected in a decentralised manner in this way via an IO 420.

The IO 420 interface module is integrated into a CAN bus line like the other CAN bus capable devices.

When completing the configuration, note that an IO 420 interface module will occupy 2 CAN addresses on the bus system.

- ▶ 1. CAN addr.: Input and output 1 + 2
- ▶ 2. CAN addr.: Input and output 3 + 4

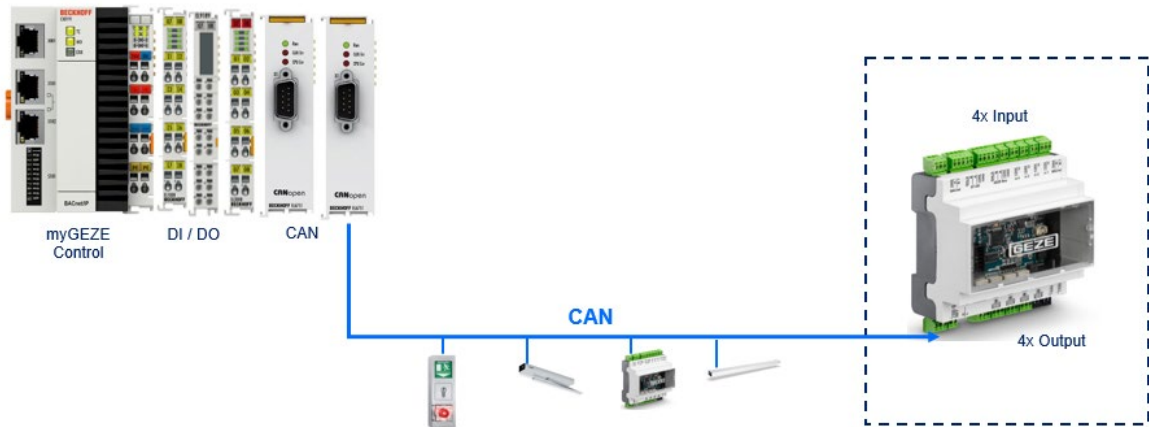


Fig. 29: Detached inputs and outputs with GEZE IO 420

Configuration of the inputs and outputs detected via the IO 420 is carried out in the same manner for the myGEZE Control Configurator as configuration of the input and output terminals.

The IO 420 interface module must be configured accordingly using the ST220 programming device.

- ▶ Assigning the CAN addresses
- ▶ Module type: Universal
- ▶ Parameter setting for inputs

6.6 Determination of the necessary hardware components

The necessary hardware components are determined by specification and joint development with the customer and user of the controller system.

The system designs and system boundaries described in the previous chapters must be taken into consideration.

The on-site circumstances of the project must be taken into account in the design.

This affects possible installation positions, cable routes and the connection to existing building management infrastructures.

6.7 Electrical wiring diagram

If ordered, you will receive the configured components in a control cabinet housing adapted to the quantity of terminals with all the necessary components such as power supply, fuses, terminal blocks etc.

In this case, GEZE GmbH also provides an electrical wiring diagram.

6.8 Licence model

The controller system has licensing. The licence is linked to one controller system. Each controller has a system ID which ensures protection.

The controller's system ID has to be known for a licence to be issued.

It can be determined using the TwinCAT tool with the system running.

1. In TwinCAT, open the License tab in the opened project solution.
2. The 36-digit system ID can be found under **Order Information (Runtime)**. This can be retrieved through marking and copying.

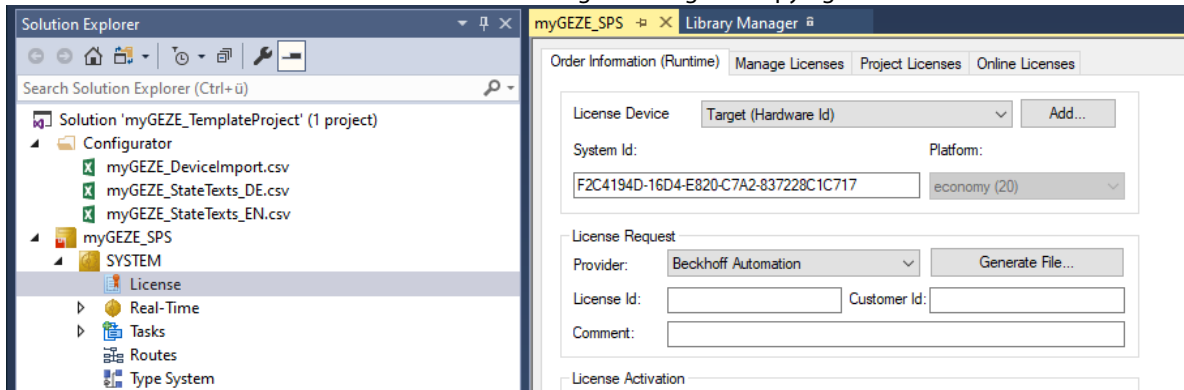


Fig. 30: TwinCAT SystemID

The necessary licence file is issued to the customer by GEZE GmbH through order placement.

The encrypted licence file is loaded to the controller during the configuration process together with the configuring data.

The controller checks the data and executes the program code accordingly.

If there is no valid licence available, the controller goes into **Stop** mode following configuration. This mode is indicated by a red TC-LED.

7 Putting the software into operation

7.1 Basic information about Beckhoff and TwinCAT 3

The controller system is made up of hardware components and the programming environment TwinCAT 3 from Beckhoff Automation.

The embedded PCs are programmed in accordance with the powerful IEC 61131-3 standard. The automation software TwinCAT 3 forms the basis for programming the embedded PC.



The manual addresses users with basic knowledge of automation technology from Beckhoff Automation as well as application of the programming environment TwinCAT 3. Menu fields, user interfaces are only explained or shown in the application.



More detailed information can be found in the **Beckhoff Information System**: <https://infosys.beckhoff.com/index.htm> under TwinCAT 3

Tools required

- ▶ TwinCAT version Build 4024.35
- ▶ Card reader or USB interface with card reader for Micro-SD cards
- ▶ myGEZE Control Configurator Version 1.1.1 or higher

For use for advanced configurations only with an administrator account

- ▶ CeRHost remote program from Beckhoff Automation
- ▶ File transfer program, such as WinSCP

7.2 myGEZE Control Configurator

7.2.1 Introduction

7.2.1.1 System requirements

- ▶ Windows version 22H2
- ▶ PowerShell
- ▶ Admin rights for installation
- ▶ Developer mode

7.2.1.2 System behaviour

Some of the input fields have check correct content.

Faulty content is signalled by a red border around the input field.

As long as a field has a red border around it, a fault is pending and editing cannot proceed.

In the following example, the IP address is configured in a non-valid range:

Lizenz:

IP Adresse:

IP Subnetz Maske:

Fig. 31: Example of non-valid input

7.2.2 Overview

7.2.2.1 Header

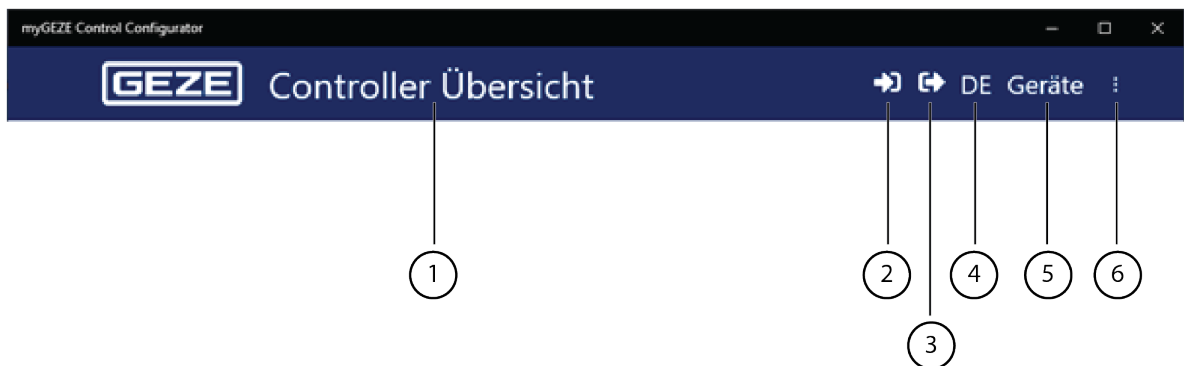


Fig. 32: Input screen header

- 1 Screen name
- 2 Import of configuration, licence, state text into the program
- 3 Export of configuration, license, state text to local storage location or to the controller
- 4 Language selection
- 5 Selection of device overview / controller
- 6 Other controller configurations: Calender, notification classes, state texts, scenes



Fig. 33: Header in other screens

- ① Jumps to the last screen
- ② Screen name
- ③ Selection of device overview / controller
- ④ Other controller configurations: Calendar, notification classes, state texts, scenes

7.2.2.2 Controller overview

All the parameters for the controller are configured in the controller overview. These serve as unique identification for the controller system within the building automation network. The data are used for configuration of the controller and mapped in part to the respective properties of the BACnet device object.

myGEZE Control Configurator

GEZE Controller Übersicht DE Geräte

1 — Lizenz: Die Lizenz wird automatisch bei Import gelesen

2 — IP Adresse: Bitte geben Sie eine IP Adresse ein!

3 — IP Subnetz Maske: Bitte geben Sie die IP Subnetzmaske ein!

4 — IP Default GW: Bitte geben Sie ein IP Default Gateway ein!

5 — *Bau-Objekt: Bitte geben Sie einen Objekt-Bau ein!

6 — *Instanz Nummer: Bitte geben Sie die Instanznummer des Controllers ein!

7 — *Standort: Bitte geben Sie einen Standort ein!

8 — Beschreibung: Bitte geben Sie eine Beschreibung ein!

Fig. 34: Input screen



The values marked by an * have to be stipulated if they are to be used in the further course for the definition of patterns.

These fields are also subject to review. As long as the entry is not logical in structure, the field will have a red border around it.

- 1 This field cannot be edited. The number of the licence file is shown here after data import.
A licence file is necessary in the controller as authorisation for the application.
- 2 The IP address of the controller is determined through these three input fields.
- 3 Empty field → data are not changed. (Standard 192.168.1.3/255.255.255.0)
"0.0.0.0" →DHCP is activated
- 4 Data only relevant for X101/102 (TCCCATMP1).
DIP switches 10 and 9 to **OFF** and 1 to 8 to **ON**.
- 5 Object name
- 6 Defines the technical address of the controller in the BACnet network.
Permissible range: 1 to 4194302

- 7 Location
- 8 Description

7.2.2.3 Import

A configuration that has already been generated can be imported to the program again later and further edited. For this, the program offers the possibility of importing the data from a folder directory or directly online from a connected controller.

- ▶ Independently of whether locally or via the controller, configuration, licence and state texts can be imported at the same time.
 - ▶ Pattern variables in curly brackets {} are not saved and are thus not read in again.
4. Select the required data types.
 5. Set whether the import is to be carried out from the controller or locally.
 6. Choose import and select the required files (csv and lic).
- ➔ Carry out selection of the files according to the required file types (step 1).



If the configuration contains scenes, the state texts must be imported at the same time.

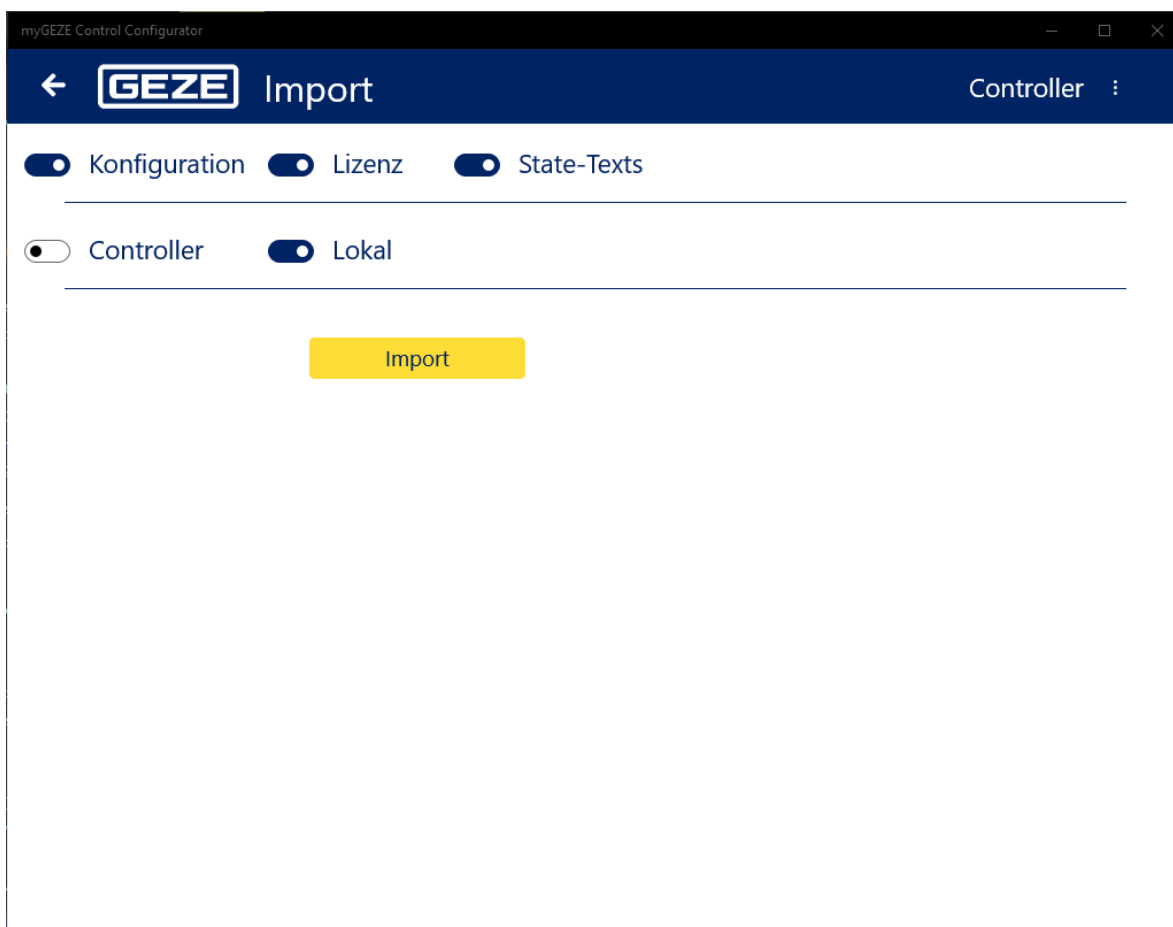


Fig. 35: Import local

Data import from a controller system takes place via ftp file transfer. This is protected by the entry of user and password.

Standard

User name: geze
 Password: 1863

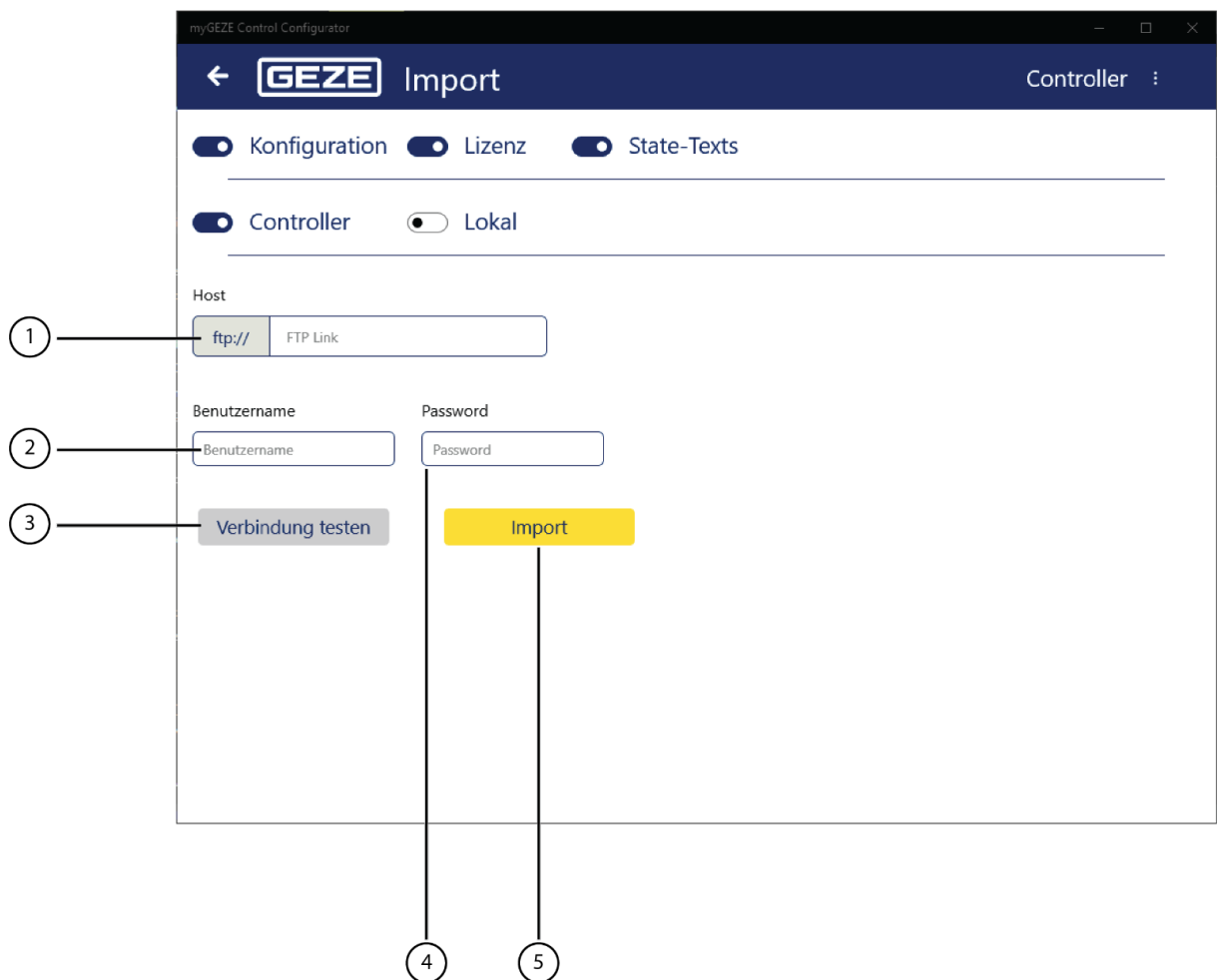


Fig. 36: Import Controller

- ① **Host**
IP address or host name of the target system
- ② **User name**
System user, e.g. GEZE
- ③ **Password**
System password
- Test connection**
- ④ The connection to the target system can be checked with this.
green = connection successful
red = connection failed
- ⑤ **Import**
Data import is started

The status of the import is shown by a dialogue field after the procedure has been completed:

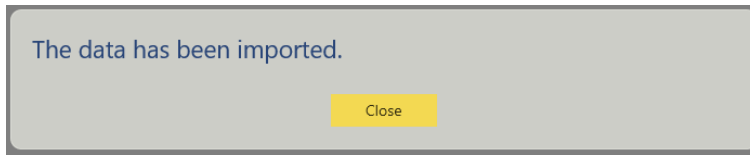


Fig. 37: Import successful



Fig. 38: Import failed

7.2.2.4 Export

A prepared configuration can be exported from the program.

This can be into a folder directory (local) e.g. as data backup. This configuration can be loaded again later via the import function and further edited.

- ▶ Pattern variables in curly brackets { } are not exported, only the result.

With the controller setting the data are transmitted directly to a connected controller system. The same access data as for the import apply here.

For a complete export to the controller, the licence must already have been imported. The export can be carried out locally and to a controller at the same time. To carry out export via controller a valid FTP link and the user data must be entered. In the case of export to the controller, a local copy is saved in the defaults folder at the same time.

Configuration, licence and state texts can be exported at the same time on the controller.

Locally, only configuration OR licence OR state can be exported. This is because a name must be provided to save the files.

myGEZE Control Configurator

← **GEZE** Export Controller ⋮

Konfiguration Lizenz State-Texts

Controller Lokal

Host

ftp:// 192.168.2.3

Benutzername Password

GEZE ●●●●

Verbindung testen Export

Fig. 39: Controller and local export

7.2.2.5 Functions

7.2.2.5.1 Device overview

All configured devices are shown here. Further devices can be added and removed.

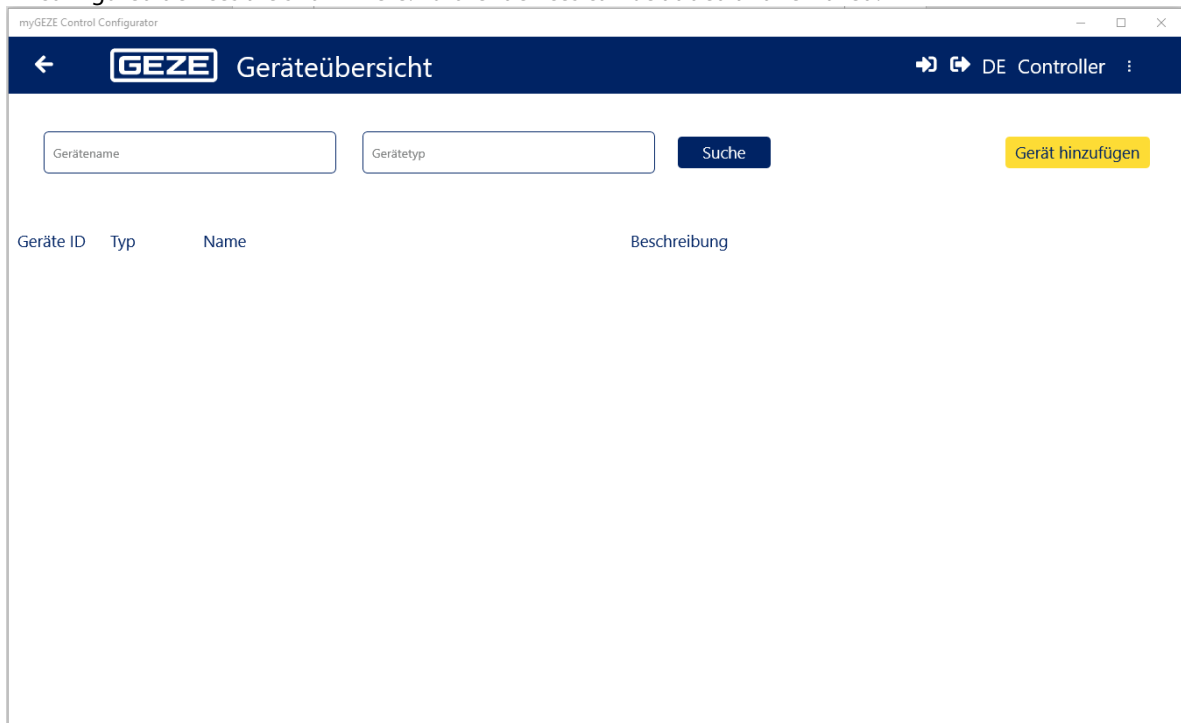


Fig. 40: Device overview empty

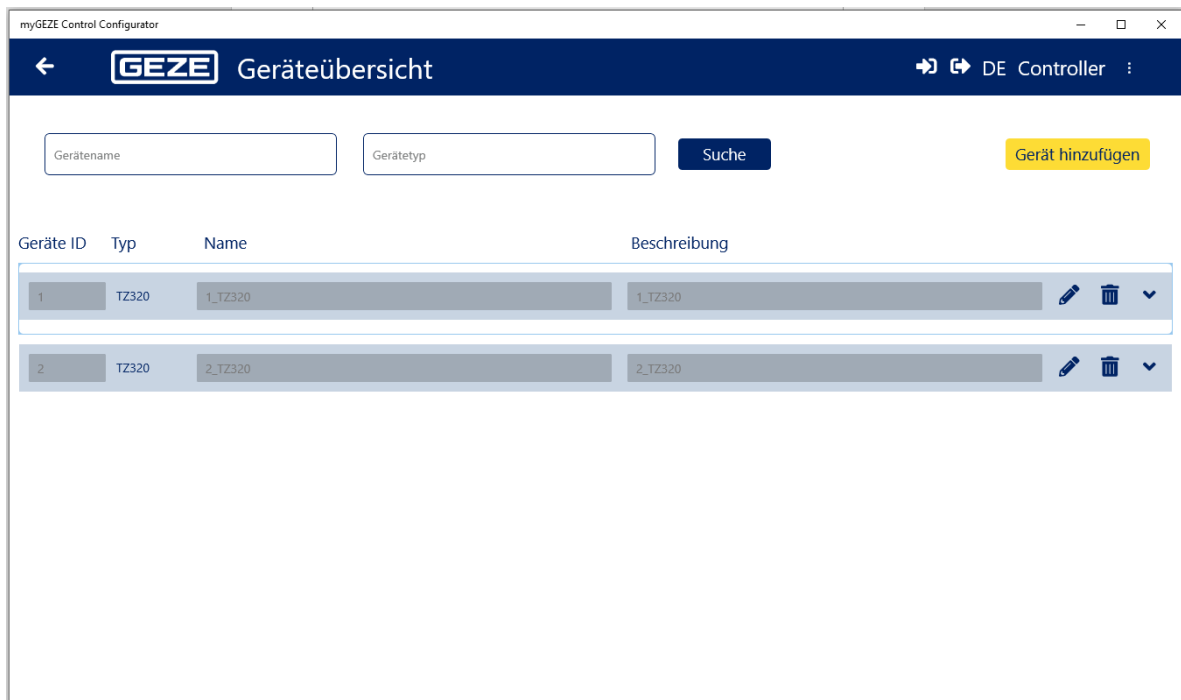











Fig. 41: Device overview with content



If the fields have a red border around them, the entry is not valid and must be adapted.

Icons

			The device data can be edited
			Selected device is deleted
			Opens the overview of all data points (BACnet) of the device. With I/O the data points are also shown without BACnet link.

7.2.2.5.2 Adding a device

Devices are added in four steps. To do this, select **Add devices**. Adding always takes place for a certain device type. In other words, all the steps must be completed for this device type and the configuration saved before the next devices can be created.

7.2.2.5.2.1 Step 1

In the first step, specific patterns can be defined for the devices which are then used for the creating the devices. This makes it easier to add the devices, since this data is then predefined and does not have to be entered individually.

Free text elements can be used for these patterns, or an automatism can be created by means of a variable specified in curly brackets.

In the process, controller data already entered and data created in the further course (e.g. addressing, type) are used via these specifications in curly brackets. The defined patterns apply for all the elements that are generated in the next steps.

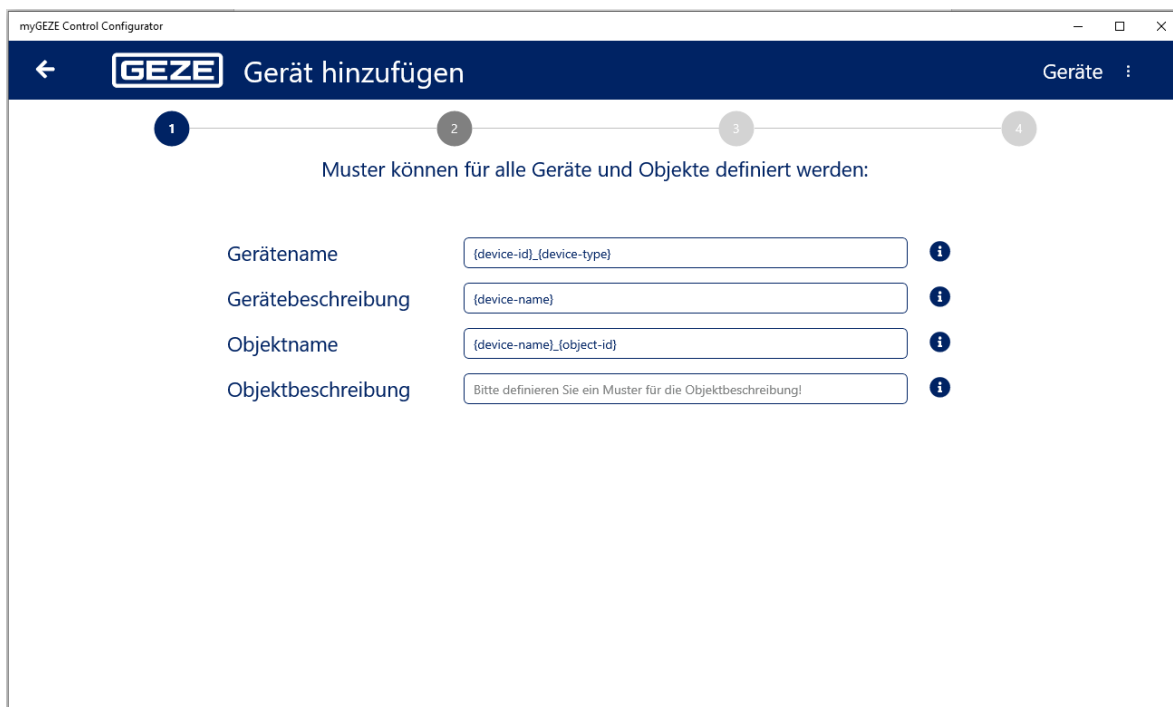


Fig. 42: Adding devices – step 1 (default setting)

Possible pattern fields	
Device name	
Free text field	Direct input
{controller-number}	Input from controller field <i>Instance number</i>
{controller-name}	Input from controller field <i>Object name</i>
{controller-location}	Input from controller field <i>Location</i>
{device-type}	Device type selected in step 2
{device-id}	GEZE device ID, results automatically in step 2
Device description	
Free text field	see above
{controller-number}	see above
{controller-name}	see above
{controller-location}	see above
{device-name}	Name generated in step 2 which results from this pattern
{device-type}	see above
{device-id}	see above
Project name	
Free text field	see above
{controller-number}	see above
{controller-name}	see above
{controller-location}	see above
{device-name}	see above
{device-type}	see above
{device-id}	see above
{object-id}	ID of the individual data point stored in the system
Building description:	
Free text field	see above
{controller-number}	see above
{controller-name}	see above
{controller-location}	see above
{device-name}	see above
{device-type}	see above
{device-id}	see above
{object-id}	see above
{object-name}	Name generated in step 2 which results from this pattern

myGEZE Control Configurator - □ ×

← **GEZE** **Gerät hinzufügen** Geräte ⋮

1 — 2 — 3 — 4

Muster können für alle Geräte und Objekte definiert werden:

Gerätename	<input type="text" value="PFWR0009_{device-type}_{device-id}"/>	i
Gerätebeschreibung	<input type="text" value="PFWR9 00.911A_{controller-location}"/>	i
Objektname	<input type="text" value="PFWR0009IWA1EL10_{device-name}_{object-id}"/>	i
Objektbeschreibung	<input type="text" value="PFWR9 Raum 00.911A System: 007_{object-id}"/>	i

Fig. 43: Example of pattern entered



The variables which are possible or can be used are shown in the INFO box.

7.2.2.5.2.2 Step 2

In this step, device type, the number of devices to be created and the technical addressing are defined. The devices are then defined using this information together with the patterns prepared in step 1.


The device configuration differs depending on the device type selected. The addresses are determined automatically according to a pre-existing definition. They can be adapted again later.

During the final addition of one/several devices, this automatically receives an internal device ID. This is unique in the system and is numbered sequentially. The device ID can be changed manually. The operator is then responsible for the one-time assignment.



Fig. 44: Adding devices – step 2

Editing steps

1. Select device type
2. Specify number
3. Specify technical address
4. Check device name pattern, device description pattern and adapt if necessary
5. Add selection 
6. Choose step 3.

	Add selection.
	Refresh view.
	Overview of devices added.
	User information



Every CAN terminal can contain max. 63 devices. In total, max. 200 devices can be connected distributed among all CAN terminals.




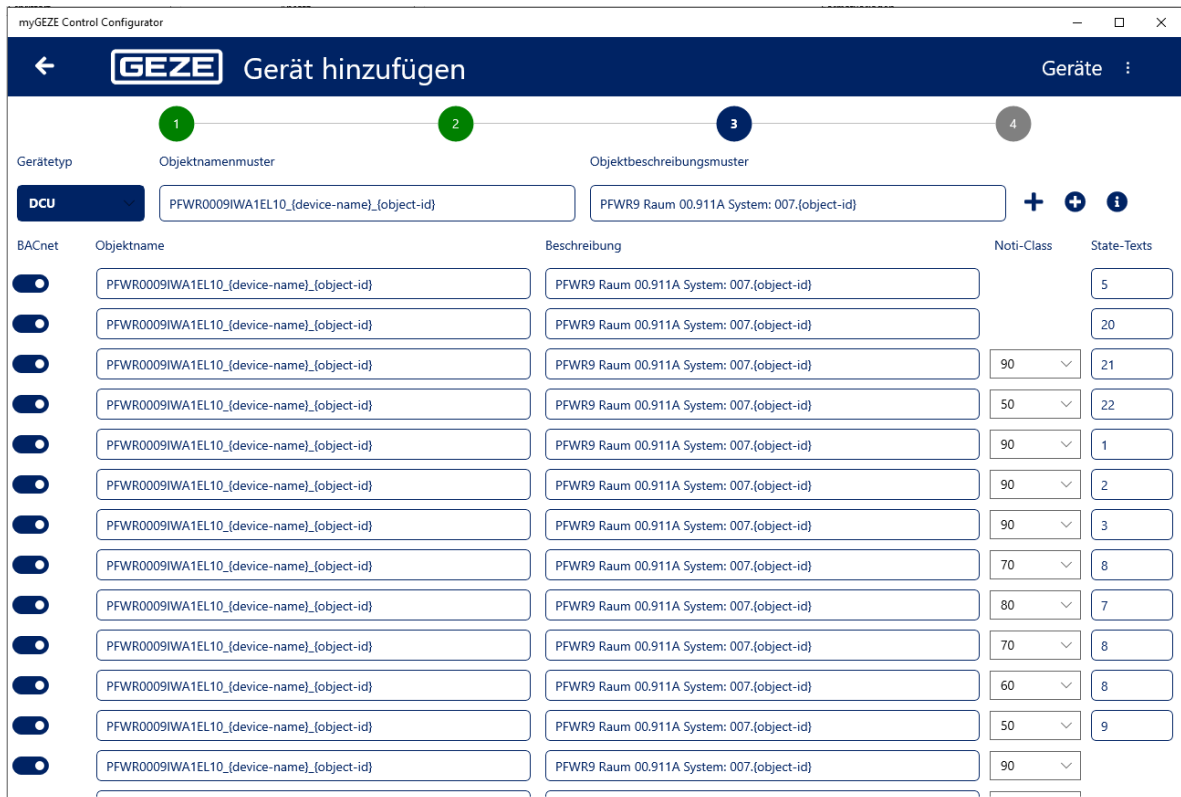
Device ID is a sequential number of the existing devices. Up to 9,999 devices be added. This value is necessary for calculation of the BACnet instance number.

7.2.2.5.2.3 Step 3

The patterns for the objects are defined in this step. The data entered in steps 1 and 2 are used for this.

Editing steps

1. Select created device type.
2. Add object name.
3. Use the slide switches '*BACnet*' to define which data points are to be forwarded to BACnet.
4. If necessary, adapt the settings for notification class and state texts.
Individual notification class objects and state texts can be assigned to the objects here.
5. Following completion, change the next editing step by clicking .



BACnet	Objektname	Beschreibung	Noti-Class	State-Texts
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}		5
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}		20
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	90	21
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	50	22
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	90	1
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	90	2
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	90	3
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	70	8
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	80	7
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	70	8
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	60	8
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	50	9
<input type="checkbox"/>	PFWR0009IWA1EL10_{device-name}_{object-id}	PFWR9 Raum 00.911A System: 007.{object-id}	90	

Fig. 45: Adding devices – step 3.1



This step must be carried out with all the device types created.
During this editing step, object name and description are still shown with their pattern definition.
The resulting name and description can only be shown in step 4!

7.2.2.5.2.4 Step 4

In this step, the number of configured devices per type with the entries made are shown. The data of the patterns entered are now shown resolved with the data generated.

Changes/adaptations can be carried out here by opening and editing the individual devices.

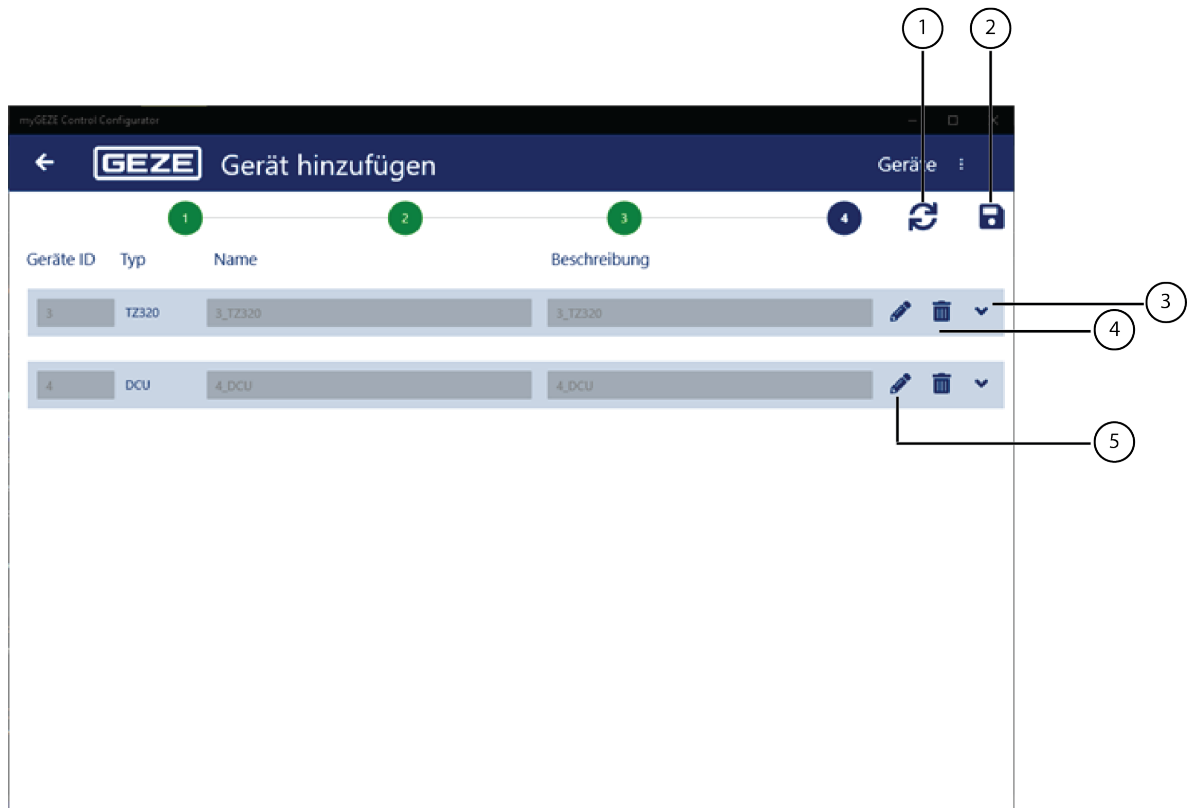


Fig. 46: Adding devices – step 4

- ① Refresh view.
- ② Save current selection.
- ③ Open device overview.
- ④ Delete device.
- ⑤ Edit devices.



If an error has occurred during creation of the devices, the faulty device has a red border around it.

Editing steps

1. Check whether the devices have been created as entered in terms of quantity and data.
2. Open the individual devices by clicking the button ³.
3. If necessary or if a faulty configuration is shown at the device, click the button ⁵ to change to editing mode and adapt individual data records.
4. Faulty devices must be edited.
5. Close editing mode.
6. Refresh view.
7. Save configuration.



Saving the creation process is sufficient to save complete it. If the configured devices are to be used again later, the configuration must be exported. See chapter "Export".

BACnet	Objektnamen	Beschreibung	Noti-Class	State-Texts
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_1	PFWR9 Raum 00.911A System: 007.1		5
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_2	PFWR9 Raum 00.911A System: 007.2		20
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_3	PFWR9 Raum 00.911A System: 007.3	90	21
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_4	PFWR9 Raum 00.911A System: 007.4	50	22
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_5	PFWR9 Raum 00.911A System: 007.5	90	1
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_7	PFWR9 Raum 00.911A System: 007.7	90	2
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_8	PFWR9 Raum 00.911A System: 007.8	90	3
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_9	PFWR9 Raum 00.911A System: 007.9	70	8
<input checked="" type="checkbox"/>	PFWR0009IWA1EL10_PFWR0009_DCU_3_10	PFWR9 Raum 00.911A System: 007.10	80	7

Fig. 47: Editing devices – step 4

7.2.2.5.3 Overview of further functions

7.2.2.5.3.1 Calendar

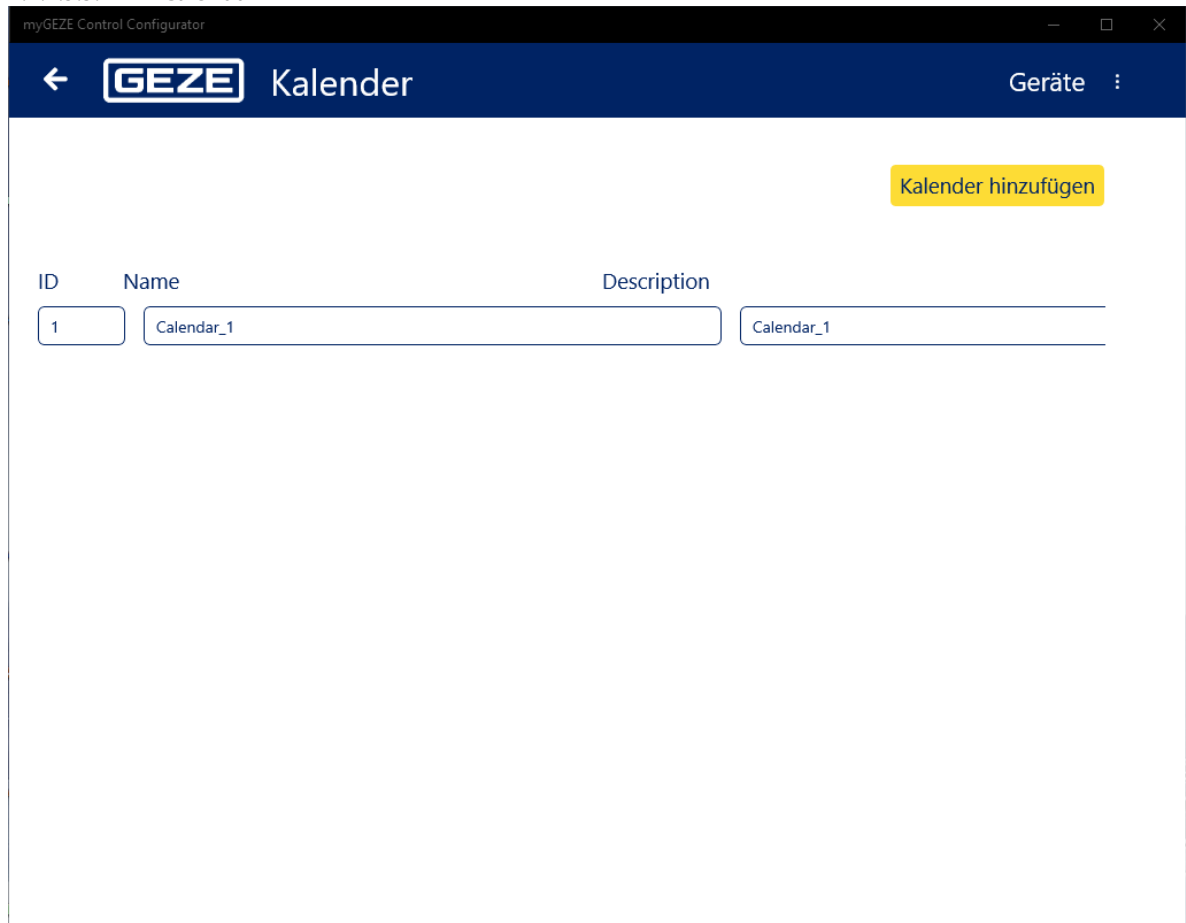


Fig. 48: Calendar function

7.2.2.5.3.2 Messages

BACnet offers the possibility of sending alarms using different notification class objects.



The notification class objects can be defined or adapted here. After they have been configured here, the notification objects can be used for the data objects of the devices.

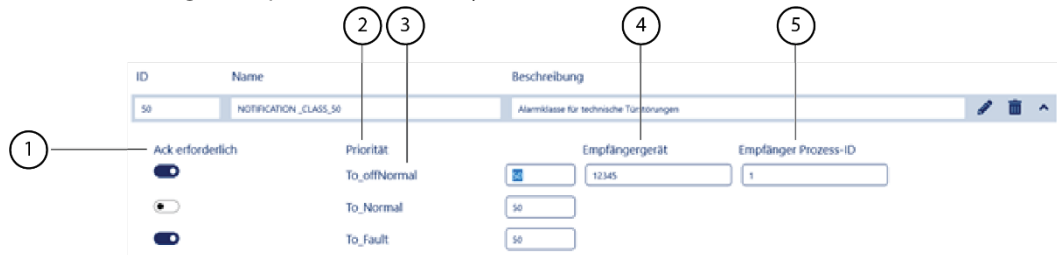


Fig. 49: Notification function (default)

ID	BACnet instance number
Name	BACnet object name
Description	BACnet description
Ack necessary	Settings for alarm confirmation by the recipient
Priority	Settings for the priorities of the alarm states
Receiver address	BACnet device instance (ID) of the receiver device
Process ID	Process number for transmitting the alarms / events

Adding/editing notification

1. Click the button Meldungsklasse hinzufügen
 - ➔ A further notification class is created. The ID is counted up automatically first in a 10 pattern.
2. Change to editing mode using  and .
3. Carry out settings.
 - ➔ Saving takes place automatically here.



The screenshot shows a configuration window for a notification class. At the top, there is a table with the following data:

ID	Name	Beschreibung
50	NOTIFICATION_CLASS_50	Alarmklasse für technische Türstörungen

Below the table, there are several configuration fields:

- 1** Ack erforderlichlich: Three toggle switches (top is on, middle is off, bottom is on).
- 2** Priorität: Three radio buttons labeled To_offNormal, To_Normal, and To_Fault.
- 3** Empfängergerät: Three input fields with values 50, 50, and 50.
- 4** Empfängergerät: A text input field containing '12345'.
- 5** Empfänger Prozess-ID: A text input field containing '1'.

Fig. 50: Edit reporting classes

Explanatory notes:

1	Ack necessary	Determines the requirement for a confirmation of the received message depending on the state transition
2	Priority	Determines the priority of a transmitted message depending on the state transition
3	State transition	To_offNormal: Transition to signal status To_Normal: Return to idle status To_Fault: Transition to a fault status for the data point
4	Receiver device	Specify a receiver based on the BACnet device ID of the receiver device Empty == no receiver defined Entry 1 4139302 possible
5	Receiver process ID	Process number with which myGEZE Control transmits the messages to the receiver device



These settings must be made in agreement with the system integrator of the receiver device if necessary. They usually determines how their system must receive the alarms / events.

7.2.2.5.3.3 State texts

A state text is the definition of the state texts and levels of a digital data point. State texts are predefined and their number can be increased as required. Every digital data point can have one of these state texts assigned. Adding, editing and deleting work in the same way as in the previous chapters.

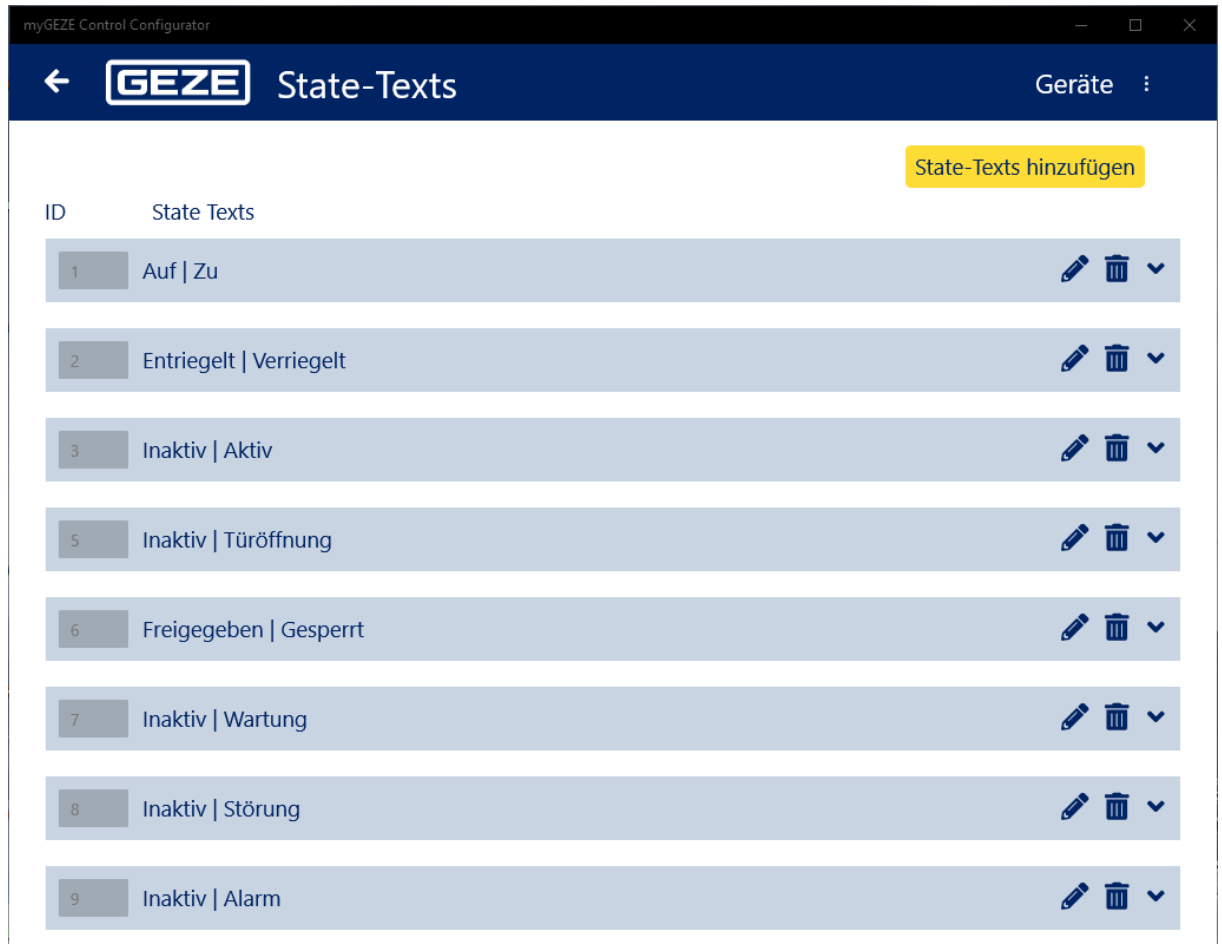


Fig. 51: State texts function

7.2.2.5.3.4 Scene

The system provides the possibility of defining functional scenes.

With these scenes, switching functions which are to take place together can be grouped. A wide range of different commands with different functions can be compiled.

These scenes can then be triggered directly via a group switch data point (multi-state value). In addition, an automatic time-dependent function can be stored by configuring a BACnet schedule.

Adding, editing and deleting work in the same way as in the previous chapters.

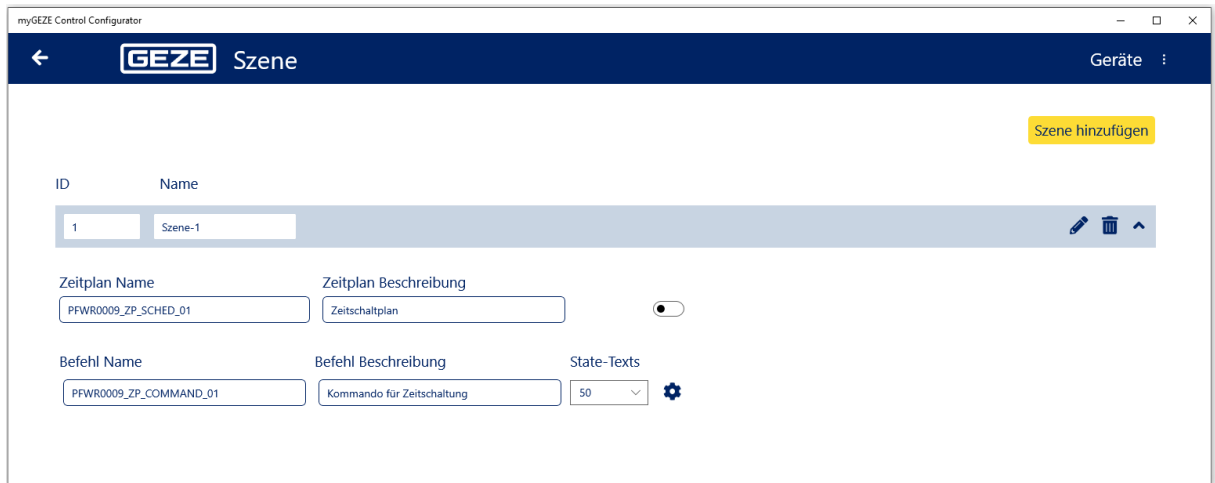










Fig. 52: Scene function

ID	Internal number
Name	Internal name
Schedule name	BACnet object name of the schedule
Schedule description	BACnet description of the schedule
	The decision can be taken here whether the schedule object is created
Command name	BACnet object name of the switch data point
Command description	BACnet description of the switch data point
State texts	Possible levels of the switch data point (defined under state texts)
	Definition of the switching actions of the individual switch objects

Adding/editing scene

1. Click the button **Szene hinzufügen**
 → A further scene class is created
2. Change to editing mode using  and .
3. Carry out settings.
 → Saving takes place automatically here.

Adding/editing switching action

1. Change to the settings: Button 
 → Input screen for the actions is opened
2. Change to editing mode using  and .
3. Carry out settings.
4. Save with 

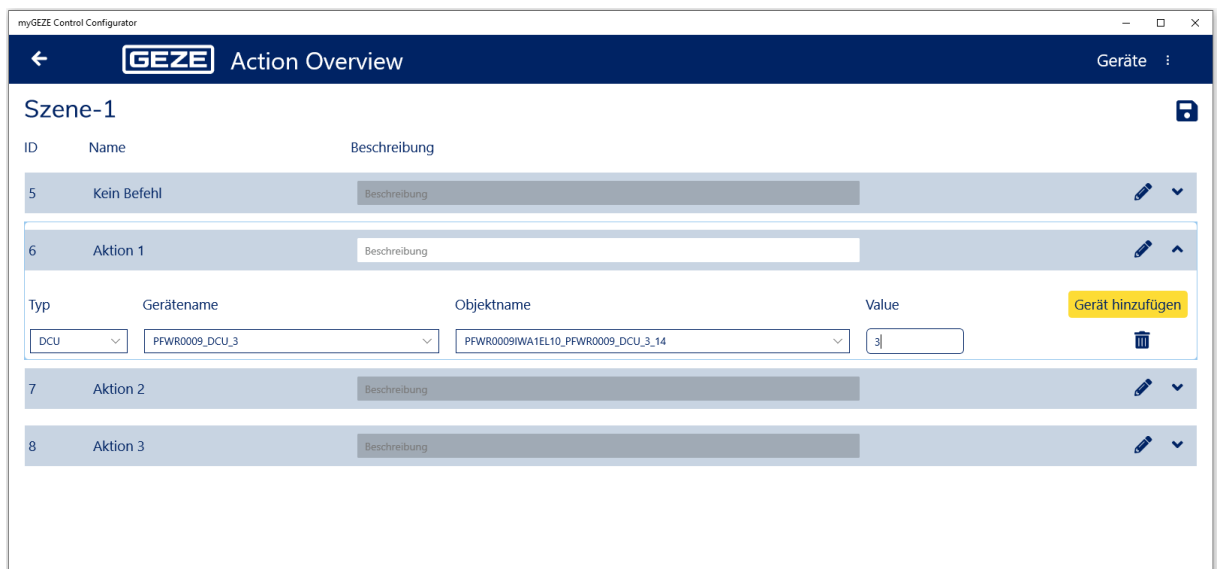


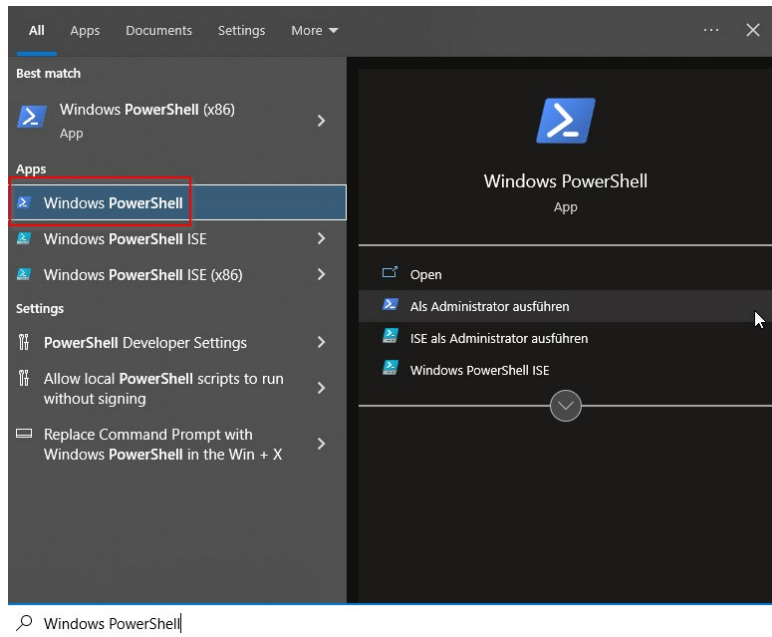
Fig. 53: Configuration of actions

Type	Device type
Device name	Device name generated
Project name	BACnet data point name generated Selection possible from the switchable data points of the device
Value	Selectable value: Selection possible from the state texts or as unsigned number with multi-state objects

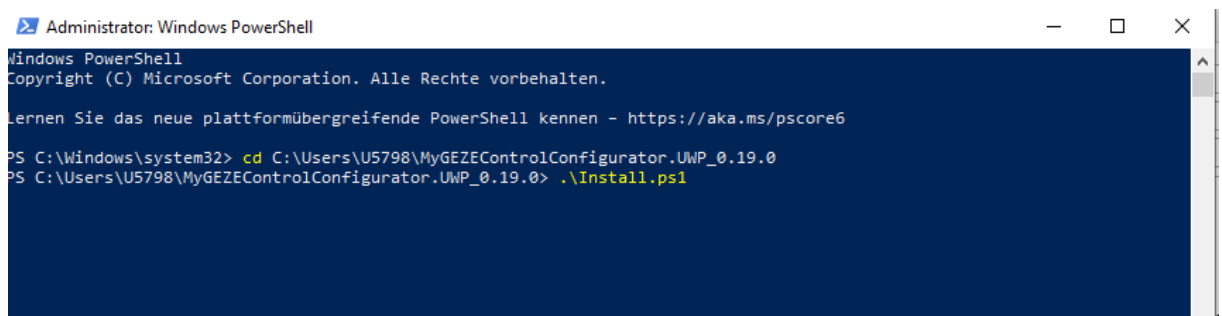
7.2.3 Installation

Carry out the following steps to install the myGEZE Control configurator:

1. Download the latest version via the download link.
2. Unpack the zip file.
3. Execute PowerShell as administrator.



4. In PowerShell, change to the folder in which the zip file was unpacked.
5. Execute install.ps1



7.2.4 Updating

No automatic updates are planned for the configurator. For updates, there is a new installation package that can be installed.

7.2.5 Deinstallation

Deinstallation is done using the Windows (De)installation Wizard.

7.3 Preparations for a new controller

The embedded PC is commissioned via the upper controller Ethernet interface X001. Then the field bus interface and all connected devices/bus terminals are configured by TwinCAT 3. After parameter setting, the configuration is saved on the embedded PC.

To get a controller ready for operation, several work steps are required concerning firmware version, access possibilities via interface, release and blocking of functions and accesses.

These settings are saved in a predefined image file.

To load this image to a new controller, note the following points.



A computer system with card reader or USB port and a USB card reader for micro SD cards is necessary for this work step.

7.3.1 Settings that are set with this image

Firmware	4024.35	
IP interfaces		
Upper interface X001		
Name	EMAC1	Programming and diagnosis interface
IPv4 Address	192.168.2.3	
IPv4 Subnet Mask	255.255.255.0	
DHCP	Disabled	
IPv4 Default Gateway	192.168.2.254	
Lower interface X101/102		
Name	TCCCATMP1	Interface for BACnetIP
IPv4 Address	192.168.1.3	
IPv4 Subnet Mask	255.255.255.0	
DHCP	Disabled	
IPv4 Default Gateway	192.168.1.254	
Project user		
Name	GEZE	
PW	1863	
FTP	Transmission possible as administrator and with project user and the respective password. Anonymous user is switched off.	
CeRHost	can be reached by administrator	
Beckhoff-Device-Manager	can be reached by administrator	

7.3.2 Preparations



Here, the term *hard disk* stands for the drive that results when the SD card is inserted to the programming device.

1. Disconnect the controller from the power supply.
2. Remove the micro SD card and insert in a card reader at the PC.
3. Copy the licence data from the directory \Hard Disk\TwinCAT\3.1\Target\License and save as data backup.
4. Mark and delete all files and folders from the main directory on the micro SD card (do not format the card).
5. Unpack the zip file with the image files to any directory.
6. Copy all image files to the root level of the micro SD card.
7. Copy the licence files saved in step 3 back to the directory \Hard Disk\TwinCAT\3.1\Target\License.
8. Safely remove/eject the micro SD card at the PC, remove it from the card reader and insert it into the controller.
9. Set the DIP switches on the controller as follows:

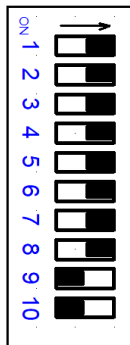
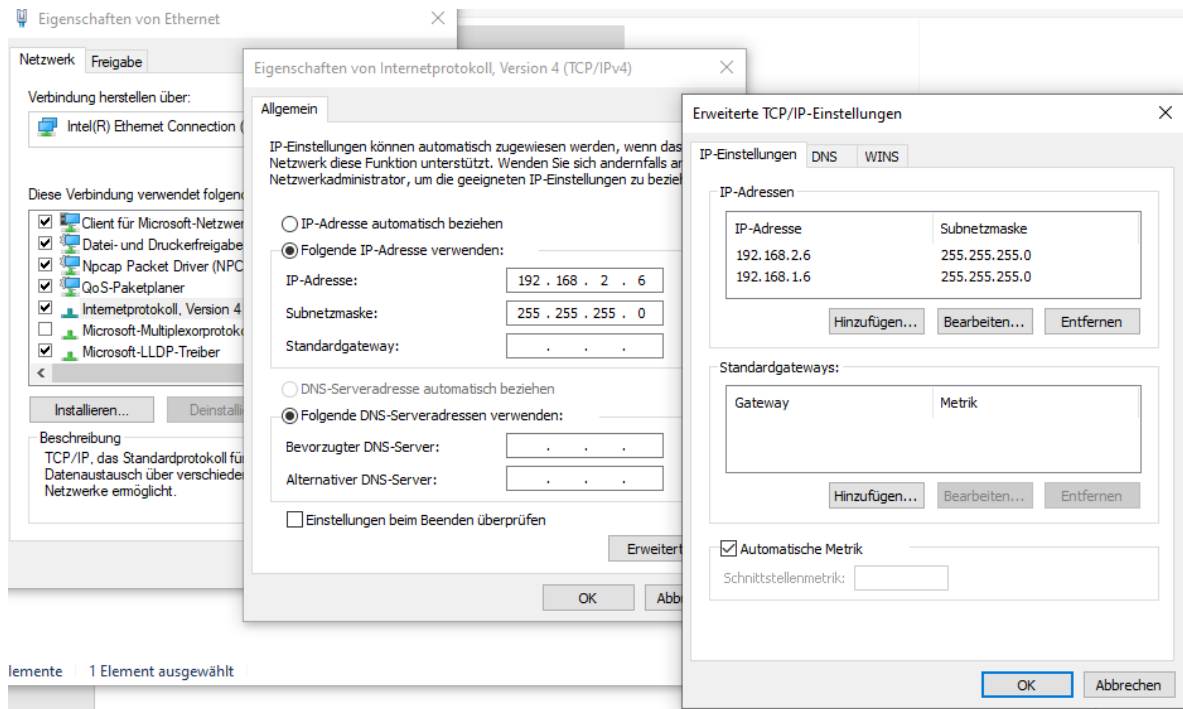


Fig. 54: DIP switch S101, switches 1-10

DIP 1 to 8: ON
DIP 9 and 10: OFF

10. Connect the controller back to the power supply and boot it. Attention: The controller automatically carries out a second restart after startup if the firmware does not match that of the images. This then takes somewhat more time.
11. Set the Ethernet interface of the computer system as follows:



The two IP addresses shown are to be seen as an example as far as the setting in the host range (last part) is concerned. To avoid double assignments, an address between 4 ... 253 can be set here.



Do not use the addresses **192.168.1.3** and **192.168.2.3**.
The controller uses these addresses.

12. Connect the computer with the programming interface X001 (top).
13. In the computer system, open the **TwinCAT menu** on the Windows task bar. There, open **Edit routes**.

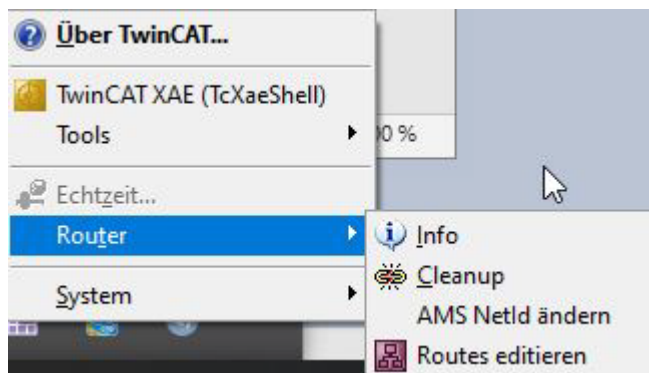


Fig. 55: Edit route

14. Click Add, enter **192.168.2.3** and press **Enter**.

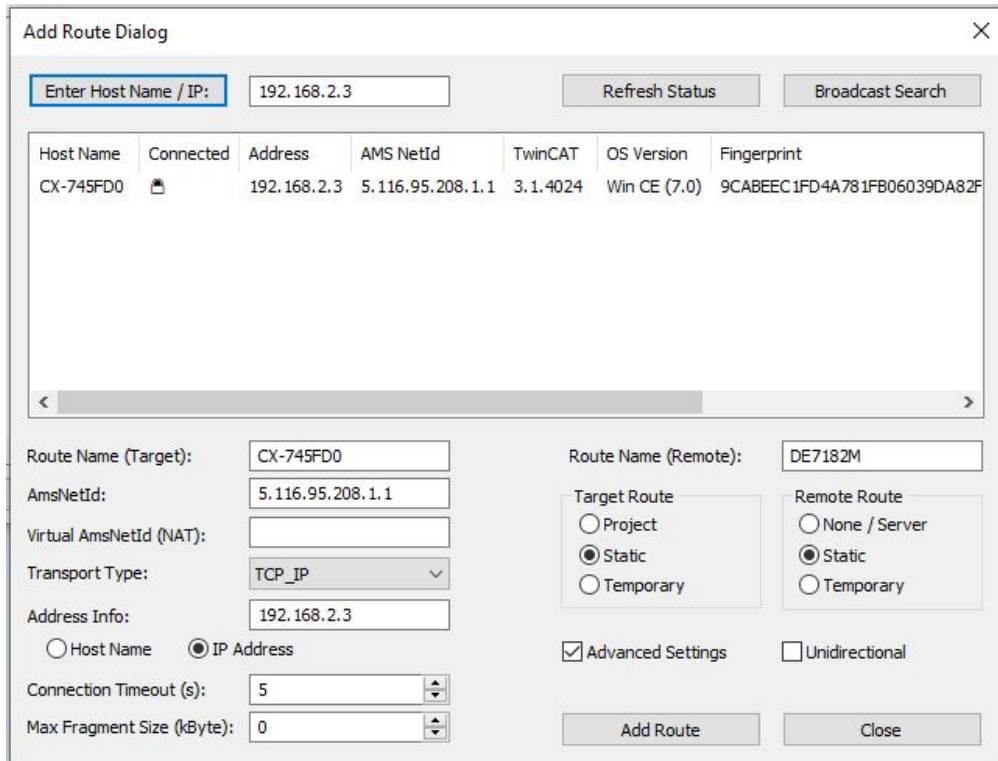
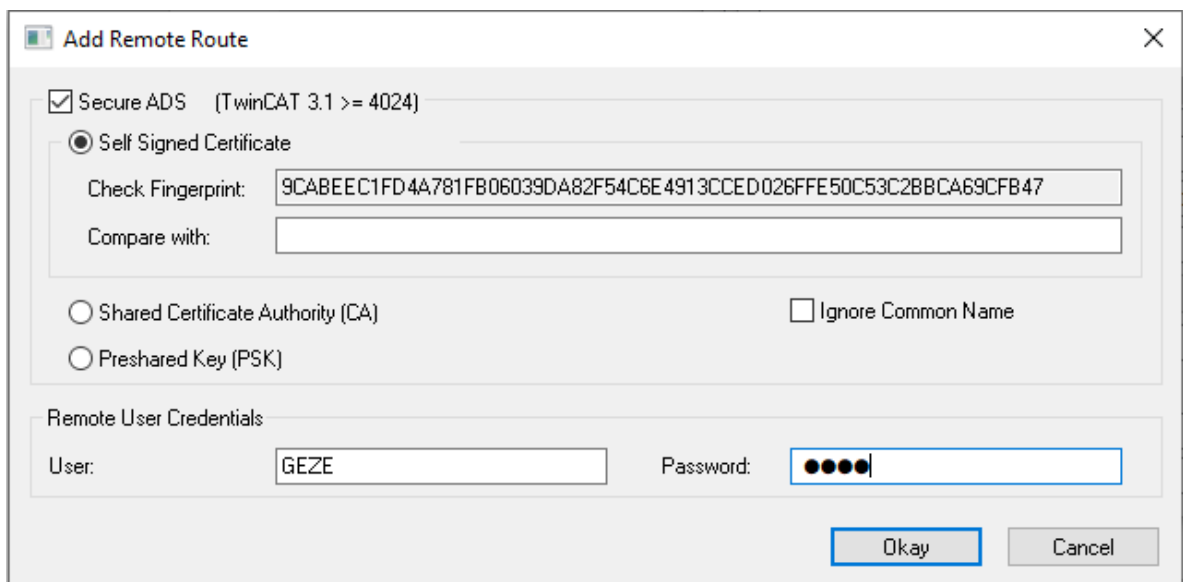


Fig. 56: Add route dialogue

i Under **Address Info** the radio button **IP Address** must be enabled, otherwise the route will not be added.

15. Click Add Route.
16. Check mark next to Secure ADS:
User: GEZE
PW: 1863
17. Click OK, click Close:



18. If there is an x next to Connected after this, the route to the controller is available.

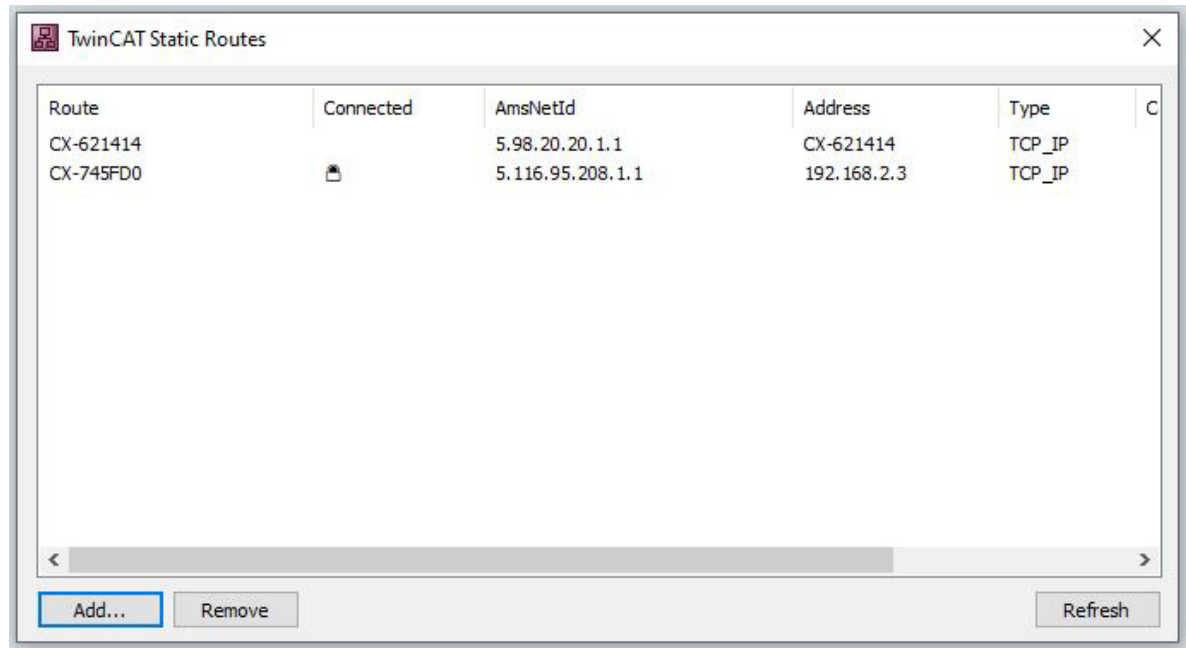


Fig. 57: Example CX745FD0

→ The controller is prepared for programming/configuration with TwinCAT.

7.4 Preparing an application for a project

An application is made up of 3 basic components and is prepared using the tools described in the previous chapters.

- | | |
|-------------------------------|---|
| ▶ Beckhoff TwinCAT 3 | Hardware and software template |
| ▶ myGEZE Control Configurator | Project configuration |
| ▶ Controller licence | Software protection of the GEZE application |

All software parts must be prepared as described and then loaded into the controller.

It is recommended to load in the order of editing, first the prepared project configuration comprising

- ▶ Configuration file
- ▶ State texts
- ▶ Licence file

with the myGEZE Control Configurator to the controller.

Then to edit the hardware and software template and activate it in the controller.

This way the right configuration is used immediately when the software template is activated.

Editing in reverse order is also possible, in this case another system restart must be carried out after the configuration has been transmitted.

7.4.1 IP addresses and BACnet settings of the controller

As described in the chapter *Preparations for a new controller*, the controller is assigned one IP address each for the interfaces through basic configuration.

The settings for the lower interface X101/102, TCCCATMP1 can be made according to customer specification. This is done in the myGEZE Control Configurator program and is saved together with the BACnet device ID in the configuration file and transmitted to the controller.



Fig. 58 : myGEZE Control Configurator IP address example

Further BACnet parameters cannot be set using the configuration file. These have to be adapted directly in TwinCAT if needed. This can concern the UDP port used for BACnet communication, for example.

For this, open the network settings under *Advanced Settings* under *I/O in Device 3 (BACnetIP)*. UDP Port and Network Number can be adapted to customer specification here.

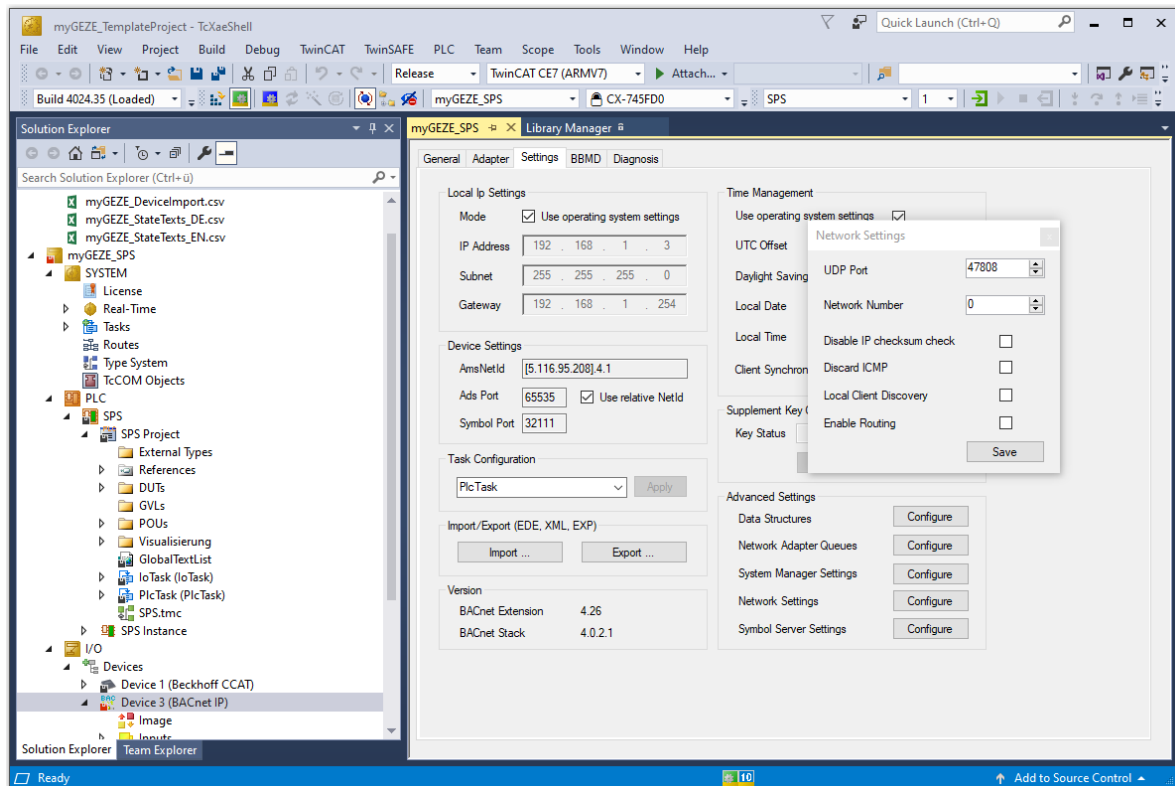


Fig. 59: Advanced settings

7.4.2 Loading a GEZE project

Load the configuration prepared with myGEZE Control Configurator and the licence to the controller. The advantage of loading this configuration to the controller before the TwinCAT project is that the controller then boots correctly directly after activation of the application. If the step is not carried out until after activation, the controller goes into **Stop** mode since the licence is missing.

7.4.3 Preparing TwinCAT project

- ▶ Create a folder for the project in the XAE directory.
There is a free choice for the folder name. Use of a name that refers to the project is recommended. The order number and project name can be integrated, for example.
- ▶ Load the TwinCAT template project from the tzip directory.

The software template is available in the format 'tzip', zipped with TwinCAT. This is available from GEZE GmbH in the respectively approved version.

The project-specific configurations can be derived from this template.

1. In TwinCAT, select **File / Open / Open Solution from Archive**

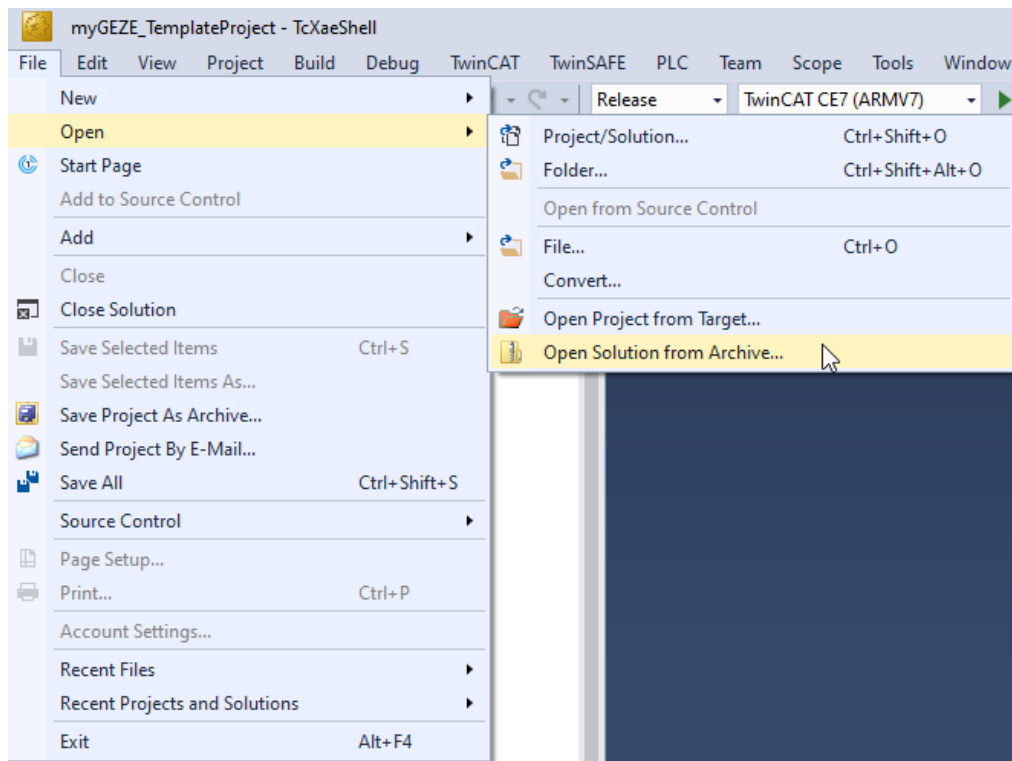


Fig. 60: TcXaeShell_openProject 01

2. Select the directory path created previously and confirm "Select folder".

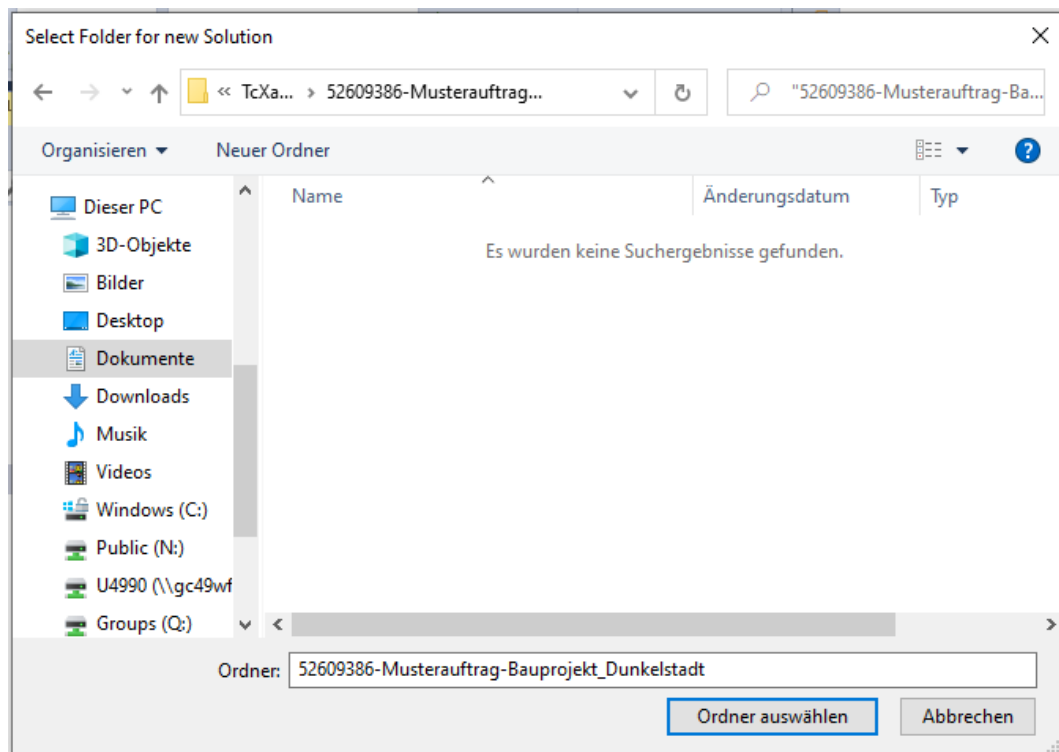


Fig. 61: TcXaeShell_openProject 02

3. Select a customer project

The template project contains the configured customer application and software that can be used to analyse the connected CAN devices during commissioning. This is explained again in section 7.7.

This must be selected in the TwinCAT Solution Explorer in order to edit the customer project.

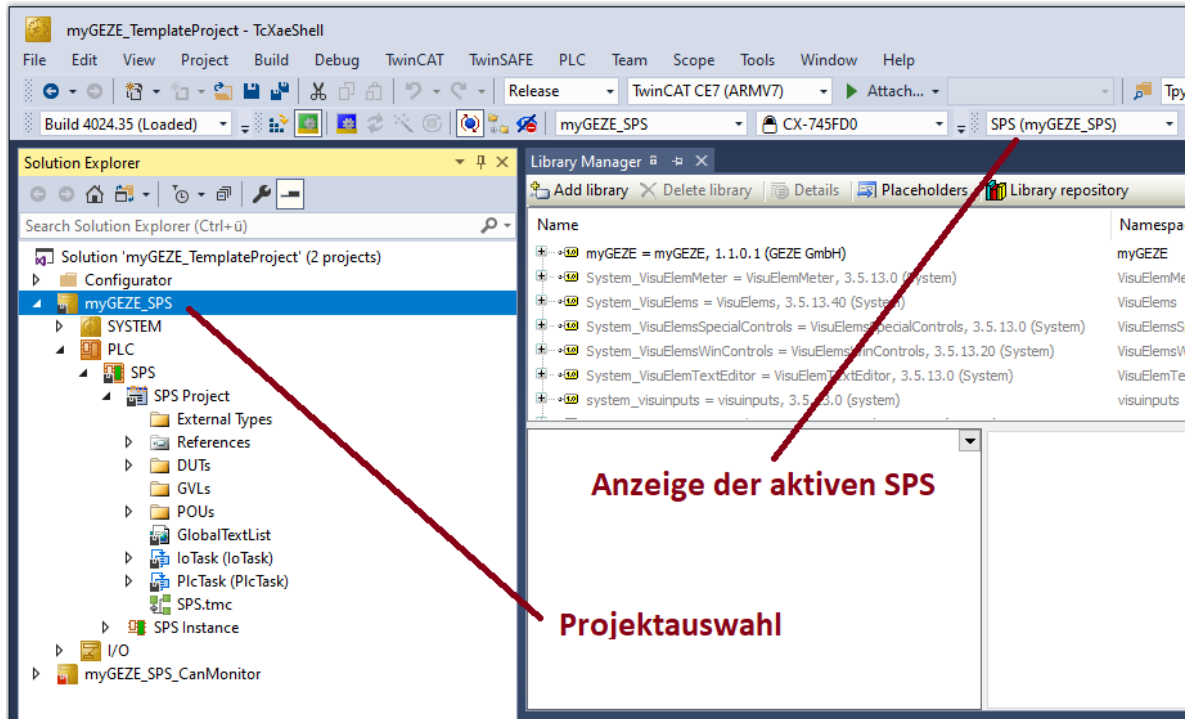


Fig. 62: Project selection_SolutionExplorer

4. Change to the target hardware

5. Use **Choose Target System** to select the hardware for which a route was prepared previously.

6. Confirm information about changing the platform with **Yes**.

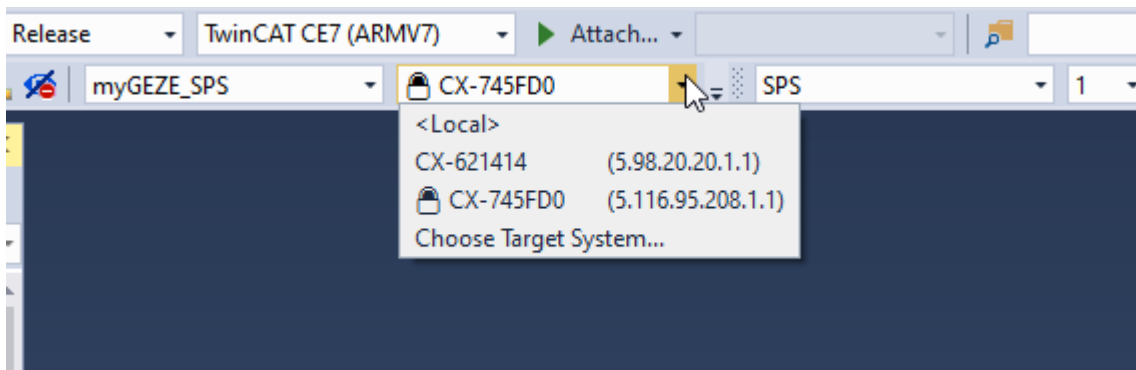


Fig. 63: TcXaeShell_openProject 03



Fig. 64: TcXaeShell_openProject 04

7.4.3.1 Checking GEZE software libraries

3 software libraries from GEZE GmbH are required for the correct processing of the program workflow. These are normally already implemented in the software. If any parts are missing, this will be indicated by TwinCAT.

- ▶ Open the library path in TwinCAT under the PLC application by double-clicking '**References**':

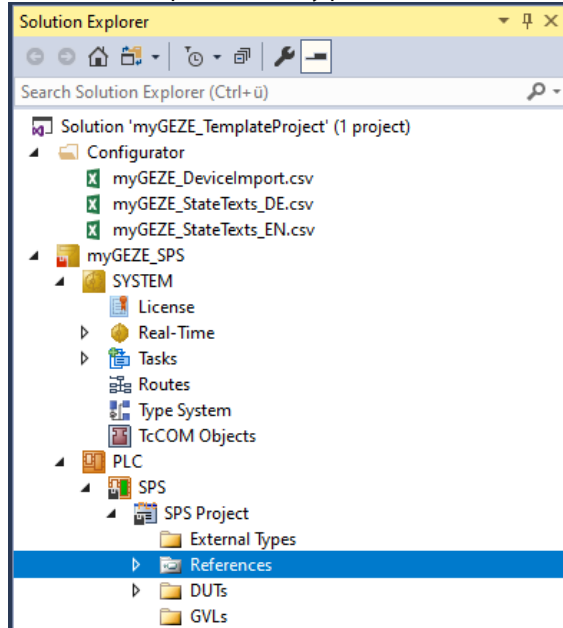


Fig. 65: TwinCAT references

- ▶ The GEZE libraries installed are shown in the editor window.

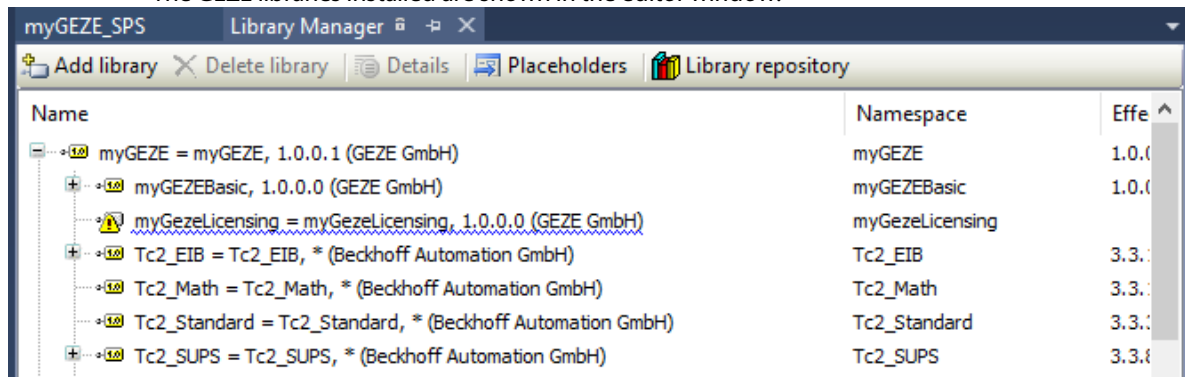


Fig. 66: TwinCAT references faulty

In the example shown, the library for myGEZELicensing is incorrect or missing. This is indicated by the wavy underline and the yellow exclamation mark. In this case, the correct version must then be installed using the tab '**Library Repository**'.

The necessary libraries are located in the PLC folder under
 ...|Testprojekt\myGEZE_TemplateProject\SPS\Libraries\geze gmbh

1. In TwinCAT, double-click '**Library Repository**'.
2. Click the 'Install' button.
3. Select library path.
4. Select the missing library and install by clicking '**Open**'.

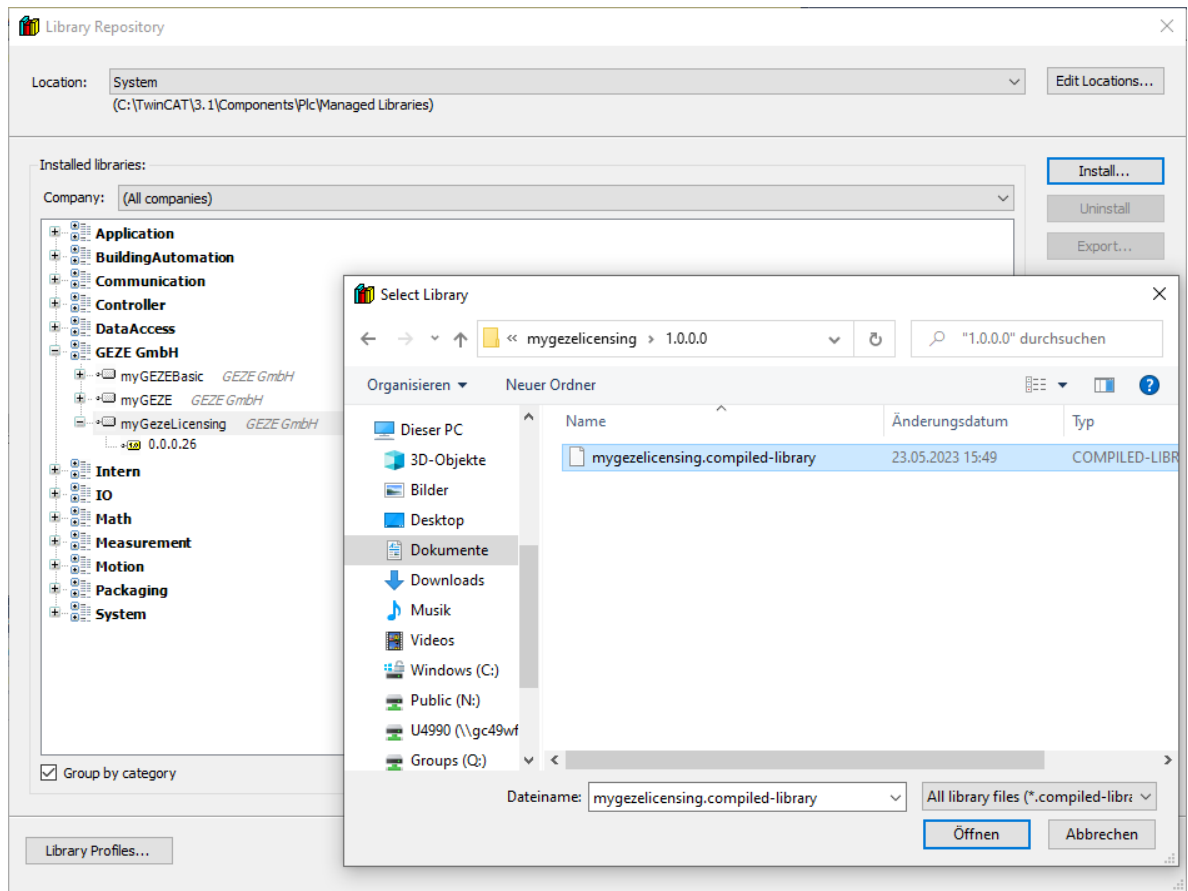


Fig. 67: TwinCAT references

Once all libraries have been installed correctly, the wavy underline and the yellow exclamation mark will disappear everywhere.

Old libraries that are no longer needed can be removed by pressing the button '*Uninstall*'.

7.4.3.2 Configuration/hardware structure

Here, the configuration is adapted to the actual hardware structure. In the template project, all the terminals of the max. possible system structure are listed and initially disabled.

Right-clicking the terminal and clicking the function '*Disable*' again then enables the corresponding terminal. The icon was in front of the terminal before can no longer be seen when the terminal is active.

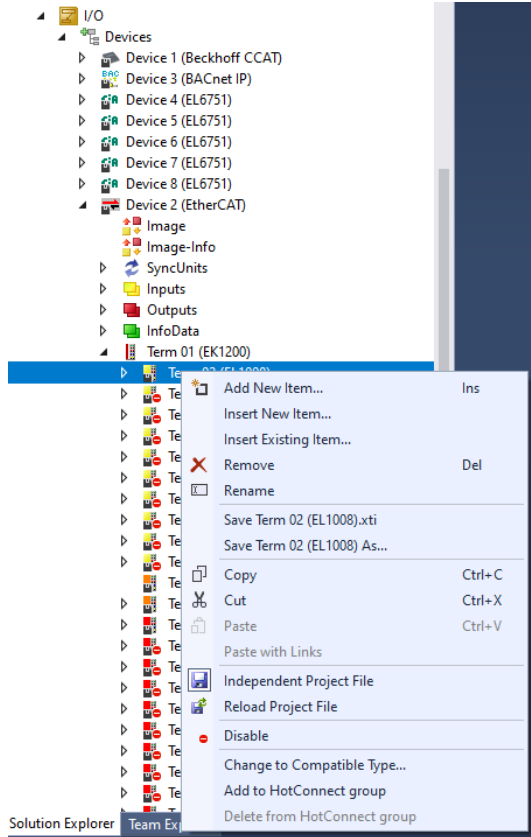


Fig. 68: myGEZE_TcXaeShell_openProject

For example:

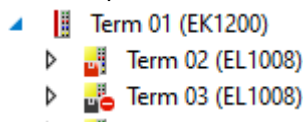


Fig. 69: myGEZE_TcXaeShell_openProject

- ▶ First terminal active, second terminal disabled.

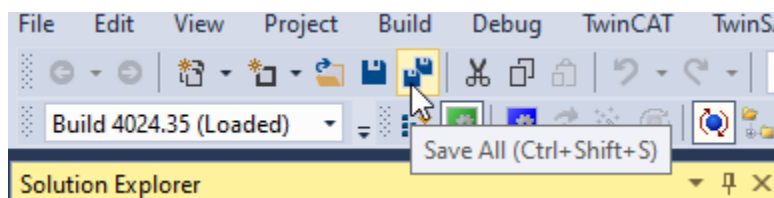


Fig. 70: myGEZE_TcXaeShell_openProject

- ▶ Save all
- ▶ Activate Configuration

The project configuration thus prepared is transmitted to the controller and activated using the function '*Activate Configuration*'.

For this, a route to the controller must have been set and the correct target hardware selected beforehand.

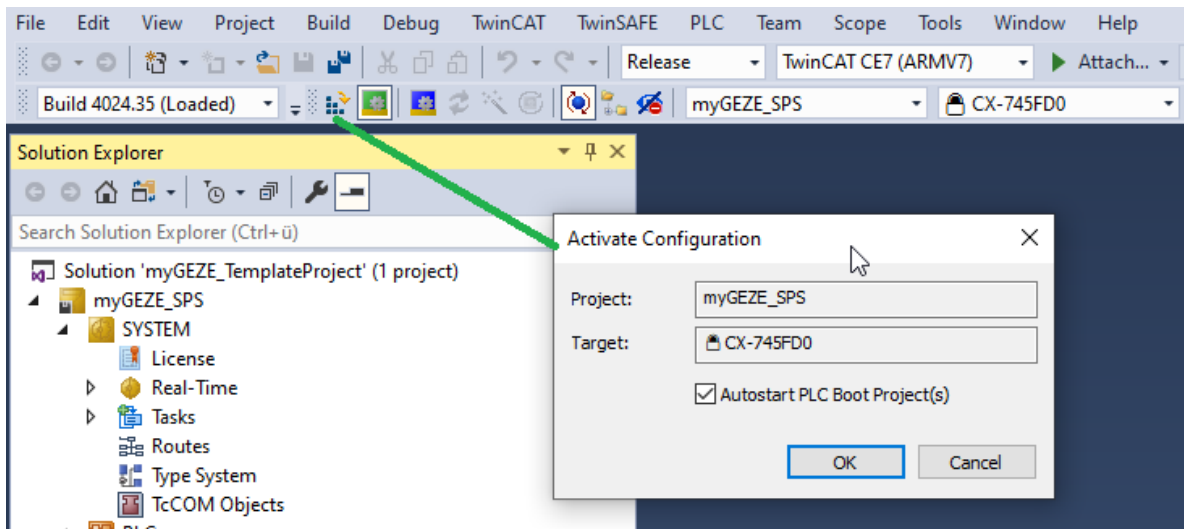


Fig. 71: myGEZE_TcXaeShell_openProject

- ▶ Confirm prompt about restart with **OK**.

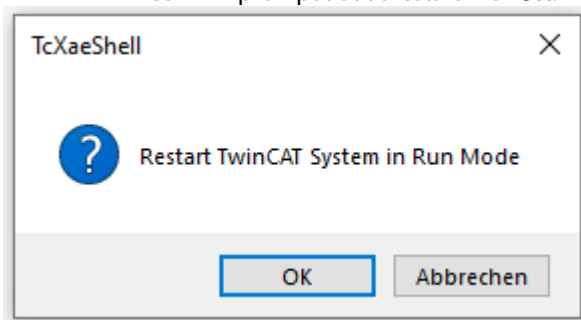


Fig. 72: myGEZE_TcXaeShell_openProject

7.4.3.3 Configuring for controller system correct

During program download and activation, the TC-LED on the controller as well as various other LEDs in the terminal system light up red.

During the final startup procedure of the controller system, the WD (watchdog) LED flashes green.

If the prepared and loaded configuration is correct, the two LEDs for TC and W must have light up with green continuous light after the start phase has been completed.

No other LEDs may light up red in the upper area at the terminals.



Fig. 73: myGEZE LED status

7.5 Checking BACnet objects and generating BACnet-EDE file with TwinCAT

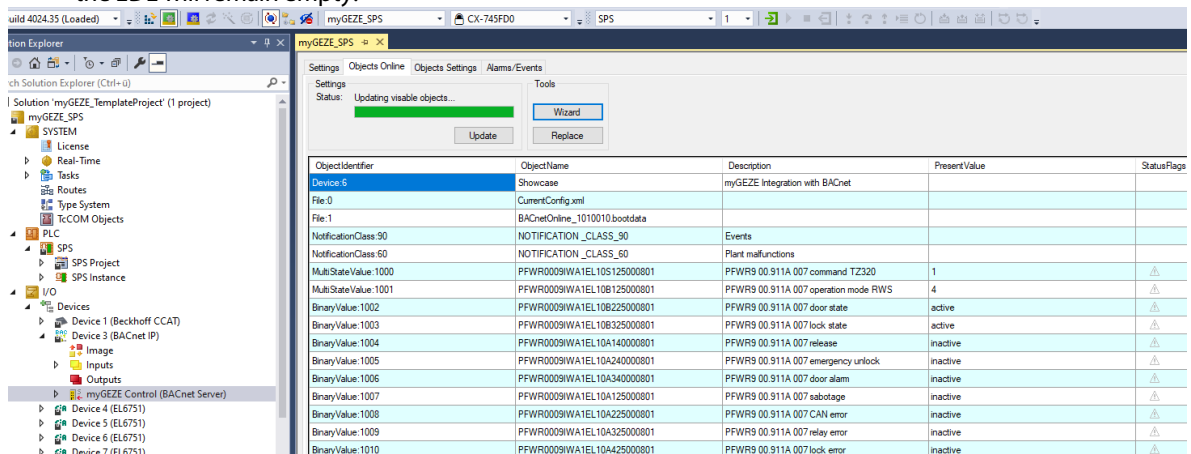
After configuration has been completed, the correct generation of the BACnet data points can be checked in the TwinCAT programming tool.

For the data to be forwarded e.g. to a system integrator for the building management system, the required data can be exported from the system as a BACnet-EDE file according to the standard format prescribed by the BACnet Interest Group.

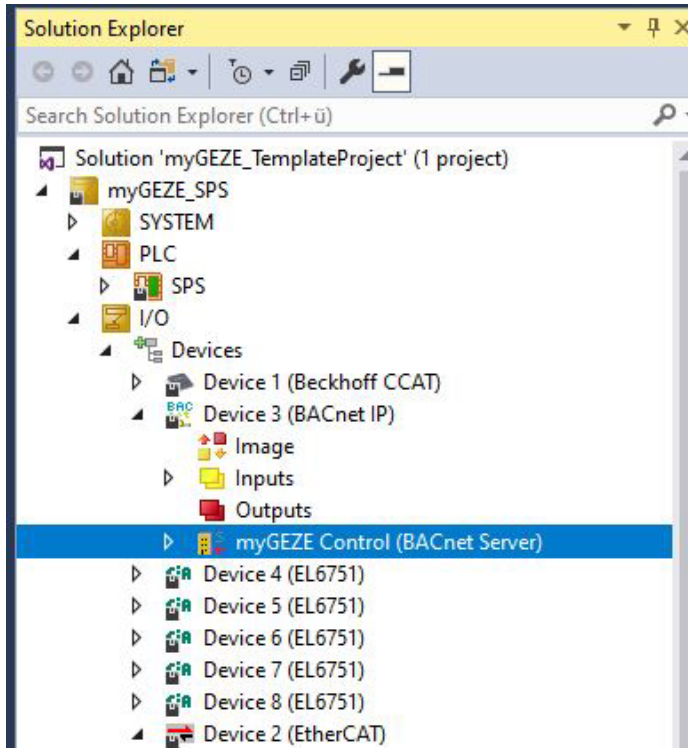
7.5.1 Checking BACnet objects

Before: Complete a scan in the sub-item “myGEZE Control (BACnet server)” in Dynamic Object Management.

- ➔ All created BACnet objects will be displayed. Export these to the EDE. If you do not complete the export, the EDE will remain empty.



1. Open the settings for myGEZE Control BACnet server in TwinCAT in the path I/O / Device 3 (BACnetIP).

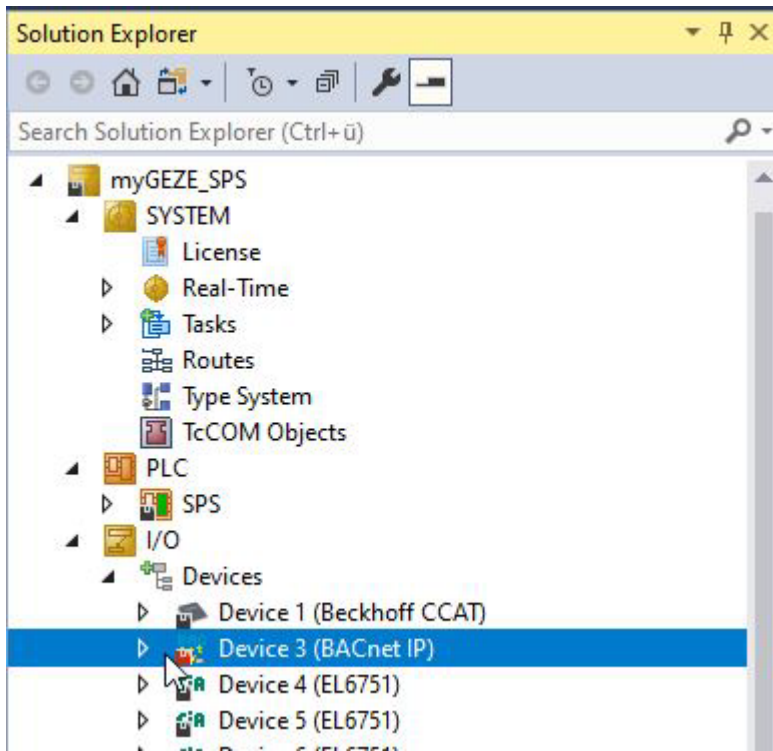


2. Double-click to start the settings.
3. To query the configuration generated, change to the Objects Online tab. In this window, all the configured data objects can be seen with their current status. This can be used to check whether all entries made have been implemented correctly.

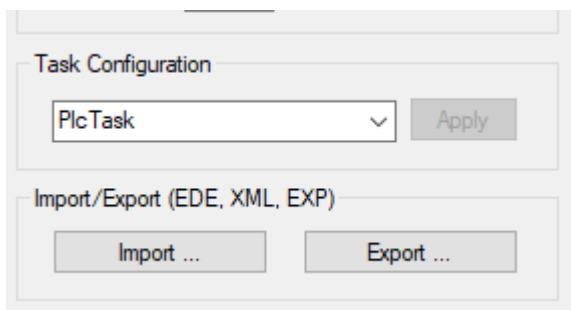
Object Identifier	ObjectName	Description	Present Value	StatusFlags	OutOfService	EventEnable
Device 6	Musikoffer	myGEZE Integration RWS für BACnet				
File 0	CurrentConfig.xml					
File 1	BACnetOnline_1010010.bootdata					
NotificationClass:50	NOTIFICATION_CLASS_50	Alarmer				
NotificationClass:70	NOTIFICATION_CLASS_70	Technische Störungen				
NotificationClass:80	NOTIFICATION_CLASS_80	Wartungsmeldungen				
NotificationClass:90	NOTIFICATION_CLASS_90	Ereignisse				
NotificationClass:60	NOTIFICATION_CLASS_60	Anlagenstörungen				
MultiStateValue:1000	PFWR009WAE1E1105125000801	PFWR3 00 911A 007 Schabobjekt RWS	1			
BinaryValue:1002	PFWR009WAE1E1108225000801	PFWR3 00 911A 007 Türzustand	inactive	⚠	⚠	⚠
BinaryValue:1003	PFWR009WAE1E1108325000801	PFWR3 00 911A 007 Verriegelungszust...	inactive	⚠	⚠	⚠
BinaryValue:1004	PFWR009WAE1E110A140000801	PFWR3 00 911A 007 Freischaltung	inactive	⚠	⚠	⚠
BinaryValue:1005	PFWR009WAE1E110A240000801	PFWR3 00 911A 007 Notentregelung	inactive	⚠	⚠	⚠
BinaryValue:1006	PFWR009WAE1E110A340000801	PFWR3 00 911A 007 Türleam	inactive	⚠	⚠	⚠
BinaryValue:1007	PFWR009WAE1E110A225000801	PFWR3 00 911A 007 Sabotage	inactive	⚠	⚠	⚠
BinaryValue:1008	PFWR009WAE1E110A225000801	PFWR3 00 911A 007 CAN Störung	active	⚠	⚠	⚠
BinaryValue:1009	PFWR009WAE1E110A325000801	PFWR3 00 911A 007 Relaisfehler	inactive	⚠	⚠	⚠
BinaryValue:1010	PFWR009WAE1E110A425000801	PFWR3 00 911A 007 Verriegelungsfehler	inactive	⚠	⚠	⚠
BinaryValue:1011	PFWR009WAE1E110A525000801	PFWR3 00 911A 007 Kommunikations...	inactive	⚠	⚠	⚠
AnalogValue:1012	PFWR009WAE1E110M125000801	PFWR3 00 911A 007 Anzahl Türöffnun...	33	⚠	⚠	⚠

7.5.2 Generating BACnet-EDE file

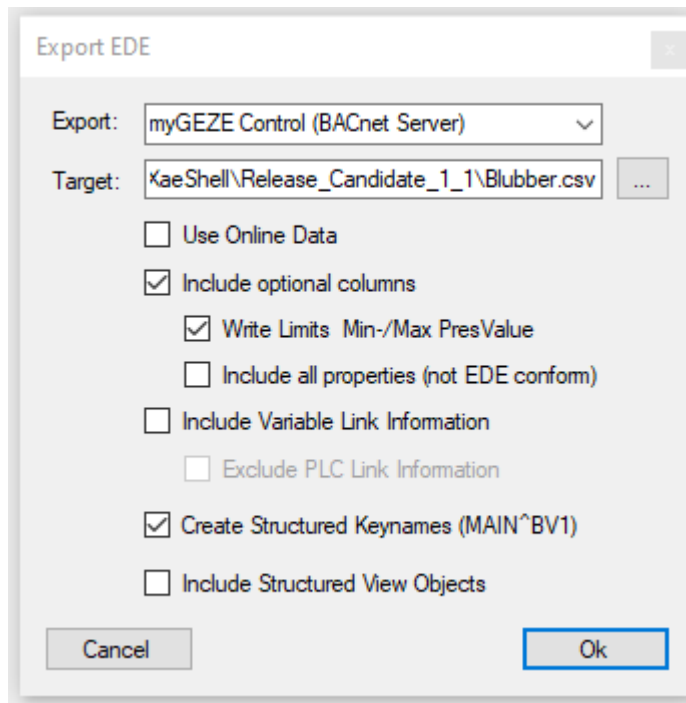
1. Open the settings for myGEZE Control BACnet server in TwinCAT in the path I/O / Device 3 (BACnetIP).



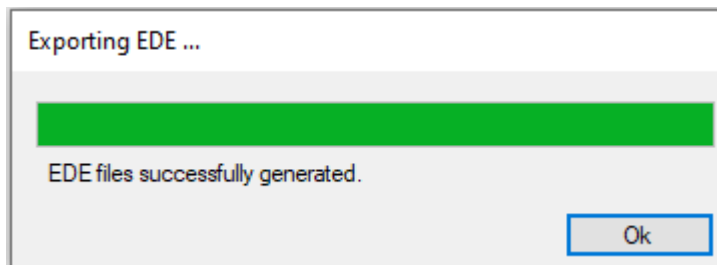
2. Double-click to start the settings.
3. To export a BACnet-EDE file, change to the Setting tab. An export is started by clicking **Export**.



4. Specify the required storage location and file name in the dialogue window. The file type must be set to EDE files (*.csv).
5. Initiate export with the Save button.
6. Place a check mark next to '**Use Online Data**' and '**Create Structured Keynames**' in the window that opens.



7. Start export with the OK button
8. Successful generation is indicated by the program.



7.6 Expanded BACnet settings in TwinCAT

7.6.1 Assigning the BACnet device instance using the myGEZE Control Configurator

The BACnet device instance (also known as the BACnet device ID, BACnet ID, BACnet device address) determines the address of the controller in the BACnet network.

The BACnet device address is assigned during the configuration process using the myGEZE Control Configurator tool. See the Controller overview section.

There, a parameter loaded into the controller alongside the GEZE device configuration is defined.

To ensure these settings are also adopted from the configuration file, the setting parameter provided for this purpose in TwinCAT must be set to '0'.

1. Open the settings for myGEZE Control BACnet server in TwinCAT in the path I/O / Device 3 (BACnetIP)
2. Double click 'myGEZE Control (BACnet server)' to start the settings
3. Switch to the Setting tab
4. Check to ensure the parameter 'BACnet ID' is set to '0', and if not then set it to '0'

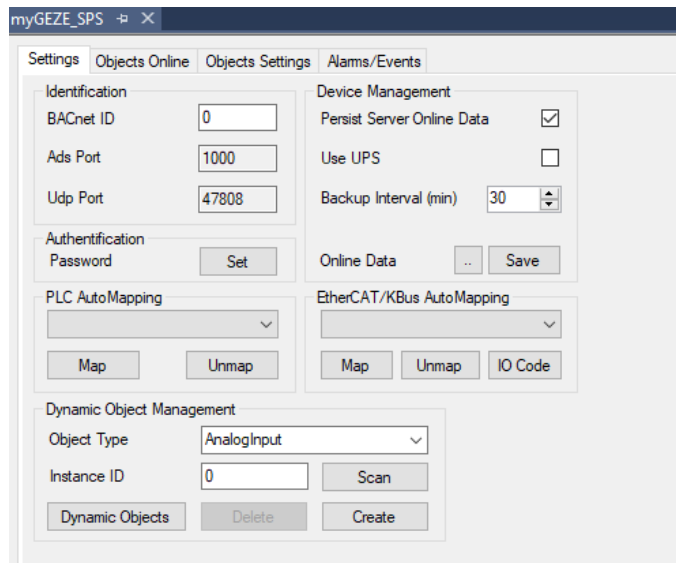


Fig. 74: Setting_BACnet ID.PNG

5. Save the configuration if necessary.
 - ▶ The TwinCAT configuration must be activated again in the controller. See the section '*Configuring an application*'

7.6.2 Setting the BACnet UDP port

BACnet uses communication with UDP (User Datagram Protocol).

A communication port is assigned for this communication.

For BACnet, this range is defined as 47808 ... 47823.

The default setting is UDP 47808.

This setting can be adjusted within the defined range in TwinCAT based on the user specifications.

1. Open the settings for myGEZE Control BACnet server in TwinCAT in the path I/O / Device 3 (BACnetIP)
2. Double click 'Device 3 (BACnet IP)' to start the settings
3. To configure UDP, change to the Settings tab
4. Open the Parameter Network Settings under Advanced settings

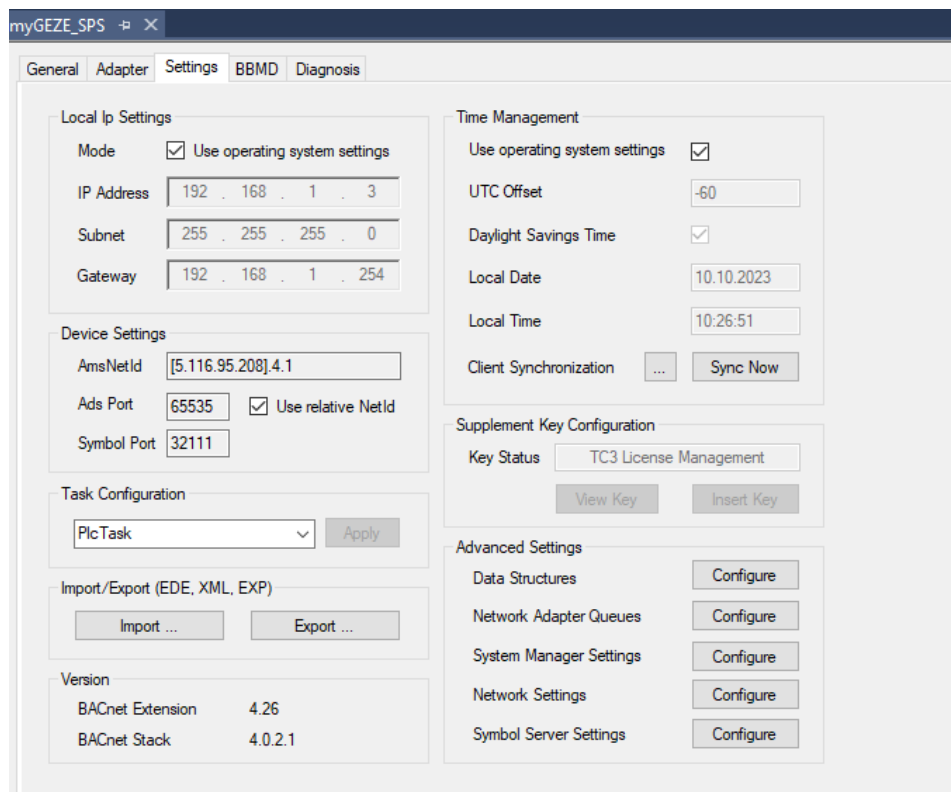


Fig. 75: Setting_BACnet UDP01

5. Change the UDP port parameter in the input dialogue that opens, and click Save to save

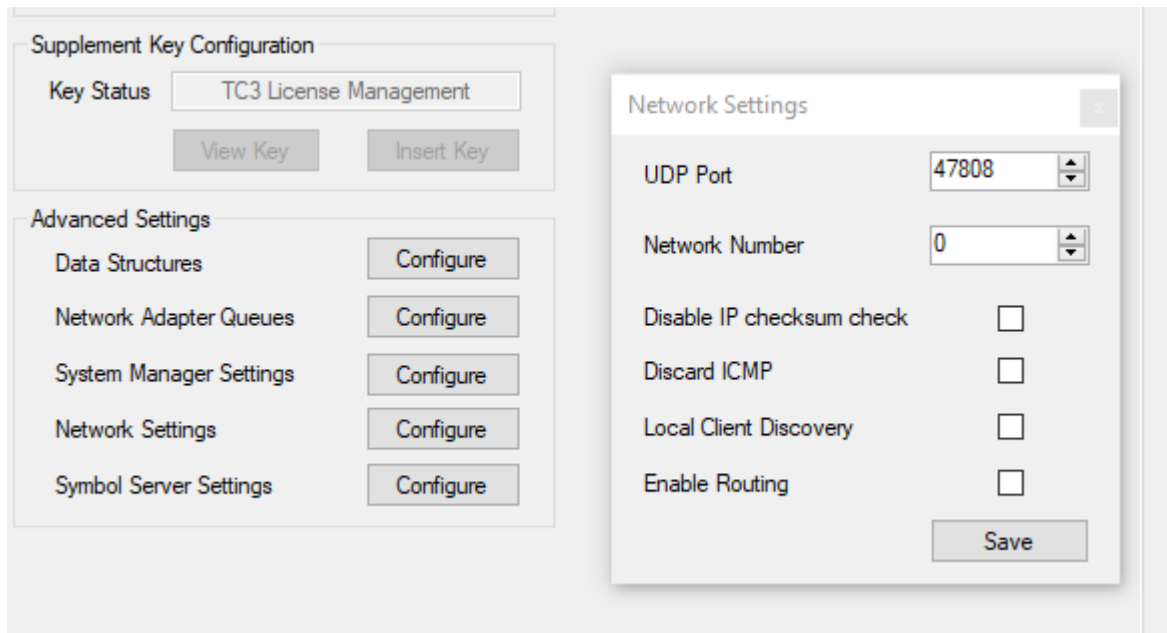


Fig. 76: Setting_BACnet UDP02

6. Save configuration.
 - ▶ The TwinCAT configuration must be activated again in the controller. See the section '*Configuring an application*'

7.6.3 Setting the BACnet Broadcast Management Device BBMD

If the controller can start communication with a BACnet system which is in another IP segment, configuration of a BACnet Broadcast Management Device BBMD is necessary.

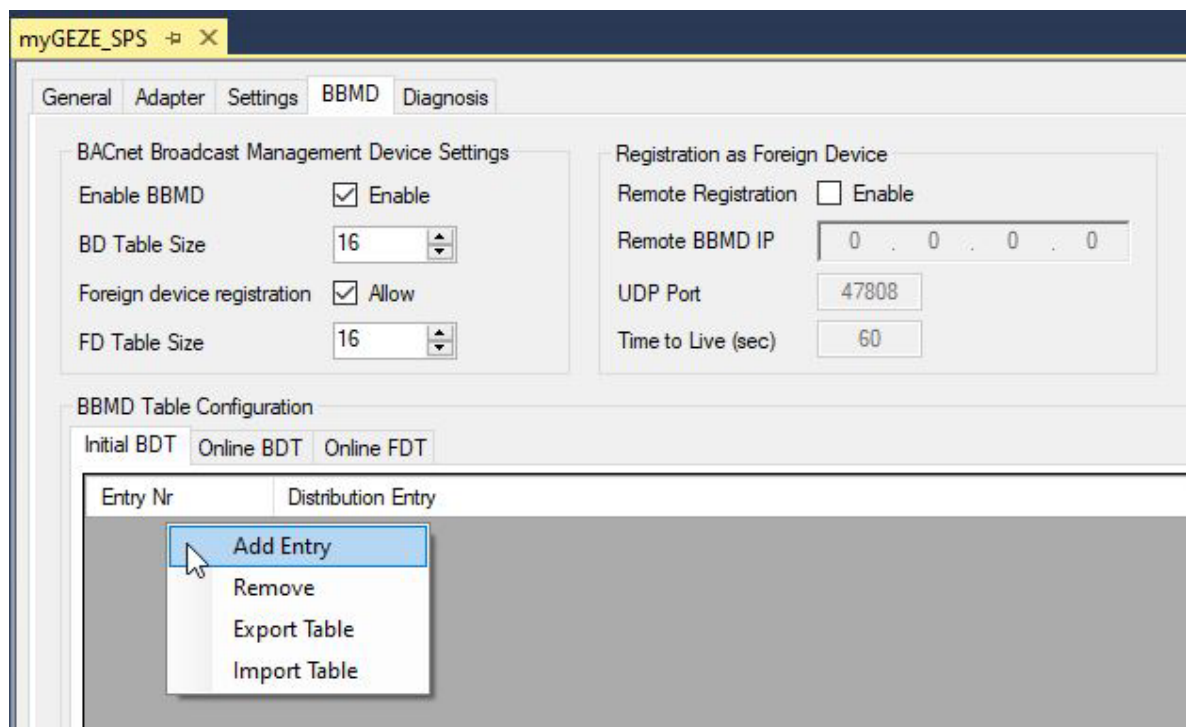
This configuration can be done in a corresponding Settings tab for the BACnet IP device.



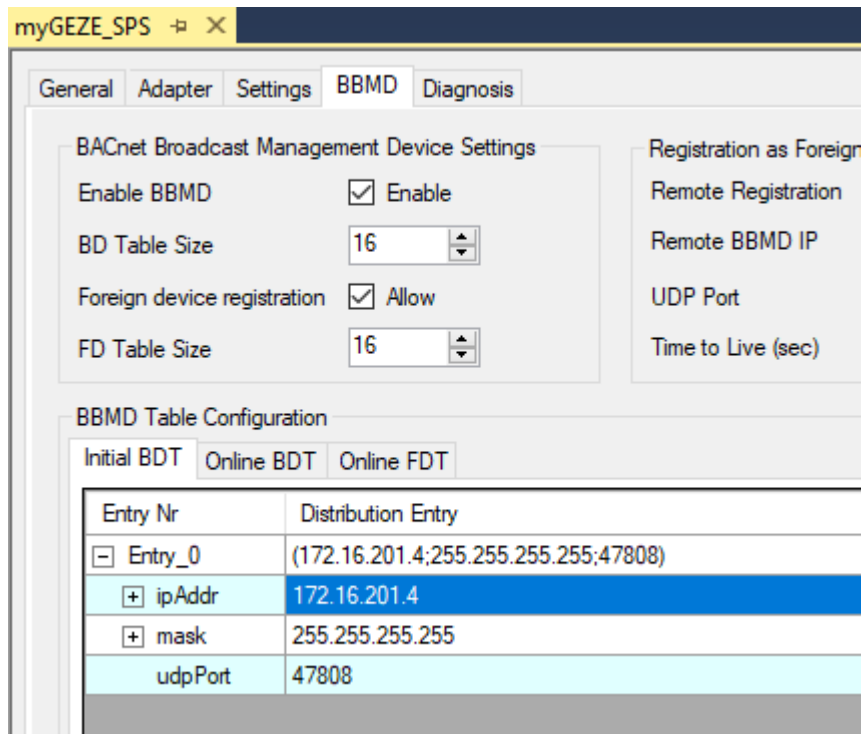
Only one system may be configured as BBMD per IP address segment. Otherwise this will lead to a flood of BACnet messages which will bring data communication to a standstill in a very short time and may also cause a heavy load or even communication failure on other devices.

For this reason, the network administrator should be consulted before this function is used.

1. Open the settings for myGEZE Control BACnet server in TwinCAT in the path I/O / Device 3 (BACnetIP).
2. Double-click to start the settings.
3. To configure BBMD, change to the BBMD tab.



4. Activate the function '**Enable BBMD**'.
5. Click the Initial BDT field and then right-click Add Entry.
6. Open/edit the entry and enter the required IP address of the BBMD partner in the ipAddr field.



Several entries can be made here.

7. Save configuration.

- ▶ The TwinCAT configuration must be activated again in the controller. See the section '*Configuring an application*'

7.7 CAN monitor application

In order to analyse the configured and used CAN terminals, an application has been created that can display the statuses of the CAN terminals and determine the GEZE devices connected to them.

This application is included in the template project as another PLC program, and can be loaded into the controller system during commissioning.

Each GEZE device transmits a lifetime telegram to the CAN bus at a cycle of 1 second. The telegram contains various information, such as the type, bus address, data content.

The application evaluates the connected devices based on the content of this telegram.

1. Select CAN monitor project:

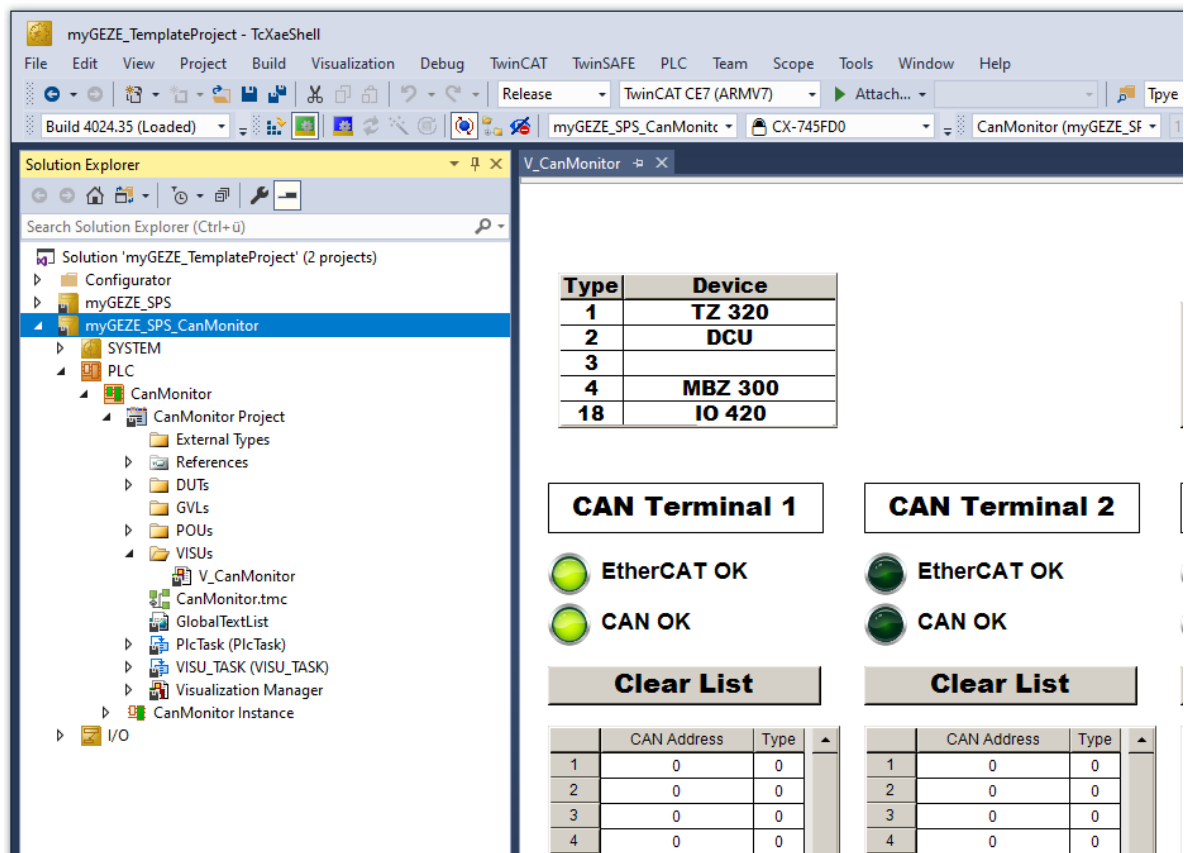


Fig. 77: Project_selection_SolutionExplorer_CAN-Monitor

2. Check the hardware and adjust to the project if necessary
3. Activate configuration on the controller system

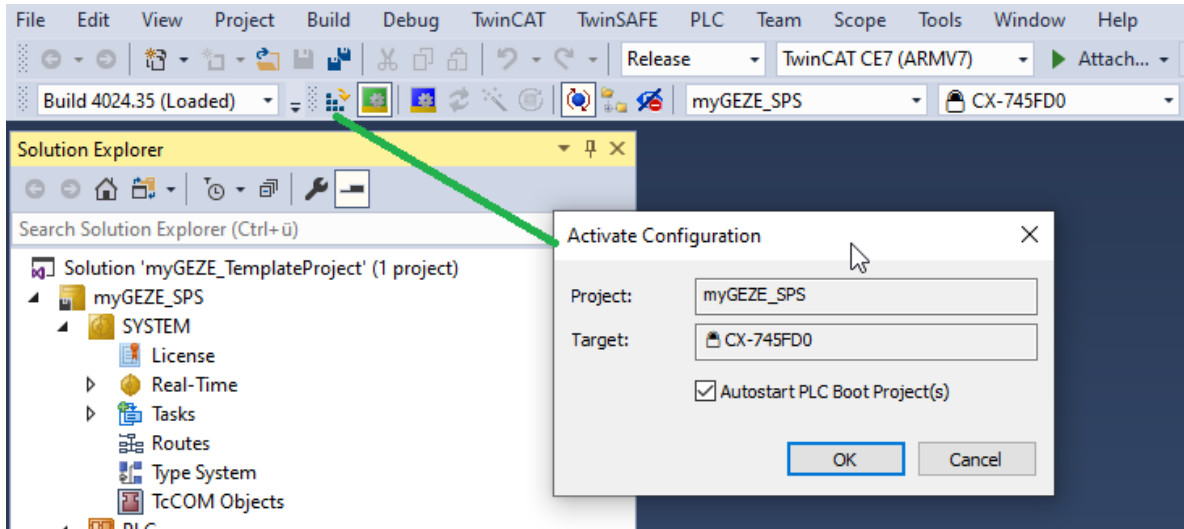


Fig. 78: myGEZE_TcXaeShell_openProject08

- ▶ Confirm prompt about restart with **OK**.

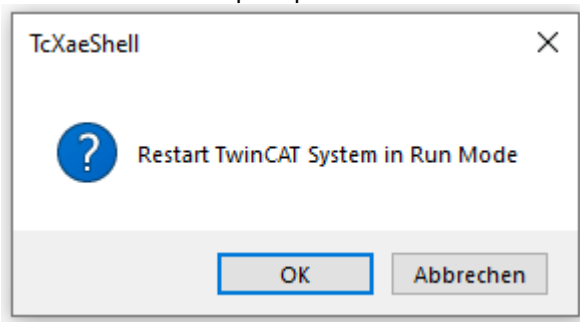


Fig. 79: myGEZE_TcXaeShell_openProject09



The CAN monitor application uses an HMI visualisation function, for which a license is required. This license can be generated for limited time use by entering the random code displayed.



There is an application in the CAN monitor that activates the LED for WD flashing red, to indicate that the customer project is not in the controller system.

Analysis of CAN terminals and connected devices:

A graphic indicator has been created for CAN monitoring.

There is a program code behind this graphic that checks to ensure the configured CAN terminals are functioning correctly. The incoming CAN lifetime telegrams for the connected CAN devices are also recorded and evaluated.

This information is used to create a graphic display of the CAN status.

Accessing the CAN monitor graphic:

The graphic can be accessed online in the controller system in two different ways.

1. Access directly from TwinCAT

Double click the 'V_CANMonitor' graphic
The graphic is opened in Editor.

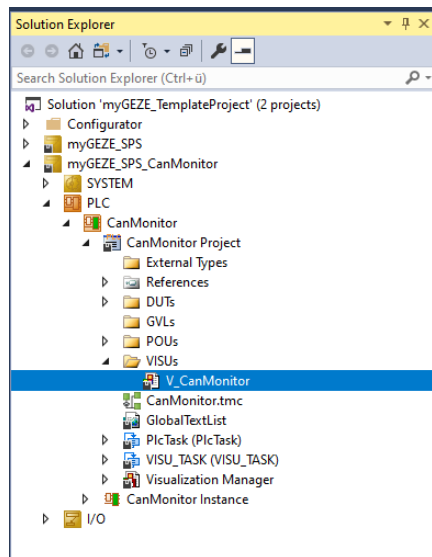


Fig. 80: Access_CAN-Monitoring

Log into the controller to display the current status

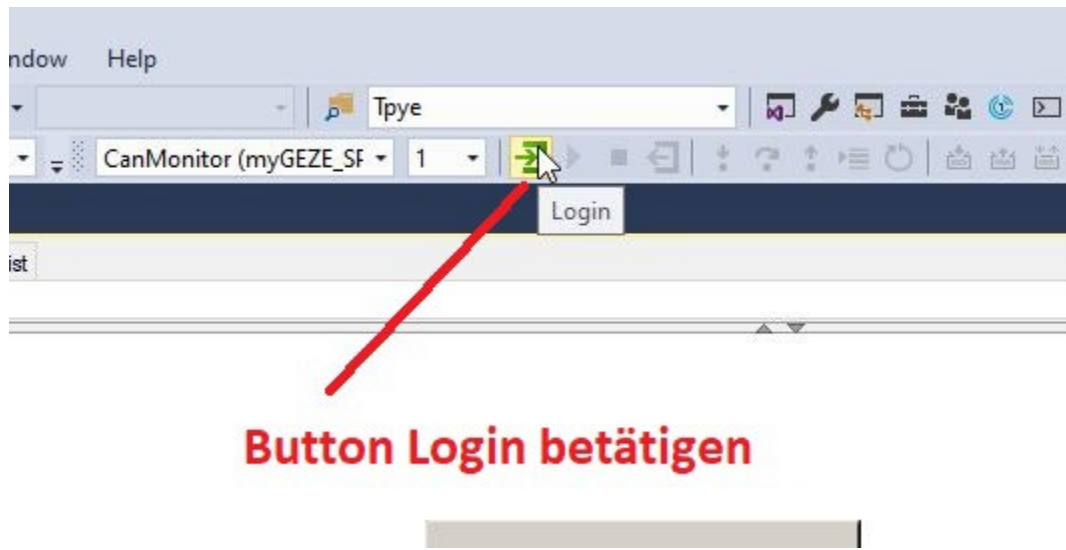


Fig. 81: TwinCAT_Log-in

After login, the current status of the CAN terminals and connected devices will be displayed live.

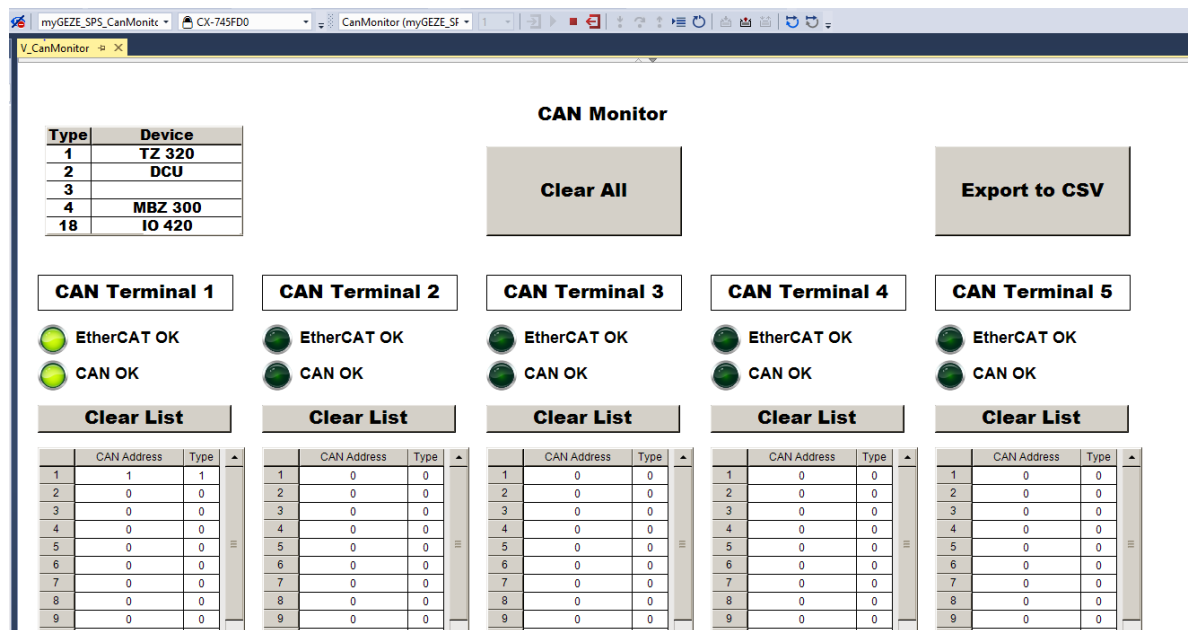


Fig. 82: CAN-Monitor-V_CAN side

Explanatory notes

Type	Device
1	TZ 320
2	DCU
3	
4	MBZ 300
18	IO 420

Fig. 83: CAN-Monitor list

This list shows a key for the connected devices.

An ID in the lifetime telegram of the GEZE device can be used to differentiate between the product series of the devices indicated above.

If a device cannot be clearly identified, it appears under type 3.

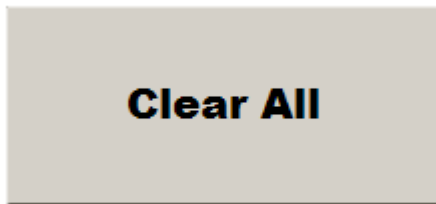


Fig. 84: CAN-Monitor-Button_All.PNG

This button deletes all lists of detected devices.

They will then be automatically repopulated after the lifetime telegrams are received.

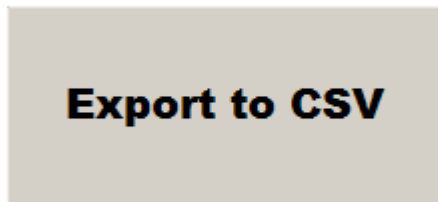


Fig. 85: CAN-Monitor-Button_Export.PNG

This button can be used to export the current display of connected GEZE devices.

The list is saved automatically in the FTP file directory of the controller.

An FTP client can be used to load the file with protected access for the user 'GEZE' and corresponding password from the controller.

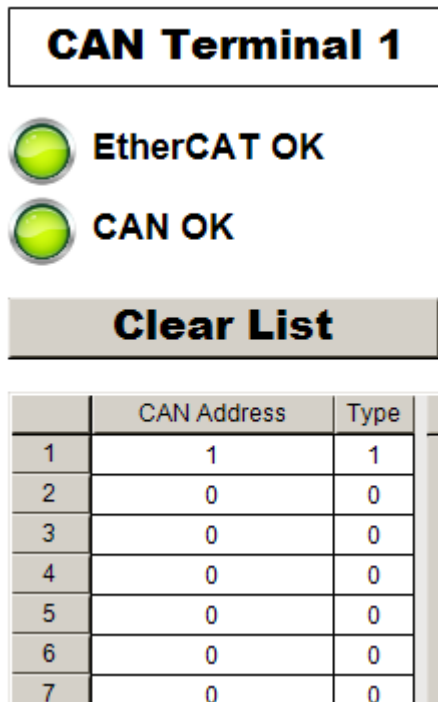


Fig. 86: CAN-Monitor-Device_List.PNG

EtherCAT OK CAN terminal on the controller operating correctly

CAN OK No fault on the CAN bus (such as a short circuit)

Clear List List of corresponding CAN terminals is deleted

The detected CAN devices are displayed in the device list with their CAN addresses and type designations. The list can include up to 63 devices. No device was detected at points where a '0' is entered.



The list is populated based on the lifetime telegrams received from the devices. They may be received in different sequences, depending on the timing.

- ➔ The list is not sorted by address or type.
- ➔ The sequence of the list may be different each time it is cleared.

2. Display of the current status via a web browser

The CAN monitor can also be displayed via a web browser.

To do so, access the following link:

https://192.168.2.3/Tc3PlcHmiWeb/Port_851/Visu/canmonitor.htm

The IP address can differ depending on the settings.

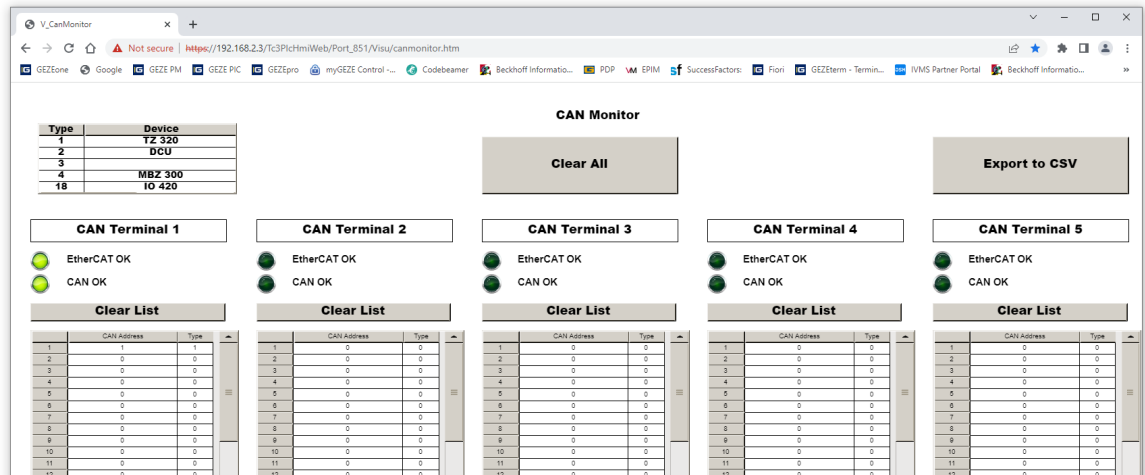


Fig. 87: CAN-Monitor-Web-Browser.PNG

The functions displayed correspond to those of the interface displayed in TwinCAT.



Please note that this is an internal, unsecured web connection (http) without security mechanisms.
 → Please confirm the security notification that may appear in your browser.
 → Due to security guidelines on the device, it may be impossible to form an insecure connection.



Please ensure that you load the customer application in the controller system once again and activate it after finishing work with the CAN monitor.
 Only then will the data and information be processed according to the project configuration.

8 Transportation and storage

Control unit

Store removed control units in a safe place.

Controllers / terminals

At storage temperatures above 60 C, remove the battery from the embedded PC. Store the battery separate from the embedded PC in a dry environment at a temperature in the range of 0 °C to 30 °C.



Presets such as the date and time are lost if the battery is removed.

9 Disposal

All control unit components must be disposed of in accordance with the statutory regulations for hazardous waste. Rechargeable batteries contain highly toxic substances and therefore can only be disposed of at collection points prescribed by law.

Information regarding the German Battery Directive

(Applicable in Germany and in all other Member States of the European Union as well as in other European countries, together with the countries' own provisions for a separate waste battery collection system.)

In accordance with the German Battery Directive, we are obliged to inform you of the following in connection with the sale of batteries or rechargeable batteries respectively in connection with the delivery of devices containing batteries or rechargeable batteries: Rechargeable batteries and batteries must not be disposed of with household waste. Disposal with household waste is expressly forbidden according to the German Battery Directive. As the end-consumer, you are legally obliged to return used batteries. Please dispose of batteries at a municipal collection point or in store. Batteries received from us can be returned to us by mail after use.

The address is: GEZE GmbH, Wareneingang, Reinhold-Vöster-Str. 21–29, 71229 Leonberg.

Batteries that contain hazardous substances are labelled with the symbol of a crossed-out rubbish bin. The chemical identifier of the harmful chemical, Cd for cadmium, Pb for lead, Hg for mercury, is located under the rubbish bin symbol.

10 Technical data

Electrical data and connection values	
Operating voltage (primary)	230 V AC -15 % to +10 %, (195 V AC to 253 V AC)
Frequency	50 Hz (47-63 Hz)
Protection	10 A
Ambient conditions	
Ambient temperature range	-5 to +40 °C
Relative humidity	75 % (average value over the entire life span) 90 % (max. 96 h of continuous operation at +40 °C)
Mechanical data	
Surface-mounted housing	Painted sheet steel (RAL 7035) with lock insert (two-way key bit, 3 mm)
IP rating	IP 30, in compliance with EN 12101-10 environment class 1
Housing dimensions	Depending on the unit equipment

Max. power loss of the individual components:

Component	Max. power loss (in watts)	
myGEZE Control CPU MODULE 8191	4	Load 9W with UPS
myGEZE Control CAN MASTER TERMINAL	2	
myGEZE Control CAN connector	-	
myGEZE Control ETHER CAT-COUPLER	0.5	
myGEZE Control EIB/KNX BUS TERMINAL	0.5	
myGEZE Control END TERMINAL	-	
myGEZE Control 8-channel digital input terminal	1	
myGEZE Control potential distribution terminal 24 V DC	-	
myGEZE Control potential distribution terminal 0 V DC	-	
myGEZE Control output terminal 2-channel relay	1	
myGEZE Control output terminal 4-channel relay	1	
myGEZE Control power supply terminal	1	
myGEZE Control coupler	4	
myGEZE Control extension	4	
myGEZE Control 2-port junction	0.65	
myGEZE Control bus end cover	-	



The power supply for the overall system is 24 VDC (-15 %/+20 %).
The power losses may deviate slightly due to the tolerance.

11 List of figures

Fig. 1: Mounted terminals	10
Fig. 2: Standard power supply.....	10
Fig. 3: Type of installation at temperatures up to 60°C.....	12
Fig. 4: Installation.....	13
Fig. 5: Disassembly.....	13
Fig. 6: Wiring.....	14
Fig. 7: myGEZE Control CPU MODULE 8191	16
Fig. 8: DIP switch S101, switches 1 to 10.....	18
Fig. 9 : myGEZE Control CAN MASTER TERMINAL.....	19
Fig. 10 : myGEZE Control CAN connector.....	21
Fig. 11: myGEZE Control CAN connector connection illustration	22
Fig. 12 : myGEZE Control KNX System	23
Fig. 13: Structure bus terminals for communication with KNX	24
Fig. 14: LED indicators KNX.....	25
Fig. 15: Example structure for communication with KNX	26
Fig. 16: LED indicators KNX.....	27
Fig. 17 : myGEZE Control 8-channel digital input terminal	28
Fig. 18: LED indicators KNX.....	29
Fig. 19 : myGEZE Control potential distribution terminal 24 V DC.....	30
Fig. 20: myGEZE Control potential distribution terminal 0 V DC	31
Fig. 21 : myGEZE Control output terminal 2-channel relay	32
Fig. 22 : myGEZE Control output terminal 4-channel relay	34
Fig. 23: myGEZE Control power supply terminal.....	36
Fig. 24: myGEZE Control coupler	37
Fig. 25: myGEZE Control extension.....	38
Fig. 26: myGEZE Control 2-port junction	39
Fig. 27: myGEZE Control bus end cover	40
Fig. 28: Example of substation system structure.....	43
Fig. 29: Detached inputs and outputs with GEZE IO 420	44
Fig. 30: TwinCAT SystemID	45
Fig. 31: Example of non-valid input	47
Fig. 32: Input screen header.....	47
Fig. 33: Header in other screens	48
Fig. 34: Input screen	49
Fig. 35: Import local	50
Fig. 36: Import Controller.....	51
Fig. 37: Import successful.....	52
Fig. 38: Import failed	52
Fig. 39: Controller and local export.....	53
Fig. 40: Device overview empty.....	54
Fig. 41: Device overview with content.....	54
Fig. 42: Adding devices – step 1 (default setting)	55
Fig. 43: Example of pattern entered	57
Fig. 44: Adding devices – step 2	58
Fig. 45: Adding devices – step 3.1.....	59
Fig. 46: Adding devices – step 4	60
Fig. 47: Editing devices – step 4.....	61
Fig. 48: Calendar function.....	62
Fig. 49: Notification function (default).....	63
Fig. 50: Edit reporting classes	64
Fig. 51: State texts function.....	65
Fig. 52: Scene function	66
Fig. 53: Configuration of actions	67
Fig. 54: DIP switch S101, switches 1-10	70
Fig. 55: Edit route.....	71
Fig. 56: Add route dialogue.....	72

Fig. 57: Example CX745FD0.....	73
Fig. 58 : myGEZE Control Configurator IP address example.....	74
Fig. 59: Advanced settings.....	75
Fig. 60: TcXaeShell_openProject 01.....	76
Fig. 61: TcXaeShell_openProject 02.....	76
Fig. 62: Project selection_SolutionExplorer.....	77
Fig. 63: TcXaeShell_openProject 03.....	77
Fig. 64: TcXaeShell_openProject 04.....	78
Fig. 65: TwinCAT references.....	79
Fig. 66: TwinCAT references faulty.....	79
Fig. 67: TwinCAT references.....	80
Fig. 68: myGEZE_TcXaeShell_openProject.....	81
Fig. 69: myGEZE_TcXaeShell_openProject.....	81
Fig. 70: myGEZE_TcXaeShell_openProject.....	81
Fig. 71: myGEZE_TcXaeShell_openProject.....	82
Fig. 72: myGEZE_TcXaeShell_openProject.....	82
Fig. 73: myGEZE LED status.....	83
Fig. 74: Setting_BACnet ID.PNG.....	87
Fig. 75: Setting_BACnet UDP01.....	88
Fig. 76: Setting_BACnet UDP02.....	89
Fig. 77: Project_selection_SolutionExplorer_CAN-Monitor.....	92
Fig. 78: myGEZE_TcXaeShell_openProject08.....	93
Fig. 79: myGEZE_TcXaeShell_openProject09.....	93
Fig. 80: Access_CAN-Monitoring.....	94
Fig. 81: TwinCAT_Log-in.....	95
Fig. 82: CAN-Monitor-V_CAN side.....	95
Fig. 83: CAN-Monitor list.....	96
Fig. 84: CAN-Monitor-Button_All.PNG.....	96
Fig. 85: CAN-Monitor-Button_Export.PNG.....	96
Fig. 86: CAN-Monitor-Device_List.PNG.....	97
Fig. 87: CAN-Monitor-Web-Browser.PNG.....	98

Germany

GEZE GmbH
Niederlassung Süd-West
Tel. +49 (0) 7152 203 594
Email: leonberg.de@geze.com

GEZE GmbH

Niederlassung Süd-Ost
Tel. +49 (0) 7152 203 6440
Email: muenchen.de@geze.com

GEZE GmbH

Niederlassung Ost
Tel. +49 (0) 7152 203 6840
Email: berlin.de@geze.com

GEZE GmbH

Niederlassung Mitte/Luxemburg
Tel. +49 (0) 7152 203 6888
Email: frankfurt.de@geze.com

GEZE GmbH

Niederlassung West
Tel. +49 (0) 7152 203 6770
Email: duesseldorf.de@geze.com

GEZE GmbH

Niederlassung Nord
Tel. +49 (0) 7152 203 6600
Email: hamburg.de@geze.com

GEZE Service GmbH

Tel. +49 (0) 1802 923392
Email: service-info.de@geze.com

Austria

GEZE Austria
Email: austria.at@geze.com
www.geze.at

Baltic States –

Lithuania / Latvia / Estonia
Email: baltic-states@geze.com

Benelux

GEZE Benelux B.V.
Email: benelux.nl@geze.com
www.geze.be
www.geze.nl

Bulgaria

GEZE Bulgaria - Trade
Email: office-bulgaria@geze.com
www.geze.bg

China

GEZE Industries (Tianjin) Co., Ltd.
Email: chinasales@geze.com.cn
www.geze.com.cn

GEZE Industries (Tianjin) Co., Ltd.

Branch Office Shanghai
Email: chinasales@geze.com.cn
www.geze.com.cn

GEZE Industries (Tianjin) Co., Ltd.

Branch Office Guangzhou
Email: chinasales@geze.com.cn
www.geze.com.cn

GEZE Industries (Tianjin) Co., Ltd.

Branch Office Beijing
Email: chinasales@geze.com.cn
www.geze.com.cn

France

GEZE France S.A.R.L.
Email: france.fr@geze.com
www.geze.fr

Hungary

GEZE Hungary Kft.
Email: office-hungary@geze.com
www.geze.hu

Iberia

GEZE Iberia S.R.L.
Email: info.es@geze.com
www.geze.es

India

GEZE India Private Ltd.
Email: office-india@geze.com
www.geze.in

Italy

GEZE Italia S.r.l Unipersonale
Email: italia.it@geze.com
www.geze.it

GEZE Engineering Roma S.r.l

Email: italia.it@geze.com
www.geze.it

Korea

GEZE Korea Ltd.
Email: info.kr@geze.com
www.geze.com

Poland

GEZE Polska Sp.z o.o.
Email: geze.pl@geze.com
www.geze.pl

Romania

GEZE Romania S.R.L.
Email: office-romania@geze.com
www.geze.ro

Russia

OOO GEZE RUS
Email: office-russia@geze.com
www.geze.ru

Scandinavia – Sweden

GEZE Scandinavia AB
Email: svrige.se@geze.com
www.geze.se

Scandinavia – Norway

GEZE Scandinavia AB avd. Norge
Email: norge.se@geze.com
www.geze.no

Scandinavia – Denmark

GEZE Danmark
Email: danmark.se@geze.com
www.geze.dk

Singapore

GEZE (Asia Pacific) Pte, Ltd.
Email: gezesea@geze.com.sg
www.geze.com

South Africa

GEZE South Africa (Pty) Ltd.
Email: info@gezesa.co.za
www.geze.co.za

GEZE GmbH

Reinhold-Vöster-Straße 21–29
71229 Leonberg
Germany

Tel.: 0049 7152 203 0
Fax.: 0049 7152 203 310
www.geze.com

