Product manual | **06.11.2026**

Busch-Tenton®
Busch-Installationsbus® KNX

SBS/Ux.0.xx-xxx Control element xgang with room temperature controller
SBR/Ux.0.xx-xxx Control element xgang with room temperature controller
SBOC/Ux.0.xx-xxx Control element with CO_2/humidity sensor
SBRC/Ux.0.xx-xxx Control element xgang with room temperature controller and CO_2/humidity sensor
SB/Ux.0.xx-xxx Control element xgang



BUSCH-JAEGER

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1 Notes on the instruction manual

Please read through this manual carefully and observe the information it contains. This will assist you in preventing injuries and damage to property and ensure both reliable operation and a long service life for the device.

Please keep this manual in a safe place.

If you pass the device on, also include this manual along with it.

ABB AG – BUSCH-JAEGER accepts no liability for any failure to observe the instructions in this manual.

If you require additional information or have questions about the device, please contact ABB AG – BUSCH-JAEGER or visit our Internet site at:

www.BUSCH-JAEGER.de/en

2 Safety

The device has been constructed according to the latest valid regulations governing technology and is operationally reliable. It has been tested and left the factory in a technically safe and reliable state.

However, residual hazards remain. Read and adhere to the safety instructions to prevent hazards of this kind.

ABB AG – BUSCH-JAEGER accepts no liability for any failure to observe the safety instructions.

2.1 Information and symbols used

The following Instructions point to particular hazards involved in the use of the device or provide practical instructions:



Danger

Risk of death / serious damage to health

– The respective warning symbol in connection with the signal word "Danger" indicates an imminently threatening danger which leads to death or serious (irreversible) injuries.



Warning

Serious damage to health

– The respective warning symbol in connection with the signal word "Warning" indicates a threatening danger which can lead to death or serious (irreversible) injuries.



Caution

Damage to health

– The respective warning symbol in connection with the signal word "Caution" indicates a danger which can lead to minor (reversible) injuries.



Attention

Damage to property

– This symbol in connection with the signal word "Attention" indicates a situation which could cause damage to the product itself or to objects in its surroundings.



NOTE

This symbol in connection with the word "Note" indicates useful tips and recommendations for the efficient handling of the product.



This symbol alerts to electric voltage.

2.2 Intended use

Devices fitted with a CO_2/humidity sensor are used to measure the CO_2 concentration in the ambient air, relative humidity and room temperature (including devices without an RTC). Devices fitted with a room temperature controller can also be used to regulate the room temperature in conjunction with a valve-actuated convector, a fan coil actuator or a conventional heating and cooling system.

A wide range of functions for controlling light, blinds and much more are available for the control elements (including devices without an RTC); these functions can be selected and configured for each button or rocker switch using the commissioning tool (ETS).

The scope of the application is listed in Chapter 11 “Description of application and parameters“ on page 75.

2.3 Improper use

Each use not listed in Chapter 2.2 “Intended use“ on page 22 is deemed improper use and can lead to personal injury and damage to property.

ABB AG – BUSCH-JAEGER is not liable for damages caused by use deemed contrary to the intended use of the device. The associated risk is borne exclusively by the user/operator.

The device is not intended for the following:

- Unauthorized structural changes
- Repairs
- The use in bathroom areas
- Outdoor use
- Safety-related functions. The device is intended solely for monitoring and/or controlling functions such as lights or blinds.

2.4 Target group / Qualifications of personnel

2.4.1 Operation

No special qualifications are needed to operate the device.

2.4.2 Installation, commissioning and maintenance

Installation, commissioning and maintenance of the device must only be carried out by trained and properly qualified electrical installers.

The electrical installer must have read and understood the manual and follow the instructions provided.

The electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installer must be familiar with and correctly apply the "five safety rules" (DIN VDE 0105, EN 50110):

1. Disconnect
2. Secure against being re-connected
3. Ensure there is no voltage
4. Connect to earth and short-circuit
5. Cover or barricade adjacent live parts

2.5 Cyber security

The industry faces intensifying cybersecurity risks. To enhance the stability, security and robustness of its solutions, ABB AG – BUSCH-JAEGER has officially introduced cybersecurity robustness testing as part of its product development process.

The following measures are prerequisite for the safe operation of your system. ABB AG – BUSCH-JAEGER accepts no liability for non-observance.

Access control and limitation

The careful isolation of the system against unauthorized access is the basis for every protective concept. Only authorized persons (fitter, caretaker, tenant) are allowed physical access to the IP network or bus system and its components. This also includes the device described in this instruction manual.

The best possible protection of the IP or network media (WLAN) and the transfer nodes must be guaranteed already during planning and installation. Sub-distributions with fieldbus devices must be lockable or be in rooms to which only authorized persons have access.

KNX Secure

Enable KNX Secure in the ETS. When KNX Secure is enabled, the communication data is protected against replay and tampering attacks.

If KNX Secure is not enabled, communication security cannot be guaranteed. It is recommended that you only use unsecured operation if the device is required to communicate with older product versions. In this mode, data is transmitted between devices in unencrypted form, which increases the risk of cyberattacks.

Change the KNX Secure communication keys and engineering keys regularly.

Bus cabling

- The ends of the bus cables must not be visible; in other words, they must not protrude from walls or cable ducts either inside or outside the building.
- Bus cables in outdoor areas or in areas with limited protection represent an increased safety risk. The physical access should be made exceptionally difficult.
- The KNX line must not relay a KNX-IP line.

IP Network

The local network represents a sensitive component for safe communication. That is why unauthorized access to the local network should be prevented. The normal safety mechanisms for IP networks are to be used, e.g.:

- Safe encryption of wireless networks
- Use of complex passwords and protection of these against unauthorized persons
- Physical access to network interfaces (Ethernet interfaces) and network components (routers, switches) should only be permitted in secure areas.
- MAC filter (table with certified device addresses)

Connection to the Internet or the local IP network

To prevent improper use, no router ports from the Internet into the building network or home network are to be opened to the display. A VPN tunnel is suitable for safe remote control.

The stable and reliable function of the device also depends on the reliability of the local IP network to which the server is connected. For this reason additional network components are to be used to repel the DoS attacks (denial of service) from the Internet. Such attacks can overload the local IP network or the individual components and make them inaccessible.

Firewalls can be used to improve the security of the product installation.

User account security

Set a strong access password during initial commissioning. Use passwords that you have received from the administrator only for the first login.

Keep passwords secret and use a password manager with two-factor login as memory aid, e.g. Keepass.

Updates

If Internet access is available, updates can be carried out via the ETS. The ETS establishes a connection to the KNX server. Every update must be confirmed by the end user. In this process, the firmware is verified for authentication and integrity using a signature file.

Solutions for protection against malware

The product is not susceptible to malware, because a user-defined code cannot be executed on the system. The only option of updating the software is the update of the firmware. Only a firmware signed by ABB AG – BUSCH-JAEGER is accepted.

Password rules

Preset passwords should be changed by the user during the first use of the device.

Keep your passwords secret and use a password manager with two-factor authentication to help you remember them, such as KeePass.

Regular servicing and maintenance

Check regularly that the housing and cable protection of the KNX products are in place and that there are no visible signs of damage.

Change the KNX Secure communication keys and engineering keys regularly.

Disclosure and reporting of product vulnerabilities

Security issues can be reported at the following e-mail address:

- cybersecurity@ch.abb.com

Data deletion and decommissioning

To decommission the device and completely delete the data stored on it, reset the device to its factory settings. Further information on this topic can be found at Chapter 9.6 “RESET (Resetting the device)“ on page 73.

Duties and responsibilities

- Installation managers
  - Open the ETS project password.
  - Configure the ETS.
- Maintenance personnel
  - Check regularly that the device cables and casing are in good condition.
- Product users
  - No measures are required.

2.6 Safety instructions



Danger - Electric voltage!

Electric voltage! Risk of death and fire due to electric voltage of 100 … 240 V.
Dangerous currents flow through the body when coming into direct or indirect contact with live components. This can result in electric shock, burns or even death.

- Work on the 100 … 240 V supply system may only be performed by authorised and qualified electricians.
- Disconnect the mains power supply before installation / disassembly.
- Never use the device with damaged connecting cables.
- Do not open covers firmly bolted to the housing of the device.
- Use the device only in a technically faultless state.
- Do not make changes to or perform repairs on the device, on its components or its accessories.
- Keep the device away from water and wet surroundings.



Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).



Caution! - Risk of damaging the device due to external factors!

Moisture and contamination can damage the device.

- Protect the device against humidity, dirt and damage during transport, storage and operation.

3 Information on protection of the environment

3.1 Environment



Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

– The device contains valuable raw materials which can be recycled. Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2012/19/EU WEEE and 2011/65/EU RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006).

4 Setup and function

Busch-Tenton® are configurable switch and push-button sensors designed for the decentralized control of various room functions. The devices are suitable for both surface-mounted and flush-mounted installation and can be flexibly integrated into existing KNX installations.

All devices feature an integrated bus coupler, which enables direct connection to the KNX bus line, enabling seamless integration with existing actuators through KNX group addresses, thereby allowing control of switching, dimming and blind control functions. Furthermore, the device allows you to save and recall light scenes, making it convenient and flexible to use.

The standard specification includes integrated sensors for measuring room temperature and humidity. Depending on the model, the device is also fitted with a CO_2 sensor. The measured room values are continuously recorded and made available to the KNX bus via group objects, enabling intelligent control of climate control parameters.

The full functionality of the device is enabled by parameterisation through ETS, with programming and configuration carried out in a user-friendly manner by means of this standard interface.

4.1 Device versions

Busch-Tenton® is available in the following models:

– 10x magnification with display, with or without CO_2 and temperature/humidity sensor
– 6-channel with display, with or without CO_2 and temperature/humidity sensor
– 12-speed, with CO_2 and temperature/humidity sensor
– 6-speed, with CO_2 and temperature/humidity sensor
– Dual-function control element with temperature/humidity sensor
– 4-way control element with temperature/humidity sensor
– 6-way control element with temperature/humidity sensor
– 8-way control element with temperature/humidity sensor
– 12-way control element with temperature/humidity sensor

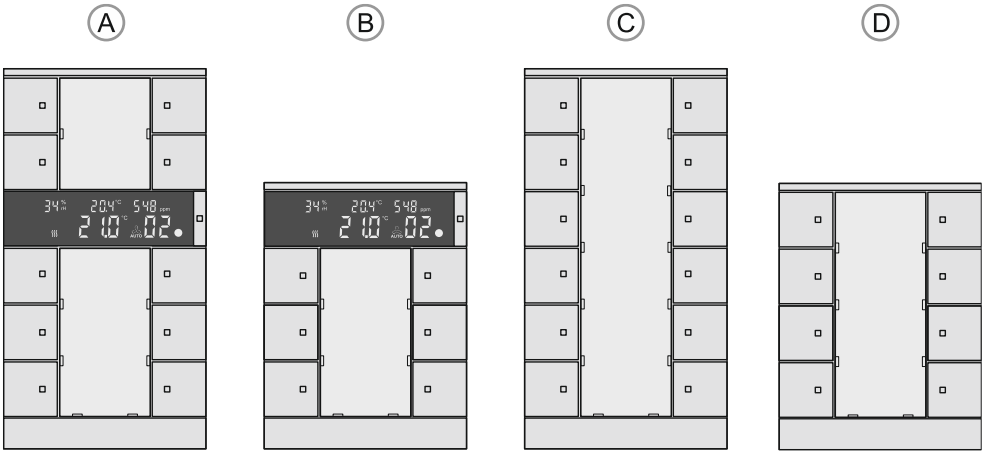


Fig. 1: Design of control elements (examples)

[A] 10-gang room temperature controller, with display
[B] 6-gang room temperature controller, with display
[C] 12-gang control element, with temperature/humidity sensor
[D] 8-gang control element, with temperature/humidity sensor

4.2 Device overview

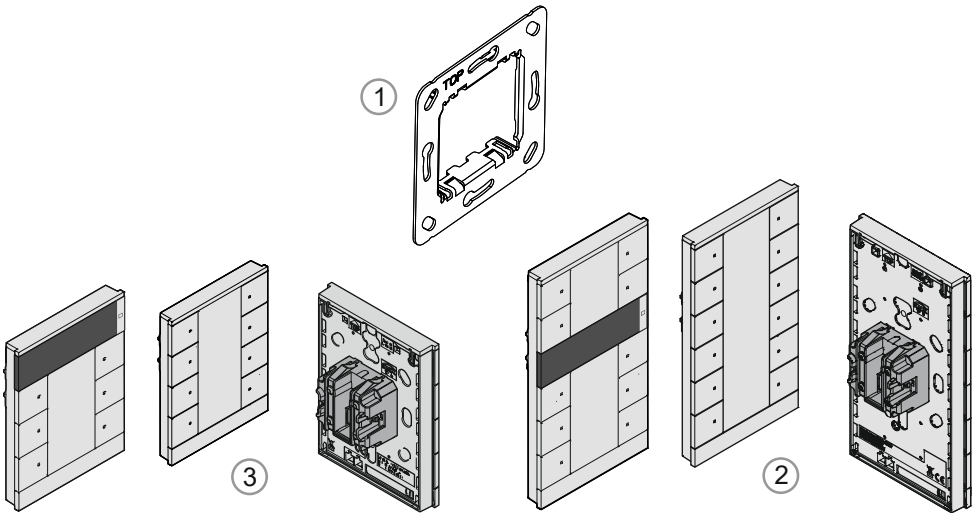


Fig. 2: Overview of devices

[1] Support ring
[2] 8-gang control element/RTC with 6-gang control element (firmly installed unit), with/without CO_2 sensors
[3] 8-gang control element/RTC with 6-gang control element (firmly installed unit), with/without CO_2 sensors

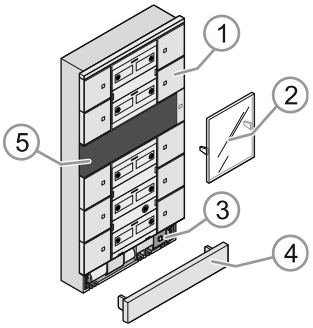


Fig. 3: Overview of functional elements

[1] Control buttons
[2] Label/cover
[3] Programming button
[4] End strip
[5] Display

Display (only RTC devices)

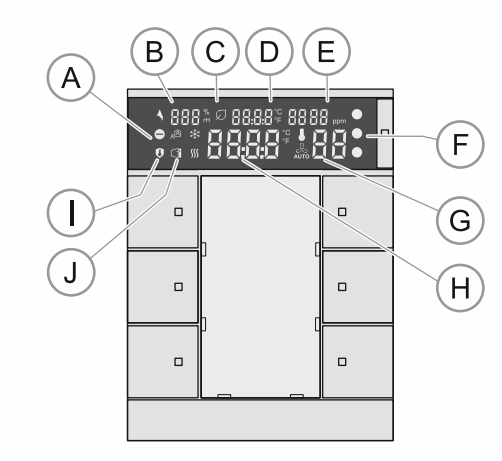


Fig. 4: User-friendly display

Pos.	Icon	Description
[A]		Dew point alarm Local operation is blocked Building protection
[B]	52% rf	Relative humidity
[C]		ECO mode
[D]	18,5°C	Actual temperature
[E]	965 ppm	Current CO_2reading
[F]		Display of CO_2concentration
[G]	Auto / 01 – 05	Fan status / fan speed level / fan speed
[H]	21,5°C	Setpoint temp
[I]		Comfort mode Standby mode
[J]		Heating or cooling status

Table 1: Display icons

Removal protection (optional)

The optional anti-theft device protects the unit against unauthorised removal, e.g. in public buildings or office blocks.

Herr, the terminals [1] must be fitted into the designated positions on the flush-mounted insert (at the rear of the unit) and snapped into place. With the removal protection fitted, the device is removed using the removal tool [2], which is available separately. To do so, the removal tool is inserted from above between the device and the wall.

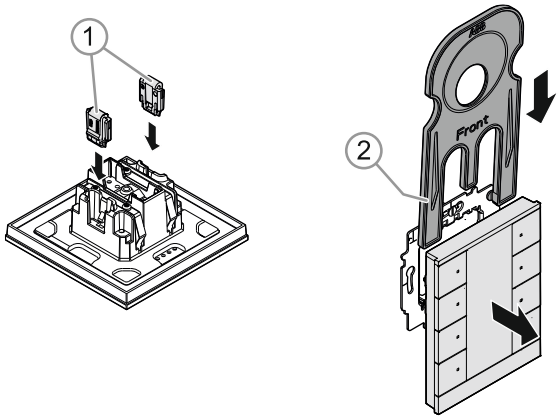


Fig. 5: Removal protection

[1] Removal protection clamps

[2] Removal tool

4.3 Control elements

Busch-Tenton® units are freely configurable multifunctional elements and are available in 6-, 10- and 12-gang versions.

– Commissioning is carried out using the ETS. For each button or rocker switch, the desired function can be selected from a list of button/rocker switch functions and configured (see chapter 11.4 “Application "Operating area x"“ on page 114). Furthermore, the devices feature a multi-coloured LED for each key, which can be used to indicate status or simply to illuminate the keys.

– Various functions can be implemented using the ETS commissioning software. The functions depend on the parameters selected via the respective software application.

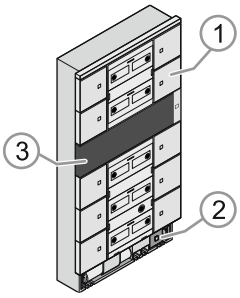


Fig. 6: Design of control elements (examples)

[1] Buttons
[2] Programming button
[3] Display

4.4 Functions

The following table provides an overview of the possible functions and applications of the device:

Device type	Key functions General	RTC functions	Additional functions of the CO_2 / sensors / display
Control element, 2-/4-/6-/8-/12-gang	▪ Freely configurable multifunction control element ▪ Push-button function (switching/dimming/blind/value transmission/light scenes/fan function) ▪ Label field ▪ Support of the KNX functions with innovative colour concept ▪ Integrated KNX bus coupler	-	▪ Integrated temperature sensor ▪ Integrated humidity sensor (measures relative and absolute humidity and the dew point) ▪ Integrated dew point measurement
6-/10-gang with display, without CO_2	▪ Freely configurable multifunction control element ▪ Push-button function (switching/dimming/blind/value transmission/light scenes/fan function) ▪ Label field ▪ Support of the KNX functions with innovative colour concept ▪ Integrated KNX bus coupler	▪ Room temperature controller ▪ Main/extension unit operation ▪ Control of heating, ventilation and fan coil actuators ▪ Contribution to space heating energy efficiency: 1.0%	▪ Integrated temperature sensor ▪ Integrated humidity sensor (measures relative and absolute humidity and the dew point) ▪ Integrated dew point measurement ▪ Temperature display: actual/setpoint value ▪ Display of operating mode, temperature, fan speed, humidity level, time and date via LCD
6-/10-gang with display, with CO_2	▪ Freely configurable multifunction control element ▪ Push-button function (switching/dimming/blind/value transmission/light scenes/fan function) ▪ Label field ▪ Support of the KNX functions with innovative colour concept ▪ Integrated KNX bus coupler	▪ Room temperature controller ▪ Main/extension unit operation ▪ Control of heating, ventilation and fan coil actuators ▪ Contribution to space heating energy efficiency: 1.0%	▪ Integrated temperature sensor ▪ Integrated humidity sensor (measures relative and absolute humidity and the dew point) ▪ Integrated dew point measurement ▪ CO_2/humidity sensor ▪ Temperature display: actual/setpoint value ▪ Display of operating mode, temperature, fan speed, humidity level, CO_2level, time and date via LCD ▪ CO_2 traffic light
6-/12-gang with CO_2, without display	▪ Freely configurable multifunction control element ▪ Push-button function (switching/dimming/blind/value transmission/light scenes/fan function) ▪ Label field ▪ Support of the KNX functions with innovative colour concept ▪ Integrated KNX bus coupler	-	▪ Integrated temperature sensor ▪ Integrated humidity sensor (measures relative and absolute humidity and the dew point) ▪ Integrated dew point measurement ▪ CO_2/humidity sensor ▪ CO_2 traffic light

Table 2: Function overview

4.4.1 Support ring

Installation is carried out using the support ring shown in fig. “Fig. 7: Support ring“ on page 36, which is the same for all country variants.

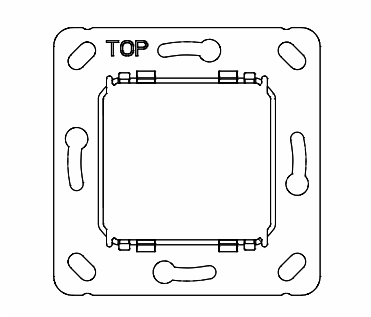


Fig. 7: Support ring

4.5 Scope of supply

The following are included in the scope of delivery:

- Flush-mounted insert with control element (firmly installed unit)
- Support ring
- KNX bus connection terminal
- Installation and operating instructions

Note

- Surface-mounted housings/frames are not included in the scope of delivery and must be purchased separately!
- Removal protection and removal tool are not included in the scope of delivery and must be purchased separately!

Note

- For information about the versions of the device, see chapter 4.1 “Device versions“ on page 30.
- For information on anti-theft protection, see chapter 6.5.1.1 “Removal protection (optional)“ on page 45.

5 Technical data

5.1 Technical data

Name	Value
Power supply	24 V DC (via bus line)
Bus subscribers Busch-Tenton®	
– Control elements – Control elements with temperature/humidity sensor – Control elements with $CO_2$and temperature/humidity sensors	1 (12 mA)
– Control elements with display, with or without $CO_2$and temperature/humidity sensors	2 (24 mA)
Connection	
▪ Bus connection terminal	0.4 - 0.8 mm
▪ Line type	J-Y(St)Y, 2 x 2 x 0.8 mm
▪ Wire stripping	6 - 7 mm
Power consumption (Detailed information on power consumption can be found in the ETS application.)	
Medium	TP-256
– Control elements – Control elements with temperature/humidity sensor – Control elements with $CO_2$and temperature/humidity sensors	24 V / 12 mA (FanIn1)
– Control elements with display, with or without $CO_2$and temperature/humidity sensors	24 V / 24 mA (FanIn2)
Parameter setting	Parameters are set using the ETS Tool Software.
Ambient temperature	-5°C - +45°C
Storage temperature	-20°C - +70°C
CO_2 measurement ranges (devices with a display)	
CO_2emission range	0 - 40,000 ppm
Accuracy of CO_2measurement	400 ppm - 5000 ppm ±(30 ppm + 3 % of the measured value)
Additional deviation in accuracy after five years when the Automatic Self-Calibration (ASC) algorithm is enabled	Typical: 400 - 2000 ppm ±(5 ppm + 0.5 % of the measured value)
Lifetime	Typical operating conditions: >10 years

Name	Value
Measurement range for relative humidity	0 % RH ... 100 % RH
Accuracy (typ.)	15°C ... 35°C, 20 % RH ... 65 % RH ±6 % RH -10°C ... 60°C, 0 % RH ... 100 % RH ±9 % RH
Accuracy deviation	<0.25 % RH per year
Temperature measurement range	-10°C ... 60°C
Accuracy (typ.)	± 0.2 °C
Accuracy deviation	< 0.03°C per year
CO_2 measurement range (devices with traffic light display)	
CO_2emission range	0 - 32,000 ppm
Accuracy of CO_2measurement	400 - 5000 ppm± (100 ppm + 10 %)
Temperature and humidity sensor (devices without a display)	
Measurement range for relative humidity	0 % RH ... 100 % RH
Accuracy (typ.)	±1.8 % RH
Resolution	0.01 % RH
Long-term deviation	<0.2 % RH per year
Temperature measurement range	±0.2 °C
Resolution	0.01°C
Specified range	-40 - +125°C
Long-term deviation	<0.03°C per year

Table 3: Technical data

5.2 Dimensional drawings

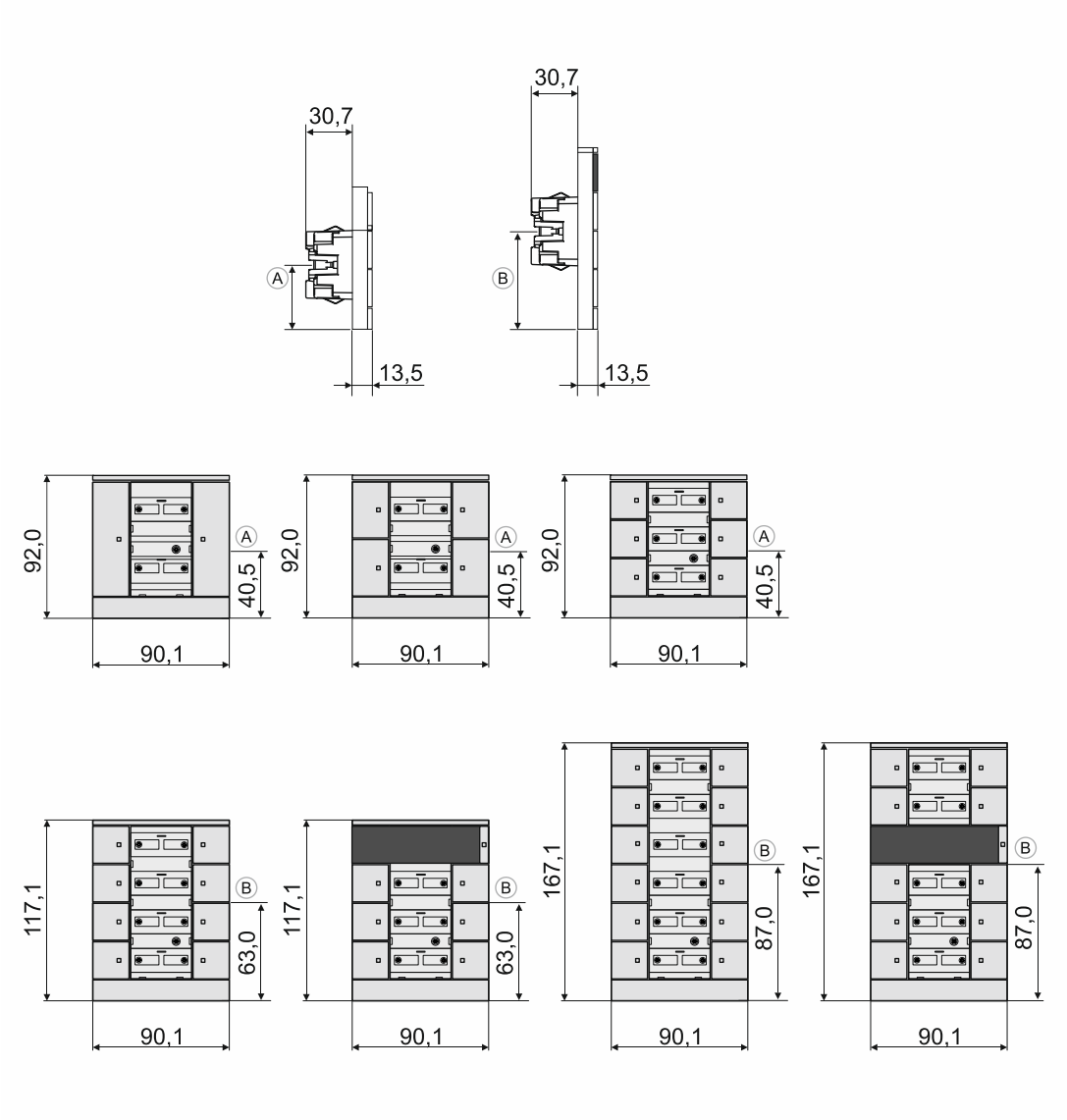


Fig. 8: Dimensions (all dimensions are in mm)

[A] Distance from the lower edge of the device to the centre of the insert

6 Connection, installation / mounting



Danger - Electric voltage!

Risk of death due to electrical voltage of 100 … 240 V during short-circuit in the low-voltage conduit.

– Low-voltage and 100 … 240 V conduits must not be installed together in a flush-mounted box!

6.1 Requirements for the electrician



Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the users of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).
- Observe the correct polarity.

6.2 Installation site

For proper commissioning please observe the following points:

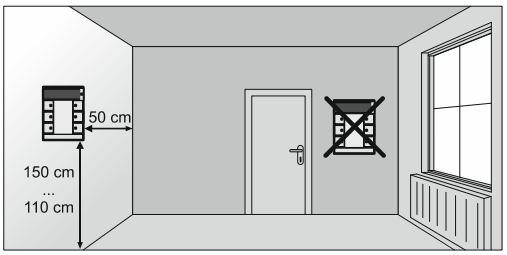


Fig. 9: Installation location – distance

- The device should be installed at a height of approximately 110 cm to 150 cm from the floor and 50 cm from a door frame.

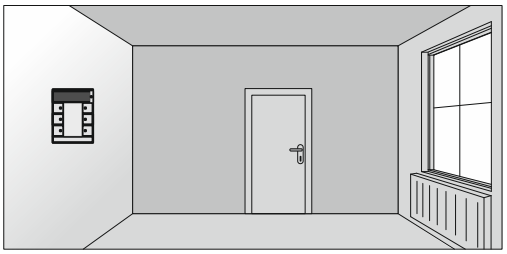


Fig. 10: Installation location – radiator position

- The device should be installed on a wall opposite a radiator.

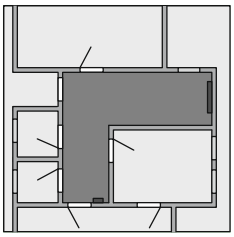


Fig. 11: Installation site – interior design

- The angles of the room architecture should not separate a radiator and the device from each other.

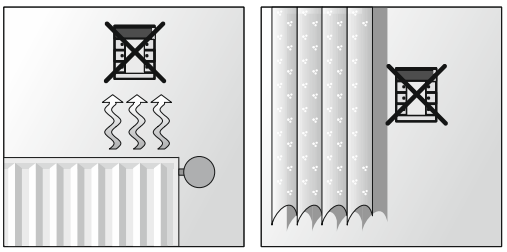


Fig. 12: Installation location – RTC position

- Installing a device close to a radiator or behind curtains is not practical.

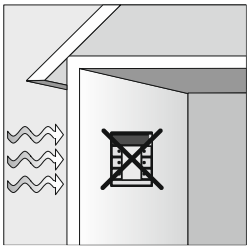


Fig. 13: Installation location – external wall

- It is not advisable to install the unit on an external wall, as low outside temperatures can affect the temperature control.



Fig. 14: Installation location – liquid wetting

- Wetting the room temperature controller with fluids is to be avoided.

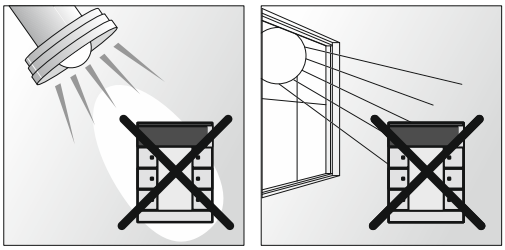


Fig. 15: Installation site – sunlight exposure

- Just as heat radiation from electrical devices can, direct sunlight can also have a negative impact on measurement accuracy and, consequently, on control performance.

6.3 Mounting / dismantling



Caution! The device can sustain damage when coming into contact with hard objects!

The plastic parts of the device are sensitive.

– Pull the attachment off only with your hands.
– Do not lever parts off with screwdrivers or similar hard objects.



Attention! - Risk of damaging the device

Risk of malfunction due to construction dust

– On devices with CO2 sensor the installation area must be carefully cleaned from construction dust and other contamination before installing the sensor, to guarantee faultless function.



Attention! - Risk of damaging the device

Risk of malfunction!

To guarantee faultless function:

– The installation must not block the ventilation slots.
– An adequate distance to heat source must be ensured.



Attention!

Risk of faulty measurements!

– Install devices with CO2 sensors only in wind-proof flush-mounted boxes to prevent faulty measurements.

6.4 Electrical connection

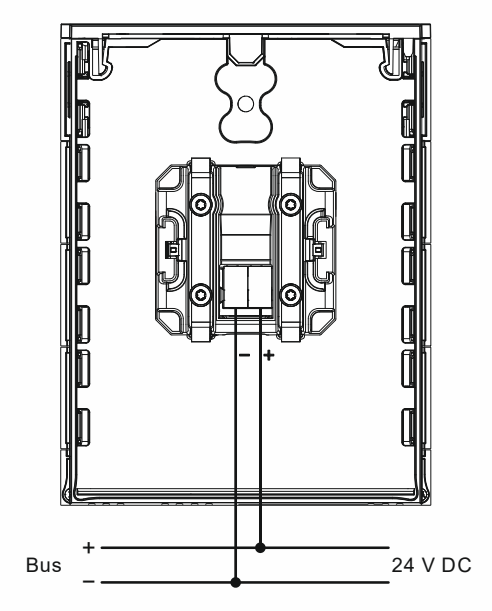


Fig. 16: Bus coupler connection

Carry out the electrical connection according to the circuit diagram.

6.5 Mounting

6.5.1 Flush-mounted installation

6.5.1.1 Removal protection (optional)

Note

- After mounting with removal protection, dismantling, see chapter 6.3 “Mounting / dismantling“ on page 43, is then only possible with the removal tool!
- The removal protection is not a component part of the device and is to be ordered separately.

Option

Carry out the following step for the optimum installation of the removal protection:

1. Install the removal protection [1].
2. Push the removal protection into position by hand.

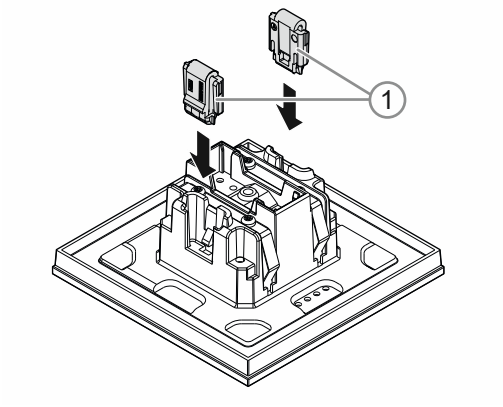


Fig. 17: Installing the removal protection

6.5.1.2 Mounting/installation in flush-mounted installation box

To install the device, perform the following steps:

1. Install the support ring.
   – Please note the orientation: the support ring must be fitted so that the side marked "TOP" is at the top.

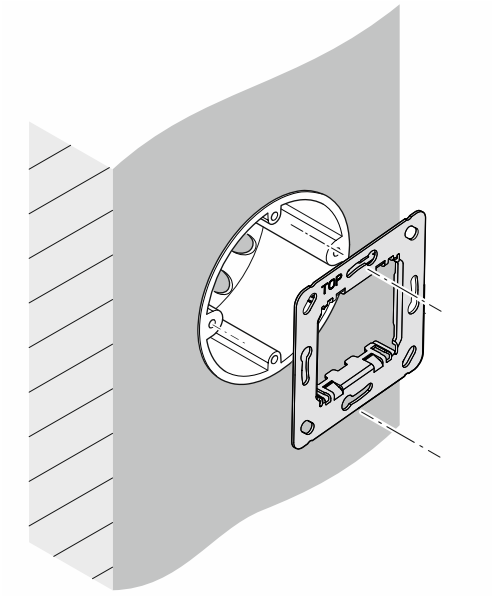


Fig. 18: Installing the support ring

2. Pull the bus line out of the flush-mounted box and connect the line to the bus connection terminal [1], see chapter 6.4 “Electrical connection“ on page 44.
   – Check that the polarity is correct!

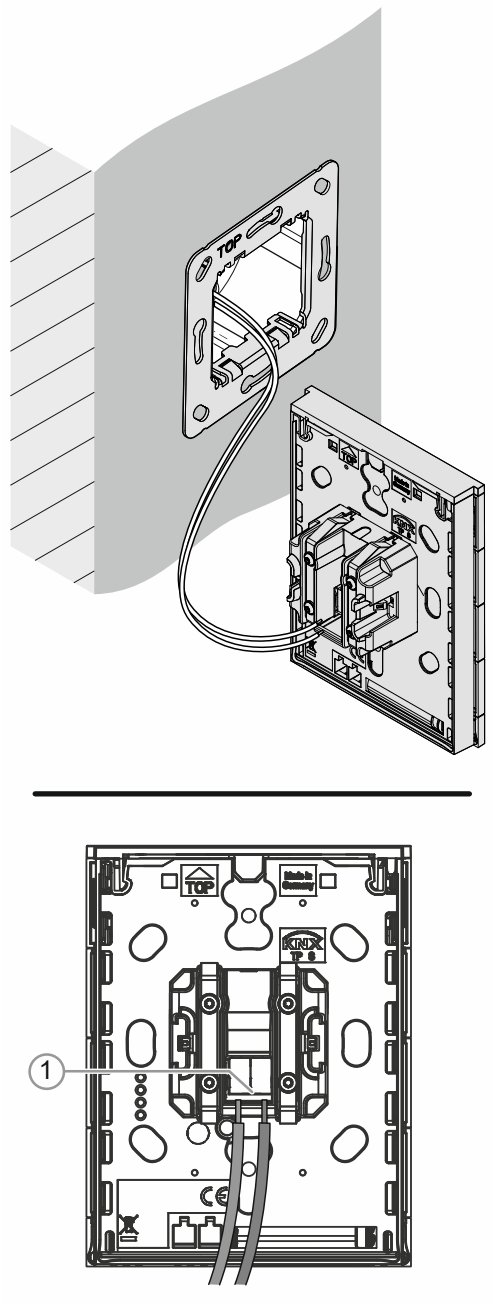


Fig. 19: Connection of the bus line

3. Install the device.
   – Snap the device into the support ring by hand.

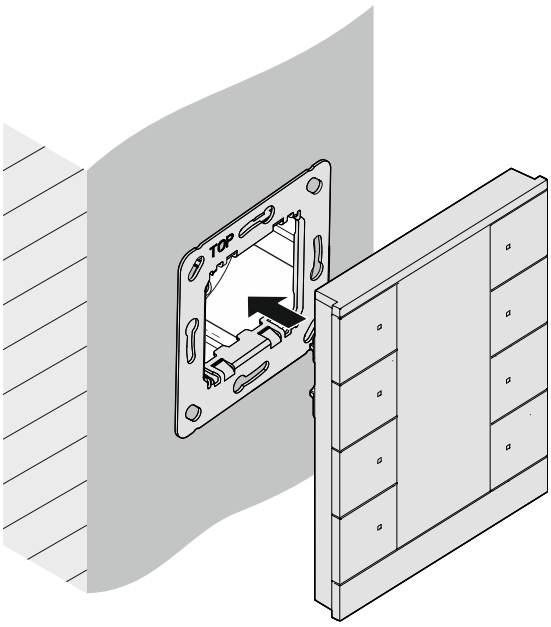


Fig. 20: Installing the devices

4. To commission the device, see chapter 7 “Commissioning“ on page 56.
   – To program the physical address, press the programming button [2] on the front of the device. To do so, remove the bottom end strip [1].
5. Press the [2] programming button.
   – All LEDs light up red as long as the device is in programming mode.
   – On devices with display, "Prog" appears additionally in the display in red.
   – Reinsert the end strip [1] after programming has been completed.

   The device is now mounted.

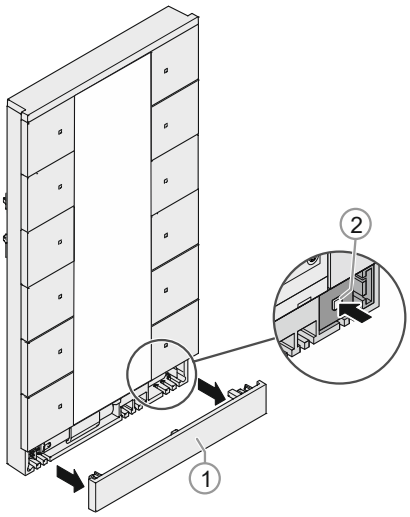


Fig. 21: Programming button

6.5.2 Dismantling

6.5.2.1 Dismantling with the removal protection tool

Note
After mounting with removal protection, see chapter 6.5.1.1 “Removal protection (optional)“ on page 45, dismantling is then only possible with the removal tool!

If installed, carry out the following step to dismantle the removal protection:

1. Pull the unit out of the support ring as far as it will go (up to the removal protection).
2. Insert the removal protection tool [1] behind the device.
   – This action automatically unlocks the removal protection, allowing the device to be removed completely from the support ring.
3. Remove the device.

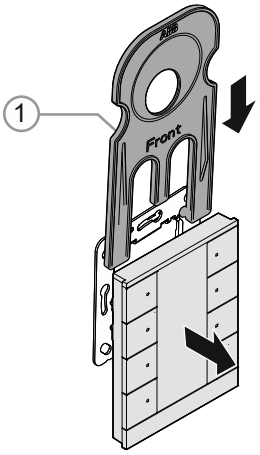


Fig. 22: Disassembly using a removal tool

6.5.3 Surface-mounted installation

6.5.3.1 Mounting with surface-mounted mounting frame

Note
Surface-mounted housings/frames are not included in the scope of delivery and must be purchased separately!

Preparatory work:

For the installation on a surface-mounted frame, the fastening screw must be made accessible on the operating section on the front of the device.

1. Pull off the bottom end strip.
2. Remove the cover of the labelling field.siehe Kapitel Beschriftungsfelder.

Unscrewing the flush-mounted insert of the device

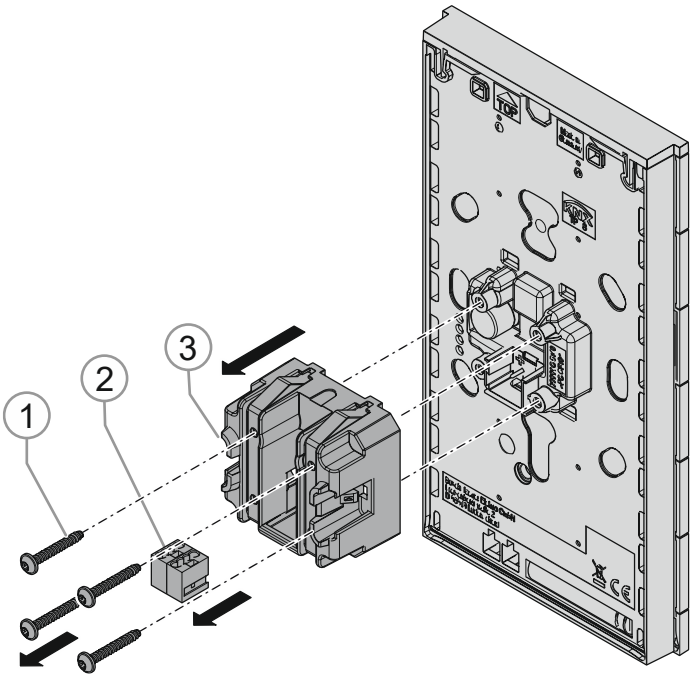


Fig. 23: Preparing the operating section

1. Disconnect the bus terminal [2]
2. Unscrew the screws (Torx T8) [1]
3. Remove the flush-mounted insert [3]

Bus cable guide of surface-mounted frame (option)

For an alternative cable guide, via the top or bottom side of the frame, a 6 mm borehole can be provided.

Note
A centring mark is available on the top and bottom side of the frame for an alternative cable guide.

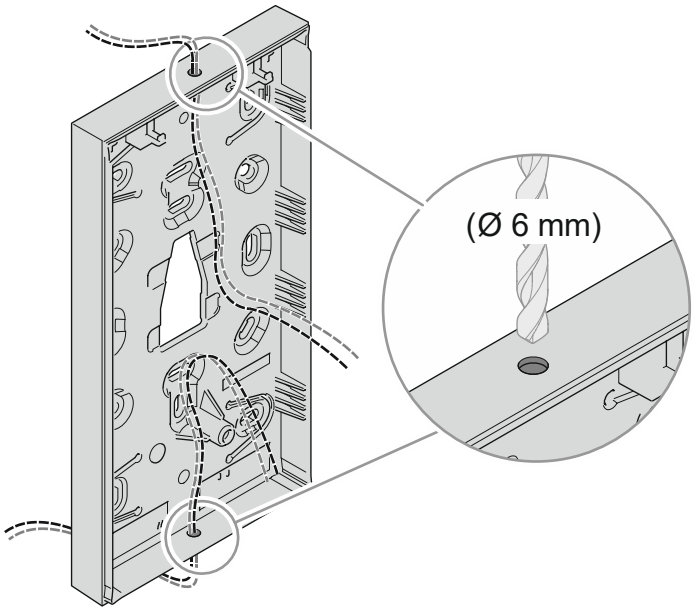


Fig. 24: Alternative bus cable routing

Installing the surface-mounted frame

Note

The surface-mounted frame can be screwed to the wall using the various recesses in the housing. It can also be fitted to a flush-mounted box.

– Do not use countersunk head screws for mounting!

Attention!

Risk of faulty measurements!

– Install devices with CO2 sensors only in wind-proof flush-mounted boxes to prevent faulty measurements.

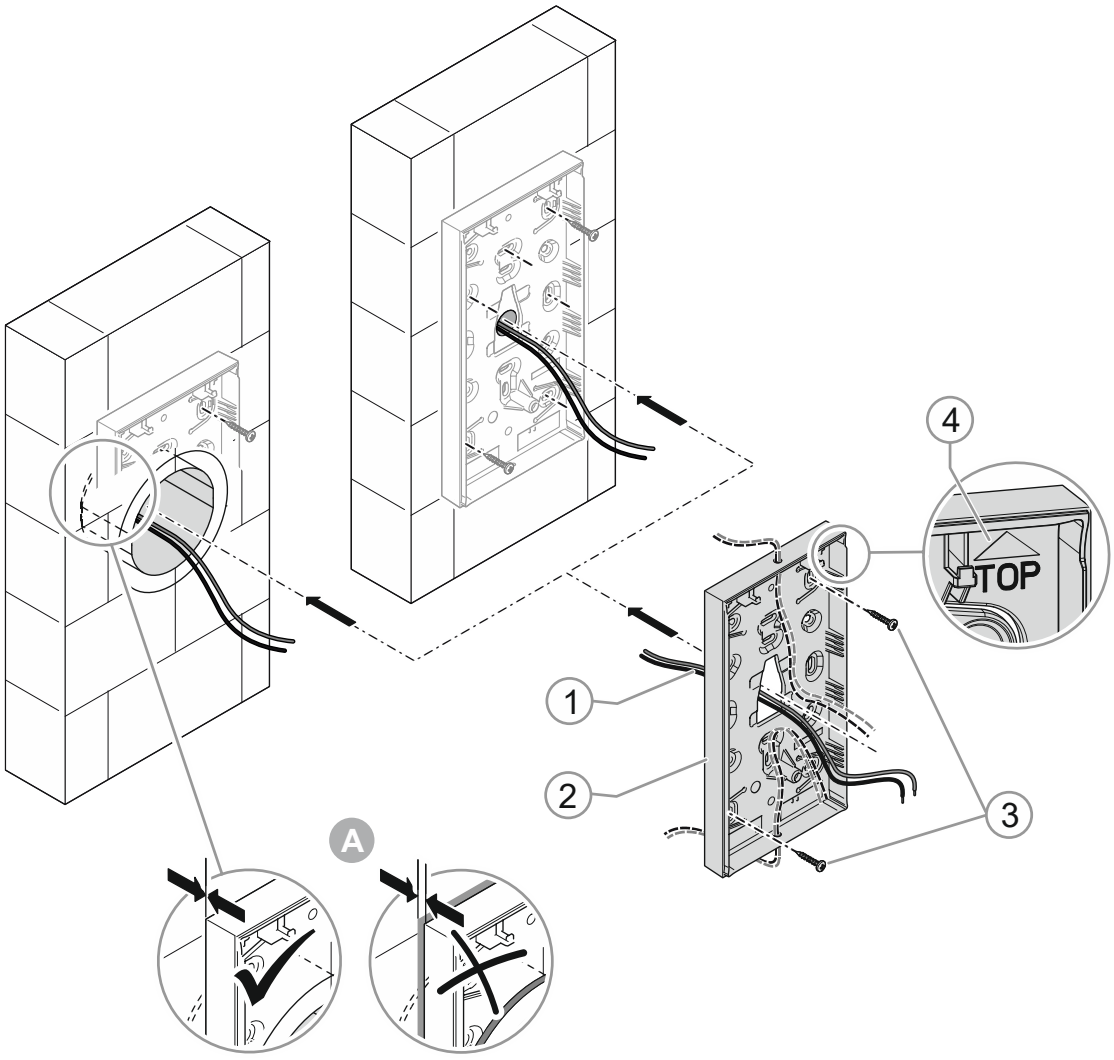


Fig. 25: Installing the surface-mounted frame

4. Route the bus cable [1] from the rear through the specified opening.

Note

– Alternatively, the bus cable can be routed through a borehole on the top or bottom side of the frame.

5. Secure the surface-mounted frame [2] using suitable screws [3] through the drill holes in the surface-mounted frame or using the screws in the flush-mounted box. Uneven walls can be levelled out using the surface-mounted frame.

Note

– The mark [4] on the surface-mounted frame "Top" must always point upwards.
– Do not use countersunk head screws for mounting the surface-mounted frame.
– [A] If the surface-mounted frame is to be fitted onto a flush-mounted box, the flush-mounted box must not protrude beyond the wall, as otherwise the device cannot be fitted flush with the wall.

Mounting control elements

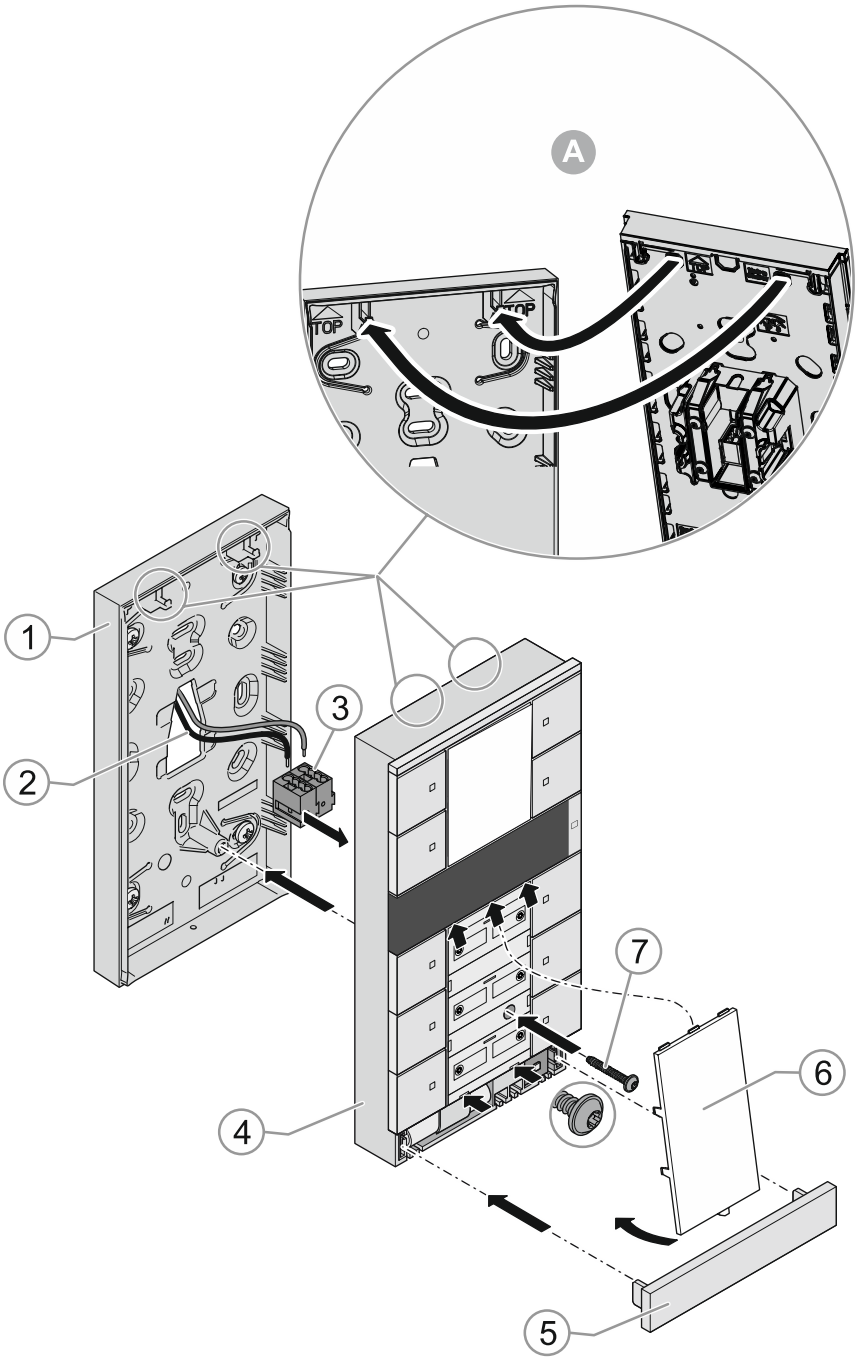


Fig. 26: Mounting control elements

6. Connect the bus cable [2] with the bus terminal [3] and plug it onto the control element [4].
7. Hang the control element [4] into the surface-mounted frame [1] from the top. Both openings for hanging must be placed onto the two hooks [A].
8. Screw the control element [4] with the enclosed screw [7] (Torx 10) onto the surface-mounted frame [1].
9. Insert the labelling inlay [6].
10. Position and snap in the end strip [5].

6.5.4 Labelling inlay

To change the label inserts, follow the steps below, depending on the model of the device.

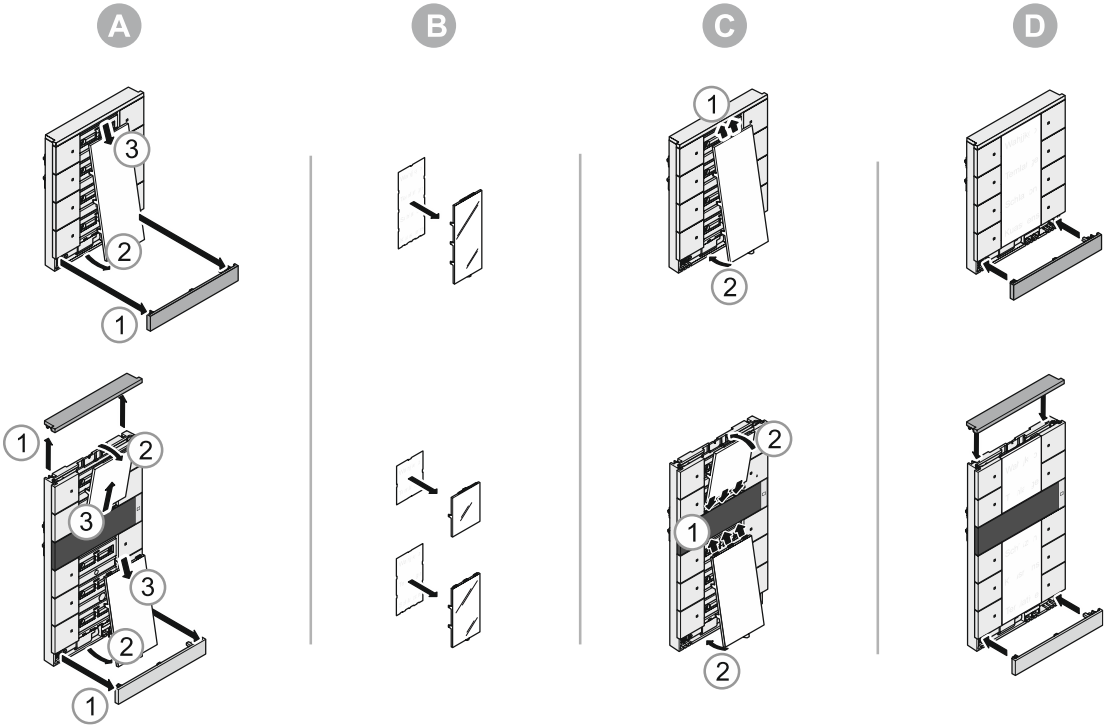


Fig. 27: Labelling inlay

7 Commissioning

7.1 Software

To start operating the device a physical address must be assigned first. The physical address is assigned and the parameters are set with the Engineering Tool Software (ETS).



Notice
The devices are products of the KNX system and meet KNX policies. Detailed expert knowledge by means of KNX training sessions for a better understanding is assumed.

7.1.1 Preparation

1. Connect a PC to the KNX bus line via the KNX interface (e.g. via the commissioning interface / commissioning adapter USB/S 1.2).
   – The Engineering Tool Software must be installed on the PC (native application from ETS 6).
2. Switch on the bus voltage.

7.1.2 Assigning a physical address

1. Remove the end strip [1]
2. Press the programming button [2].
   – All LEDs light up red.

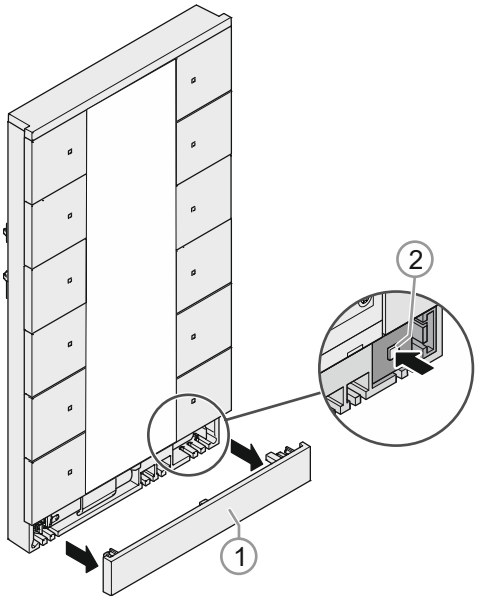


Fig. 28: Position of the programming button

7.1.3 Assigning the group address(es)

The group addresses are assigned in connection with the ETS.

7.1.4 Selecting the application program

The device applications (*.knxprod) are loaded into the devices via the ETS and make available different functions.

The applications can be downloaded via the online catalogue (www.busch-jaeger-catalogue.com) in sector "Software downloads".

Detailed description of parameters, see chapter 11 “Description of application and parameters“ on page 75.

The software (ETS) and the descriptions of the program are available in languages DE, EN, ES, FR, IT, NL, PL and RU.

7.1.5 Differentiating the application program

Various functions can be implemented via the ETS.

Detailed description of parameters, see chapter “Description of application and parameters“ on page 75 (only in languages DE, EN, ES, FR, IT and NL).

8 Updating options

A firmware update is carried out via the KNX bus by means of the ETS app "KNX Bus Update” ABB AG – BUSCH-JAEGER.

The app makes it possible to update the operating systems of the different KNX devices with changing the hardware. The latest firmware files are automatically available in the ETS app "KNX Bus Update".

The ETS can be used to check the firmware that is available in the device. The respective firmware status can be read from the device under menu item "Device info".

The app is made available free of charge in the KNX online shop. There, only licensing with the available ETS license is required.



Note
The latest firmware is available in the ETS Update app.

9 Operation

Note

- All devices with room temperature controllers are correspondingly preconfigured in the RTC section and directly access the functions of the internal RTC.
- The push-buttons of the device can be individually configured by the installer according to requirement or wishes.
- The push-buttons of your device may therefore be different from the examples listed here. The type of operation, however, is carried out in the same way.

Operation is carried out by pressing the individual push-buttons.

The function is specified via the assigned application / function and their parameter settings. Extensive functions are available for the touch contacts.

For the full range of applications, see see chapter 11 “Description of application and parameters“ on page 75.

Note

In the basic setting, the display always indicates the setpoint temperature!

9.1 Calibration of CO_2 sensors

Devices with a built-in CO_2 sensor carry out self-calibration. When the device is first commissioned, it must be connected to the KNX bus and powered for at least 2 hours. This time is required to carry out the initialisation of the CO_2 sensor. The device then begins to self-calibrate the CO_2 sensor. Calibration is complete once the CO_2 level in the outside air has reached approximately 420 ppm. The device will then carry out self-calibration repeatedly over a period of approximately 3 to 5 days.

Note

Do not disconnect the device from the bus voltage during the initial calibration. You can reduce the calibration time by repeatedly supplying the device with fresh air, for example, through an open window.

In the ETS application, the installation height of the device is specified relative to sea level; otherwise, the measured value will not be calculated and measured accurately.

9.2 Control elements

Note

- Depending on the model, push-buttons are also located above the device, and can be freely configured.
- The individual room temperature control functions can be operated either via pre-configured rocker switches by pressing the toggle button [1] to the right of the display or, if desired, via the free configuration of the individual rocker switches/buttons. For this the corresponding function is to be selected via the ETS application.

The room temperature controller is operated using the button [1] next to the display or via the button configured with this function. The functions can vary depending on the application.

The system returns to the normal operating screen automatically if no button is pressed or by pressing the button [1] next to the display again.

The following illustration shows the complete structure.

6-gang with display

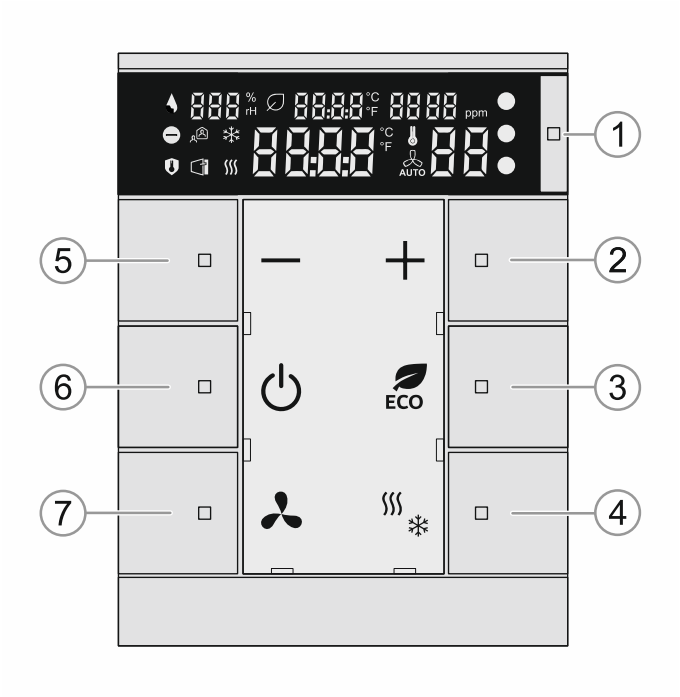


Fig. 29: Controls – example: 6-button unit with display

Note
The key layout may vary depending on the configuration and device.

[1] Shift key (activates the RTC adjustment/control level)
[2] Setpoint adjustment (increasing the temperature)
[3] Switching the operating mode to "Building Protection"
[4] The button can be freely configured, e.g. to switch between heating and cooling
[5] Setpoint adjustment (reducing the temperature)
[6] Switch the operating mode to "ECO"
[7] Fan speed levels

10-gang with display

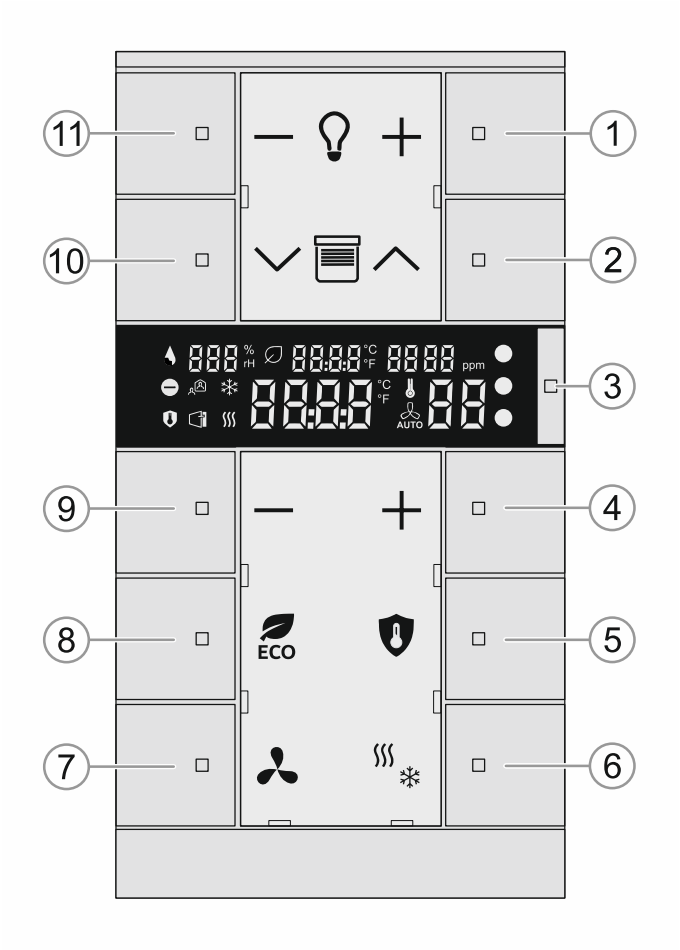


Fig. 30: Controls – example: 10-position with display

Note
The key layout may vary depending on the configuration and device.

[1] Dim light (increasing brightness)
[2] Operate blind (up)
[3] Shift key (activates the RTC adjustment/control level)
[4] Setpoint adjustment (increasing the temperature)
[5] Switching the operating mode to "Building Protection"
[6] Shift key (activates the RTC adjustment/control level)
[7] Fan speed levels
[8] Changing the operating mode to "ECO"
[9] Setpoint adjustment (reducing the temperature)
[10] Operate blind (down)
[11] Dim light (reducing brightness)

9.3 Colour concept

The KNX functions are supported by an LED colour concept.

Colour	Meaning
Yellow	Lights
Blue	Blind control
Orange	Room temperature control
Magenta	Light scenes
White	Neutral / no assignment of functions
Red/green	Standard illumination

Table 4: LED colour concept



Notice
The operating buttons serve as status and function illumination.

9.4 Operating modes

The devices with RTC have the following operating modes:

Display	Operating mode
	**Comfort mode** Application: – You are in the room for a longer period of time; the comfort temperature is to be reached. Behaviour of the RTC: – The display indicates the set-value temperature that has been set. The controller aims at this temperature.
	**ECO mode** Application: – You are leaving the room for a few hours; the room temperature is to be reduced to save energy. However, the room should not cool down completely. Behaviour of the RTC: – The display shows the icon for "ECO". The temperature is reduced by the pre-programmed value. The fan speed levels can be limited according to the parameter setting.
	**Frost/heat protection** Application: – The function switches on automatically when a window contact has been connected and the window is being opened. Behaviour of the RTC: – The display indicates the icon for frost/heat protection. The heating valves close. If the room temperature drops below 7°C, the heating or cooling is switched on again to prevent damage to the building.
 	**Heating/cooling switchover** Application: – The device is suitable for both heating and cooling mode. Switching between the two operating modes is carried out either via a binary input configured as a heating/cooling selector switch or by pressing the button [4]. Behaviour of the RTC: – The unit operates in either heating or cooling mode and indicates this status with the relevant symbol. The settings for the respective operating mode are available. The heating unit, e.g. a heat pump, switches into cooling mode. All RTCs in the building receive information via the KNX bus and switch from heating mode into cooling mode. The display shows the icon for cooling. The settings for cooling mode are available.
	**Fan operation** Application: – You want to change the automatically selected fan speed level and set the desired fan speed level manually on the device. The control of the temperature in the room continues to be active. Behaviour of the RTC: – The display indicates the set fan speed level and "Auto". The room is heated or cooled by a 3-level fan coil; for example, 3, 5 or 10 levels can be configured. The fan sets the necessary fan speed level automatically in dependence of the control.

Table 5: Operating modes

9.5 Display overview

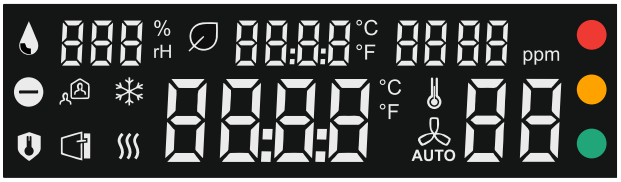


Fig. 31: Display

Display	Function	Action of the device
	Controller switched on / display of set-point temperature	
	Display of the actual temperature	
	Comfort mode	Heating/cooling is at the normal level. – The icon is active only when "Override comfort operating mode" has been activated via the corresponding communication object.
	Standby mode	The heating/cooling output is slightly lowered. – The icon is active only when standby mode has been activated via object "Operating mode" or "Override operating mode" has been activated.
	Dew point mode	The room temperature is not lowered any further.
	Frost protection mode	The temperature is kept above a minimum value.
	ECO mode	The heating/cooling output is extremely lowered.
/	Heating/cooling changeover	Manual switchover.
1 3	Fan speed levels 1-3 (5)	Ventilation is controlled manually.
Auto	Automatic fan speed levels	Ventilation is controlled automatically.
965 ppm	Display CO_2 value	Further actions are carried out depending on the parameter settings.
52% rf	Display of humidity value	
	Local operation is blocked	In frost/heat protection mode, dew point mode and condensate mode, local operation is disabled. The disabled function is also indicated by the corresponding disabled icon on the display. The operating mode must first be deactivated.
	RTC level	The icon is active when the user is on the second level of the interface. The function is activated using the control button to the right of the display.
	Time	The time can be displayed via a communication object.

Display	Function	Action of the device
	Air quality/CO_2- measurement	Display showing the air quality and CO_2reading. Green: No further action is required Yellow: Check and improve ventilation (e.g. increase the outdoor air flow rate or air change rate) Red: further measures required (e.g. increased ventilation, reducing the number of people in the room)

Table6: Icons on the display

9.5.1 Adjust temperature

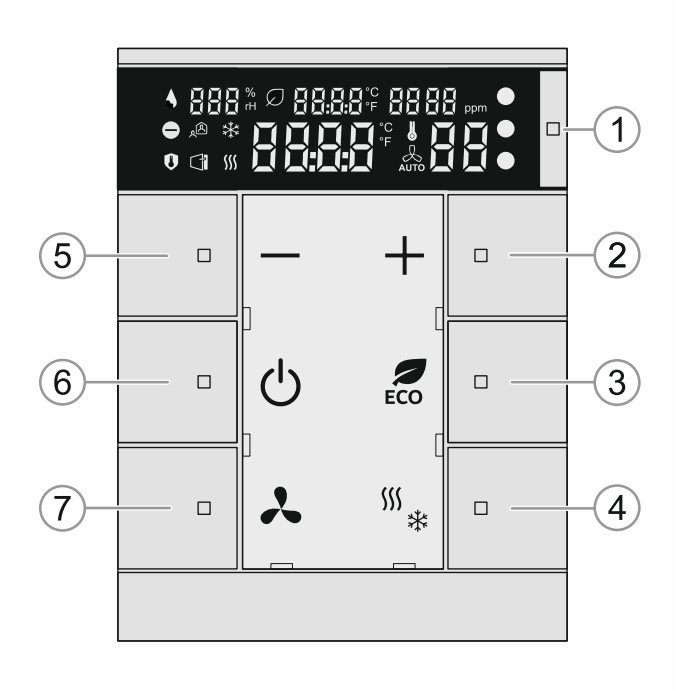
Note

– The set-point temperature appears automatically on the display. The device must be switched on for this to happen.
– The following illustration shows an example of a configuration.
– The function can be individually parameterised on one of the button pairs.

Note

There are two ways to set the temperature on the device:

[A] By pressing the button [1] to the right of the display. The device switches to controller adjustment. This is indicated by a flashing display and a temperature icon. Press the button [7] to select the desired temperature. The temperature is selected by pressing the button several times. The selected temperature is shown on the display. If the button is not pressed again, the temperature shown will be accepted.



The setpoint temperature is adjusted with the buttons [2] and [6]. The current setpoint temperature appears automatically on the display.

– Press button [2] to increase the setpoint temperature.
– Press button [6] to reduce the setpoint temperature.

The new setpoint temperature is displayed.

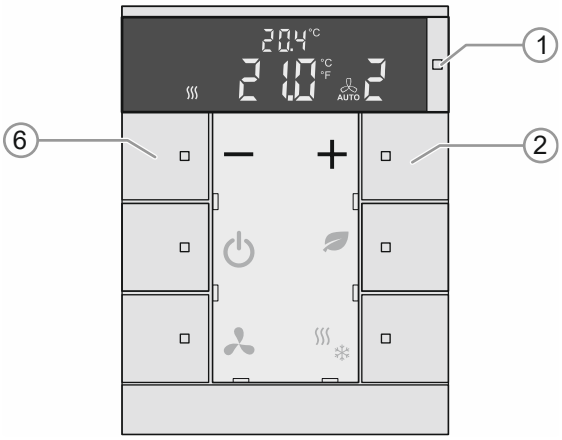


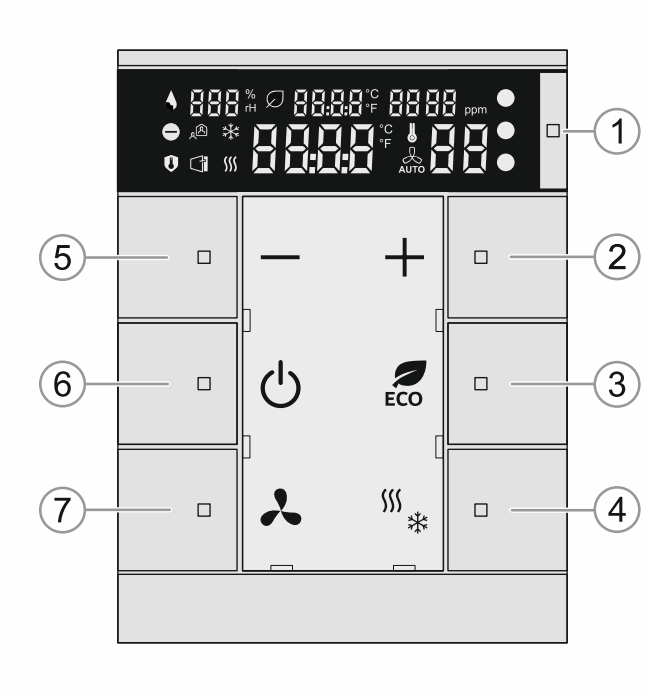
Fig. 32: Setting the temperature

9.5.2 Adjusting the fan speed levels

Note

There are two ways to adjust the fan speed on the device:

[A] By pressing the button [1] to the right of the display. The device switches to controller adjustment. This is indicated by a flashing display and a temperature icon. Press the button [7] to select the desired fan speed. The fan speed is selected by pressing the button repeatedly (e.g. 0-1-2-3-AUTO-0-1, etc.). The selected fan speed is shown on the display. If the button is not pressed again, the temperature shown will be accepted.



The following illustration shows an example of a configuration. The function can be individually parameterised on one of the buttons.

1. Press the menu button [1] to switch to the second level of operation.
2. Press button [7] to set the desired fan speed level.

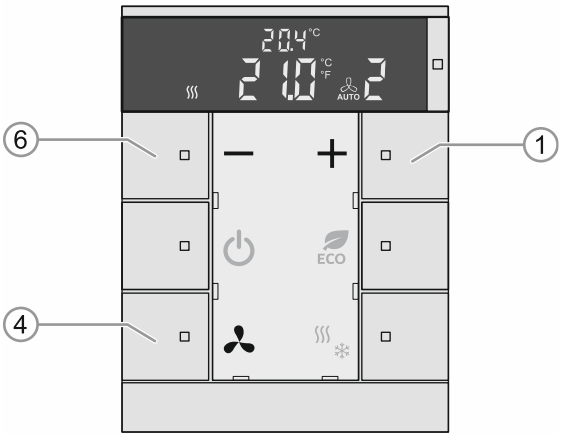


Fig. 33: Example of configuration

"Fan speed levels" function

3. Alternatively, you can control the fan speed internally using a 2-button function using button [2] or [5].

5 speed levels are available to select for the manual fan setting.

– The set fan speed level is adopted when a timeout happens after nothing has been pressed for a certain period of time, or if button [4] is pressed again.
– The manually set fan speed level is shown in the setpoint on the display at the bottom right.
– The fan speed level that is set is stored automatically.

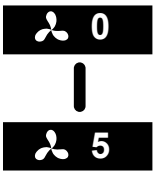


Fig. 34: "Fan speed levels" function

If "AUTO" is selected, the device control system will take on the task of determining the fan speed level.



Fig. 35: Fan speed "AUTO"

Note
The function of the fan speed levels can be parameterised.
This function is inactive if parameter "Fan coil" has not been parameterised (siehe Kapitel Applikation RTR).

9.5.3 Operating mode selection

Note

There are two ways to set the temperature on the device:

[A] By pressing the button [1] to the right of the display. The device switches to controller adjustment. This is indicated by a flashing display and a temperature icon. Press the button [2] to select the desired temperature. The temperature is selected by pressing the button several times. The selected temperature is shown on the display. If the button is not pressed again, the temperature shown will be accepted.

The ECO and Standby operating modes are used to automatically lower the room temperature and, if configured, to reduce the fan speed. As a result, less energy is consumed when the occupants are absent, for example.

The following illustration shows an example of a configuration. The function can be individually parameterised on one of the buttons.

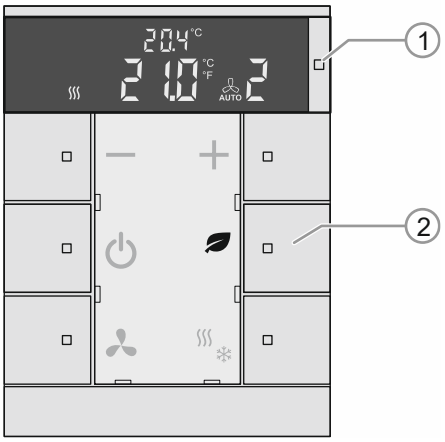


Fig. 36: ECO mode button

Activating ECO mode

1. Press the button [2].
   – The device switches to ECO mode.

Deactivating ECO mode

2. Press the button [2] again.
   – The device switches back to standard operation.

Note

The operating modes are configured via the ETS. The default setting of the operating modes cannot be changed via the setpoint adjustment, buttons [1] and [6].

9.6 RESET (Resetting the device)

Master reset

1. Disconnect the device from the bus (Busch-Installationsbus® KNX).
2. After 5 seconds, press and hold the programming button.
3. Connect the device to the bus (Busch-Installationsbus® KNX).
   – The programming LED flashes at 1 Hz.
4. Release the programming button as soon as the programming LED starts flashing at 5 Hz.
   – The device is performing a master reset. The programming LED is off.
   – Settings and the physical address will be reset to factory defaults.
   – The application program is removed.
   – The firmware version remains unchanged.
   – The Tool Key issued by ETS is reset.

The device certificate is required for recommissioning, unless it is still available in the ETS project from the original commissioning.

10 Maintenance

10.1 Cleaning



Caution! - Risk of damaging the device!

- When spraying on cleaning agents, these can enter the device through crevices.
  - Do not spray cleaning agents directly onto the device.
- Aggressive cleaning agents can damage the surface of the device.
  - Never use caustic agents, abrasive agents or solvents.

Clean dirty devices with a soft dry cloth.

– If this is insufficient, the cloth can be moistened slightly with a soap solution.

11 Description of application and parameters

11.1 Configuration

This section is used to define how the device is to be operated. Furthermore, up to 5 logic functions can be activated as an option.

The parameters for the configuration can be selected in column"Application" and fitted with an explanation in column "Description".

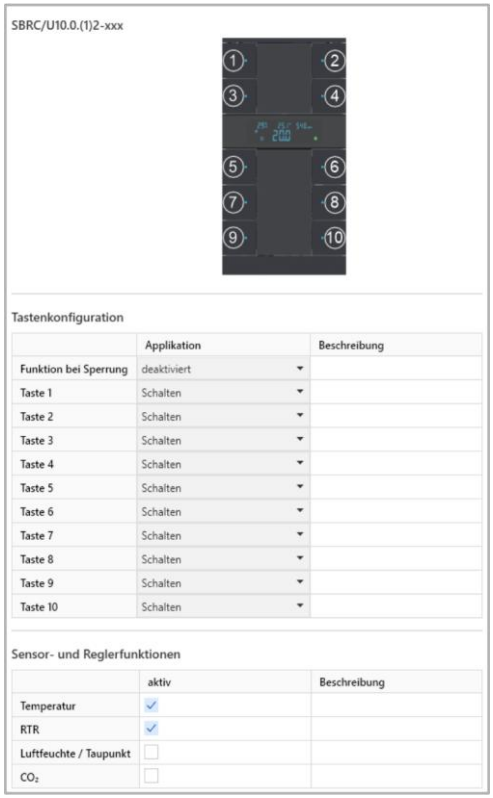


Fig. 37: Configuration

- Function when locked

Options:	<u>Deactivated</u>
	Switching
	Scenes
	Sending the value

If the application is activated, the operating area can be disabled temporarily via the 1- bit communication object "Disable operating area".

When the lock is activated, pressing any key will trigger the function configured for that key whilst the lock is active. If no function is configured for the lock state, the device will not respond to user input and no telegrams will be sent to the KNX bus via the device"s communication objects.

The configurable lock functions can be found under Chapter 11.3 ""Function when locked" application“ on page 90.



Note
The function is only executed when the device is locked.



Note
The following button and rocker switch functions can be selected under "Switch functions" > "Application". The availability of the operating areas depends on the selected layout.

- Control zones 1/2, 3/4, 5/6, 7/8, 9/10 and 11/12 (available depending on product type)

Options:	Switching
	Switching (2-buttons)
	Blinds/roller blinds
	Blinds / roller blinds (2-buttons)
	Switching/dimming
	Switching/dimming (2-buttons)
	Switching sequence
	Switching sequence (2-buttons)
	Scenes
	Send value/multiple actuation
	Internal RTC function
	Internal RTC function (2-button)
	Deactivated

The control areas can be configured via the "Key Configuration" section. The parameter is used to specify the function or stored application of the respectively combined operating areas.

- Room temperature controller (available depending on product type)

This function is enabled by default on all units with a built-in room temperature controller. The settings are configured under the "RTR" menu item in the application. You will find a detailed description in Chapter 11.8 “Application "RTC"“ on page 218 in this manual.

- Sensor and control functions (available depending on product type)

Options:	Deactivated
	Temperature
	RTC
	Humidity / Dew point
	CO_2

This parameter is used to activate the relevant sensor. When the temperature sensor is activated, an additional parameter "Sensor" is available.

- Additional functions 1, 2, 3, 4 and 5

Options:	Deactivated
	Telegram cyclical
	Priority
	Logic functions
	Gate
	Staircase lighting
	Delay
	Min/Max
	Scene actuator
	Sequence

The parameter is used to specify the stored function or application of the respective channel 1 - 5. The parameter setting is made in the respective parameter window.

11.2 Application "Device settings"

11.2.1 General

This chapter explains how to configure the basic functions of the device. These functions take precedence over the operating functions and apply to the entire unit.

11.2.2 Enabling the communication object "In operation"

Options:	No
	Yes, send value 0 cyclic
	Yes, send value 1 cyclic

- No:
  - The communication object is not enabled.
- Yes, send value 0 cyclic
  - The communication object *In operation* is sent to the KNX bus cyclic with value 0.
- Yes, send value 1 cyclic
  - The communication object *In operation* is sent to the KNX bus cyclic with value 1.

The communication object *In operation* reports the presence of the device to the KNX bus. This cyclical telegram can be monitored with an external device. If no telegram is received, the device may be defective or the KNX line to the sending device may have been interrupted.

11.2.2.1 Sending cycle

Options:	Setting option: 00:00:01 ... 00:10:00 ... 18:12:15 hh:mm:ss



Note
This parameter is only available if the parameter enable "Communication object "In operation" is set on "Yes, send value 0 cyclic" or "Yes, send value 1 cyclic"

Here the time interval is set with which the communication object *In operation* sends a cyclical telegram.

11.2.3 Display

The display has two display levels and a capacitive switch button. Users have a range of options for customising their settings.



Note

The sensor readings for temperature, $CO_2$and humidity can be shown on the display regardless of whether the sensors are activated.

The sensor readings for CO_2 and humidity are only shown in full on the display if the relevant sensors have been activated.

11.2.3.1 Top left (D1)

Options:	Deactivated
	Humidity (internal)
	Humidity (communication object)
	Percent (communication object)

This parameter allows a value to be displayed in the top left half of the display. If the user selects the "Humidity" parameter, the value measured or calculated by the device is displayed in rH.

If you wish to display the relative humidity reading from another device in the room, select the "Relative humidity (communication object)" parameter. This involves the relevant communication object "Display top left: Humidity" has been made available.

If a percentage value is to be displayed, select the "Percentage (object)" parameter. The corresponding communication object "Display top left: Percent" is provided.

If the "Disabled" option is selected, the display is hidden.

11.2.3.2 Top centre (D2)

Options:	Deactivated
	Time (communication object)
	Temperature (RTC)
	Temperature (communication object)
	Setpoint temp

This parameter allows a value to be displayed in the upper central half of the display.

Via the "Time (communication object)" parameter, the displayed communication object shows the time transmitted via the KNX bus.

If the "Temperature (RTR)" parameter is selected, the actual temperature measured internally by the device is shown on the display in °C.

If you wish to display a different temperature reading from another device in the room, select the "Temperature (communication object)" parameter. This involves the relevant communication object "Display top centre: Temperature" is provided.

If you wish to display the setpoint of the room temperature controller, select the "Setpoint temperature" parameter. The value is provided by the internal controller. If manual operation has been configured, this circumstance is displayed accordingly.

If the "Disabled" option is selected, the display is hidden.

11.2.3.3 Top right (D3)

Options:	Deactivated
	CO_2 value (internal)
	CO_2 value (communication object)

This parameter can be used to display a value in the top right half of the display.

If the user selects the "CO_2 value (internal)" parameter, the value measured or calculated by the device is displayed in ppm.

If you wish to display the CO_2 reading from another device in the room, select the "CO_2 reading (communication object)" parameter. This involves the relevant communication object "Display top right: CO2" has been made available.

If the "Disabled" option is selected, the display is hidden.

11.2.3.4 Bottom centre (D6)

The indicator is located in the centre of the bottom row of the display.

Options:	Deactivated
	Time (communication object)
	Temperature (RTC)
	Temperature (communication object)
	Setpoint temp

This parameter can be used to display a value in the upper central half of the display.

The "Time (communication object)" parameter displays the time transmitted via the KNX bus via the communication object that appears on screen.

When selected via the "Temperature" parameter, the actual temperature measured internally by the device is shown on the display in °C.

If you wish to display the temperature reading from another device in the room, select the "Temperature (communication object)" parameter. In this process, the relevant communication object "Display: Temperature" is provided.

To display the setpoint of the room temperature controller, select the "Setpoint temperature" parameter. The value is provided by the internal controller. If manual operation has been configured, this circumstance is displayed accordingly.

If the "Disabled" option is selected, the display is hidden.

11.2.3.5 Fan coil info (D7)

Options:	Active
	Inactive

This parameter allows you to disable the fan coil display on the screen. This would mean that no fan coil information would be displayed any more. However, the fan coil controller in the unit remains active.

11.2.3.6 Traffic light symbol (D4)

The display has the option of showing a CO_2 reading using a traffic light display. The traffic-light system allows users to quickly identify the air quality by the corresponding colour. The traffic light display can also be used to show other information by selecting the relevant parameter, e.g. as a level indicator.

Options:	Deactivated
	CO2 level (internal)
	CO2 value (communication object)
	Temperature (communication object)
	Percent (communication object)

This parameter allows you to display a CO_2 value, a temperature or a percentage value using the traffic light display.

- CO2 value (internal) or CO2 value (communication object):
  - This parameter can be used to display a CO_2 value, temperature or percentage value using the traffic light display. Depending on the selected measured variable, the threshold values must be set in the appropriate unit. For the options "CO_2 value (internal)" and "CO_2 value (communication object)", the threshold values are specified in ppm, the temperature in °C and the percentage value in the range from 0 to 100 %. The "Green/yellow threshold" parameter defines the threshold value for the display to change from green to yellow, whilst the "Yellow/red threshold" parameter defines the threshold value for the display to change from yellow to red.
- Temperature (communication object):
  - A temperature threshold can be displayed using the traffic light indicator. This can be used, for example, to monitor the temperature in a room. If the temperature is below 24°C, this circumstance is indicated by a green light. If the temperature exceeds 24°C, the traffic light indicator turns yellow, signalling an elevated temperature. If the temperature exceeds 30°C, the traffic light indicator turns red (temperature too high), which requires action to be taken, e.g. switching on the air conditioning.
- Percent (communication object):
  - A percentage threshold is displayed via the traffic light indicator. This can be used, for example, to monitor the level in a cistern. If the indicator is green at around 66 %, the fill level is correct. If the fill level falls below 66 %, this is indicated in yellow. If the indicator turns red when the level falls below 33 %, you must, for example, top up with fresh water or switch off a pump.

Yellow/red threshold

Options:	400 - 2000 - 3000

This parameter is used to set the threshold value for switching the traffic light from amber to red.

When the threshold value is exceeded, the yellow indicator switches off and the red indicator switches on. If the level falls below this point, the red indicator switches off and the yellow indicator switches on. The threshold value depends on the parameterised traffic light symbol value. For CO_2, the value is entered in ppm; for temperature, in °C or in percentage increments from 0 to 100 %.

Green/yellow threshold

Options:	400 - 1000 - 3000

This parameter is used to set the threshold value for switching the traffic light from green to amber.

When the limit is exceeded, the green indicator switches off and the yellow indicator switches on. If the level falls below this, the yellow indicator switches off and the green indicator switches on. The threshold value depends on the parameterised traffic light symbol value. CO_2 is entered in ppm, whilst temperature is entered in °C or as a percentage between 0 and 100 %.

11.2.3.7 RTC local operation (2. Operating level) (D5)

The display has a capacitive touch panel on the right side. The toggle function can be enabled or disabled using the parameter.

Options:	Active
	Inactive

Pressing this button takes the user to the RTC control level, which is indicated by the entire display area flashing. The system will automatically return to the main control screen after approximately 10 seconds or when the capacitive control panel is touched again.

For each rocker switch/button in the RTC on-site control system, there are several functions to choose from:

Rocker switch 1	Deactivated
	Setpoint adjustment
	ECO / Building Protection
	Fan coil settings / Switching
Rocker switch 2	Deactivated
	Setpoint adjustment
	ECO / Building Protection
	Fan coil settings / Switching
Rocker switch 3	Deactivated
	Setpoint adjustment
	ECO / Building Protection
	Fan coil settings / Switching

- Setpoint adjustment
  - This setting is used to adjust the setpoint temperature of the room temperature controller. The left side of the rocker arm is used to decrease the setpoint, whilst the right side is used to increase it. The setting is shown directly on the display.
- ECO / Building protection:
  - Below this function, the left side of the rocker switch is used to switch the operating mode between ECO and Comfort, whilst the right side is used to switch between Building Protection and Comfort. The setting is shown directly on the display.
- Fan coil settings / switching:
  - The left rocker switch is used to adjust the fan coil settings, provided this has been configured in the RTC. The fan coil stages are switched by pressing the button repeatedly. On the right side, there is an additional 1-bit object available for free allocation.

11.2.4 Customisable LED colour settings

11.2.4.1 User colour 1 - 4

Options:	#000000 - #FFFFFF

The values can be set as follows via the button on the right of the text field:

- Continuously adjustable in a colour picker
- Via a shift register in the RGB colour range
- Via a shift register in the RGB HSV colour range

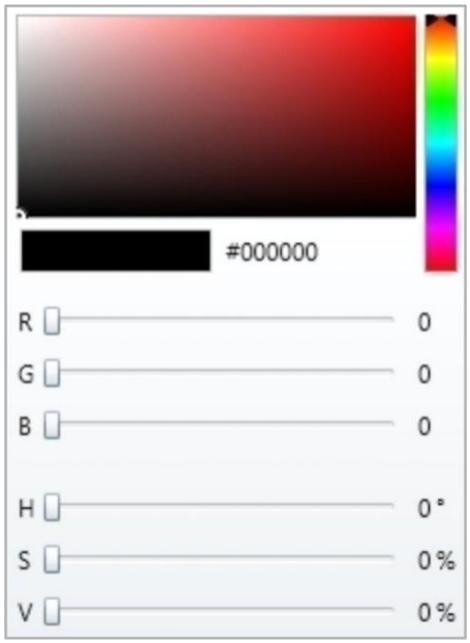


Fig. 38: Custom colour

11.2.5 Display brightness and LED

11.2.5.1 Enable day/night switching

Options:	Deactivated
	Activated

The parameter is used to specify whether the brightness of the LED and the display can be switched over between day and night mode. When parameter "Activate day/night mode switchover" is activated, additional parameters are available.

When a telegram with the value "0" (day) is received via the device, the LED lights up brightly. If a telegram is received with value "1" (Night), the LED lights up dark.

The LED of the button can light up with two different brightness levels. The parameter is used to specify whether the LED can be switched over between bright and dark.

Example: The button is assigned with the application "1-button switching" and connected with a switching actuator that switches a lamp group. The LED of the button is set to status lighting and displays a single colour. If, in addition, the LED object: If day/night mode is linked to the feedback object of the switching actuator via a group address or action, and the light is switched on, the LED shines brightly.

11.2.5.2 Brightness, day

Options:	Off
	10%
	20%
	30%
	40%
	50%
	60%
	70%
	80%
	90%
	100%

The parameter is used to specify the brightness level used for the LED and the display in daytime operation.

11.2.5.3 Brightness, Night

Options:	Off
	10%
	20%
	30%
	40%
	50%
	60%
	70%
	80%
	90%
	100%

The parameter is used to specify the brightness level used for the LED in night-time operation.

11.2.6 Absence notification

11.2.6.1 Share absence notification

Options:	Deactivated
	Activated

This parameter determines whether a different, customised display should be shown when the device is not in use. If you wish to switch the display off completely, you must deselect all the tick boxes.

11.2.6.2 Enable display/LED via

Options:	Local operation
	Communication object and local operation

This parameter defines how the absence notification can be activated.

- Local operation:
  - The away mode is exited as soon as any button – including the capacitive button on the display – is pressed manually.
- Communication object and local operation:
  - In addition to the method described in the first point, activation can also be carried out via an activated communication object.

11.2.6.3 Disable display/LED after

Options:	00:00:01 ... 00:00:05 - 18:12:15 hh:mm:ss

This parameter is used to set the return time following manual operation.

The following parameters can be used to configure the display settings for the absence function.

11.2.6.4 Show top row

Options:	Deactivated
	Activated

When this parameter is enabled, the entire top row is displayed.

11.2.6.5 Show main value

Options:	Deactivated
	Activated

When this parameter is enabled, the medium-sized display appears on the bottom line of the screen.

11.2.6.6 View fan coil information

Options:	Deactivated
	Activated

When this parameter is enabled, the large display on the right side of the bottom row of the screen, which shows fan coil status information, is displayed.

11.2.6.7 Show traffic light symbol

Options:	Deactivated
	Activated

When this parameter is enabled, the traffic light indicator appears on the right side of the display.

LED indicators for the buttons/toggle switches

The individual status LEDs can be included in the away function.

11.2.6.8 LED colour

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

This parameter is used to specify the colour of the status LEDs for the away function.

11.2.7 Alarm

The device has an alarm function. If configured, all status LEDs will flash. If you wish only specific status LEDs to indicate the alarm, this function can be deactivated for the button in each LED application.

11.2.7.1 Enable alarm function

Options:	Deactivated
	Activated

This parameter is used to specify whether the device should indicate an alarm by flashing.

11.2.7.2 LED colour

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

This parameter is used to specify the colour of the status LEDs of the alarm function.

11.2.7.3 LED brightness

Options:	Use of LED brightness settings
	10%
	20%
	30%
	40%
	50%
	60%
	70%
	80%
	90%
	100%

This parameter is used to specify which brightness level should be used for the status LEDs of the alarm function.

11.3 "Function when locked" application

This parameter window is used to configure settings relevant to the function when disabled (Chapter 11.3 “"Function when locked" application“ on page 90).

The device, or its individual buttons, can be disabled via the relevant disable object.

The displayed parameters for the disable function depend on the application selected under "Configuration". The disable function overrides the configured operating functions and is only executed or taken into account if the respective rocker switches or buttons are disabled.

Disabling the entire device

If the entire device is disabled, no further telegrams are sent to the KNX bus when the device is activated. In addition, a function can be programmed for when the device is disabled, which is executed when any of the rocker switches is pressed.

The function is set on the app when the device is locked. This is the first function to be executed when the device is disabled and the user presses button 1 or 2. The function should be a typical user function performed upon entering a room (e.g. "switch on the ceiling light"). When the application is active, a switching telegram is sent when the button is pressed or released.

If no function is configured for the lock state, the device will not respond to button actuations and no telegrams will be sent to the KNX bus through the device communication objects.

Example: When cleaning a room, only the basic lighting should be switched on. All stored functions are disabled when the device is disabled. Each individual rocker switch triggers the pre-programmed "Cleaning" scene, which switches on the ceiling lights and raises the blinds.

Disabling individual buttons

Individual buttons can also be disabled. To do so, the relevant parameter must be enabled in the respective button application. This allows individual buttons to be specifically disabled for operation, for example by a weekly timer.

11.3.1 Switching

With the application "Switching", a switching telegram is sent when the rocker is actuated and/or released. In each case, the application makes a separate set of parameters and communication objects available for the surface of the rocker.

11.3.1.1 Differentiation between short and long actuation

Options:	Deactivated
	Activated

The parameter is used to specify whether the type of actuation (long/short) is different.

11.3.1.2 Reaction at actuation

Options:	Off
	On
	□Switchover
	No reaction

The parameter is used to specify the reaction to the touch of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is inactive.

11.3.1.3 Reaction during release

Options:	Off
	On
	□Switchover
	No reaction

The parameter is used to specify the reaction to the touch of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is inactive.

11.3.1.4 Reaction on short operation

Options:	Off
	On
	□Switchover
	No reaction

The parameter is used to specify the reaction at a short actuation of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.3.1.5 Reaction at long actuation

Options:	Off
	On
	Switchover
	No reaction

The parameter is used to specify the reaction at a long actuation of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.3.1.6 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter. When parameter "Extended settings" is activated, additional parameters are available.

11.3.1.7 Long actuation from

Options:	00.3 … 00.4 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.3.1.8 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.3.1.9 Status after ETS download or KNX bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable input" is not deactivated.

11.3.2 Scenes

Via the application "Scenes", a predefined scene number is called up when the button is actuated.

In each case, the application "Scenes" makes a separate set of parameters and communication objects available for the right or left side of the rocker.

The application facilitates calling up a scene via a rocker side while the other rocker side can be assigned an additional "button orientated" function.

The user has the option to trigger a scene memory command with a long actuation of the button or an additional scene with a different scene number.

11.3.2.1 Differentiation between short and long actuation

Options:	Deactivated
	Activated

The parameter is used to specify whether the short or long actuation is different.

11.3.2.2 At short actuation: Scene number

Options:	Setting option: 1 - 64

The parameter is used to specify the scene that is carried out at a short actuation.

The parameter can only be set when parameter "Differentiation between short and long actuation" is active.

11.3.2.3 Reaction at long actuation

Options:	Save scene
	Call up further scene

The parameter is used to specify the function that is carried out at a long actuation.

The parameter can only be set when parameter "Differentiation between short and long actuation" is active.

11.3.2.4 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

When parameter "Extended settings" is activated, additional parameters are available.

11.3.2.5 Long actuation from

Options:	00.3 … 03.0 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.3.2.6 Disable control panel

Options:	Deactivated
	Value 0
	Value 1

The parameter is used to specify the value at which the operating area is disabled.

11.3.2.7 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable input" is not deactivated.

11.3.3 Send value/multiple actuation

In parameter value x send it is specified at which edge (rising or falling edge) or which actuation (short actuation, long actuation or multiple actuation) a telegram is sent.

Depending on the event, up to four values can be sent via separate communication objects. In the following parameters DPT (Data Point Type) and telegram value of the communication objects are specified.

- Value x DPT
- Value x Value

11.3.3.1 Send value at

Options:	Single operation
	Short/long actuation
	Multiple actuation

The parameter is used to specify the condition under which the value is sent.

11.3.3.2 Send value at opening/closing the contact

The parameter can only be set when parameter "Send value at" is set on "Opening/closing the contact".

The following parameters Value 1 / value 2 are used to specify when the value is sent and which value is assigned to the respective data point.

- Value 1 / Value 2 – 1.001 Switching

	Send at	DPT	Value
Value 1	Close	1.001 Switching	On Off □Switchover
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	1.001 Switching	On Off □Switchover
Value 2	No reaction		On Off □Switchover

	Send at	DPT	Value
Value 1	Open	1.001 Switching	On Off □Switchover
Value 2	Close		On Off □Switchover

	Send at	DPT	Value
Value 1	Open	1.001 Switching	On Off □Switchover
Value 2	No reaction		

- Value 1 / Value 2 – 2.001 Prio. Switching

	Send at	DPT	Value
Value 1	Close	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	Open	-	No forced operation Forced operation, value 0 Forced operation, value 1

	Send at	DPT	Value
Value 1	Open	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	Close	-	No forced operation Forced operation, value 0 Forced operation, value 1

	Send at	DPT	Value
Value 1	□Switchover	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	□Switchover	-	No forced operation Forced operation, value 0 Forced operation, value 1

- Value 1 / Value 2 – 5.001 %

	Send at	DPT	Value
Value 1	Close	5.001 Percent (0..100%)	0 ... 100%
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	5.001 Percent (0..100%)	0 ... 100%
Value 2	No reaction	-	0 ... 100%

	Send at	DPT	Value
Value 1	Open	5.001 Percent (0..100%)	0 ... 100%
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	5.001 Percent (0..100%)	0 ... 100%
Value 2	Close	-	0 ... 100%

	Send at	DPT	Value
Value 1	□Switchover	5.001 Percent (0..100%)	0 ... 100%
Value 2	□Switchover	-	0 ... 100%

- Value 1 / Value 2 – 5.010 Counting pulses (0–255)

	Send at	DPT	Value
Value 1	Close	5.010 Counting pulses	0 ... 255
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	5.010 Counting pulses	0 ... 255
Value 2	Open	-	0 ... 255

	Send at	DPT	Value
Value 1	Open	5.010 Counting pulses	0 ... 255
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	5.010 Counting pulses	0 ... 255
Value 2	Close	-	0 ... 255

	Send at	DPT	Value
Value 1	Switch over	5.010 Counting pulses	0 ... 255
Value 2	□Switchover	-	0 ... 255

- Value 1 / Value 2 – 6.010 Counting pulses

	Send at	DPT	Value
Value 1	Close	6.010 Counting pulses	-128 - 0 ... 127
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	6.010 Counting pulses	-128 - 0 ... 127
Value 2	Open	-	-128 - 0 ... 127

	Send at	DPT	Value
Value 1	Open	6.010 Counting pulses	-128 - 0 ... 127
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	6.010 Counting pulses	-128 - 0 ... 127
Value 2	Close	-	-128 - 0 ... 127

	Send at	DPT	Value
Value 1	□Switchover	6.010 Counting pulses	-128 - 0 ... 127
Value 2	□Switchover	-	-128 - 0 ... 127

- Value 1 / Value 2 – 7.001 Pulses

	Send at	DPT	Value
Value 1	Close	7.001 Pulses	0 - 65535
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	7.001 Pulses	0 - 65535
Value 2	Open	-	0 - 65535

	Send at	DPT	Value
Value 1	Open	7.001 Pulses	0 - 65535
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	7.001 Pulses	0 - 65535
Value 2	Close	-	0 - 65535

	Send at	DPT	Value
Value 1	□Switchover	7.001 Pulses	0 - 65535
Value 2	□Switchover	-	0 - 65535

- Value 1 / Value 2 – 8.001 Pulse difference

	Send at	DPT	Value
Value 1	Close	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	Open	-	-32768 - 0 - 32767

	Send at	DPT	Value
Value 1	Open	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	Close	-	-32768 - 0 - 32767

	Send at	DPT	Value
Value 1	□Switchover	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	□Switchover	-	-32768 - 0 - 32767

- Value 1 / Value 2 – 12.001 Counting pulses (unsigned)

	Send at	DPT	Value
Value 1	Close	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	Open	-	0 - 4294967295

	Send at	DPT	Value
Value 1	Open	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	Close	-	0 - 4294967295

	Send at	DPT	Value
Value 1	□Switchover	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	□Switchover	-	0 - 4294967295

- Value 1 / Value 2 – 9.001 Temperature (°C)

	Send at	DPT	Value
Value 1	Close	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	Open	-	-100 - 20 - 250°C

	Send at	DPT	Value
Value 1	Open	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	Close	-	-100 - 20 - 250°C

	Send at	DPT	Value
Value 1	□Switchover	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	□Switchover	-	-100 - 20 - 250°C

- Value 1 / Value 2 – 9:004 Lux (Lux)

	Send at	DPT	Value
Value 1	Close	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	Open	-	0 - 400 - 670433 lux

	Send at	DPT	Value
Value 1	Open	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	Close	-	0 - 400 - 670433 lux

	Send at	DPT	Value
Value 1	□Switchover	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	□Switchover	-	0 - 400 - 670433 lux

- Value 1 / Value 2 – 232,600 RGB Value 2 × (0–255)

	Send at	DPT	Value
Value 1	Close	232.600 RGB value 2x (0 - 255)	#000000 ... #FFFFFF
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	232.600 RGB value 2x (0 - 255)	#000000 ... #FFFFFF
Value 2	Open	-	#000000 ... #FFFFFF

	Send at	DPT	Value
Value 1	Open	232.600 RGB value 2x (0 - 255)	#000000 ... #FFFFFF
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	232.600 RGB value 2x (0 - 255)	#000000 ... #FFFFFF
Value 2	Close	-	#000000 ... #FFFFFF

	Send at	DPT	Value
Value 1	□Switchover	232.600 RGB value 2x (0 - 255)	#000000 ... #FFFFFF
Value 2	□Switchover	-	#000000 ... #FFFFFF

- Value 1 / Value 2 – 20.102 HVAC mode

	Send at	DPT	Value
Value 1	Close	20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
Value 2	Open	-	Automatic mode Comfort Standby Economy Building protection

	Send at	DPT	Value
Value 1	Open	20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
Value 2	Close	-	Automatic mode Comfort Standby Economy Building protection

	Send at	DPT	Value
Value 1	Switch over	20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
Value 2	□Switchover	-	Automatic mode Comfort Standby Economy Building protection

11.3.3.3 Send value at short/long actuation

The parameter can only be set when parameter "Send value at" is set on "Short/long actuation".

Via the application "Send value at short/long actuation", different values can be sent out with a short and/or long actuation of the surface.

The application "Send value at short/long actuation" does not differentiate between whether the button is actuated on the left or right side. In each case, the application makes a separate set of parameters and communication objects available for the right and left side of the button.

- Toggle value

Options:	Deactivated
	Activated

The parameter is used to specify the switchover of the respective value under value 1 and value 2.

- Value 1

The following parameter is used to specify when the value is sent and which value is assigned to the respective data point.

	Send at	DPT	Value
Value 1	Short actuation	1.001 Switching	On Off □Switchover
		2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
		5.001 Percent (0...100%)	0 - 100%
		5.010 Counting pulses (0 - 255)	0 - 255
		6.010 Counting pulses (-128 - 127)	-128 - 0 - 127
		7.001 Pulses	0 - 65535
		8.001 Pulse difference	-32768 - 0 - 32767

	Send at	DPT	Value
		12.001 Counting pulses (unsigned)	0 - 4294967295
		9.001 Temperature (°C)	-100 - 20 - 250°C
		9.004 lux (lux)	0 - 400 - 670433 lux
		232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
		20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
		Deactivated	

- Value 2

The following parameter is used to specify when the value is sent and which value is assigned to the respective data point.

	Send at	DPT	Value
Value 2	Long actuation	1.001 Switching	On Off Switchover
		2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
		5.001 Percent (0...100%)	0 - 100%
		5.010 Counting pulses (0 - 255)	0 - 255
		6.010 Counting pulses (-128 - 127)	-128 - 0 - 127
		7.001 Pulses	0 - 65535
		8.001 Pulse difference	-32768 - 0 - 32767
		12.001 Counting pulses (unsigned)	0 - 4294967295
		9.001 Temperature (°C)	-100 - 20 - 250°C
		9.004 lux (lux)	0 - 400 - 670433 lux
		232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
		20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
		Deactivated	

11.3.3.4 Multiple actuation

The parameter can only be set when parameter "Send value at" is set on "Multiple actuation".

- Maximum time between two actuations

Options:	Setting option: 00.3 … 00.5 … 10.0 ss.f

This parameter is used to specify the space of time between two actuations. Actions taken a long time apart are counted as new actions.

- Send values at every actuation

Options:	Deactivated
	Activated

The parameter is used to specify whether the value is sent at every actuation.

The following parameters Value 1 / value 2 / value 3 / value 4 are used to specify when the value is sent and which value is assigned to the respective data point.

- Value 1

	Send at	DPT	Value
Value 1	1gang actuation	1.001 Switching	On Off Switchover
		2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
		5.001 Percent (0...100%)	0 - 100%
		5.010 Counting pulses (0 - 255)	0 - 255
		6.010 Counting pulses (-128 - 127)	-128 - 0 - 127
		7.001 Pulses	0 - 65535
		8.001 Pulse difference	-32768 - 0 - 32767
		12.001 Counting pulses (unsigned)	0 - 4294967295
		9.001 Temperature (°C)	-100 - 20 - 250°C
		9.004 lux (lux)	0 - 400 - 670433 lux
		232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
		20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
		Deactivated	

- Value 2

Assigned to the relevant data point type.

	Send at	DPT	Value
Value 2	2gang actuation	1.001 Switching	On Off Switchover
		2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
		5.001 Percent (0...100%)	0 - 100%
		5.010 Counting pulses (0 - 255)	0 - 255
		6.010 Counting pulses (-128 - 127)	-128 - 0 - 127
		7.001 Pulses	0 - 65535
		8.001 Pulse difference	-32768 - 0 - 32767
		12.001 Counting pulses (unsigned)	0 - 4294967295
		9.001 Temperature (°C)	-100 - 20 - 250°C
		9.004 lux (lux)	0 - 400 - 670433 lux
		232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
		20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
		Deactivated	

- Value 3

	Send at	DPT	Value
Value 3	2gang actuation	1.001 Switching	On Off Switchover
		2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
		5.001 Percent (0...100%)	0 - 100%
		5.010 Counting pulses (0 - 255)	0 - 255
		6.010 Counting pulses (-128 - 127)	-128 - 0 - 127
		7.001 Pulses	0 - 65535
		8.001 Pulse difference	-32768 - 0 - 32767
		12.001 Counting pulses (unsigned)	0 - 4294967295
		9.001 Temperature (°C)	-100 - 20 - 250°C
		9.004 lux (lux)	0 - 400 - 670433 lux
		232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
		20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
		Deactivated	

- Value 4

	Send at	DPT	Value
Value 4	Long actuation 4gang actuation	1.001 Switching	On Off Switchover
		2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
		5.001 Percent (0...100%)	0 - 100%
		5.010 Counting pulses (0 - 255)	0 - 255
		6.010 Counting pulses (-128 - 127)	-128 - 0 - 127
		7.001 Pulses	0 - 65535
		8.001 Pulse difference	-32768 - 0 - 32767
		12.001 Counting pulses (unsigned)	0 - 4294967295
		9.001 Temperature (°C)	-100 - 20 - 250°C
		9.004 lux (lux)	0 - 400 - 670433 lux
		232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
		20.102 HVAC mode	Automatic mode Comfort Standby Economy Building protection
		Deactivated	

11.3.3.5 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.3.3.6 Long actuation from

Options:	00.3 - 00.4 ... 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when Parameter "Extended settings" has been activated.

This parameter can only be adjusted if the "Value 4" parameter is set. "Send when" is set to "Long actuation".

11.3.3.7 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

This parameter can only be set when Parameter "Extended settings" has been activated. This allows the function to be disabled separately under "Function when locked".

11.3.3.8 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable input" is not deactivated.

11.4 Application "Operating area x"

Depending on the device type, from one to ten operating areas with buttons and LED applications for up to 10 buttons are available:

- Operating area 1/2: Setting for rocker switch 1/button 1 and LED 1
- Operating area 2: Settings for button 2 and LED 2
- Operating area 3/4: Settings for the rocker switch 3/button 3 and LED 3
- Operating area 4: Settings for button 4 and LED 4
- Operating area 5/6: Settings for the rocker switch 5/button 5 and LED 5
- Operating area 6: Settings for button 6 and LED 6
- Operating area 7/8: Settings for the rocker switch 7/button 7 and LED 7
- Operating area 8: Settings for button 8 and LED 8
- Operating area 9/10: Settings for the rocker switch 9/button 9 and LED 9
- Operating area 10: Settings for button 10 and LED 10
- Operating area 11/12: Settings for the rocker switch 11/button 11 and LED 11
- Operating area 12: Settings for button 12 and LED 12

11.4.1 Switching

With the application "Switching", a switching telegram is sent when the rocker is actuated and/or released. In each case, the application makes a separate set of parameters and communication objects available for the rocker.

11.4.1.1 Differentiation between short and long actuation

Options:	Deactivated
	Activated

The parameter is used to specify whether the type of actuation (long/short) is different.

11.4.1.2 Reaction at actuation

Options:	Off
	On
	Switchover
	No reaction

The parameter is used to specify the reaction at an actuation of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is deactivated.

11.4.1.3 Reaction during release

Options:	Off
	On
	□Switchover
	No reaction

The parameter is used to specify the reaction to the touch of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is deactivated.

11.4.1.4 Reaction on short operation

Options:	Off
	On
	□Switchover
	No reaction

The parameter is used to specify the reaction at a short actuation of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.4.1.5 Reaction at long actuation

Options:	Off
	On
	□Switchover
	No reaction

The parameter is used to specify the reaction at a long actuation of the operating area.

The parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.4.1.6 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

When parameter "Extended settings" is activated, additional parameters are available.

11.4.1.7 Long actuation from

Options:	00.3 … 00.4 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when parameter "Differentiation between long and short actuation" is active.

11.4.1.8 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.1.9 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.2 Switching (2-buttons)

With the "Switching, 2-buttons" application, a telegram is sent at an actuation of the right or left side of the rocker.

The "Switching, 2-buttons" application differentiates here between whether the rocker is actuated on the right or the left side.

Button x

11.4.2.1 Reaction at actuation

Options:	Off
	On
	Switchover

The parameter is used to specify the reaction at an actuation of the operating area.

- Off:
  - Button x – response when pressed – On
- On:
  - Button x – response when pressed – Off
- Switchover:
  - Button x – response when pressed – Toggle

The action triggered when button 2 is pressed is assigned automatically.

11.4.2.2 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

When parameter "Extended settings" is activated, additional parameters are available.

11.4.2.3 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.2.4 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.3 Blinds/roller blinds

Via the application "Blind/roller blinds", blind movement and/or slats adjustment commands can be sent to connected blind actuators by short or long actuation of the surface. A short button actuation always triggers a slats adjustment or stop command and a long button actuation always triggers a travel command.

The control always remembers the button that is occupied with the "Blind/roller blind" application with the last action. Example: If a blind was lowered and halted at half height via a short button actuation, then a renewed long button actuation will raise the blind.

11.4.3.1 Operating mode

Options:	Blind
	Roller blind

- Blind:
  - The operating mode is set to blind control.
- Roller blind
  - The operating mode is set to roller blind control.

The parameter is used to specify whether the sensor or the selected button can be used for a blind or a roller blind control.

11.4.3.2 Blind control

Options:	Short: Step/stop, long: Moving
	Short: Moving, long: Step/stop

- Short: Step/stop, long: Moving:
  - Pressing the button briefly adjusts the slats or stops the movement, whilst pressing and holding the button raises or lowers the blind.
- Short: Moving, long: Step/stop:
  - Pressing the button briefly starts the movement of the blind, whilst pressing and holding the button adjusts the slats or stops the movement.

The parameter is used to specify the reaction of the blind at the type of actuation of the operating area.

These options can only be set when parameter "Blind" is selected in parameter "Operating mode".

11.4.3.3 Cycle for sending the step/stop telegrams

Options:	00.3 … 00.5 … 10.0 ss.f

This parameter is used to set the cycle for sending repeated step/stop telegrams when the button is held down for a long time.

This parameter can only be adjusted if "Short: moving, long:" "Step/stop" is selected in the "Blind control" parameter.

11.4.3.4 Roller blinds

Options:	Short: Stop, long: Moving
	Only moving

The parameter is used to specify the reaction of the roller blind at the type of actuation of the operating area.

These options can only be set when parameter "Roller blind" is selected in parameter "Operating mode".

11.4.3.5 Stop movign

Options:	at release
	at next actuation

This parameter determines the type of operation that will stop the roller blind from moving.

- At release:
  - The roller blind moves up/down at actuation and stops at release
- At next actuation:
  - The roller blind moves in the opposite direction of the last movement and stops at the next actuation

This parameter can only be set when "Only moving" is selected in parameter "Roller blind".

11.4.3.6 Extended settings

Options:	Deactivated
	Activated

When parameter "Extended settings" is activated, additional parameters are available.

11.4.3.7 Change of direction of "Movement" to

Options:	00.0 … 59.9 ss.f

This parameter is used to set the time interval for the change of direction when the movement command is triggered repeatedly.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.3.8 Change of direction "Slat adjustment" to

Options:	00.0 … 59.9 ss.f

This parameter is used to set the time interval for the direction change when the slat command is triggered repeatedly.

These options can only be set when parameter "Extended settings" is active and when "Blind" is selected in parameter "Operating mode".

11.4.4 Blinds/roller blinds (2-buttons)

Via the application "Blinds/roller blinds (2-buttons)", blind movement and/or slats adjustment commands can be sent to connected blind actuators by short or long actuation of the surface. A short button actuation always triggers a travel command and a long button actuation always triggers a slat adjustment or stop command.

In each case, the application "Blinds/roller blinds 2-buttons"makes a separate set of parameters and communication objects available for the right or left side of the surface.

The control always remembers the surface side that is occupied with the "Blinds/roller blinds (2-buttons)" application with the last action. Example: If a blind was lowered and halted at half height via a long actuation of the button, then a renewed short actuation of the button will raise the blind.

11.4.4.1 Operating mode

Options:	Blind
	Roller blind

- Blind:
  - The operating mode is set to blind control.
- Roller blind
  - The operating mode is set to roller blind control.

The parameter is used to specify whether the sensor or the selected button can be used for a blind or a roller blind control.

Button x

11.4.4.2 Direction of travel

Options:	Up
	Down

- Up (button x – direction of travel – Off)
- Down (button x – direction of travel – On)

The response to pressing button 2 is determined automatically by the selection made for button 1.

11.4.4.3 Extended settings

Options:	Deactivated
	Activated

When parameter "Extended settings" is activated, additional parameters are available.

11.4.4.4 Blind control

Options:	Short: Stop, long: Moving
	Short: Move, long: Step/stop
	Only moving
	Only slat adjustment

The parameter is used to specify the reaction to the type of the actuation.

These options can only be set when Parameter "Extended settings" has been activated.

11.4.4.5 Cycle for sending the step/stop telegrams

Options:	00.3 … 00.5 … 10.0 ss.f

This parameter is used to set the cycle for sending repeated step/stop telegrams when the button is held down for a long time.

This parameter can only be set when one of the following options has been selected in parameter "Blind actuation":

- Short: move, long: Step/stop
- Only slat adjustment

11.4.4.6 Roller blind actuation

Options:	Short: stop, long: move
	Only moving

The parameter is used to specify the reaction to the type of the actuation.

These options can only be set when Parameter "Extended settings" has been activated.

This parameter can only be set when the option "Roller blind" is selected in parameter "Operating mode".

11.4.4.7 Stop movign

Options:	at release
	at next actuation

This parameter determines the type of operation that will stop the roller blind from moving.

These options can only be set when Parameter "Extended settings" has been activated.

This parameter can only be set when the option "Only moving" is selected in parameter "Roller blind actuation".

11.4.4.8 Long actuation from

Options:	00.3 … 00.4 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set for operating mode "Blind" and for operating mode "Roller blind - short: stop, long: move".

11.4.4.9 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.4.10 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.5 Switching/dimming

With the "Switching/dimming" application, a surface has communication objects for switching and for dimming. A distinction is made a between short and long actuation of the button.

11.4.5.1 At short actuation: Switching

- Switchover

The reaction at short actuation is always “switching”.

11.4.5.2 At long actuation: Dimming direction

Options:	Changing dimming direction
	Change dimming direction, brighter at ON
	Change dimming direction, darker at ON

The parameter is used to specify the dimming direction (darker/brighter).

11.4.5.3 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.4.5.4 Dimming procedure

Options:	Start-stop dimming
	Step-wise dimming

The parameter is used to specify which dimming procedure is used.

11.4.5.5 Change per step

Options:	2%
	3%
	6%
	13%
	25%
	50%
	100%

The parameter is used to specify how large percentagewise each step is.

This parameter can only be set when "Step-wise dimming" is selected in parameter "Dimming procedure".

11.4.5.6 Telegram is repeated every

Options:	00.3 … 00.6 … 30.0 ss.f

The parameter is used to specify the time period for the telegram repetition.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.5.7 Long actuation from

Options:	00.3 … 00.… 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.5.8 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.5.9 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is activated.

11.4.6 Switching/dimming (2-buttons)

With the "Switching/dimming (2-buttons)" application, a surface has communication objects for switching and for dimming. A distinction is made between a short (switching rocker) and long (dimming) actuation of the button.

Button x

11.4.6.1 At short actuation

Options:	<u>On</u>
	Off
	□Switchover
	No reaction

The parameter is used to specify the switching function that is carried out at a short actuation.

11.4.6.2 At long actuation

Options:	<u>Brighter</u>
	Darker

The parameter is used to specify the dimming direction (darker/brighter).

Button y

11.4.6.3 At short actuation

Options:	On
	<u>Off</u>
	□Switchover
	No reaction

The parameter is used to specify the function that is carried out at a short actuation.

11.4.6.4 At long actuation

The intensity of the brightness (brighter/darker) for the long actuation in operating area y is respectively opposite to the one in operating area x.

11.4.6.5 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.4.6.6 Dimming procedure

Options:	Start-stop dimming
	Step-wise dimming

The parameter is used to specify which dimming procedure is used.

11.4.6.7 Change per step

Options:	2%
	3%
	6%
	13%
	25%
	50%
	100%

The parameter is used to specify how large percentagewise each step is.

This parameter can only be set when "Step-wise dimming" is selected in parameter "Dimming procedure".

11.4.6.8 Telegram is repeated every

Options:	00.3 … 00.6 … 30.0 ss.f

The parameter is used to specify the time period for the repeat of the telegram.

This parameter can only be set when Parameter "Extended settings" has been activated.

This parameter can only be set when "Step-wise dimming" is selected in parameter "Dimming procedure".

11.4.6.9 Long actuation from

Options:	00.3 … 00.6 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.6.10 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.6.11 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.7 Switching sequence

The switching sequence makes possible the stepwise triggering of several object values in a defined step sequence.

Function of communication objects

Communication object	Function
CO 1	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 2	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 3	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 4	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 5	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode

The parameter is used to specify the number and function of the communication objects for the switching steps.

Configuration

Up to six switching steps can be defined for the switching sequence.

11.4.7.1 Enable

	Step 1 ... 6
Enable	Deactivated
	Activated

The parameter is used to activate/deactivate the individual steps, which is respectively carried out by activating/deactivating the corresponding checkboxes.

11.4.7.2 CO 1 ... 6 – Switching

	Step 1 ... 6
CO x	Off
	On
	No reaction

This parameter is used to specify the value for communication object "Switching".

11.4.7.3 CO 1 ... 6 – Percent

	Step 1 ... 6
CO x	0 ... 100%

The parameter is used to specify the value for communication object "Percent".

11.4.7.4 CO 1 … 6 – Counting pulses

	Step 1 ... 6
CO x	0 ... 255

The parameter is used to specify the value for communication object "Byte".

11.4.7.5 CO 1 … 6 – Scene control

	Step 1 ... 6
CO x	1 ... 64

The parameter is used to specify the value for communication object "Scene".

11.4.7.6 CO 1 … 6 – RGB value 3x(0..255)

	Step 1 ... 6
CO x	#000000 - #FFFFFF

This parameter is used to specify the colour. The values are displayed hexadecimal. The values can be set as follows via the button on the right of the text field:

- Continuously adjustable in a colour picker
- Via a shift register in the CMYK colour space
- Via a shift register in the RGB colour range
- Via a shift register in the RGB HSV colour range
- Via a shift register in the HLS colour space

11.4.7.7 CO 1 … 6 – HVAC mode

	Step 1 ... 6
CO x	Automatic
	Comfort
	Standby
	Economy
	Building protection

The parameter is used to specify the value for communication object "HVAC mode".

11.4.7.8 Reaction at long actuation

Options:	Corresponds to a short actuation
	Step 1
	Previous step

The parameter is used to specify the reaction at a long actuation of the operating area.

11.4.7.9 Behaviour after the last step

The following options are available when "Corresponds to a short actuation" in parameter "Reaction at long actuation" is activated.

Options:	Change of direction
	Step 1

- Change of direction:
  - Once the final step has been completed, the sequence of operations is carried out in reverse order until the first step is reached.
- Step 1:
  - Once the final step has been completed, the sequence of operations starts again from the beginning.

The following options are available when "Step 1" or "Previous step" in parameter "Reaction at long actuation" is activated.

Options:	Change of direction
	Step 1
	No reaction

The parameter is used to specify the reaction after the last step.

11.4.7.10 Send values after evaluation period

Options:	Deactivated
	Activated

This parameter is used to specify whether the steps are to be determined based on the number of activations during the evaluation period. If this parameter is disabled, the step is incremented and executed immediately each time the button is pressed.

11.4.7.11 Evaluation period

Options:	00.3 … 02.0 … 30.0 ss.f

The parameter is used to specify the size of the evaluation period.

11.4.7.12 Enable communication object "Reset switching sequence"

Options:	Deactivated
	Activated

The parameter is used to specify whether the communication object "Reset switching sequence" is to be enabled.

11.4.7.13 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.4.7.14 Long actuation from

Options:	00.3 … 00.4 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.7.15 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.7.16 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.8 Switching sequence (2-buttons)

The switching sequence makes possible the stepwise triggering of several object values in a defined step sequence.

Function of communication objects

Communication object	Function
CO 1	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 2	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 3	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 4	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode
CO 5	▪ Deactivated ▪ 1.001 Switching ▪ 5.001 Percent (0..100%) ▪ 5.010 Counting pulses (0 - 255) ▪ 18.001 Scene control ▪ 232.600 RGB value 3x (0 - 255) ▪ 20.102 HVAC mode

The parameter is used to specify the number and function of the communication objects for the switching steps.

Configuration

Up to six switching steps can be defined for the switching sequence.

11.4.8.1 Enable

	Step 1 ... 6
Enable	Deactivated
	Activated

The parameter is used to activate/deactivate the individual steps, which is respectively carried out by activating/deactivating the corresponding checkboxes.

11.4.8.2 CO 1 ... 6 – Switching

	Step 1 ... 6
CO x	Off
	On
	No reaction

This parameter is used to specify the value for communication object "Switching".

11.4.8.3 CO 1 ... 6 – Percent

	Step 1 ... 6
CO x	0 ... 100%

The parameter is used to specify the value for communication object "Percent".

11.4.8.4 CO 1 … 6 – Counting pulses

	Step 1 ... 6
CO x	0 ... 255

The parameter is used to specify the value for communication object "Byte".

11.4.8.5 CO 1 … 6 – Scene control

	Step 1 ... 6
CO x	1 ... 64

The parameter is used to specify the value for communication object "Scene".

11.4.8.6 CO 1 … 6 – RGB value 3x(0..255)

	Step 1 ... 6
CO x	#000000 - #FFFFFF

This parameter is used to specify the colour. The values are displayed hexadecimal. The values can be set as follows via the button on the right of the text field:

- Continuously adjustable in a colour picker
- Via a shift register in the CMYK colour space
- Via a shift register in the RGB colour range
- Via a shift register in the RGB HSV colour range
- Via a shift register in the HLS colour space

11.4.8.7 CO 1 … 6 – HVAC mode

	Step 1 ... 6
CO x	Automatic
	Comfort
	Standby
	Economy
	Building control

The parameter is used to specify the value for communication object "HVAC mode".

11.4.8.8 Reaction at long actuation

Options:	Corresponds to a short actuation
	Step 1

The parameter is used to specify the reaction at a long actuation of the operating area.

11.4.8.9 Reaction on short operation

Options:	Next step
	Previous step

The parameter is used to specify the button behaviour.

11.4.8.10 Send values after evaluation period

Options:	Deactivated
	Activated

This parameter is used to specify whether the steps are to be determined based on the number of activations during the evaluation period. If this parameter is disabled, the step is incremented and executed immediately each time the button is pressed.

11.4.8.11 Evaluation period

Options:	00.3 … 02.0 … 30.0 ss.f

The parameter is used to specify the size of the evaluation period.

11.4.8.12 Enable communication object "Reset switching sequence"

Options:	Deactivated
	Activated

The parameter is used to specify whether the communication object "Reset switching sequence" is to be enabled.

11.4.8.13 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.4.8.14 Long actuation from

Options:	00.3 … 00.4 … 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.8.15 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.9 Scenes

Via the application "Scenes", a predefined scene number is called up when the surface is actuated.

The user has the option to trigger a scene memory command with a long actuation of the button or an additional scene.

11.4.9.1 Differentiation between short and long actuation

Options:	Deactivated
	Activated

The parameter is used to specify whether the type of actuation (long/short) is different.

11.4.9.2 At short actuation: Scene number

Options:	1 ... 64

The parameter is used to specify the scene that is to be called up at a short actuation.

11.4.9.3 Reaction at long actuation

Options:	Save scene
	Call up further scene

The parameter is used to specify whether at a long actuation a further scene is to be called up or the scene is stored.

11.4.9.4 At long actuation: Scene number

Options:	1 ... 64

The parameter is used to specify the scene that is to be called up at a long actuation.

This parameter is only adjustable if the "Call up additional scene" in parameter "Reaction at long actuation" has been selected.

11.4.9.5 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.4.9.6 Long actuation from

Options:	00.3 - 30.0 ss.f

The parameter is used to specify the time period for the long actuation.

The parameter can only be set when parameter "Differentiation between short and long actuation" is active.

11.4.9.7 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

11.4.9.8 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.10 Send value/multiple actuation

In parameter value x send it is specified at which edge (rising or falling edge) or which actuation (short actuation, long actuation or multiple actuation) a telegram is sent.

Depending on the event, up to four values can be sent via separate communication objects. In the following parameters DPT (Data Point Type) and telegram value of the communication objects are specified.

- Value x data point type
- Value x Value

11.4.10.1 Send value at

Options:	Single operation
	Short/long actuation
	Multiple actuation

This parameter determines the type of operation used to send a value.

11.4.10.2 Toggle value

Options:	Deactivated
	Activated

The parameter is used to specify the switchover of the respective value under value 1 and value 2.

11.4.10.3 Send value at single actuation

The parameter can only be set when parameter "Send value at" is set on "Single actuation".

The following parameters Value 1 / value 2 are used to specify when the value is sent and which value is assigned to the respective data point.

11.4.10.4 Value 1 / Value 2 – 1.001 Switching

	Send at	DPT	Value
Value 1	Close	1.001 Switching	On Off
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	1.001 Switching	On Off
Value 2	Open	-	On Off

	Send at	DPT	Value
Value 1	Open	1.001 Switching	On Off
Value 2	Close	-	On Off

	Send at	DPT	Value
Value 1	Open	1.001 Switching	On Off
Value 2	No reaction	-	-

11.4.10.5 Value 1 / Value 2 – 2.001 Prio. Switching

	Send at	DPT	Value
Value 1	Close	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	Open	-	No forced operation Forced operation, value 0 Forced operation, value 1

	Send at	DPT	Value
Value 1	Open	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	Close	-	No forced operation Forced operation, value 0 Forced operation, value 1

11.4.10.6 Value 1 / Value 2 – 5.001 Percent (0–100 %)

	Send at	DPT	Value
Value 1	Close	5.001 Percent (0..100%)	0 - 100%
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	5.001 Percent (0..100%)	0 - 100%
Value 2	Open	-	0 - 100%

	Send at	DPT	Value
Value 1	Open	5.001 Percent (0..100%)	0 - 100%
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	5.001 Percent (0..100%)	0 - 100%
Value 2	Close	-	0 - 100%

11.4.10.7 Value 1 / Value 2 – 5.010 Counting pulses (0–255)

	Send at	DPT	Value
Value 1	Close	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	Open	-	0 - 255

	Send at	DPT	Value
Value 1	Open	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	Close	-	0 - 255

11.4.10.8 Value 1 / Value 2 – 6.010 Counting pulses (-128..127)

	Send at	DPT	Value
Value 1	Close	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	Open	-	-128 - 0 - 127

	Send at	DPT	Value
Value 1	Open	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	Close	-	-128 - 0 - 127

11.4.10.9 Value 1 / Value 2 – 7.001 Pulses

	Send at	DPT	Value
Value 1	Close	7.001 Pulses	0 - 65535
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	7.001 Pulses	0 - 65535
Value 2	Open	-	0 - 65535

	Send at	DPT	Value
Value 1	Open	7.001 Pulses	0 - 65535
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	7.001 Pulses	0 - 65535
Value 2	Close	-	0 - 65535

11.4.10.10 Value 1 / Value 2 – 8.001 Pulse difference

	Send at	DPT	Value
Value 1	Close	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	Open	-	-32768 - 0 - 32767

	Send at	DPT	Value
Value 1	Open	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	Close	-	-32768 - 0 - 32767

11.4.10.11 Value 1 / Value 2 – 12.001 Counting pulses (unsigned)

	Send at	DPT	Value
Value 1	Close	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	Open	-	0 - 4294967295

	Send at	DPT	Value
Value 1	Open	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	Close	-	0 - 4294967295

11.4.10.12 Value 1 / Value 2 – 9.001 Temperature (°C)

	Send at	DPT	Value
Value 1	Close	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	Open	-	-100 - 20 - 250°C

	Send at	DPT	Value
Value 1	Open	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	Close	-	-100 - 20 - 250°C

11.4.10.13 Value 1 / Value 2 – 9.004 Lux (Lux)

	Send at	DPT	Value
Value 1	Close	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	Open	-	0 - 400 - 670433 lux

	Send at	DPT	Value
Value 1	Open	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	Close	-	0 - 400 - 670433 lux

11.4.10.14 Value 1 / Value 2 – 232,600 RGB Value 3x (0..255)

	Send at	DPT	Value
Value 1	Close	232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
Value 2	Open	-	#000000 … #FFFFFF

	Send at	DPT	Value
Value 1	Open	232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	232.600 RGB value 3x (0 - 255)	#000000 … #FFFFFF
Value 2	Close	-	#000000 … #FFFFFF

11.4.10.15 Value 1 / Value 2 – 20.102 HVAC mode

	Send at	DPT	Value
Value 1	Close	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Close	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	Open	-	Automatic Comfort Standby Economy Building protection

	Send at	DPT	Value
Value 1	Open	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	No reaction	-	-

	Send at	DPT	Value
Value 1	Open	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	Close	-	Automatic Comfort Standby Economy Building protection

11.4.10.16 Send value at short/long actuation

Via application "Send value at short/long actuation", different values can be sent out with a short and/or long actuation of the surface.

11.4.10.17 Value 1 / Value 2 – 1.001 Switching

	Send at	DPT	Value
Value 1	Short actuation	1.001 Switching	On Off
Value 2	Long actuation	1.001 Switching	On Off

11.4.10.18 Value 1 / Value 2 – 2.001 Prio. Switching

	Send at	DPT	Value
Value 1	Short actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	Long actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1

11.4.10.19 Value 1 / Value 2 – 5.001 Percent (0–100 %)

	Send at	DPT	Value
Value 1	Short actuation	5.001 Percent (0..100%)	0 - 100%
Value 2	Long actuation	5.001 Percent (0..100%)	0 - 100%

11.4.10.20 Value 1 / Value 2 – 5.010 Counting pulses (0–255)

	Send at	DPT	Value
Value 1	Short actuation	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	Long actuation	5.010 Counting pulses (0 - 255)	0 - 255

11.4.10.21 Value 1 / Value 2 – 6.010 Counting pulses (-128..127)

	Send at	DPT	Value
Value 1	Short actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	Long actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127

11.4.10.22 Value 1 / Value 2 – 7.001 Pulses

	Send at	DPT	Value
Value 1	Short actuation	7.001 Pulses	0 - 65535
Value 2	Long actuation	7.001 Pulses	0 - 65535

11.4.10.23 Value 1 / Value 2 – 8.001 Pulse difference

	Send at	DPT	Value
Value 1	Short actuation	8.001 Pulse difference	-32768 - 0 - 32767
Value 2	Long actuation	8.001 Pulse difference	-32768 - 0 - 32767

11.4.10.24 Value 1 / Value 2 – 12.001 Counting pulses (unsigned)

	Send at	DPT	Value
Value 1	Short actuation	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	Long actuation	12.001 Counting pulses (unsigned)	0 - 4294967295

11.4.10.25 Value 1 / Value 2 – 9.001 Temperature (°C)

	Send at	DPT	Value
Value 1	Short actuation	9.001 Temperature (°C)	-100 - 20 - 250°C
Value 2	Long actuation	9.001 Temperature (°C)	-100 - 20 - 250°C

11.4.10.26 Value 1 / Value 2 – 9.004 Lux (Lux)

	Send at	DPT	Value
Value 1	Short actuation	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	Long actuation	9.004 lux (lux)	0 - 400 - 670433 lux

11.4.10.27 Value 1 / Value 2 – 232,600 RGB Value 3x (0..255)

	Send at	DPT	Value
Value 1	Short actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF
Value 2	Long actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF

11.4.10.28 Value 1 / Value 2 – 20.102 HVAC mode

	Send at	DPT	Value
Value 1	Short actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	Long actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection

11.4.10.29 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

11.4.10.30 Long actuation from

Options:	00.3 - 00.4 - 30.0

The parameter is used to specify the time period for the long actuation.

This parameter can only be set when Parameter "Extended settings" has been activated.

This parameter can only be set when parameter "Send value at" is set on "Short/long actuation" or "Multiple actuation".

11.4.10.31 Disable control panel

Options:	Deactivated
	For value 0
	For value 1

The parameter is used to specify the value at which the input is disabled.

This parameter can only be set when Parameter "Extended settings" has been activated.

11.4.10.32 Send value at multiple operation

Multiple-actuation functionality allows up to 4 different values to be transmitted using a single button. The data point type can be defined for each individual value. The individual values are retrieved by pressing the button repeatedly within the time defined or set in the parameters.

11.4.10.33 Maximum time between two actuations

Options:	00.3 … 00.5 … 10.0 ss.f

This parameter is used to define the time interval at which successive actuations are counted as a single actuation. If there is a significant interval between actuations, it is counted as a new actuation.

11.4.10.34 Send values at every actuation

Options:	Deactivated
	Activated

This parameter determines whether the value is sent each time the button is pressed or whether the number of actuations is counted and only the value corresponding to that number of actuations is sent.

The following parameters Value 1 / value 2 / value 3 / value 4 are used to specify when the value is sent and which value is assigned to the respective data point.

11.4.10.35 Value 1 – Value 4 – 1.001 Switching

	Send at	DPT	Value
Value 1	1gang actuation	1.001 Switching	Off On □Switchover
Value 2	2gang actuation	1.001 Switching	Off On □Switchover
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	1.001 Switching	Off On □Switchover
Value 2	2gang actuation	1.001 Switching	Off On □Switchover
Value 3	2gang actuation	Deactivated 1.001 Switching	Off On □Switchover
Value 4	Long actuation 4gang actuation	Deactivated 1.001 Switching	Off On □Switchover

11.4.10.36 Value 1 – Value 4 – 2.001 Prio. Switching

	Send at	DPT	Value
Value 1	1gang actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	2gang actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 2	2gang actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 3	2gang actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1
Value 4	Long actuation 4gang actuation	2.001 priority Switching	No forced operation Forced operation, value 0 Forced operation, value 1

11.4.10.37 Value 1 – Value 4 – 5.001 Percent (0–100 %)

	Send at	DPT	Value
Value 1	1gang actuation	5.001 Percent (0..100%)	0 - 100%
Value 2	2gang actuation	5.001 Percent (0..100%)	0 - 100%
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	5.001 Percent (0..100%)	0 - 100%
Value 2	2gang actuation	5.001 Percent (0..100%)	0 - 100%
Value 3	2gang actuation	5.001 Percent (0..100%)	0 - 100%
Value 4	Long actuation 4gang actuation	5.001 Percent (0..100%)	0 - 100%

11.4.10.38 Value 1 – Value 4 – 5.010 Counting pulses (0..255)

	Send at	DPT	Value
Value 1	1gang actuation	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	2gang actuation	5.010 Counting pulses (0 - 255)	0 - 255
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	5.010 Counting pulses (0 - 255)	0 - 255
Value 2	2gang actuation	5.010 Counting pulses (0 - 255)	0 - 255
Value 3	2gang actuation	5.010 Counting pulses (0 - 255)	0 - 255
Value 4	Long actuation 4gang actuation	5.010 Counting pulses (0 - 255)	0 - 255

11.4.10.39 Value 1 – Value 4 – 6.010 Counting pulses (-128..127)

	Send at	DPT	Value
Value 1	1gang actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	2gang actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 2	2gang actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 3	2gang actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127
Value 4	Long actuation 4gang actuation	6.010 Counting pulses (-128..127)	-128 - 0 - 127

11.4.10.40 Value 1 – Value 4 – 7.001 Pulses

	Send at	DPT	Value
Value 1	1gang actuation	7.001 Pulses	0 - 66535
Value 2	2gang actuation	7.001 Pulses	0 - 66535
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	7.001 Pulses	0 - 66535
Value 2	2gang actuation	7.001 Pulses	0 - 66535
Value 3	2gang actuation	7.001 Pulses	0 - 66535
Value 4	Long actuation 4gang actuation	7.001 Pulses	0 - 66535

11.4.10.41 Value 1 – Value 4 – 8.001 Pulse difference

	Send at	DPT	Value
Value 1	1gang actuation	8.001 Pulses	-32768 - 0 - 32768
Value 2	2gang actuation	8.001 Pulses	-32768 - 0 - 32768
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	8.001 Pulses	-32768 - 0 - 32768
Value 2	2gang actuation	8.001 Pulses	-32768 - 0 - 32768
Value 3	2gang actuation	8.001 Pulses	-32768 - 0 - 32768
Value 4	Long actuation 4gang actuation	8.001 Pulses	-32768 - 0 - 32768

11.4.10.42 Value 1 – Value 4 – 12.001 Counting pulses (unsigned)

	Send at	DPT	Value
Value 1	1gang actuation	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	2gang actuation	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 2	2gang actuation	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 3	2gang actuation	12.001 Counting pulses (unsigned)	0 - 4294967295
Value 4	Long actuation 4gang actuation	12.001 Counting pulses (unsigned)	0 - 4294967295

11.4.10.43 Value 1 – Value 4 – 9.001 Temperature (°C)

	Send at	DPT	Value
Value 1	1gang actuation	9.001 Temperature (°C)	-100 … 20 … 250°C
Value 2	2gang actuation	9.001 Temperature (°C)	-100 … 20 … 250°C
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	9.001 Temperature (°C)	-100 … 20 … 250°C
Value 2	2gang actuation	9.001 Temperature (°C)	-100 … 20 … 250°C
Value 3	2gang actuation	9.001 Temperature (°C)	-100 … 20 … 250°C
Value 4	Long actuation 4gang actuation	9.001 Temperature (°C)	-100 … 20 … 250°C

11.4.10.44 Value 1 – Value 4 – 9.004 Lux (Lux)

	Send at	DPT	Value
Value 1	1gang actuation	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	2gang actuation	9.004 lux (lux)	0 - 400 - 670433 lux
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	9.004 lux (lux)	0 - 400 - 670433 lux
Value 2	2gang actuation	9.004 lux (lux)	0 - 400 - 670433 lux
Value 3	2gang actuation	9.004 lux (lux)	0 - 400 - 670433 lux
Value 4	Long actuation 4gang actuation	9.004 lux (lux)	0 - 400 - 670433 lux

11.4.10.45 Value 1 – Value 4 – 232,600 RGB value 3×(0–255)

	Send at	DPT	Value
Value 1	1gang actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF
Value 2	2gang actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF
Value 2	2gang actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF
Value 3	2gang actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF
Value 4	Long actuation 4gang actuation	232.600 RGB value 3x (0 - 255)	#000000 - #FFFFFF

11.4.10.46 Value 1 – Value 4 – 20.102 HVAC mode

	Send at	DPT	Value
Value 1	1gang actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	2gang actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 3	2gang actuation	Deactivated	-
Value 4	Long actuation 4gang actuation	Deactivated	-

	Send at	DPT	Value
Value 1	1gang actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 2	2gang actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 3	2gang actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection
Value 4	Long actuation 4gang actuation	20.102 HVAC mode	Automatic Comfort Standby Economy Building protection

11.4.10.47 Status after ETS download or bus voltage recovery

Options:	Last status
	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

This parameter can only be set when parameter "Disable operating area" is not deactivated.

11.4.11 Internal RTC function

This function transmits the configured key commands directly to the internal RTC (room temperature controller) without the need for links to group addresses.

11.4.11.1 Button function

Options:	Comfort/Eco
	Fan speed
	Comfort/Building Protection
	Heating/cooling

This parameter is used to define operating functions for the internal RTC.

11.4.12 Internal RTC function (2-button)

This function transmits the configured key commands directly to the internal RTC (room temperature controller) without the need for links to group addresses.

11.4.12.1 Rocker switch function

Options:	Setpoint
	Fan speed

This parameter is used to define operating functions for the internal RTC.

- Setpoint:
  - This function is used to adjust the setpoint of the room temperature controller in pre-set increments using the rocker switch (carried out in the "Room Temperature Controller" application).
- Fan speed:
  - This function allows you to adjust the fan speed using the rocker switch. The direction of adjustment is set via the "Rocker Configuration" parameter. The settings entered are shown directly on the display.

11.4.12.2 Rocker configuration

Options:	Left "-", right "+"
	Left "+", right "-"

This parameter determines the function of the left and right rocker switches for adjusting the temperature.

11.4.13 LED x

With the application "LED x", the LED of the button can be used for orientation illumination, status display, air quality display or function display. The LED can light up in different colours. The LED can also flash for alarm display (see) and/or scene storage display.

11.4.13.1 Operating mode

Options:	Status illumination
	Function illumination

This parameter is used to specify whether the LED should indicate status, function or air quality.

11.4.13.2 Colour of function illumination

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for function illumination.

This parameter is only adjustable when "Function illumination" in parameter "Operating mode" has been selected.

11.4.13.3 Data point type for status object

Options:	1.001 Switching
	5.001 Percent (0..100%)
	9.008 Parts/million (ppm)

The parameter is used to specify the data point type of the status illumination.

This parameter is only adjustable when "Status illumination" in parameter "Operating mode" has been selected.

11.4.13.4 Colour for Off

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for "Off".

This parameter can only be set when "1.001 Switching" in parameter "Object type for status object" has been selected.

11.4.13.5 Colour for On

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for alarm "On".

This parameter can only be set when "1.001 Switching" in parameter "Object type for status object" has been selected.

11.4.13.6 Colour for Zone 1 (corresponds to 0%)

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 1.

This parameter can only be set when "5.001 Percent (0..100%)" in parameter "Data point type for status object" has been selected.

11.4.13.7 Colour for area 2 (starts at 1%)

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 2.

This parameter can only be set when "5.001 Percent (0..100%)" in parameter "Data point type for status object" has been selected.

11.4.13.8 Threshold value between area 2 and area 3

Options:	≥1 … 33 … 98 %

This parameter is used to set the threshold value for the transition between Zone 2 and Zone 3.

This parameter can only be set when "5.001 Percent (0..100%)" in parameter "Data point type for status object" has been selected.

11.4.13.9 Colour for zone 3

The colour white is set by default for the display of measurement range 3. It is possible to change the colour accordingly. There are seven primary colours, four user-defined colours and the "Off" setting to choose from

Colour for area (%)

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

Ink concentration for area (ppm)

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 3.

This parameter can only be set if "5.001 Percent (0..100 %)" or "9.008 Parts per million (ppm)" has been selected in the "Data point type for status object" parameter.

11.4.13.10 Threshold value between area 3 and area 4

Options:	1 - 66 - 98%

The threshold value between area 3 and area 4 is specified via the parameter.

This parameter can only be set when "5.001 Percent (0..100%)" in parameter "Data point type for status object" has been selected.

11.4.13.11 Colour for Zone 4 (up to 99%)

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 4.

This parameter can only be set when "5.001 Percent (0..100%)" in parameter "Data point type for status object" has been selected.

11.4.13.12 Colour for zone 5

The colour red is preset for the display of measurement range 5. It is possible to change the colour accordingly. There are seven primary colours, four user-defined colours and the "Off" setting to choose from

Colour for area (%)

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 5.

This parameter can only be set if "5.001 Percent (0..100 %)" or "9.008 Parts per million (ppm)" has been selected in the "Data point type for status object" parameter.

11.4.13.13 Display internal CO_2 value

Options:	Inactive
	Active

If the device has an internal CO_2 sensor, the measured CO_2 value is processed within the application. If an external value is to be displayed, the parameter must be set to "inactive" and connected to the LED RGB communication object via its group address.

This parameter is only available if the "Operating mode" setting has been set to "Illumination status".

Threshold values for CO_2 concentrations in indoor air in accordance with the "Ventilation" workplace guideline ASR 3.6

CO_2 concentration [ml/m³] or [ppm]	Actions
<1000	**The LED lights up GREEN** No further action required (provided that the use of the room is not expected to cause concentrations to rise above 1,000 ppm)
1000 - 2000	**The LED lights up YELLOW** ▪ Check and improve ventilation ▪ Draw up a ventilation plan (e.g. define responsibilities) Ventilation measures (e.g. increasing the outdoor air flow rate or the air change rate)
>2000	**The LED lights up RED** Further measures are required (e.g. increased ventilation, reducing the number of people in the room)

11.4.13.14 Colour for zone 1

The colour green is preset for the display of measurement range 1. It is possible to change the colour accordingly. There are seven primary colours, four user-defined colours and the "Off" setting to choose from

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 1.

This parameter can only be set if "5.001 Percent (0..100 %)" or "9.008 Parts per million (ppm)" has been selected in the "Data point type for status object" parameter.

11.4.13.15 Threshold between zone 1 and 2

Options:	400 … 1000 … 3000 ppm

11.4.13.16 Colour for zone 2

The colour yellow is preset for the display of measurement range 2. It is possible to change the colour accordingly. There are seven primary colours, four user-defined colours and the "Off" setting to choose from

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 2.

This parameter can only be set if "5.001 Percent (0..100 %)" or "9.008 Parts per million (ppm)" has been selected in the "Data point type for status object" parameter.

11.4.13.17 Threshold between zone 2 and 3

Options:	400 … 1000 … 3000 ppm

11.4.13.18 Colour for zone 3

The colour yellow is preset for the display of measurement range 3. It is possible to change the colour accordingly. There are seven primary colours, four user-defined colours and the "Off" setting to choose from

Options:	Off
	Yellow
	Red-orange
	Red
	Violet
	Blue
	Green
	White
	User colour 1
	User colour 2
	User colour 3
	User colour 4

The parameter is used to specify the colour the LED is to have for area 3.

This parameter can only be set if "5.001 Percent (0..100 %)" or "9.008 Parts per million (ppm)" has been selected in the "Data point type for status object" parameter.

11.4.13.19 Considering the alarm functions

Options:	Deactivated
	Activated

This parameter determines whether the LED brightness is based on the brightness value set under "Basic settings / LED settings for alarm". If this parameter is disabled, no data is taken from the alarm.

To enable the alarm function to be configured, the "Alarm" function must be activated in the "Device settings" application.

11.4.13.20 Share communication object "Save animation scene"

Options:	Deactivated
	Activated

This parameter determines whether the LED brightness is based on the function under the scene as configured. If this parameter is disabled, no data relating to scene animation will be applied.



Note
The object can be linked to a scene object, thereby causing the LED on the device to flash briefly.

11.5 Application "Temperature"

The device has an integrated temperature sensor. The measured temperature value is transmitted via a 2-byte communication object "Sensor – temperature sensor" to the bus to be linked, for example, with room temperature controller.

If the device has an internal room temperature controller, the internal sensor is directly linked to the room temperature controller. This means that it is not possible to create an additional link.



Note
The reading from the temperature sensor is used by the room temperature controller to calculate humidity and the dew point. The "Temperature" application is also used to carry out temperature calibration, which is then applied to the other applications.

11.5.1 Override device offset during download

Options:	Deactivated
	Activated

When activated, the new offset is set. If this parameter is enabled, all offset values previously stored in the application will be overwritten.

11.5.1.1 Offset

Options:	-25 - 0 - 25

The setting range is between -25 and +25°C. The setting range applies only to the internally measured value. If an external temperature reading is used, the offset must be set on the device in which the temperature sensor is located.



Note
In any case, it is advisable, once the device has been installed, to check that the temperature reading taken directly from the device using a calibrated thermometer matches the internal temperature reading of the device.

11.5.1.2 Offset communication object

Options:	Not used
	Measured value
	Difference

The correction value is only available for the internal sensor. If the reading from an external sensor is used, the correction value must be set in the application of the external sensor, e.g. directly in the RTC or Humidity/dew point. You can choose whether the offset relates to the measured value or to the measured difference.



Note
Depending on the circumstances, it may be advisable to use an external temperature sensor, as the position of the internal sensor may result in an inaccurate reading. If, for example, the device is situated right next to a door, the room temperature may mix with that of the adjoining room, thereby resulting in an inaccurate temperature reading.

The internal sensor should only be calibrated if the new reference value has been determined by a calibrated sensor. Two types of entry are available:

- Not used:
  - No offset value is used.
- Measured values:
  - Here, the new reading from the external sensor is entered directly via the object.
- Difference:
  - The difference between the internal and external sensors is entered here. E.g. indoor 21°C, outdoor 21.7°C, humidity. A correction value of 0.7 K should therefore be entered.

The stored correction values are only overwritten if they are changed.

11.5.1.3 Send temperature

Options:	Cyclic
	On change and cyclic

- Cyclic:
  - The actual temperature (room temperature) is sent at fixed time intervals.
- On change and cyclic
  - The actual temperature is sent at fixed intervals and at each change of the room temperature.

The parameter is used to specify whether the temperature value is sent only cyclic or also at value changes.

11.5.1.4 Sending cycle

Options:	Setting option from 00:00:25 to 01:30:00 (hh:mm:ss)

The period for the cycle time for sending the actual temperature is specified via the parameter.

11.5.1.5 Send when there is a change of (*0.1 K)

Options:	Setting option from 1 - 5 ... 255

The parameter is used to specify at which change the value is to be sent.

This parameter can only be set when "At change or cyclic" in parameter "Send temperature" is active.

11.6 "Humidity / dew point" application

11.6.1 Humidity sensor

11.6.1.1 Sensor settings

Using the parameters under "Sensor settings", it is possible to specify the location of the sensor for relative and absolute humidity.

11.6.1.2 Temperature source

Options:	Internal
	External

- Internal:
  - The temperature sensor inside the device is used to measure relative and absolute humidity.
- External:
  - Enabling this parameter activates an additional 2-byte communication object called "External temperature", which allows a temperature value provided by the bus to be used for calculating relative or absolute humidity.



Note
If the temperature source is set to "internal", it is always advisable, once the device has been installed, to compare the temperature reading taken directly from the device using a calibrated thermometer with the internal temperature reading of the device.

11.6.1.3 Humidity source

Options:	Internal
	External

- Internal:
  - The temperature sensor inside the device is used to measure relative and absolute humidity.
- External:
  - Enabling this parameter activates the additional 2-byte communication object "External relative humidity". The "External relative humidity" option allows a relative humidity value provided by the bus to be used to calculate the relative or absolute humidity.

11.6.1.4 Override device offset during download

Options:	Activated
	Deactivated

This parameter determines whether the device offset stored in the device is overwritten during an ETS download.

11.6.1.5 Offset

Options:	-25 … 0 … 25 % RH

The adjustment range is between -25 and +25 % RH. The adjustment range applies only to the internally measured value. If an external humidity reading is used, the offset must be set on the device in which the temperature sensor is located

11.6.1.6 Offset communication object

Options:	Not used
	Measured value
	Difference

The "Offset communication object" parameter is activated, together with a communication object, exclusively in conjunction with the sensor used internally. You can choose whether the offset relates to the measured value or to the measured difference.

When referring to the measured value, the communication object "Humidity offset (measured value)" is enabled. When referring to the difference, the communication object "Humidity-Offset (Difference)" is released.



Note
In some applications, it makes sense to use an external temperature and/or humidity sensor, as the position of the internal sensor can lead to inaccurate measurements or calculations of relative or absolute humidity. If, for example, the device is situated directly next to a door, the temperature and/or humidity of the room may mix with those of the adjoining room, thereby leading to inaccurate humidity readings.

11.6.1.7 External relative humidity data point type

Options:	9.007 Moisture (%)
	5.001 Percent (0..100%)

If the temperature source or humidity source is set to "external", the parameters "External relative humidity data point type", "Enable communication object for sensor faults" and "Input monitoring" are enabled.



Note
In some applications, it makes sense to use an external temperature and/or humidity sensor, as the position of the internal sensor can lead to inaccurate measurements or calculations of relative or absolute humidity. If, for example, the device is situated directly next to a door, the temperature and/or humidity of the room may mix with those of the adjoining room, thereby leading to inaccurate humidity readings.

11.6.1.8 Input monitoring

Options:	1 … 10 … 240 min

If the parameter does not receive a telegram for the "external temperature" communication object within the specified time, a telegram is sent to the bus via the "sensor fault" object.

11.6.1.9 Communication object

Options:	Relative humidity	Inactive Active
	Relative humidity at 20°C	Inactive Active
	Absolute humidity	Inactive Active

The individual humidity readings are made available via a 2-byte object when the individual objects are activated.

- Relative humidity:
  - Indicates the saturation of the air with water vapour. Once 100% saturation has been reached, the air can no longer absorb any more moisture. Condensation then forms. The amount of moisture that can be absorbed depends on the ambient temperature; in other words, warmer air can hold more moisture than colder air. Relative humidity is displayed as a percentage.
- Relative humidity at 20°C:
  - Displays the humidity level in the room at a temperature of 20°C. This value can be used as a reference value for further calculations. This value is regarded as a reference value and is used as a basis for further calculations.
- Absolute humidity:
  - Describes the maximum volume of water at a given temperature as a function of the room volume. Absolute humidity is expressed in grams per cubic metre (g/m³).

11.6.1.10 Send relative humidity at change

Options:	Deactivated
	In case of a change of 1 % RH
	In case of a change of 2 % RH
	In case of a change of 3 % RH
	In case of a change of 4 % RH
	In case of a change of 5 % RH
	In case of a change of 6 % RH
	In case of a change of 7 % RH
	In case of a change of 8 % RH
	In case of a change of 9 % RH
	In case of a change of 10 % RH
	In case of a change of 11 % RH
	In case of a change of 12 % RH
	In case of a change of 13 % RH
	In case of a change of 14 % RH
	In case of a change of 15 % RH
	In case of a change of 16 % RH
	In case of a change of 17 % RH
	In case of a change of 18 % RH
	In case of a change of 19 % RH
	In case of a change of 20 % RH
	In case of a change of 21 % RH
	In case of a change of 22 % RH
	In case of a change of 23 % RH
	In case of a change of 24 % RH
	In case of a change of 25 % RH

The parameter is used to determined when a change should be actively sent to the KNX bus. The telegram load can be reduced by the setting.

11.6.1.11 Send relative cyclic

Options:	Deactivated
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the humidity cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.6.1.12 Relative humidity data point type

Options:	9.007 Moisture (%)
	5.001 % (0..100&)

This parameter defines the communication object for outputting the relative humidity.

11.6.1.13 Share communication object "Sensor fault"

Options:	Activated
	disabled

Once activated, the "Sensor fault" communication object becomes visible. This parameter is used to monitor the external sensor input. If, under "Input monitoring", no value is received for the object (e.g. external temperature) within the set time, a corresponding message is issued via the object.

The parameter is visible if "Temperature source" or "Humidity" has been set to "external".

11.6.2 Humidity control

11.6.2.1 Controller type

Options:	Deactivated
	Single-stage
	Two-stage
	Three-stage
	PI

When selecting the controller type, the relevant communication objects are available for linking to an actuator. For example, if a single-stage controller is selected, the "Humidification stage 1" object is enabled.

11.6.2.2 Change setpoint via communication object

Options:	Deactivated
	Activated

The basic set value defined for the first threshold can be optimised via the KNX bus, e.g., through a visualisation. To do so, the communication object "Humidification – relative humidity setpoint" is activated.

11.6.2.3 Control variable data point type

Options:	1.001 Switching
	2.001 Prio. Switching
	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	17.001 Scene number

The output value when the respective threshold is exceeded or undershot is defined using this parameter. The relevant threshold value is defined in the "Stage setting" table under "Humidity threshold".

11.6.2.4 Send control variable on change



Note
The "Send control variable on change" parameter is always visible, regardless of whether the "Control variable output format" parameter is set to "Percent" or "Counting pulses". Only the available options change.

Options:	Inactive
	In case of a change of 1 % ... 2 % ... 25 % (increment: 1 %)

The control value is sent after a defined percentage change. If this is not desired, the parameter must be accordingly set to "inactive".

11.6.2.5 Send control value cyclic

Options:	Inactive
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the control value cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.6.2.6 Send control variable on change [byte]



Note
The parameter is available only when parameter "Control value output format" is set on "Byte".

Options:	Inactive
	In case of a change of 1
	In case of a change of 2
	In case of a change of 5 ... 10 - 50 (increment: 5)

The control value is sent after a defined value change. If this is not desired, the parameter must be accordingly set to "inactive".

11.6.2.7 Send control value cyclic

Options:	Inactive
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the control value cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.6.2.8 Hysteresis (symmetrical)

Options:	1 … 5 … 10 % (in 1% increments)

The basic set value has a hysteresis. If the parameterised hysteresis percentage value is exceeded/undershot, the corresponding value is sent. It can be adjusted in 1 % increments.



Note
The parameter is available only when parameter "Controller type" is set on "Single stage", "Two-stage" or "Three-stage".

11.6.2.9 Disable control output

Options:	Deactivated
	Activated

The complete function of the sensor can be blocked using this parameter and the corresponding communication object. Deactivation takes place by selecting "Inactive".

11.6.2.10 Behaviour at setting the blockage

Options:	Send nothing
	Send configured value

If the sensor is blocked after the receipt of an ON telegram, a selection can be made from the following parameters:

- Do not send:
  - The sensor sends no value during blockage.
- Send configured value:
  - The sensor sends its configured (current) value during blockage also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.6.2.11 Behaviour at removing the blockage

Options:	Do not send
	Send current value

If the sensor is enabled again after the receipt of an OFF telegram, the following parameters can be selected:

- Do not send:
  - The sensor only sends its value when it has changed.
- Send current value
  - DThe sensor sends its current value also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.6.3 Dehumidification control

11.6.3.1 Controller type

Options:	Deactivated
	Single-stage
	Two-stage
	Three-stage
	PI

When selecting the controller type, the relevant communication objects are available for linking to an actuator. For example, if a single-level controller is selected, the object "Humidification level 1" is enabled.

11.6.3.2 Change setpoint via communication object

Options:	Deactivated
	Activated

The basic set value defined for the first threshold can be optimised via the KNX bus, e.g., through a visualisation. To do so, the communication object "Humidification – relative humidity setpoint" is activated.

11.6.3.3 Control variable data point type

Options:	1.001 Switching
	2.001 Prio. Switching
	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	17.001 Scene number

The output value when the respective threshold is exceeded or undershot is defined using this parameter. The relevant threshold value is defined in the "Stage setting" table under "Humidity threshold".

11.6.3.4 Send control variable on change



Note
The "Send control variable on change" parameter is always visible, regardless of whether the "Control variable output format" parameter is set to "Percent" or "Counting pulses". Only the available options change.

Options:	Inactive
	In case of a change of 1 % ... 2 % ... 25 % (increment: 1 %)

The control value is sent after a defined percentage change. If this is not desired, the parameter must be accordingly set to "inactive".

11.6.3.5 Send control value cyclic

Options:	Inactive
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the humidity cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.6.3.6 Send control variable on change [byte]



Note
The parameter is available only when parameter "Control value output format" is set on "Byte".

Options:	Inactive
	In case of a change of 1
	In case of a change of 2
	In case of a change of 5 ... 10 - 50 (increment: 5)

The control value is sent after a defined value change. If this is not desired, the parameter must be accordingly set to "inactive".

11.6.3.7 Send control value cyclic

Options:	Inactive
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the control value cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.6.3.8 Hysteresis (symmetrical)

Options:	1 - 5 ... 10 % (increment: 1 %)

The basic set value has a hysteresis. If the parameterised hysteresis percentage value is exceeded/undershot, the corresponding value is sent. It can be adjusted in 1 % increments.



Note
The parameter is available only when parameter "Controller type" is set on "Single stage", "Two-stage" or "Three-stage".

11.6.3.9 Disable control output

Options:	Deactivated
	Activated

The complete function of the sensor can be blocked using this parameter and the corresponding communication object. Deactivation takes place by selecting "Inactive".

11.6.3.10 Behaviour at setting the blockage

Options:	Send nothing
	Send configured value

If the sensor is blocked after the receipt of an ON telegram, a selection can be made from the following parameters:

- Do not send:
  - The sensor sends no value during blockage.
- Send configured value:
  - The sensor sends its configured (current) value during blockage also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.6.3.11 Behaviour at removing the blockage

Options:	Do not send
	Send current value

If the sensor is enabled again after the receipt of an OFF telegram, the following parameters can be selected:

- Do not send:
  - The sensor only sends its value when it has changed.
- Send current value
  - The sensor sends its current value also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.6.4 Level setting

The level settings are available for both the humidification control and the dehumidification control.

11.6.4.1 Level setting – RH level 1

Options:	20 - 55 ... 99 % (increment: 1 %)

The "Threshold 1" setting defines the value for Level 1 at which a response – e.g. "Fan Level 1" – is to be triggered.

11.6.4.2 Level setting – Control command: Control variable below level 1

- Humidity control

Options:	Off
	On

- Dehumidification control

Options:	Off
	On

The parameter defines which state should be sent after threshold value 1 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching".

11.6.4.3 Level setting – Priority of control variable below level 1

Options:	End priority
	OFF with priority
	ON with priority

The parameter defines which state should be sent after threshold value 1 is undershot.



Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching".

11.6.4.4 Level setting – Percentage of control variable below level 1

Options:	0 - 100%

The parameter defines which state should be sent after threshold value 1 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)".

11.6.4.5 Level setting – Value 1: Control variable below level 1 (byte)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 1 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.010 Counting pulses (0..255)".

11.6.4.6 Level setting – Control variable value below level 1 (scene)

Options:	0 - 64

The parameter defines which state should be sent after threshold value 1 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.001 Scene number".

11.6.4.7 Level setting – Control command for control variable above level 1

Options:	Off
	On

The parameter defines which state should be sent after threshold value 1 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching".

11.6.4.8 Level setting – Priority of control variable above level 1

Options:	End priority
	OFF with priority
	ON with priority

The parameter defines which state should be sent after threshold value 1 is exceeded.



Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching".

11.6.4.9 Level setting – Percentage of control variable above level 1

Options:	0 - 100%

The parameter defines which state should be sent after threshold value 1 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)".

11.6.4.10 Level setting – Control variable value above level 1 (byte)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 1 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.010 Counting pulses (0..255)".

11.6.4.11 Level setting – Value of control variable above level 1 (scene)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 1 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.001 Scene number".

11.6.4.12 Level setting – RH level 2

Options:	Same as threshold 1
	Threshold 1+1 % ... +2% ... +30 % (increment: 1 %)

For Threshold 1 (base value), the parameterised value of the 2nd… The threshold value above which a response, e.g. "Fan speed 2", is to be triggered.



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.13 Level setting – Control command: Control variable below level 2

- Humidity control

Options:	Off
	On

- Dehumidification control

Options:	Off
	On

The parameter defines which state should be sent after threshold value 2 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.14 Level setting – Priority of control variable below level 2

Options:	End priority
	OFF with priority
	ON with priority

The parameter defines which state should be sent after threshold value 2 is undershot.



Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.15 Level setting – Percentage of control variable below level 2

Options:	0 - 100 %

The parameter defines which state should be sent after threshold value 2 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

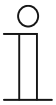
11.6.4.16 Level setting – Control variable value below level 2 (byte)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 2 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.010 Counting pulses (0..255)".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

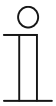
11.6.4.17 Level setting – Control variable value below level 2 (scene)

Options:	0 - 64

The parameter defines which state should be sent after threshold value 2 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.007 Scene number".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.18 Level setting – Control command for control variable above level 2

Options:	Off
	On

The parameter defines which state should be sent after threshold value 2 is exceeded.

Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching".

Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.19 Level setting – Priority of control variable above level 2

Options:	End priority
	OFF with priority
	ON with priority

The parameter defines which state should be sent after threshold value 2 is exceeded.

Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching".

Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.20 Level setting – Percentage of control variable above level 2

Options:	0 - 100%

The parameter defines which state should be sent after threshold value 2 is exceeded.

Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)".

Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.21 Level setting – Control variable value above level 2 (byte)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 2 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.010 Counting pulses (0..255)".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

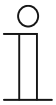
11.6.4.22 Level setting – Value of control variable above level 2 (scene)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 2 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.001 Scene number".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.23 Level setting – RH level 3

Options:	Same as threshold 1
	Threshold 1+1 % ... +2 % -... +30 % (increment: 1 %)

For Threshold 1 (base value) and Threshold 2, the parameterised value of the 3rd… The threshold value above which a response, e.g. "Fan speed 3", is to be triggered.

Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.24 Level setting – Switching command: control variable below level 3

Options:	Off
	On

The parameter defines which state should be sent after threshold value 3 is exceeded.

Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching".

Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.25 Level setting – Priority of control variable below level 3

Options:	End priority
	OFF with priority
	ON with priority

The parameter defines which state should be sent after threshold value 3 is undershot.

Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching".

Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.26 Level setting – Percentage of control variable below level 3

Options:	0 - 100%

The parameter defines which state should be sent after threshold value 3 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)".



Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

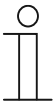
11.6.4.27 Level setting – Control variable value below level 3 (byte)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 3 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.010 Counting pulses (0..255)".



Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.28 Level setting – Control variable value below level 3 (scene)

Options:	0 - 64

The parameter defines which state should be sent after threshold value 3 is undershot.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.001 Scene number".

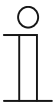


Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.29 Level setting – Control command for control variable above level 3

Options:	Off
	On

The parameter defines which state should be sent after threshold value 3 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching".



Note
The parameter is available only when parameter "Controller type" is set on "Two-stage" or "Three-stage".

11.6.4.30 Level setting – Priority of control variable above level 3

Options:	End priority
	OFF with priority
	ON with priority

The parameter defines which state should be sent after threshold value 3 is exceeded.



Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching".



Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.31 Level setting – Percentage of control variable above level 3

Options:	0 - 100%

The parameter defines which state should be sent after threshold value 3 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)".



Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.32 Level setting – Control variable value above level 3 (byte)

Options:	0 - 255

The parameter defines which state should be sent after threshold value 3 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.010 Counting pulses (0..255)".



Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

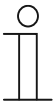
11.6.4.33 Level setting – Control variable value above level 3 (scene)

Options:	0 - 64

The parameter defines which state should be sent after threshold value 3 is exceeded.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.001 Scene number".



Note
The parameter is available only when parameter "Controller type" is set on "Three-stage".

11.6.4.34 Level setting – Value in the event of a sensor fault

Options:	Active
	Inactive

Should a fault or failure occur in the internal or external measurement, activating the parameter will make the fault available to the KNX bus via the "Sensor fault" communication object.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "1.001 Switching". In addition, under "Sensor settings", the "Humidity source" parameter must be set to "External".

11.6.4.35 Level setting – Value in the event of a sensor fault (priority)

Options:	Active
	Inactive

Should a fault or failure occur in the internal or external measurement, activating the parameter will make the fault available to the KNX bus via the "Sensor fault" communication object.



Note
Parameter only available if the "Control variable data point type" parameter is set to "2.001 Prio. Switching". In addition, under "Sensor settings", the "Humidity source" parameter must be set to "External".

11.6.4.36 Stage setting – value in the event of a sensor fault (%)

Options:	Active
	Inactive

Should a fault or failure occur in the internal or external measurement, activating the parameter will make the fault available to the KNX bus via the "Sensor fault" communication object.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "5.001 Percent (0–100%)". In addition, under "Sensor settings", the "Humidity source" parameter must be set to "External".

11.6.4.37 Level setting – Value in the event of a sensor fault (%)

Options:	Active
	Inactive

Should a fault or failure occur in the internal or external measurement, activating the parameter will make the fault available to the KNX bus via the "Sensor fault" communication object.



Note
This parameter is only available if the "Control variable data point type" parameter is set to "17.001 Scene number". In addition, under "Sensor settings", the "Humidity source" parameter must be set to "External".

11.6.4.38 PI settings – Setpoint (10 … 95 % RH)

Options:	10 - 30 ... 95%

The parameter defines which value should be sent after the threshold value is undershot.



Note
The parameter is available only when parameter "Controller type" is set on "PI".

11.6.4.39 PI settings – P range (10 … 40 % RH)

Options:	10 - 20 ... 40%

The parameter defines which value should be sent after the threshold value is exceeded.



Note
The parameter is available only when parameter "Controller type" is set on "PI".

11.6.4.40 PI settings – I-time (15 … 240 min)

Options:	15 ... 240

The I-term integrates the steady-state control error over time until it falls to zero.



Note
The parameter is available only when parameter "Controller type" is set on "PI".

11.6.4.41 PI settings – Min. value (%)

Options:	0 ... 90%

The parameter defines which value should be sent after the threshold value is undershot or when the value is below this threshold value.



Note
The parameter is available only when parameter "Controller type" is set on "PI".

11.6.4.42 PI settings – Max. value (%)

Options:	10 - 100%

The parameter defines which value should be sent after the threshold value is exceeded or when the value is above the threshold value.



Note
The parameter is available only when parameter "Controller type" is set on "PI".

11.6.4.43 PI settings – Value in the event of a sensor failure

Options:	0 - 255

Should a fault or failure occur in the internal or external measurement, activating the parameter will make the fault available to the KNX bus via the "Sensor fault" communication object.



Note
The parameter is available only when parameter "Controller type" is set on "PI".

11.6.4.44 Disable control output

Options:	Deactivated
	Activated

The complete function of the sensor can be blocked using this parameter and the corresponding communication object. Deactivation takes place by selecting "Inactive".

11.6.4.45 Behaviour at setting the blockage

Options:	Send nothing
	Send configured value

If the sensor is blocked after the receipt of an ON telegram, a selection can be made from the following parameters:

- Do not send:
  - The sensor sends no value during blockage.
- Send configured value:
  - The sensor sends its configured (current) value during blockage also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.6.4.46 Behaviour at removing the blockage

Options:	Do not send
	Send current value

If the sensor is enabled again after the receipt of an OFF telegram, the following parameters can be selected:

- Do not send:
  - The sensor only sends its value when it has changed.
- Send current value
  - The sensor sends its current value also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.6.5 Dew point

11.6.5.1 Activate

Options:	Inactive
	Active

The parameter activates the dew point sensor. The corresponding communicaiton objects are displayed in ETS.

11.6.5.2 Communication object

Options:	Dew point TF100	Inactive Active
	Dew point TF80	Inactive Active
	Dew point TF0	Inactive Active

The individual dew point values are made available via a 2-byte communication object when the individual objects are activated.

The TF value is used to prevent mould growth on surfaces. This specifies the relative humidity, expressed as a percentage, at which the layer of air in front of the wall, in conjunction with the temperature, prevents mould growth.

- TF100:
  - TF100: Corresponds to 100% of the maximum saturation of the air with water in the room; condensation may occur.
- TF80:
  - This corresponds to 80 % of the maximum saturation of the air with water in the room. Condensation cannot form on the wall surface.
- TF70:
  - This corresponds to 70 % of the maximum saturation of the air with water in the room. Condensation cannot form on the wall surface.

11.6.5.3 Send dew point temperature when there is a change

Options:	0.1 - 0.5 ... 25K

The parameter is used to determined when a change should be actively sent to the KNX bus. The telegram load can be reduced by the setting.

11.6.5.4 Send dew point temperature cyclically

Options:	Inactive
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the dew point temperature cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.6.6 Dew point alarm

11.6.6.1 Activate

Options:	<u>Deactivated</u>
	Activated

If an alarm is sent when the parameterised dew point is exceeded, the parameter must be set to "active". A corresponding communication object is displayed in ETS in parallel.

11.6.6.2 Threshold

Options:	<u>TF70</u>
	TF80
	TF100

This selection determines the dew point value for the control system. The TF value is used to prevent mould from forming on surfaces. This specifies the relative humidity, expressed as a percentage, at which the layer of air in front of the wall, in conjunction with the temperature, prevents mould growth.

- TF80:
  - This corresponds to 80 % of the maximum saturation of the air with water in the room. Condensation cannot form on the wall surface.
- TF80:
  - This corresponds to 80 % of the maximum saturation of the air with water in the room. Condensation cannot form on the wall surface.
- TF70:
  - This corresponds to 70 % of the maximum saturation of the air with water in the room. Condensation cannot form on the wall surface.

11.6.6.3 Share communication object "Surface temperature"

Options:	Inactive
	Active

When this feature is enabled, an additional 2-byte temperature object (surface temperature) is made available.

A value determined by an external temperature sensor is assigned to this communication object. This value is set in relation to the dew point calculated for the room.

If the measured value is below the dew point, the dew point alarm triggers a corresponding message or action. The alarm will not be deactivated until the temperature rises above the dew point.

Example:

In a room with a temperature of 21°C and a relative humidity of 58 %, the dew point is approximately 12.4°C (TF80 at 15.9°C). If the temperature falls below 12.4°C, condensation will occur, meaning that condensation may form on components.

If an additional external temperature sensor – the value of which is provided via KNX – measures the temperature at a supply pipe (cold surface) of a cooling ceiling, a corresponding alarm is triggered when the temperature falls below the dew point. For example, this can close the valve on the cooling ceiling and/or switch the control to frost/heat protection mode.

This prevents condensation from forming, for example, in summer whilst the cooling ceiling is in operation, on the supply pipe leading to the cooling ceiling, which could otherwise cause damp damage to the ceiling.

11.6.6.4 Hysteresis (symmetrical)

Options:	0 - 1 ... 5°C

The basic set value has a hysteresis. If the parameterised hysteresis value is exceeded/undershot, the corresponding value is sent.

11.6.6.5 If there are any changes, send

Options:	Deactivated
	Activated

If a changed value/status is present, it can be activated and sent to the KNX bus via the corresponding communication object.

11.6.6.6 Cyclical sending

Options:	Deactivated
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If the current alarm should be sent cyclically through the corresponding KNX communication object, the corresponding time must be selected here.

11.6.6.7 Dew point alarm output objects

Options		Activation	Data Point Type	Alarm active	Alarm disabled
	Dew point alarm 1	Active Inactive	1.001 Switching 2.001 Prio. 5.001 Percent (0..100%) 5.010 Counter reading (0–255) 17.001 Scene (0..63) 20.102 HVAC Mode	OFF On	OFF On
	Dew point alarm 2	Active Inactive	1.001 Switching 2.001 Prio. 5.001 Percent (0..100%) 5.010 Counter reading (0–255) 17.001 Scene (0..63) 20.102 HVAC Mode	OFF On	OFF On
	Dew point alarm 3	Active Inactive	1.001 Switching 2.001 Prio. 5.001 Percent (0..100%) 5.010 Counter reading (0–255) 17.001 Scene (0..63) 20.102 HVAC Mode	OFF On	OFF On

Using the parameter table, it is possible to output three individual dew point alarms via parameterised data point types.

- Dew point alarm 1 ... 3:
  - Dew point alarm 1 is enabled by default. If the user wishes to configure multiple alarms, they can set up to a maximum of 3 alarms.
- Activate:
  - IIn the table, you must decide accordingly whether and how many alarms should be activated. By default, dew point alarm 1 is enabled; dew point alarms 2 and 3 are disabled.
- Data point type:
  - For each dew point alarm, a corresponding data point type for the output object can be configured. This makes it possible to allocate the dew point alarm to different applications.

    Example:
    If, for example, a dew point alarm is to be displayed, dew point alarm 1 can be linked to an icon or a visual alarm on a display. If the valve is to be closed at the same time, this can be controlled via a count value (0 ... 255) with a value of 0 for dew point alarm 2. At the same time, the RTC is also due to switch to protection mode. This links dew point alarm 3 to the RTC protection mode via the switching object.

  - 1.001 Switching: 1 bit: On/Off
  - 2.001 Prio. 2 bit: On/Off
  - 5.001 Percent: 8-bit unsigned value; 0 ... 100%
  - 5.010 Counting pulses: 8-bit unsigned value; 0 ... 255
  - 17.001 Scene number: Scene control; 0 .. 63
  - 20.102 HVAC mode: AUTO, Comfort; Standby; ECO, Frost/Heat Protection; 8-bit
- Alarm active:
  - This is where the behaviour when an alarm is active is configured. The parameterisation depends on the selected data point type.
    - Switching: The parameter defines which state should be sent in case of a dew point alarm.
    - Priority The parameter defines which state should be sent in case of a dew point alarm.
    - Percent: This parameter defines which value between 0 and 100% is sent in case of a dew point alarm.
    - Counter reading: This parameter defines which value between 0 and 255 is sent in case of a dew point alarm.
    - Scene: This parameter defines which scene between 1 and 64 is sent in case of a dew point alarm.
    - HVAC mode: Specify which HVAC operating mode should be triggered when a dew point alarm is issued.
- Alarm inactive:
  - This is where the behaviour when an alarm is active is configured. The parameterisation depends on the selected data point type.
    - Switching: If the dew point alarm is no longer present at the object, this parameter can be used to define which status should be sent.
    - Priority If the dew point alarm is no longer present at the object, this parameter can be used to define which status should be sent.
    - Percent: If the dew point alarm is no longer connected to the unit, this parameter can be used to define
    - Counter reading: If the dew point alarm is no longer present at the object, this parameter can be used to define which value between 0 and 255 should be sent.
    - Scene: If the dew point alarm is no longer present at the object, this parameter can be used to define which scene between 1 and 64 should be sent.
    - HVAC mode: Specify which HVAC operating mode should be triggered when a dew point alarm is issued.

11.7 Application "CO2 sensor"

11.7.1 CO_2 sensor

11.7.1.1 Sensor settings

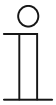
Options		Source	Internal	Internal component
	CO_2	Internal External	-2000 - 0 - 2000 ppm	Only use the external measured value. Include 10 %, 20 % …, 80 %, 90 % in the calculation

The parameter table can be used to specify the location of the CO_2 sensor.

11.7.1.2 Source

Options:	Internal
	External

- Internal:
  - The sensor inside the device is used to measure the CO_2 level.
- External:
  - Enabling this parameter activates an additional 2-byte communication object. This object allows a CO_2 sensor value provided via the bus to be used
- Internal offset:
  - The offset is only available for the internal CO2 sensor. An offset should only be applied once the automatic calibration of the internal CO_2 sensor has been completed (see chapter 9.1 “Calibration of CO2 sensors“ on page 61). An external CO_2 sensor must be given an offset in the external sensor application.



Note

In some applications, it makes sense to use an external CO_2 sensor, as the position of the internal sensor may result in inaccurate readings. If, for example, the device is situated directly next to a door, the CO_2 level in the room may mix with that of the adjoining room, thereby leading to an inaccurate measurement result.

11.7.1.3 Internal offset

Options:	-2000 … 0 … 2000 ppm

The adjustment range is between -2000 and 2000 ppm and applies exclusively to the internally measured CO_2 value. If a CO_2 value is taken externally, the offset must be set on the device in which the CO_2 sensor is located.

11.7.1.4 Internal component

Options:	Include in calculation at 10%
	Include in calculation at 20%
	Include in calculation at 30%
	Include in calculation at 40%
	Include in calculation at 50%
	Include in calculation at 60%
	Include in calculation at 70%
	Include in calculation at 80%
	Include in calculation at 90%
	Only use external measured value

The parameter **"Internal proportion"** determines the extent to which the internally measured CO_2 value measured internally contributes to the total value when an external value is also available. At 100 %, only the internal reading is taken into account; at 0 %, only the external reading is taken into account; in between, both are weighted accordingly.

11.7.1.5 Share communication object "Sensor fault"

Options:	Active
	Inactive

This parameter is only available when an external CO_2 sensor is used. This parameter can be used to send a sensor fault to the KNX bus.

11.7.1.6 Input monitoring

Options:	1 - 10 … 240 min

This parameter is used to enable the "Sensor fault" communication object and to monitor it over time. If no telegram is received within the specified time, this is reported as a sensor fault via the "Sensor fault" communication object.

11.7.1.7 Height of mounting location above normal height zero

Options:	-1000 m - +1,000 metres above sea level, MHN

The parameter is used to make an adaptation of the CO_2 measurement to the height of the installation location. This means that the CO_2 value is determined even more accurately.

11.7.1.8 Send CO_2 value when a change occurs

Options:	Deactivated
	In case of a change of 10 ppm
	In case of a change of 20 ppm
	In case of a change of 50 ppm
	In case of a change of 100 ppm
	In case of a change of 150 ppm
	In case of a change of 200 ppm
	In case of a change of 250 ppm
	In case of a change of 300 ppm
	In case of a change of 350 ppm
	In case of a change of 400 ppm
	In case of a change of 450 ppm
	In case of a change of 500 ppm

The parameter is used to determined when a change should be actively sent to the KNX bus. The telegram load can be reduced by the setting.

11.7.1.9 Send CO_2 value cyclically

Options:	Deactivated
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the CO_2 value cyclically through the corresponding KNX communication object, a corresponding time must be selected here.

11.7.2 CO_2 control

11.7.2.1 Control settings

11.7.2.2 CO_2 control type

Options:	Deactivated
	Single-stage
	Two-stage
	Three-stage
	PI

The control type for actuating the external fan is defined using this parameter. When selecting the controller type, the relevant communication objects are available for linking to an actuator.

11.7.2.3 Change setpoint via communication object

Options:	Deactivated
	Activated

The basic set value defined for the first threshold can be optimised via the KNX bus, e.g., through a visualisation.

11.7.2.4 Control variable data point type

Options:	1.001 Switching
	2.001 Prio. Switching
	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	17.001 Scene number

The output value when the respective threshold is exceeded or undershot is defined using this parameter.



Note
The parameter is available only when parameter "CO_2 controller type" is set on "Single stage", "Two-stage" or "Three-stage".



Note
For selection of parameter setting "PI" only the selection between "Percent" or "Byte" is available.

11.7.2.5 Send control variable on change

Options:	Deactivated
	Activated

At each change in status between ON and OFF, the corresponding control value is sent. The parameter must be activated for this.



Note
The parameter is available only when parameter "Control value data point type" is set on "Switching command", "Priority" or "Scene".

11.7.2.6 Send control value cyclic

Options:	Inactive
	Every minute
	Every 2 minutes
	Every 3 minutes
	Every 4 minutes
	Every 5 minutes
	Every 10 minutes
	Every 15 minutes
	Every 20 minutes
	Every 45 minutes
	Every hour
	Every 2 hours
	Every 3 hours
	Every 4 hours
	Every 5 hours
	Every 6 hours
	Every 12 hours
	Once a day

If you wish to send the control value cyclically through the corresponding KNX communication object, the corresponding time must be selected.

11.7.2.7 Hysteresis (symmetrical)

Options:	50 ppm
	100 ppm
	150 ppm
	200 ppm
	250 ppm
	300 ppm

The basic set value has a hysteresis. If the parameterised hysteresis value is exceeded/undershot, the corresponding value is sent.



Note
The parameter is available only when parameter "CO2 controller type" is set on "Single stage", "Two-stage", "Three-stage" or "PI".

11.7.2.8 Control variable settings

Options	Level	CO_2 switching threshold	Control variable below	Control variable above
	Level 1	400 … 1150 … 2000 ppm	1.001 Switching: ▪ ON/OFF 2.001 Prio. ▪ End priority ▪ OFF with priority ▪ ON with priority 5.001 Percent (0..100%): ▪ 0..100% 5.010 Counting pulse (0–255): ▪ 0..255 17.001 Scene number: ▪ 1..64	1.001 Switching: ▪ ON/OFF 2.001 Prio. ▪ End priority ▪ OFF with priority ▪ ON with priority 5.001 Percent (0..100%): ▪ 0..100% 5.010 Counting pulse (0–255): ▪ 0..255 17.001 Scene number: ▪ 1..64
	Level 2	1+50…400…1000 ppm	1.001 Switching: ▪ ON/OFF 2.001 Prio. ▪ End priority ▪ OFF with priority ▪ ON with priority 5.001 Percent (0..100%): ▪ 0..100% 5.010 Counting pulse (0–255): ▪ 0..255 17.001 Scene number: ▪ 1..64	1.001 Switching: ▪ ON/OFF 2.001 Prio. ▪ End priority ▪ OFF with priority ▪ ON with priority 5.001 Percent (0..100%): ▪ 0..100% 5.010 Counting pulse (0–255): ▪ 0..255 17.001 Scene number: ▪ 1..64
	Level 3	2+50…400…1000 ppm	1.001 Switching: ▪ ON/OFF 2.001 Prio. ▪ End priority ▪ OFF with priority ▪ ON with priority 5.001 Percent (0..100%): ▪ 0..100% 5.010 Counting pulse (0–255): ▪ 0..255 17.001 Scene number: ▪ 1..64	1.001 Switching: ▪ ON/OFF 2.001 Prio. ▪ End priority ▪ OFF with priority ▪ ON with priority 5.001 Percent (0..100%): ▪ 0..100% 5.010 Counting pulse (0–255): ▪ 0..255 17.001 Scene number: ▪ 1..64

The parameters for the individual levels are configured in the table; their availability depends on the control type selected previously.

- Level 1:
  - This level is available in all parameter settings (except for the PI control). This is where the first threshold value is set; this may, for example, be based on workplace guideline ASR 3.6.
- Level 2:
  - This level is available on a two-level control. This is where the desired value or state is defined when the respective switching threshold is exceeded or not reached.

- Level 3:
  - This level is available on a three-level control. Here, too, the desired value or state is defined when the respective switching threshold is exceeded or not reached.

  If the value exceeds or falls below the set threshold, a defined value is sent to the KNX bus to reset the event that was previously triggered. For example, a fan is activated when the threshold is undershot to supply the room with fresh air. If the CO_2 concentration falls below the threshold value again after the air has been replaced, the fan is switched off accordingly.

Setpoint	P-range	I-time	Min. value	Max value
400 … 1150 … 2000 ppm	100 … 400 … 2000 ppm	15 - 240 min	0 ... 90%	10 ... 100%

The table is used to configure the parameters of a PI control:

- Setpoint:
  - This parameter specifies which value is to be output when the threshold is exceeded or not reached.
- P-area:
  - Threshold 1 defines the base value at which a response, e.g. "Fan speed 3", is triggered.
- I-time:
  - The I component determines the time taken to reach the setpoint; if the I component is too high, this can lead to excessive overshoot.
- Min. value:
  - This parameter defines the value that is output when the threshold is not reached or is exceeded.
- Max. value:
  - This parameter defines the value that is output when the threshold is exceeded or not met.

11.7.2.9 Control variable in the event of a sensor fault

Options:	Deactivated
	Activated

If the internal or external measurement malfunctions or fails, a defined switching command can be sent through this parameter.

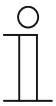


Note
The parameter is available only when parameter "Control value output format" is set on "Switching command".

11.7.2.10 Priority in the event of a sensor fault

Options:	End priority
	OFF with priority
	ON with priority

If the internal or external measurement malfunctions or fails, a defined switching command can be sent through this parameter.



Note
The parameter is available only when parameter "Control value output format" is set on "Priority".

11.7.2.11 Value in the event of a sensor fault (scene)

Options:	0 - 64

If the internal or external measurement malfunctions or fails, a defined value can be sent through this parameter.



Note
The parameter is available only when parameter "Control value output format" is set on "Scene".

11.7.2.12 Disable control output

Options:	Deactivated
	Activated

The complete function of the sensor can be blocked using this parameter and the corresponding communication object. Deactivation takes place by selecting "Inactive".

11.7.2.13 Behaviour at setting the blockage

Options:	Send nothing
	Sending the value

If the sensor is blocked after the receipt of an ON telegram, the following parameters can be selected:

- Do not send:
  - The sensor sends no value during blockage.
- Send current value:
  - The sensor sends its current value during blockage also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.7.2.14 Behaviour at removing the blockage

Options:	Send nothing
	Send configured value

If the sensor is enabled again after the receipt of an OFF telegram, the following parameters can be selected:

- Do not send:
  - The sensor only sends its value when it has changed.
- Send configured value:
  - The sensor sends its configured (current) value also when it has not changed.



Note
The parameter is available only when parameter "Blocking object" is set on "Active".

11.8 Application "RTC"

11.8.1 Basic settings

The following settings can be configured in this parameter window:

- Configure use of the basic and advanced levels
- Adjusting the control behaviour

11.8.2 Device function

11.8.2.1 RTC device is

Options:	Main device
	Extension unit (secondary)

This parameter determines the role that the RTC plays within the system.

- Main device:
  - This function allows the room temperature control settings to be stored directly in the unit. Only the control variables and/or communication objects required to control an extension are displayed. In addition, one or more extension handsets can be configured as operator extensions. The master device must be linked to the associated slave devices using the appropriately labelled communication objects. Only the master device regulates the temperature.
- Extension device:
  - If the room temperature control is located in another device, e.g. in a valve actuator, the device can be operated as a remote room temperature control. In doing so, the unit exchanges the necessary information – such as setpoint adjustment, operating mode selection or fan coil speed adjustment – with the main unit. Several extension units can be operated in conjunction with a main unit.

11.8.3 Heating/cooling system

	Heating	Cooling
Primary level	Deactivated	Deactivated
	Radiator (PI: 1.5 K / 100 min)	Cooling ceiling (PI: 5 K / 240 min)
	Underfloor heating (PI: 4 K / 200 min)	Fan coil (PI: 4 K / 90 min)
	Electric heater (2-point)	Additional fan (2-point)
	Fan coil: Water-filled heating coil (PI: 4 K / 90 min)	Free configuration
	Free configuration	
Additional stage	Deactivated	Deactivated
	Radiator (PI: 1.5 K / 100 min)	Cooling ceiling (PI: 5 K / 240 min)
	Underfloor heating (PI: 4 K / 200 min)	Fan coil (PI: 4 K / 90 min)
	Electric heater (2-point)	Additional fan (2-point)
	Fan coil: Water-filled heating coil (PI: 4 K / 90 min)	
	Free configuration	

These settings are used to configure the basic parameters of the heating/cooling system. It enables you to configure the required heating and/or cooling systems with the appropriate control functions. The system offers a range of functions for this purpose.

11.8.3.1 Control settings

Options:	Deactivated
	Activated

This parameter defines the control behaviour of the room temperature control, e.g. P/I components, setpoint behaviour and control parameters that determine how quickly and accurately the room temperature is controlled.

Basic heating/cooling:

The basic level is the primary control. The basic level is used to regulate the room to the desired set temperature.

- Heating:
  - For operating a heat-based automatic single-room control. The control type and control settings must be configured.
  - "Radiators" and "Surface heating" represent PI controllers with preset P and I components. In the advanced settings, the P and I components of a PI controller can be freely configured using the "Free configuration" option.
  - "Electric heating" utilises a 2-point controller. The "Fan coil: electric heating coil" controller type combines a 2-point controller for the heating coil with a fan control.
  - "Fan coil: The "Water-filled heating coil" combines a PI controller for the heating coil with a fan control system.
  - For heating-only operation, the required control settings must be determined using the selection table. The "Cooling" basic setting, as well as the additional settings for "Heating" and "Cooling", must be deactivated.
- Cooling:
  - For operating a cooling-based automatic single-room control. The type of heating and the control settings must be configured.
  - "Cooling ceiling" represents a PI controller with preset P and I components. The "Free Configuration" function allows the P and I components of a PI controller to be freely configured.
  - "FanCoil" combines a PI controller for the cooling coil with a fan control system.
  - „The “additional fan” is controlled according to the output variable of the PI controller and increases air circulation or cooling capacity as the cooling demand rises.
  - For cooling-only operation, the required control type must be specified. The "Cooling" basic setting, as well as the additional settings for "Heating" and "Cooling", must be deactivated.
- Heating and cooling:
  - For operating a two-wire or four-wire system used to heat or cool a room. Switching between heating and cooling can take place using a central switch (two-wire system) or automatically via the single room temperature controller (four-wire system).
  - The required control type must be selected for heating/cooling operation.

Additional stage heating/cooling

An advanced level is required in order to activate an additional level. The additional level depends on the basic level. Normally, the supplementary level serves to support the basic level within a room.

Example: A typical example is an additional radiator in the bathroom. The underfloor heating (basic setting) regulates the temperature in the room. The towel rail is designed to help the base level regulate the room to the desired setpoint more quickly than the slow-responding underfloor heating can. Once the desired set temperature is reached, the auxiliary heater switches off to prevent the room from overheating.

The additional level for heating and/or cooling is only active if the corresponding basic level has been activated beforehand.

- Heating with additional stage:
  - In addition to the controller function described under "Heating", the supplementary stage provides a parallel control loop for controlling an additional heating circuit. An independent controller type can be selected for this purpose. This type of additional stage is used, for example, to quickly heat up a bathroom with floor heating via an additional heating fan.
- Cooling with additional stage:
  - In addition to the controller function described under "Cooling", the supplementary stage provides a parallel control loop for controlling an additional cooling circuit. An independent controller type can be selected for this purpose. This type of additional stage is used, for example, to quickly cool a room via an added cooling device.
- Heating and cooling with additional stage
  - In addition to the heating and cooling functions, parameters can be set for one additional stage each with an autonomous controller type.

11.8.3.2 Control of the auxiliary level

Options:	2 separate communication objects
	1 communication object for a 6-way valve

This parameter determines how the auxiliary level (heating/cooling) is controlled via KNX communication objects.

- "2 separate communication objects":
  - Heating and cooling are controlled via two separate group objects. This allows both functions to be switched on or off, or controlled, independently of one another.
- "1 communication object for a 6-way valve":
  - Only one shared communication object is used, which controls a 6-way valve that mechanically switches between heating and cooling modes. Control is therefore carried out via a single control variable, rather than separately for heating and cooling.

11.8.4 Heating and cooling settings

11.8.4.1 Operating mode following KNX power restoration or download

Options:	Heating
	Cooling

This parameter determines which operating mode is activated following a KNX power recovery, an ETS reset or an ETS download.

Note
The parameter is visible if, in the "RTC" application under "Basic settings", the "Basic heating level" and "Basic cooling level" parameters are both enabled.

11.8.4.2 Type of heating/cooling system

Options:	4-pipe
	2-pipe

- 4-pipe:
  - In a 4-pipe system, there are separate supply and return pipes for heating and cooling. The temperature control ensures that the two systems are interlocked so that heating and cooling cannot take place at the same time.
- 2-pipe:
  - In a two-pipe system, there is one pipe for the flow and one for the return, each of which can be supplied with either a heating or cooling medium. Information on whether the system is heating or cooling is transmitted from the generator to the temperature control.

This parameter is used to specify the type of heating/cooling system to be used. This setting affects how the system switches between operating modes (heating/cooling).

Note
The parameter is visible if, in the "RTC" application under "Basic settings", the "Basic heating level" and "Basic cooling level" parameters are both enabled.

11.8.4.3 Heating/Cooling changeover



Note
When configuring the "Heating/cooling system" type as "2-pipe", this parameter is fixed to the option via the communication object and cannot be changed.

Options:	Manually/via a communication object
	Automatic

- Manually/via a communication object:
  - The switch between operating modes is carried out via the "Heating/Cooling Switch" communication object. The following dependent communication objects are displayed: Heating/cooling changeover
- Automatic:
  - For four-pipe systems which allow the switchover between heating and cooling at all times. Once the room temperature has been determined and the setpoint temperature has been specified, the unit automatically switches between heating and cooling and adjusts to the corresponding setpoint. The following dependent parameters are displayed: Hysteresis for switchover heating/cooling.

This parameter determines how the system switches between operating modes.



Note
The parameter is visible if, in the "RTC" application under "Basic settings", the "Basic heating level" and "Basic cooling level" parameters are both enabled.

11.8.4.4 Basic-level control

Options:	2 separate communication objects
	1 communication object for a 6-way valve

This parameter determines how the base level (heating/cooling) is controlled via KNX communication objects.

- "2 separate communication objects":
  - Heating and cooling are controlled via two separate group objects. This allows both functions to be switched on or off, or controlled, independently of one another.
- "1 communication object for a 6-way valve":
  - Only one shared communication object is used, which controls a 6-way valve that mechanically switches between heating and cooling modes. Control is therefore carried out via a single control variable, rather than separately for heating and cooling.



Note
The parameter is visible if, in the "RTC" application under "Basic settings", the "Basic heating level" and "Basic cooling level" parameters are both enabled.

11.8.5 6-way valve

A 6-way valve is designed for combined use, for example with heating and cooling ceilings. The 6-way valve combines the functions of four or two straight-through valves. In addition, a changeover valve is also built in.

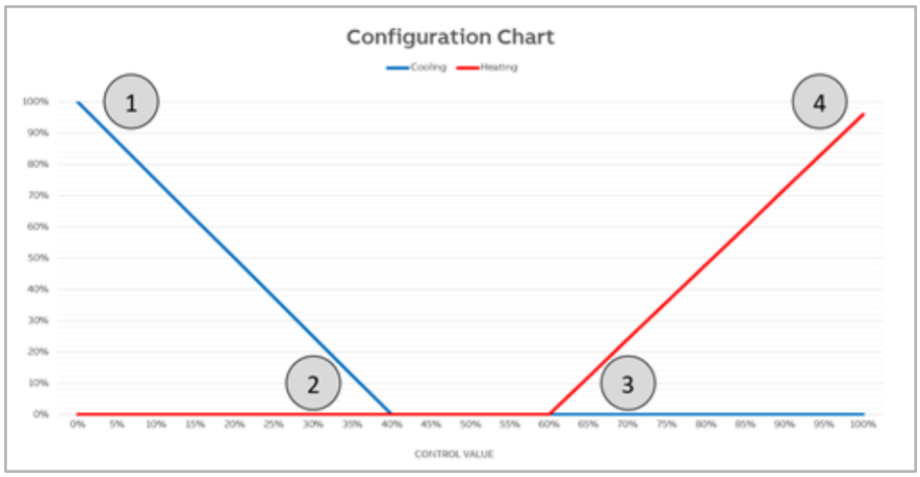


Fig. 39: 6-way valve

11.8.5.1 Maximum control variable for cooling

Options:	0 - 100%

11.8.5.2 Maximum input value for cooling control variable 0

Options:	30 - 40 ... 60%

11.8.5.3 Maximum input value for heating control variable 0

Options:	40 - 60 ... 70%

11.8.5.4 Maximum heating control variable

Options:	0 - 100%

11.8.5.5 Swap heating and cooling

Options:	Deactivated
	Activated

11.8.6 Restore user settings

11.8.6.1 Restore control status following a KNX power recovery or download

Options:	Deactivated
	Activated

- Deactivated:
  - The adjustments are discarded.
- Activated:
  - The adjustments are retained. The following dependent parameters are displayed: Overwrite saved settings when downloading

This parameter determines whether changes to the operating mode, operating mode setting or setpoints are restored following a restart (KNX power-up, ETS reset or ETS download).

11.8.6.2 Overwrite saved settings on download

Options:	Deactivated
	Activated

This parameter determines whether the settings stored in the device are overwritten by the values specified in the ETS during an ETS download.



Note
The parameter is visible if, in the “RTC” application under “Basic settings”, the parameter “Restore controller status after KNX power recovery or download” is enabled.

11.8.7 Release status objects

11.8.7.1 "RTSM control status (Main/Secondary)" (DPT 21.107)

Options:	Deactivated
	Activated

This parameter is used to enable the 1-byte RTSM (DPT21.107). The property comprises the following breakdown:

Bit of the status telegram	Meaning when '1'	Meaning when '0'
0	Window open For "Frost/heat protection = automatic frost protection mode": This bit is set if the automatic frost protection system temperature drop detection is active. For "Frost and heat protection = via window status": The bit is set if at least one window is open once the delay time has elapsed.	No windows are open For "Frost/heat protection = automatic frost protection mode": The bit is inactive if the automatic frost protection system temperature drop detection is inactive. For "Frost and heat protection = via window status": The bit is inactive if all windows are closed.
1	Presence (presence detector)	No presence (presence detector)
2	Presence (presence button)	No presence (presence button)
3	Comfort extension active	Comfort extension not active
4	Forced operating mode active	Forced operating mode not active
5	Not used (permanently set to "0")	
6	Not used (permanently set to "0")	
7	Not used (permanently set to "0")	

11.8.7.2 "Confirm setpoint adjustment (Main/Secondary)"

Options:	Deactivated
	Activated

- Deactivated
  - The communication object is not enabled.
- Activated:
  - The following dependent communication objects are displayed: Confirm setpoint adjustment (Main/Secondary).

This parameter is used to enable the following communication object: "Confirm setpoint adjustment (Main/Secondary)".

11.8.7.3 "RTC status control (Main/Secondary)" (DPT 22.103)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent parameters are displayed: Frost alarm temperature, overheating alarm temperature. The following dependent communication objects are displayed: RTC status control.

This parameter is used to configure the "RTC Controller Status (Main/Secondary)" communication object

11.8.7.4 "RHCC status control (Main/Secondary)" (DPT 22.101)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent parameters are displayed: Frost alarm temperature, overheating alarm temperature.

The following dependent communication objects are displayed: "RHCC status control".

This parameter enables the RHCC control status communication object, as well as the frost and overheating alarms.

11.8.7.5 "Heating/cooling mode switch"

Options:	No
	Yes

- No:
  - The communication object is not enabled.
- Yes:
  - The following dependent communication objects are displayed: Heating/cooling mode switch status.

This parameter is used to enable the following communication object: "Heating/cooling mode switch".



Note
The parameter is visible if, in the “RTC” application under “Basic settings”, the “Basic stage control” parameter under “Heating and cooling settings” is set to “1 communication object for 6-way valve”.

11.8.8 Enable function

11.8.8.1 Temperature display

Options:	Celsius
	Fahrenheit

This parameter can be used to set the unit of the temperature display to either Celsius or Fahrenheit.

11.8.8.2 Change temperature unit via communication object

Options:	Deactivated
	Activated

When parameter t is enabled, the communication object "Switch display °C/F" is enabled. The communication object can be used to switch modes via the KNX bus.

11.8.8.3 Window contact

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent parameters are displayed: Delay time.
  - The following dependent communication objects are displayed: Window contact.

This parameter is used to enable the following communication object: Window contact.

11.8.8.4 Delay time



Note
To prevent air conditioning units from reacting to the window being opened briefly, the processing of the "Window open" telegram can be delayed. If the window remains open for the entire delay period, the "Window open" telegram is processed. The delay time is reset every time the window is opened.

Options:	00:00:00 ... 01:00:00 hh:mm:ss

This parameter is used to set the delay time for the window contact.



Note
The parameter is visible if, in the "RTC" application, under the "Basic settings" parameter, the parameter "Enable function: "Window contact" is enabled.

11.8.8.5 Frost warning temperature



Note
The frost alarm is designed to alert you to critical temperatures in the room and has no effect on temperature control. The control system"s target temperatures for building protection ensure that critical temperatures are not reached in the room.

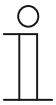
Options:	-10 - 5 - 20°C

This parameter is used to set the threshold temperature for the frost alarm. If the room temperature falls below the set value, the frost alarm is triggered.



Note
The parameter is visible if, in the “RTC” application under the “Basic settings” parameters, the “Enable communication object” parameter and the “RTC (Main Secondary) controller status” parameter (DPT 22.103) are set to “Enabled”.

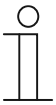
11.8.8.6 Overheating alarm temperature



Note
The overheating alarm is designed to alert you to critical temperatures in the room and has no effect on temperature control. The control system"s target temperatures for building protection ensure that critical temperatures are not reached in the room.

Options:	-10 - 40 - 60°C

This parameter is used to set the threshold temperature for the overheating alarm. If the room temperature exceeds the set value, the overheating alarm is triggered.



Note
The parameter is visible if, in the "RTC" application under "Basic settings", the parameters "Enable communication object" and "RTC controller status (Main/Secondary) (DPT 22.103)" are enabled.

11.8.8.7 Presence detector

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent communication objects are displayed: Presence detector.

This parameter is used to enable the following communication object: Presence detector. The "Presence Detector" communication object activates Comfort mode when a person is present (telegram value 1). In the event of an absence (telegram value 0), the operating mode specified by the "Operating mode (Main/Secondary)" communication object applies.

11.8.8.8 Override operating mode

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent communication objects are displayed: Override operating mode.

This parameter is used to enable the following communication object: "Current operating mode (Main/Secondary)".

11.8.8.9 Control synchronisation (DPT 20.105)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent parameters are displayed: Synchronisation settings.

This parameter enables control synchronisation. Authorisation is only required if several controls are used within a single control zone and it is necessary to ensure that all controls are operating in the same mode (heating or cooling).



Note
The parameter is visible if, in the "RTC" application under "Basic settings", the "Basic heating level" and "Basic cooling level" parameters are both enabled.

11.8.8.10 Synchronisation direction

Options:	Sender
	Receiving

- Sender:
  - The device operates as the transmitting unit (master unit) and specifies the operating mode to the receiving unit (slave unit). The following dependent communication objects are displayed: Control synchronisation output.
- Receiving:
  - The device operates as a receiving unit (sub-station) and receives the operating mode from the transmitting unit (main station).
  - The following dependent communication objects are displayed: Control synchronisation input.

This parameter determines whether the device is operated as a master or a slave.

11.8.8.11 Scenes

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent parameters are displayed: Scenes

This parameter enables the "Scenes" application.

11.8.9 Communication objects: Enable heating

11.8.9.1 Disable/enable heating

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled. The "Cooling" operating mode cannot be disabled.
- Activated:
  - The "Heating" operating mode can be disabled via the enabled communication object. If the heating operating mode is disabled, the cooling levels cannot be activated and a control signal of 0 % is sent to the outputs or to the bus.

The following dependent communication objects are displayed: "Lock/unlock heating".

11.8.9.2 Lock/unlock heating levels individually (DPT 21.106)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled. All heating levels are enabled, all control signals are being transmitted, and the control signal for the base level is being output.
- Activated:
  - The heating levels can be enabled or disabled separately via the enabled communication object.

The following dependent communication objects are displayed: "Lock/unlock heating levels individually".

11.8.9.3 Heating setpoints (DPT 275.100)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:

This parameter is used to enable the following communication object: "Setpoints heating".



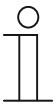
Note
The parameter is visible if the "Basic heating level", "Standby" and "Economy" parameters are enabled in the "RTC" application under "Basic settings".

11.8.9.4 Heating active (control variable > 0)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent communication objects are displayed: Heating active

This parameter is used to enable the following communication object: Heating active



Note
The parameter is visible if the "Basic heating level" parameter is enabled in the "RTC" application under "Basic settings".

11.8.10 Communication objects: Enable cooling

11.8.10.1 Disable/enable cooling

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled. The "Cooling" operating mode cannot be disabled.
- Activated:
  - The "Cooling" operating mode can be disabled via the enabled communication object. If the heating operating mode is disabled, the cooling stages cannot be activated and a control signal of 0 % is sent to the outputs or to the bus.
  - The following dependent communication objects are displayed: Disable/enable cooling.

11.8.10.2 Disable/enable cooling levels individually (DPT 21.106)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled. All cooling levels are enabled, all control signals are being transmitted, and the control signal for the base level is being output.
- Activated:
  - The cooling levels can be enabled or disabled separately via the enabled communication object.
  - The following dependent communication objects are displayed: Disable/enable heating levels individually.

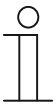
This parameter is used to enable the following communication object: Disable/enable cooling levels individually.

11.8.10.3 Setpoints cooling (DPT 275.100)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent communication objects are displayed: Setpoints cooling.

This parameter is used to enable the following communication object: "Setpoints cooling".



Note
The parameter is visible if the "Basic cooling level", "Standby" and "Economy" parameters are enabled in the "RTC" application under "Basic settings".

11.8.10.4 Active cooling (control variable > 0)

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent communication objects are displayed: Cooling active

This parameter is used to enable the following communication object: Cooling active

11.8.10.5 Dew point alarm

Options:	Deactivated
	Activated

- Deactivated:
  - The communication object is not enabled.
- Activated:
  - The following dependent parameters are displayed: when the dew point alarm is actve.
  - The following dependent communication objects are displayed: Dew point alarm.

This parameter is used to enable the following communication object: Dew point alarm

11.8.10.6 When the dew point alarm is active

Options:	Enable building protection cooling
	Disable cooling

- Enable building cooling:
  - To prevent frost forming on the refrigerant pipes, the "Building Protection – Cooling" operating mode is activated (→ "Building Protection – Cooling" setpoint parameter). The "Building Protection – Cooling" operating mode remains active until the dew point alarm is reset.
- Disable cooling:
  - To prevent frost forming on the refrigerant pipes, the "Cooling" operating mode is deactivated. The Cooling operating mode is disabled until the dew point alarm is reset.

This parameter is used to define the response to an active dew point alarm.



Note
The parameter is visible if the "Enable communication object" and "Dew point alarm" parameters are enabled under "Basic settings" in the "RTC" application.

11.8.11 Control settings

The following settings can be configured in this parameter window:

- Set control parameters (for free configuration of the basic or auxiliary levels)
- Share status communication objects
- Define the transmission behaviour of the control variables
- Set the base load
- Set temperature limits

This parameter window contains the following parameters:

The table is used to configure the controls for the respective basic and auxiliary levels. The table is populated dynamically based on the heating and cooling systems specified in the default settings. The table shows all the data configured for the controller type for the basic stages "Heating" and/or "Cooling", as well as for the additional stages "Heating" and/or "Cooling". If controller types are disabled under the "Basic Settings" tab, they will not be displayed in the table.

Heating/cooling system	▪ Basic heating / basic cooling ▪ Additional heating level / additional cooling level
Proportional component	▪ Basic heating / basic cooling ▪ Additional heating level / additional cooling level
Integral component	▪ Basic heating / basic cooling ▪ Additional heating level / additional cooling level
Setpoint difference for additional level	▪ Additional heating level / additional cooling level
Extended settings	▪ Send control variable when there is a change in ▪ Send control value cyclic – Sending cycle – Send inactive control variable cyclically ▪ Maximum control value ▪ Basic load – Minimum control variable [base load] ▪ Enable boost function – Initial value – Expiration time ▪ Temperature limiter – Limit temperature – Unidirectional hysteresis ▪ Minimum floor temperature – Setpoint temperature – Initial value – Unidirectional hysteresis – Initial value

Conditions for visibility

- "Configuration" parameter window
  - Set the "Controller settings" parameter under "Basic settings" to "enabled"

11.8.11.1 Heating/cooling system

Options:	Unchanging

This parameter automatically applies the settings for the basic and additional levels from the "Basic Settings" parameter window, and these settings cannot be changed.

This setting is derived from specifications in other parameters and cannot be changed here.

11.8.11.2 Proportional component

Options:	0 - 25K

This parameter is used to set a fixed, unchangeable preset value for the proportional component of the PI control, in accordance with the use of the base and auxiliary levels. If the relevant basic or additional level can be freely configured, the value can be changed. The default value varies depending on the basic and/or additional level.



Note
The default value depends on the operating mode (heating or cooling).

11.8.11.3 Integral component

Options:	0 - 2 ... 25K

The I-component stands for the readjust time of a PI control. The integral component has the effect of moving the room temperature toward, and ultimately reaching, the setpoint. Depending on the type of system used, the readjust time has to have different values. In general, the more inactive the overall system, the greater the readjust time.

This parameter determines the maximum difference from the setpoint temperature at which the supplementary level remains active.



Notice - Readjust time
- If the I-component "Readjust time" selected too small (fast), the system tends to overshoot at the start.
- If the I-component "Readjust time" is selected too large, the system responds constantly too slow.



Note
This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%,"PI PWM, On/Off“ or "Fan coil". In addition, the "Heating type" parameter must be set on "Free configuration".



Note
The parameter is visible if the "Additional heating stage" and "Additional cooling stage" parameters are enabled in the "RTC" application under "Basic settings".

11.8.11.4 Setpoint difference, supplementary level

Options:	0.1 - 2 ... 15K

This parameter is only active if an additional heating or cooling level has been selected under => Basic Settings/Control Configuration.

The auxiliary level is designed to assist the base level in reaching the set temperature. It is activated when the actual temperature differs from the setpoint temperature by a value greater than the "Setpoint temperature difference for additional stage". If the temperature difference in the room falls below this value, the additional level is deactivated.

11.8.11.5 Extended settings



Note
The changes made to the settings of the dependent parameters are only valid if the dependent parameters are displayed.

Options:	Deactivated
	Activated

- Deactivated:
  - The advanced settings are not displayed. The relevant parameters are used with their default values. Changes to the default values are discarded.
- Activated:
  - The following dependent parameters are displayed: Send control signal when there is a change in, send control signal cyclically, maximum control signal, base load, temperature limit.

This parameter displays the advanced settings in the parameters window.

11.8.11.6 Send control variable in case of change in

Options:	2%
	5%
	10%

This parameter determines the minimum change in the control variable (based on the last value sent) required for the output value to be sent to the bus.

The control variable is only actively sent to the KNX bus if the currently calculated value of the control variable differs by at least the parameterised difference from the value last sent. If the difference is smaller, the control signal is not sent to the KNX bus.



Note
The parameter is visible if, in the "RTC" application, under "Basic settings" and then "Heating/cooling system", the following controller types are selected: "Radiator", "Underfloor heating", "Fan coil: "Water-filled heating coil" or "Free configuration".

11.8.11.7 Send control value cyclic

Options:	Deactivated
	Activated

- Deactivated:
  - The control variable is only sent when it changes.
- Activated:
  - The following dependent parameters are displayed: Sending cycle: send inactive control variable cyclically.

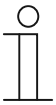
If desired, the control variable can be sent cyclically. To do this, the parameter must be enabled. If set to "Inactive", a telegram is only sent when the control variable changes. If this parameter is enabled, the control variable is sent to the bus cyclically once the parameterised time has elapsed. The cycle time is set using the "Cycle time" parameter.

11.8.11.8 Sending cycle

Options:	0 - 15 ... 60 min

The cycle time can only be configured if the "Send control variable cyclically" parameter is enabled.

If the reception of cyclic control variable telegrams is monitored on the receiver side, the cycle time should be approximately one-third of the monitoring time in the receiver.



Note
The parameter is visible if the "Send control variable cyclically" parameter is enabled in the "RTC" application under "Controller settings".

11.8.11.9 Send inactive control variable cyclically



Note
Cyclical sending increases the bus load. The control variable for the inactive operating mode should only be sent cyclically if it is absolutely essential to monitor the cyclical sending between two devices.



Note
In systems that have only one control variable input for heating and cooling, the control variable communication objects for heating and cooling must be connected to the same input communication object. If this option is selected in this parameter, the control variables for the active and inactive operating modes will override one another.

Options:	Deactivated
	Activated

This parameter determines whether the control variable for the inactive operating mode is transmitted cyclically.



Note
The parameter is visible if the "Send control variable cyclically" parameter is enabled in the "RTC" application under "Controller settings".

11.8.11.10 Maximum control value

Options:	0 - 100%

This parameter is used to set the maximum control variable. The control system must not exceed the maximum control variable, even if the control calculates a higher control variable.



Note
The parameter is visible if the "Send control variable cyclically" parameter is enabled in the "RTC" application under "Controller settings".

11.8.11.11 Basic load

Note
The base load can be set individually for each heating and cooling level. The base load is always activated for all levels simultaneously, but only applies to the active operating mode (heating or cooling). When switching operating modes, the base load of the inactive operating mode is not taken into account.

Options:	Inactive
	Always active
	Via communication object

- Inactive:
  - The base load is not used.
- Always active:
  - Here it is possible to define whether this basic load will be permanently active or whether it will be switched via the "Basic load" object.
- Via communication object:
  - When this parameter is selected, the basic load function, which means the minimum control value with a value higher than zero, can be activated (1) or deactivated (0) using the "Basic load" object. If it is activated, then the heating medium will always be fed through the system with at least the minimum control value. If it is deactivated, the control value can be reduced to zero by the controller.

This parameter is used to specify the use of a base load.

The base load serves to specify a minimum control variable. The control must not allow the load to fall below the base load, even if the control calculates a lower control variable.

11.8.11.12 Minimum control variable [base load]

Options:	0 - 100%

The minimum control value from the PI controller specifies the minimum value that the controller outputs. If a minimum value that is greater than zero is selected, the controller will not issue a lower value, even if it calculates a control value that is lower.

This parameter can be used to set a base load, e.g. for operating floor heating. Even if the controller calculates the control value zero, a heating medium will flow through the floor heating system to prevent the floor from cooling down.

Under "Settings of basic load," it is also possible to define whether this basic load will be permanently active or whether it will be switched by the "Basic load" object.

Note
The parameter is visible if, in the "RTC" application, under "Basic settings" and then "Heating/cooling system", the following controller types are selected: "Radiator", "Underfloor heating", "Fan coil: "Water-filled heating coil" or "Free configuration".

Note
The parameter is visible if the "Base load" parameter is enabled in the "RTC" application under "Controller settings".

11.8.11.13 Enable boost function

Options:	Deactivated
	Activated

The boost function is used to heat or cool a room quickly. If the boost function is to be used, it is activated by setting the corresponding 1-bit communication object to the value 1. The boost function is available for all basic and additional functions. This can be disabled using the "Disable boost function" parameter.

When the boost function is active, the control variable is set to "On" or "100 %", regardless of the value determined by the controller.

11.8.11.14 Control value

Options:	0 - 100%

This parameter determines which control variable the control uses during boost operation. When the boost function is activated, normal PI control operation is temporarily overridden.

11.8.11.15 Expiration time

Options:	00:00:01 ... 00:30:00 ... 18:12:15

This parameter is only active if "Exceed timeout" has been selected for the "End boost function" parameter. This time determines when the boost function ends, measured from the moment it is activated.

11.8.11.16 Temperature limiter

Options:	Deactivated
	Activated

- Deactivated:
  - The temperature limit is not activated.
- Activated:
  - The following dependent parameters are displayed: Limit temperature, single-sided hysteresis.
  - The following dependent communication objects are displayed: Limit temperature for the basic heating level, limit temperature for the supplementary heating level, limit temperature for the basic cooling level, limit temperature for the supplementary cooling level.

The temperature limit is used to implement a safety function designed to prevent critical temperatures from being reached. A typical example of this is underfloor heating used in conjunction with delicate floor coverings (e.g. wood), where it is essential to ensure that the flow temperature of the heating circuit remains within a permissible range and that no damage occurs.

The flow temperature is usually controlled by a central monitoring and control unit. KNX is primarily used here to monitor this temperature. To this end, the relevant temperature – usually the flow temperature of the heating circuit (Supply Temperature / VT Circuit) – is provided via a separate communication object. The data can be recorded, for example, via an external temperature sensor in the flow line or by receiving a measured value from the central control system.

If the configured limit value is exceeded, the temperature limit kicks in and sets the controller output to 0 %, so that no further heat is supplied. Only when the temperature returns to within the permissible range does the control output the calculated control signal once more.

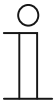
As this is a safety-critical monitoring function, it should also be ensured that the input object can be monitored (e.g. for failure or invalid values), as this is not currently provided as standard.

11.8.11.17 Limit temperature



Note
The default value depends on the operating mode (heating or cooling).

Options:	5 - 35 ... 90°C (heating)
	5 - 10 ... 90°C (cooling)



Note
The parameter is visible if the "Temperature limit" parameter is enabled in the "RTC" application under "Controller settings".

This is where the limit temperature is set for the individual parameters of the control configuration for the temperature limit of the base heating level, auxiliary heating level, base cooling level and/or auxiliary cooling level. If the inlet temperature exceeds the limit temperature (when heating) or falls below it (when cooling), the temperature limit is activated.

11.8.11.18 Unidirectional hysteresis

Options:	-25 - 5 ... 0.5K

Notice
The parameter is visible if the "Temperature limit" parameter is enabled in the "RTC" application under "Controller settings".

This parameter is used to set the hysteresis for the temperature limit of the base heating level, auxiliary heating level, cooling level and auxiliary cooling level. If the input temperature falls below the limit temperature minus the hysteresis, during heating or if the input temperature rises above the limit temperature plus the hysteresis, the temperature limit is deactivated again whilst the limit is active.

11.8.11.19 Minimum floor temperature

Options:	Deactivated
	Activated

This parameter is only available in the "Heating" controller configuration

The purpose of underfloor heating is to maintain a minimum temperature in the floor, even if the setpoint temperature in the room has already been reached. The actual floor temperature for this is received via dedicated communication objects. To this end, an external temperature sensor – usually embedded in the screed – measures the actual temperature, which is then transmitted to the control via the KNX bus.

It is switched on when the value 1 is received on the "Activate underfloor heating" command object, and switched off when the value 0 is received.

11.8.11.20 Setpoint temperature

Options:	5 - 22 ... 90°C

This is where the target temperature for the floor/screed is set.

11.8.11.21 Initial value

Options:	0 - 80 ... 100%

This setting specifies that, for example, 80 % of the setpoint temperature is used for control purposes.

11.8.11.22 Unidirectional hysteresis

Options:	0.5 - 5 ... 25K

Notice
The parameter is visible if the "Temperature limit" parameter is enabled in the "RTC" application under "Controller settings".

This parameter is used to set the one-sided hysteresis of the limit temperature. Hysteresis determines by how much the temperature must fall below (heating) or rise above (cooling) the limit temperature before the control becomes active again.

11.8.11.23 Function active after reset

Options:	No
	Yes

When the controller/device is restarted, this parameter can be used to select whether the "Underfloor heating" function is activated straight away or not.

11.8.12 Setpoint manager

The following settings can be configured in this parameter window:

- Set the base setpoint
- Enable Standby and Economy operating modes
- Set target temperatures
- Enable setpoint communication objects

The setpoint manager is used to configure the setpoints for the "Heating" and/or "Cooling" controller settings. Furthermore, the control parameters for the setpoint settings are defined here. This parameter window contains the following parameters:

Set value for heating comfort = set value for cooling comfort	▪ Hysteresis for switchover heating/cooling
Disable Standby and Economy	▪ Enable absolute setpoints – Enable setpoint communication objects
Setpoint	▪ Comfort heating ▪ Comfort cooling ▪ Standby heating ▪ Standby cooling ▪ Economy heating ▪ Economy cooling ▪ Building protection: heating ▪ Building protection: cooling
Operating mode following a KNX bus voltage recovery or an ETS download	▪ Additional heating level / additional cooling level
Send communication object value "Current setpoint"	▪ Sending cycle

Conditions for visibility

- "Configuration" parameter window
  - Set the "Controller settings" parameter under "Basic settings" to "enabled"
- "Basic Settings" parameter window
  - "Basic heating" and "Basic cooling" parameters enabled

11.8.13 Operating mode settings

11.8.13.1 Set value for heating comfort = set value for cooling comfort

Options:	Deactivated
	Activated

- Deactivated:
  - The function has two separate setpoints for heating and cooling in the comfort mode. The device will display the currently active setpoint. Switching between heating and cooling occurs via the "Switchover heating/cooling" parameter setting.
  - The following dependent parameters are displayed: Setpoint for comfort cooling; this is the base setpoint.
- Activated:
  - The device has the same setpoint for heating and cooling in the comfort mode. The system switches to heating mode when the temperature drops below the setpoint minus hysteresis. It switches to cooling mode when the temperature exceeds the setpoint plus hysteresis. The hysteresis is parameterisable.
  - The following dependent parameters are displayed: Hysteresis for switchover heating/cooling.

This parameter determines whether a common setpoint temperature is used for "Comfort" heating and "Comfort" cooling.

Examples of recommended design values for the interior temperature

Type of building or room	Category	Operating temperature	
		Minimum value for the heating season (winter), ~1.0 clo	Maximum value for the cooling period (summer) ~ 1.0 clo
Office single Seated ~ 1.2 metres	I	21.0	25.5
	II	20.0	26.0
	III	19.0	27.0
Department store Standing, walking ~ 1.6 metres	I	17.5	24.0
	II	16.0	25.0
	III	15.0	26.0

Table 7: Examples of recommended design values for the interior temperature

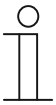
11.8.13.2 Hysteresis for switchover heating/cooling



Note
Automatic switching between heating and cooling only takes place if the "Automatic" option is selected in the "Heating/cooling switch" parameter.

	Operating mode
Actual temperature > (setpoint + hysteresis)	Cooling
Actual temperature < (setpoint + hysteresis)	Heating

Options:	0.5 - 1.0 ... 10.0°C



Notice
The parameter is visible if the "Heating/cooling switch" parameter is enabled in the "RTC" application under "Basic settings". In addition, the "Comfort heating setpoint" parameter must be enabled under "Setpoint manager".

This parameter sets the hysteresis for automatic switching between heating and cooling in Comfort mode when a common setpoint is used for Comfort heating and Comfort cooling.

11.8.13.3 Disable Standby and Economy

Options:	Deactivated
	Activated

- Deactivated:
  - The following dependent parameters are displayed: Standby heating setpoint, Economy heating setpoint, Standby cooling setpoint, Economy cooling setpoint, operating mode following KNX power restoration or ETS download, enable the "Heating setpoints" communication object (DPT 275.100), enable the "Cooling setpoints" communication object (DPT 275.100).
  - The following dependent communication objects are displayed: Operating mode (Main/Secondary).
- Activated:
  - The Standby and Economy operating modes are deactivated; any values received for Standby or Economy are discarded. This function is only available in Comfort and Building protection operating modes.

This parameter is used to set whether setpoint adjustments are based solely on temperature values or take account of the operating mode.

The Comfort and Building protection modes are always available. Comfort mode is the standard operating mode for a room. The Building protection setpoint is triggered, for example, when an open window is detected or in the event of a dew point alarm.

When the Standby and Eco operating modes are activated, the objects for switching between operating modes are also activated, so that preset setpoints for Comfort, Standby, Eco and Building protection can be used.

11.8.13.4 Table of setpoints

Setpoint	Heating	Cooling
Comfort	4 - 21 - 40°C	-
Standby	0.5 - 2 - 25K	0.5 - 2 - 25K
Economy	0.5 - 4 - 25K	0.5 - 4 - 25K
Building protection	4 - 7 - 40°C	18 - 35 - 40°C

Example:

If you switch between operating modes whilst the "Absolute setpoints disabled" setting is active, the "Comfort" operating mode serves as the reference point; in other words, in the "Heating" controller configuration, the values are subtracted from those of the "Comfort" operating mode.

- Standby: 21°C ... 2 K = 19°C
- ECO: 21°C ... 4 K = 17°C

In the "Cooling" controller configuration, the values are added together in "Comfort" operating mode.

- Standby: 21°C + 2 K = 23°C
- ECO: 21°C + 4 K = 25°C

Active:

When the absolute setpoint is enabled, the setpoints for each operating mode can be defined freely. The required setpoint can be selected for each operating mode.



Note
When defining the setpoints, the operating modes should be selected such that the "Comfort" mode serves as the baseline. All other operating modes should be set to a lower setting in heating mode and a higher setting in cooling mode.

Setpoint	Heating	Cooling
Comfort	4 - 21 - 40°C	
Standby	4 - 19 - 40°C	10 - 27 - 40°C
Economy	4 - 17 - 40°C	10 - 29 - 40°C
Building protection	4 - 7 - 16°C	10 - 35 - 40°C

11.8.13.5 Setpoint: Comfort heating

Options:	5 - 21 ... 40°C



Notice
The parameter is visible if the "Basic heating level" parameter is enabled in the "RTC" application under "Basic settings".

This parameter is used to set the target temperature (setpoint) for the "Comfort heating" operating mode.

11.8.13.6 Setpoint: Comfort cooling

Options:	4 - 25 ... 40°C

Notice
The parameter is visible if the "Basic cooling level" parameter is enabled in the "RTC" application under "Basic settings".

This parameter is used to set the target temperature (setpoint) for the "Comfort cooling" operating mode.

11.8.13.7 Setpoint: Standby heating

Note
The available options and default values depend on the selection made in the "Enable absolute setpoints" parameter.

Options:	4 - 25 ... 40°C
	0.5 - 2 ... 25K

Notice
The parameter is visible if the "Basic heating level" parameter is enabled in the "RTC" application under "Basic settings". In addition, the "Standby" and "Economy" parameters must be enabled under "Setpoint manager".

This parameter is used to set the target temperature (setpoint) for the "Heating standby" operating mode.

11.8.13.8 Setpoint: Standby cooling

Note
The available options and default values depend on the selection made in the "Enable absolute setpoints" parameter.

Options:	4 - 25 ... 40°C
	0.5 - 2 ... 25K

Notice
The parameter is visible if the "Basic heating level" parameter is enabled in the "RTC" application under "Basic settings". In addition, the "Standby" and "Economy" parameters must be enabled under "Setpoint manager".

This parameter is used to set the setpoint temperature for the "Cooling standby" operating mode.

11.8.13.9 Setpoint: Economy heating



Note
The available options and default values depend on the selection made in the "Enable absolute setpoints" parameter.

Options:	4 - 25 ... 40°C
	0.5 - 4 ... 25K



Notice
The parameter is visible if the "Basic heating level" parameter is enabled in the "RTC" application under "Basic settings". In addition, the "Standby" and "Economy" parameters must be enabled under "Setpoint manager".

This parameter is used to set the target temperature (setpoint) for the "Heating economy" operating mode.

11.8.13.10 Setpoint: Economy cooling



Note
The available options and default values depend on the selection made in the "Enable absolute setpoints" parameter.

Options:	4 - 25 ... 40°C
	0.5 - 4 ... 25K



Notice
Conditions for visibility:
- RTC x parameter window \ Basic settings parameter window \ Basic cooling level parameters \ all options except "Disabled"
- RTC x Parameter Window \ Setpoint Manager Parameter Window \ Enable Standby and Economy Parameters \ Option: No

This parameter is used to set the target temperature (setpoint) for the "Cooling economy" operating mode.

11.8.13.11 Building protection heating setpoint

Options:	4 - 7 ... 16°C



Notice
The parameter is visible if the "Basic heating level" parameter is enabled in the "RTC" application under "Basic settings".

This parameter is used to set the target temperature (setpoint) for the "Building Protection – Heating" operating mode.

11.8.13.12 Building protection cooling setpoint

Options:	18 - 35 ... 40°C

Notice
The parameter is visible if the "Basic cooling level" parameter is enabled in the "RTC" application under "Basic settings".

This parameter is used to set the target temperature (setpoint) for the "Building Protection – Cooling" operating mode.

11.8.13.13 Status following KNX power restoration or ETS download

Note
The operating mode should be defined during the planning phase. If the operating mode is set incorrectly, this may result in reduced comfort or increased energy consumption.

Options:	Comfort
	Standby
	Economy
	Building protection

Note
The parameter is visible if the "Standby" and "Economy" parameters are enabled in the "RTC" application under "Setpoint manager".

This parameter determines which operating mode is activated following a KNX power recovery or an ETS download. The operating mode remains active until a new operating mode is selected

11.8.14 Setpoint settings

11.8.14.1 Send current setpoint

Options:	In case of change
	On change and cyclic

- In case of change
  - The value is sent in case of change.
- On change and cyclic
  - The value is transmitted when it changes or at regular intervals. The cycle time can be adjusted. The cycle time is reset after each transmission, even if the value was transmitted when it was changed.
  - The following dependent parameters are displayed: Sending cycle

This parameter is used to define when the setpoint currently valid is to be sent via the Current setpoint group object.

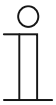
11.8.14.2 Sending cycle



Note
The available options and default values depend on the parent parameter.

Options:	1 - 15 ... 240 min

This parameter specifies the cycle in which the communication object value is sent.



Note
Conditions for visibility:
- The parameter appears in various places within the application. Visibility depends on the use case and the parent parameter.

11.8.15 Summer compensation

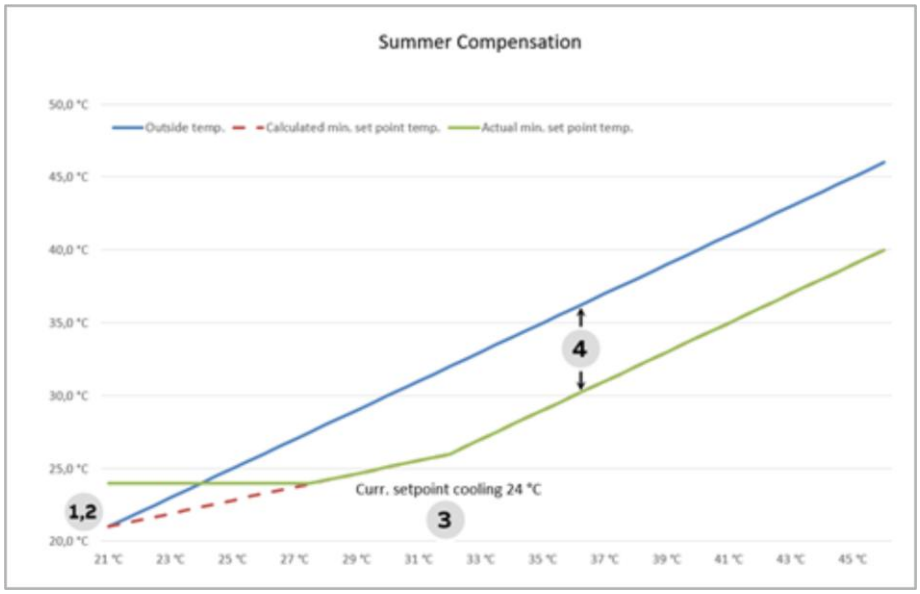


Fig. 40: Summer compensation

[A] X-axis: Outside temperature

[B] Y-axis: Setpoint

11.8.15.1 Activate

Options:	Deactivated
	Activated

In order to save energy, and to ensure that the temperature difference occurring during entry and exit of a climate-controlled building stays within comfortable limits, the excessive reduction of room temperature should be prevented during high temperatures in the summer (Summer compensation according to DIN 1946). The room temperature is increased by adjusting the setpoint temperature for cooling.

Raising the room temperature does not, however, mean that you heat up the room. Rather, the adjustment is intended to allow the room temperature to increase to a certain setpoint without cooling. This, for example, prevents the air-conditioning system from further reducing the room temperature to 24°C with an external temperature of 35°C.

However, activation of the summer compensation requires an outside temperature sensor that transmits its measured value to the bus and can be evaluated by the room temperature controller.

11.8.15.2 Initial temperature

Options:	15 … 21 …35°C

The trigger temperature is the minimum outdoor temperature at which summer compensation can take effect.

11.8.15.3 Offset starting temperature

This value must always be set to 0 in order to prevent setpoint jumps caused by summer compensation.

11.8.15.4 Exit temperature

Options:	15 - 21 - 35°C

This is the outdoor temperature up to which the cooling setpoint is adjusted on a sliding scale. Above this value, the adjustment is always the outdoor temperature minus the offset at the set-point temperature.

11.8.15.5 Offset exit temperature

Options:	0 - 6 - 25°C

This value is used at the setpoint temperature and when the outdoor temperature is higher to calculate the adjusted cooling setpoint temperature according to "Outdoor temperature minus offset at setpoint temperature".

11.8.16 Setpoint adjustment

The following settings can be configured in this parameter window:

- Set the minimum and maximum setpoint adjustments
- Set the reset for setpoint adjustment

This parameter window contains the following parameters:

- Maximum heating boost
- Maximum cooling boost
- Maximum heating reduction
- Maximum cooling reduction
- Reset manual setpoint adjustment upon receipt of a base setpoint
- Manual setpoint adjustment to reset when changing the operating mode
- Manual setpoint adjustment to reset via communication object

Conditions for visibility

- "Configuration" parameter window
  - Set the "Controller settings" parameter under "Basic settings" to "enabled"
- "Basic Settings" parameter window
  - "Basic heating" and "Basic cooling" parameters enabled

11.8.17 Manual setpoint adjustment

	Heating	Cooling
Maximum boost	0 - 3 ... 9K	0 - 9 K
Maximum reduction	0 - 9 K	0 - 3 ... 9K

This setting allows you to limit the extent to which the setpoint temperature can be manually boosted or reduced during heating and/or cooling operation.

Manual adjustment is only available in Comfort mode. If the controller is set to a different operating mode, e.g. "ECO", when operated, the operating mode will switch from ECO to Comfort. This is indicated, for example, on the control panel by the display switching from "ECO" or "Blade" to the setpoint temperature.

11.8.18 Reset manual setpoint adjustment

The following parameters are used to specify whether the manual setpoint adjustment is reset when a new base setpoint is received for one of the communication objects "Base setpoint for comfort heating" or "Base setpoint for comfort cooling".

Manual setpoint adjustment is reset as soon as a new base setpoint is received. If a new manual setting is then made, the maximum boost/minimum reduction will take place within the parameterised limits.

This parameter is only available if the device function is set to "Secondary device" under "Basic settings".

11.8.18.1 Upon receipt of a base setpoint

Options:	Deactivated
	Activated

- Deactivated:
  - The manual setpoint adjustment is not reset.
- Enabled:
  - Manual setpoint adjustment is reset. The new setpoint corresponds to the base setpoint.
  - The following dependent communication objects are displayed: "Reset setpoint adjustment".

This parameter determines whether manual setpoint adjustment is reset via the 1-bit communication object "Reset setpoint adjustment".

11.8.18.2 When changing the operating mode

Options:	Deactivated
	Activated

- Deactivated:
  - The manual setpoint adjustment is not reset.
- Activated:
  - Manual setpoint adjustment is reset. The new setpoint corresponds to the setpoint for the active operating mode. Any shift in the base setpoint is taken into account.

This parameter determines whether the manual setpoint adjustment is reset when the operating mode changes.

If the operating mode is changed, the manual adjustment is reset. If a new manual setting is then made, the maximum boost/minimum reduction will take place within the parameterised limits.

11.8.18.3 Via communication object

Options:	Deactivated
	Activated

- Deactivated:
  - The manual setpoint adjustment is not reset.
- Activated:
  - Manual setpoint adjustment is reset via the "Reset setpoint adjustment" communication object.

If the communication object "Reset setpoint adjustment" is sent to the bus, the manual adjustment is reset. If a new manual setting is then made, the maximum boost/minimum reduction will take place within the parameterised limits.

11.8.19 Setpoint display

11.8.19.1 Setpoint on display

Options:	Absolute
	Relative

The display on a control unit shows the current setpoint either as an absolute or relative value.

- Absolute:
  - On devices with a display, the setpoint value is shown as an absolute temperature, e.g. 21.0°C.
- Relative:
  - The setpoint value is displayed as a relative value, e.g. -5°C ... +5 °C, on devices with a display.

11.8.19.2 Step width of manual setpoint adjustment

Options:	0.1
	0.2
	0.5
	1

The "Manual setpoint adjustment increment" parameter specifies by how many degrees the setpoint increases or decreases per step during manual adjustment.

11.8.19.3 Hide temperature unit setpoint

Options:	No
	Yes

Enabling this parameter hides the °C or °F display.

11.8.20 Temperature reading

The following settings can be configured in this parameter window:

- Enable temperature monitoring
- Set the operating mode and control variable in the event of a fault

This parameter window contains the following parameters:

- Enable monitoring
- Operating mode in the event of a fault
- Monitoring time
- Adjustments to size in the event of a change

Conditions for visibility

- "Configuration" parameter window
  - Set the "Controller settings" parameter under "Basic settings" to "enabled"

11.8.21 Temperature inputs

In this respect, it is possible to select the use of different temperature inputs. Normally, the internal temperature sensor is used for control purposes. However, should it be necessary to use an additional (external) temperature sensor, this must be selected in the parameters below. You can choose between two further parameters.

11.8.21.1 Configuration

Options:	Internal measurement
	External measurement
	Weighted measurement

The room temperature can be measured at the device or fed to the device by an object via the bus. In addition, weighted measuring is also available, in which the weighted average of up to two temperature values (1 x internal, 1 x external) is calculated and used as an input value for control.

- Internal measurement:
  - Selecting this parameter activates an additional communication object. An internal temperature reading is then received via this object. Internal measurement is disabled.
- External measurement:
  - Selecting this parameter activates an additional communication object. An external temperature reading is then received via this object. Internal measurement is disabled.
  - This parameter is used, for example, when a temperature sensor is fitted in a floor and it is desired to use the direct measurement from the floor for temperature control. Communication takes place via the KNX bus.
- Weighted measurement:
  - The weighted measurement uses the internal temperature sensor and a temperature sensor that communicates via the KNX bus. A corresponding communication object is available for this purpose.
  - This setting is used when the reading from the internal temperature sensor is insufficient for control purposes and an additional sensor – for example, located elsewhere in the room – is to be used. In doing so, a balance must be struck between the two temperature controls in order to achieve optimum control.

11.8.21.2 Weighting of internal measurements

Options:	0 - 50 ... 100

This parameter is available if the "Configuration" parameter has been set to "Weighted measurement". This parameter specifies the extent to which the internal temperature sensor is taken into account in the calculated room temperature when an external temperature value is also used.

11.8.21.3 Weighting of external measurements

Options:	0 … 50 ... 100

This parameter is available if the "Configuration" parameter has been set to "Weighted measurement". This parameter specifies the extent to which the external temperature sensor is taken into account in the calculated room temperature when an internal temperature value is also used.

11.8.22 Sending behaviour: Current temperature

11.8.22.1 Cyclic sending

Options:	1 - 15 ... 240

This parameter determines whether, and at what intervals, the current temperature reading is regularly transmitted to the KNX bus, even if the temperature has not changed.

11.8.22.2 Temperature sensor - Value is sent from a change of

Options:	0.1 - 0.5 ... 10

This parameter sets the sending threshold for the temperature value. The temperature reading is only automatically sent to the KNX bus if the measured temperature changes by at least the set amount compared with the last value sent.

11.8.23 Temperature monitoring and recording

11.8.23.1 Activate

Options:	Deactivated
	Activated

- Deactivated:
  - Monitoring of the actual temperature is not authorised.
- Activated:
  - The following dependent parameters are displayed: Operating mode in the event of a fault, monitoring time, control variable in the event of a fault.
  - The following dependent communication objects are displayed: Fault, actual temperature

This parameter enables monitoring of the actual temperature.

11.8.23.2 Operating mode for fault

Options:	Heating
	Cooling

This parameter is only available if the "Basic heating and cooling" level is enabled in the "Basic settings" section under "Heating/cooling system" in the application.

If a fault occurs whilst receiving the external temperature signal, the controller switches to the configured "Heating" or "Cooling" operating mode.



Note
The parameter is visible if, in the “RTC” application, the “Heating/cooling switch” parameter under “Basic settings” and the “Enable actual value monitoring” parameter under “Temperature measurement” are enabled.

11.8.23.3 Monitoring time

Options:	00:01:00 … 01:00:00 … 18:12:15 hh:mm:ss

This parameter is used to specify the time period within which a value must be received on the "External actual temperature" communication object. Each time a value is received on the "External actual temperature" communication object, the monitoring time is reset.



Note
The parameter is visible if, in the “RTC” application, the “Heating/cooling switch” parameter under “Basic settings” and the “Enable actual value monitoring” parameter under “Temperature measurement” are enabled.

11.8.23.4 Control value for fault

Options:	0 - 10 ... 100%

This parameter is used to specify the control variable that is activated in the event of a failure in the actual temperature signal. The control variable remains in effect until a value is received for the "External actual temperature" communication object.



Note
The parameter is visible if, in the “RTC” application, the “Heating/cooling switch” parameter under “Basic settings” and the “Enable actual value monitoring” parameter under “Temperature measurement” are enabled.

11.8.24 Fan coil unit

The ventilation convectors, also called fan convectors or fan coil units, are used for decentralized heating and cooling. They are installed in the room and supplied via a central heating and cooling system.

This system allows the room temperature to be adjusted very quickly to suit individual preferences.

11.8.24.1 Number of fans

Options:	Heating/cooling via one system
	Heating/cooling via two systems

If fan coil units have been configured for heating and cooling, this parameter is used to specify whether heating and cooling operations are to be carried out via the same unit using a fan control system

11.8.24.2 Data point: fan speed for main and auxiliary units

Options:	5.001 Percent (0..100%)
	5.100 Fan speed levels (0–255)

This setting determines whether the manual fan speed level between the main and extension units is specified as a count or a percentage. Main and extension units must be set the same for the correct function.

11.8.25 Fan speed levels



Note
Only available if the controller type "Electric heating" or "Water-filled heating coil" has been selected in the "Basic settings" parameter for heating and/or cooling.

The cooling parameters are only available if the option "Heating/cooling via two systems" has been selected under "General/number of fans".

11.8.25.1 Number of fan speed levels

Options:	3 levels
	5 levels
	10 levels

This parameter is used to specify the number of fan speed levels the actuator will use to control the fan of the fan coil.

11.8.25.2 Data point type

Options:	5.001 Percent (0..100%)
	[5.100] Fan speed level (0 - 255)
	1.001 Switching m from n
	1.001 Switching 1 from n

- 0 ... 5: The level values (0 ... 3 or 0 ... 5) are output in a 1-byte format as counter values ranging from 0 to ... 3 or 0° ... 5.
- 0 ... 255: The level values (0 ... 3 or 0 ... 5) are output as percentages.
  Example with a 5-level fan: The level value "1" is output as 20 %, and "5" is output as 100 %.
- 1 bit m from n: The level values (0 ... 3 or 0 ... 5) are output via 1-bit objects. The number of objects available is the same as the number of fan speed levels. For level 2, for example, the 1-bit fan speed level objects 1 and 2 are output as the value 1, while the other fan speed level objects use the value 0.
- 1 bit m 1 from n: The level values (0 ... 3 or 0 ... 5) are output via 1-bit objects. The number of objects available is the same as the number of fan speed levels. For the level 2, for example, only the 1-bit fan speed level object 2 is output as the value 1. The other fan speed level objects use the value 0.

11.8.25.3 Send fan speed

Options:	Only for manual operation
	For manual operation and automatic

This parameter is used to specify when the output of the fan speed level values is made: Either only when the fan speed levels are manually adjusted or also in automatic mode. This setting depends on the options for the fan coil actuator. If the actuator itself controls the fan speed levels in automatic mode based on a derivative of the control value, than the "Only for manual operation" option must be selected. Otherwise, the other option should be selected.

11.8.25.4 Lowest adjustable fan speed

Options:	Off
	Level 1

This parameter is used to preselect the lowest fan speed level that can be set by an operation performed at the device. When level 0 is selected, the heating/cooling system will not be in operation (fan speed level and valve control 0) as long as the current operating mode and operation type are maintained. To avoid damage to the building, level "0" is deactivated after 18 hours and the device is returned to automatic mode.

11.8.26 Fan status

11.8.26.1 Fan speed from actuator

Options:	Deactivated
	Activated

The controller obtains the current fan speed level for controlling a fan coil actuator either by calculating it from the table of level values under "Fan coil settings for heating" or "Fan coil settings for cooling", or by receiving feedback from the fan coil actuator. If the "Active" option is selected here, the "Fan coil level status" object is enabled to receive the fan speed setting from the fan coil actuator.

11.8.27 Fan



Note
Only available if the controller type "Electric heating" or "Water-filled heating coil" has been selected in the "Basic settings" parameter for heating and/or cooling.



Note
The cooling parameters are only available if the option "Heating/cooling via two systems" has been selected under "General/number of fans".

11.8.27.1 Level values

Options:	<u>According to standard table of values</u>
	Specify individually

For the calculation of the fan speed level from the control value or for the output of a percentage value for a specific fan speed level, the fan speed level value table is used. The standard value table (see table) is the table from the KNX specification. For a deviation the values can be specified individually.

Level values	Specify individually	Specify individually
Fan speed/level 1: Heating control variable	0 - <u>50</u> - 255	0 - <u>50</u> - 255
Fan speed/level 2: Heating control variable	0 - <u>50</u> - 255	0 - <u>50</u> - 255
Fan speed/level 3: Heating control variable	0 - <u>50</u> - 255	0 - <u>50</u> - 255
Fan speed/level 4: Heating control variable	0 - <u>50</u> - 255	0 - <u>50</u> - 255
Fan speed/level 5: Heating control variable	0 - <u>50</u> - 255	0 - <u>50</u> - 255

In this parameter, the control values of the controller are assigned to fan speed levels. This assignment is used if the fan speed levels are transmitted together with the control values.

Note

These level settings should be adjusted to match the settings in the fan coil actuator.

Setting the "Control value type" to "Fan coil" in the control parameters is only useful for one of either the basic stage or the additional stage. Setting the basic and additional stage parameters to fan coil is not useful, since the control of only one fan coil actuator each for heating and cooling is supported.

The "Fan speed level 4 - 5 up to control value (0 - 255) heating“ parameters are available only when the "Number of fan speed levels" is set on "5 levels".

Standard value table

The fan speed is transmitted as an 8-bit value (0..255).

- The value 0 corresponds to the fan being switched off.
- The value 255 corresponds to the maximum fan speed.

The individual fan speeds are distributed evenly across the range from 0 to 255. The corresponding control value for a fan speed is calculated by linearly scaling the selected speed to the maximum value of 255. This allows the device to be controlled in a standardised manner, regardless of the number of fan speed levels available.

Fan speed level	Speed	Value
3	0	0
	1	85
	2	170
	3	255
5	0	0
	1	51
	2	102
	3	153
	4	204
	5	255
10	0	0
	1	26
	2	51
	3	77
	4	102
	5	128
	6	153
	7	179
	8	204
	9	230
	10	255

Table 8: Fan speed levels: Standard value table

11.8.28 Limitation in ECO mode



Note
Only available if, in the "Basic settings" application, the controller type "Electric heating" or "Water-cooled heating coil" has been selected for the basic or additional heating and/or cooling stage (for fan coils only).

The parameters for fan coil 2 are only available if the option "Heating/cooling via two systems" has been selected under "General/number of fans".

11.8.28.1 Activate

Options:	Deactivated
	Activated

When switching to ECO mode, the fan speeds are limited as a result.

11.8.28.2 Maximum fan speed

Options:	0 … 3
	0 … 5
	0 … 10

Specifies the maximum possible fan speed level when the system is switched to ECO mode.

11.8.29 Scenes

11.8.29.1 Number of scenes

Options:	1 ... 16

This parameter can be used to define the number of scenes assigned to the RTC.

11.8.29.2 Overwrite scenes at download

Options:	Activated
	disabled

This parameter determines how the device behaves with regard to saved scenes during an ETS download.

- Activated:
  - The scenes stored in the device are replaced by the scene values configured in the ETS when they are downloaded. Any existing scenes, which may have been modified at runtime, will be lost in the process.
- Deactivated:
  - The scenes currently stored in the device will be retained. A download will not overwrite them, even if different values are stored in the ETS.

11.8.29.3 Configuration

Here, you can define scenes which, when triggered, cause the RTC to switch to a desired operating mode.

- Active scenes:
  - The scene is active and can be used or triggered.
- Scene number (here: 1):
  - When the relevant scene number is received via the "Scene" communication object, the scene is activated.
- Save function enabled:
  - The scene can be saved or overwritten at runtime (e.g. by pressing and holding a button). This saves the current operating mode in this scene.
- Operating mode (here: Comfort):

Options:	Comfort
	Standby
	Economy
	Building protection

  - When the scene is called, the RTC is set to this mode.

11.9 Application "General functions"

The application for the respective function 1 - 5 is assigned under application "Configuration".



Note
The following parameters can only be adjusted when the corresponding application (see above) is selected.

Options:	Deactivated
	Telegram cyclical
	Priority
	Logic gate
	Gate
	Staircase lighting
	Delay
	Min/Max
	Scene actuator
	Sequence

The applications listed in the following are available.

- Deactivated:
  - The application is not active. No parameters are available.
- Telegram cyclical:
  - Upon receipt of a telegram at the object "Function x – cyclic telegram:" "Input" sends a telegram with the same content via the object "Function x – cyclic telegram:" output" only at the receipt of a specific, set value.
- Priority
  - With the application a forced guidance (priority) can be activated for switching outputs.
- Logic functions:
  - The application can be used to link up to ten input values with each other.
- Gate:
  - The application can be used to filter certain signals and to block the flow of signals temporarily.
- Staircase lighting:
  - The application can be used to supply switching telegrams or value telegrams with a switch-off delay.
- Delay:
  - Telegrams can be received via the "GFx: input" object.
- Min/max:
  - Up to eight input values can be compared with each other with the application.
- Scene actuator:
  - The app allows you to receive an 8-bit KNX scene. The scene actuator then sends one or more telegrams to the bus. This allows devices or functions that do not support 8-bit scene objects to be included in scenes.
- Sequence:
  - Via the parameter it is possible to send out multiple telegrams with different values in a predefined sequence consecutively via the same object.

11.9.1 Cyclic telegram

Via the "Cyclic telegram" application and after receipt of a telegram on the "Input" object, a telegram with the same content is cyclically sent out on the cyclic "Output" object.

The object types for "Input" and "Output" can be collectively parameterised for the different applications.

The times for cyclic sending on the "Output" object are adjustable.

There is the option of temporarily disabling the function via an additional object "Block".

11.9.1.1 Data point type

Options:	1.001 Switching
	1.005 Alarm
	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	8.001 Pulse difference
	7.001 Pulses
	9.001 Temperature (°C)
	14.005 Amplitude
	13.001 Counting pulses (signed)
	12.001 Counting pulses (unsigned)

The parameter is used to specify the data type for the "Cyclic telegram" application.

Via the "Cyclic telegram" application and after receipt of a telegram on the "Input" object, a telegram with the same content is cyclically sent out on the cyclic "Output" object.

- 1.001 Switching
  - The value is sent as 1-bit switching command (0 or 1), e.g. On/Off, enabled/blocked, true/untrue.
- 1.005 Alarm
  - The value is sent as 1-bit switching command (0 or 1), alarm functions On/Off.
- 5.001 Percent (0..100%)
  - The value is sent as 1-byte value without a sign (percentage value). (0 = 0 %, 255 = 100 %)
- 5.010 counting pulses (0 - 255)
  - The value is sent as 1-byte value without a sign. Any value 0 - 255.
- 8.001 Pulse difference
  - The value is sent as 2-byte value with a sign, (-32768 - +32767), e.g. time difference or percentage difference.
- 7.001 Pulses
  - The value is sent as 2-byte value without a sign (0 - 65535), e.g. time or brightness value.
- 9.001 Temperature (°C)
  - The value is sent as 2-byte temperature value with a sign (-273 - 670760).

- [14.005] Amplitude
  - The value is sent as 2-byte daytime value. This value can be used to convey amplitude values or dimensionless numerical quantities (e.g. physical quantities such as luminous intensity, electrical power or pressure). The value has no value restriction
- 13.001 Counting pulses (signed):
  - The value is sent as 4-byte value with a sign (-2147483648 - +2147483647), e.g. counting impulse, time difference.
- 12.001 Counting pulses (unsigned)
  - The value is sent as 4-byte value without a sign (0 - 4294967295), e.g. counting impulse.

The set option fixes the data type of the input and output object.



Note
When using object types that are not directly assigned to a data point type (e.g. DPT 9.x), the commissioning engineer must ensure that the values used fall within the range specified for standardised data point types.

11.9.1.2 Sending cycle

Options:	Setting option from 00:00:55 - 00:10:00 ... 01:30:00 hh:mm:ss

The parameter is used to specify the times for cyclic sending.

11.9.1.3 Extended settings

Options:	Deactivated
	Activated

The extended settings can be activated via this parameter.

When parameter "Extended settings" is activated, additional parameters are available.

11.9.1.4 Enable communication object "Disable"

Options:	Deactivated
	Activated

The parameter is used to enable the "Block" communication object.

When parameter "Enable "Disable" communication object is activated, additional parameters are available.

11.9.1.5 Block at value

Options:	0
	1

The parameter is used to specify the value at which the input is disabled.

11.9.1.6 Status following KNX power restoration or ETS download

Options:	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

11.9.1.7 Cyclical sending

Options:	Always activated
	Activated at a specified value
	Activated except at a specified value

- Always activated:
  - Telegrams that are received on object “Gfx: input", are transferred directly to object “GFx: Output” and are there sent cyclic.
- Activated at a specified value
  - This value is sent via object "GFx: output” only at the receipt of a specific, set value. If a different value is received on object “GFx: If a message is received via the "Input" object, no telegram is sent via the object "GFx: Output" was sent.
- Activated except at a specified value
  - This deviating value is sent cyclic via object "GFx: output” only at the receipt of a specific, set value.

The parameter is used to specify the options for cyclic sending.

11.9.1.8 Value for cyclic sending

Options for selection "1 bit switching" and "1-bit alarm":

Options:	Off
	On

Options for selection "1 byte 0-100%":

Options:	0 - 100 (%)

Options for selection "1 byte 0-255":

Options:	0 - 255

Options for selection "2-byte float":

Options:	-671088.64 - 670760.96

Options for selection "2-byte signed":

Options:	-32768 - +32767

Options for selection "2-byte unsigned":

Options:	0 - 65535

Options for selection "2-byte temperature":

Options:	-273 - 500

Options for selection "4-byte float":

Options:	-4000000 - 4000000

Options for selection "4-byte signed":

Options:	-2147483648 - 2147483647

Options for selection "4-byte unsigned":

Options:	0 - 4294967295

11.9.2 Priority

The "Priority" application has 3 communication objects, a 1-bit object "Switch input", a 2-bit object "Input priority" and a 1-bit object "Output". The telegrams received on the "Switch input" are transferred to the "Output" depending on the state of the "Input priority" object.

The 2-bit object "Input priority" can receive and differentiate between four different values (0, 1, 2 and 3). Here, the "Output" object is positively driven. Three different statuses are differentiated:

- "Input priority" has the value "3": The value that is present on "Switch input" has no meaning. The "Output" is switched to positively driven and has the value "1".
- "Input priority" has the value "2". The value that is present on "Switch input" has no meaning. The "Output" is switched off positively driven and has the value "0".
- "Input priority" has the value "1" or "0". The "Switching input" is transferred to the "Output".

During a positive drive, changes of the "Switching input" object are saved, even if the current state on the "Output" object does not immediately change through this. If the positive drive is terminated, a telegram transmission on the "Output" occurs according to the current value of the "Switching input" object.

Once the bus voltage has been restored, priority is no longer with us and the data must be resent.

11.9.3 Logic functions

All input objects and the output object can take on size 1 bit or 1 byte independent from each other.

The application is used to specify the logic gate the enabled input objects are linked with. At the receipt of new telegrams at the inputs, they are switched according to the selected function. The inputs can also be individually inverted.

The result determined from the inputs is sent via the output object. The default value that is to be sent at a positive result can be adjusted.

11.9.3.1 Function

Options:	AND
	OR
	XOR
	XNOR
	NAND
	NOR
	NOT

The parameter is used to specify the logic gate the communication objects are to be linked with.

11.9.3.2 Number of inputs

Options:	2 ... 10

The parameter is used to set the number of inputs that are to be linked in the logic function.

	DPT	Initial value	Inverting an input
Input	1.001 Switching 5.001 counting pulses (0 - 255)	0 1	Deactivated Activated

The parameter is used to assign the data point types and the initial value depending on the number of selected inputs (2 - 10) for each input separately. The inputs can be individually inverted.

11.9.3.3 Data point type: Output

Options:	1.001 Switching
	5.001 Counting pulses (0 - 255)

Each logical function has an output object. The result determined from the inputs is sent on the bus via the output object.

The parameter is used to specify the bit size for the output object.

11.9.3.4 Send initial value at

Options:	Each input telegram
	Value change

- Each input telegram:
  - When a telegram is received via the input object, the communication object always sends the value of the output object on the bus. This also happens if the value of the output object has not changed.
- Value change:
  - The communication object only sends a telegram when the value of the output object has changed.

This parameter determines whether a telegram is sent via the communication object “Function x – logic functions: output” every time a telegram is received or only at the change of the output object.

11.9.3.5 The default value for "true" is

Options:	1
	Individual

- 1:
  - As soon as the condition is fulfilled, a logical "1" is present on the output. This equally applies when the "Object type output" parameter is set on "1 byte".
- Individual:
  - The value that is present on the output when the condition has been met, can be set via parameter "Value".

The parameter is used to specify the value of the output object in the logic status "True".

11.9.3.6 Value

Options:	0
	1

- True = 0:
  - If the condition is met, the value "0" is present on the communication object "Function x – Logic functions: Output“.
- True = 1:
  - If the condition is met, the value "1" is present on the communication object "Function x – Logic functions: Output“.

This parameter is used to specify which value is to be transmitted via the communication object "Function x – Logic functions: Output” at a fulfilled (true) condition.

This parameter is only adjustable if the parameter "Output value" for "true" is set on "As defined below".

11.9.3.7 The initial value for "false" is

Options:	0
	Individual

- 0:
  - As soon as the condition is fulfilled, a logical "0" is present on the output.
- Individual:
  - The value that is present on the output when the condition has been met, can be set via parameter "Value".

This parameter determines which value is set via the object "Function x – Logic functions: Output" at a non-fulfilled (false) condition.

11.9.3.8 Value

Options:	0
	1

- Untrue = 0
  - If the condition is met, the value "0" is present on the communication object "Function x – Logic functions: Output".
- Untrue = 1
  - If the condition is met, the value "1" is present on the communication object "Function x – Logic functions: Output".

This parameter is used to set the value to be transmitted via the communication object "Function x – Logic functions: Output" at a non-fulfilled (false) condition.

This parameter is only adjustable if the parameter "Output value" for "false" is set on "As defined below".

11.9.4 Gate

The "Gate" application allows specific signals to be filtered and the signal flow to be temporarily blocked. The function has three communication objects: "Barrier", "Entrance" and "Exit".

11.9.4.1 Data point type

Options:	1.001 Switching
	1.008 Up/Down
	1.007 Step
	2.001 Forced operation
	3.007 Dimming step
	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	9.001 Temperature (°C)
	8.001 Pulse difference
	7.001 Pulses
	10.001 Daytime
	11.001 Date
	14.005 Amplitude
	13.001 Counting pulses (signed)
	12.001 Counting pulses (unsigned)

The parameter is used to specify the data type that is to be used.

11.9.4.2 Filter function

Options:	Deactivated
	Filter out "On"
	Filter out "Off"

- Deactivated:
  - No telegrams are filtered out.
- "On" filter out
  - On telegrams are filtered out.
- "Off" filter out
  - OFF telegrams are filtered out.

The parameter can be used to filter On or Off telegrams (1 bit) out. The function is used, for example, when only the On telegram is needed and the sensor does not activate any filter function in its application program.

This parameter can only be set when in parameter "Data point type" the option "1,001-bit switching is selected.

11.9.4.3 Data flow direction

Options:	Input to output
	Output to input
	In both directions

- Input to output:
  - Telegrams are sent by the "Function 4 – gate: input" to the object “Function 4 – gate: output".
- Output to input:
  - Telegrams are sent by the "Function 4 – gate: output” to the object "Function 4 – gate: input".
- In both directions
  - Telegrams are forwarded in both directions.

The parameter is used to specify the direction in which the signal is to be transferred.

11.9.4.4 Value output

Options:	Normal
	Inverted

The parameter is used to specify whether the value normal or inverse is sent.

This parameter can only be set when in parameter "Object type" the option "1-bit switching is selected.

11.9.4.5 Enable communication object "Disable"

Options:	Deactivated
	Activated

The parameter is used to enable the "Block" communication object.

When parameter "Enable "Disable" communication object is activated, additional parameters are available.

11.9.4.6 Block at value

Options:	0
	1

The parameter is used to specify the value at which the input is disabled.

11.9.4.7 Status following KNX power restoration or ETS download

Options:	Blocked
	Enabled

The parameter is used to specify the status the input takes after download or bus voltage recovery.

11.9.4.8 Save input signal

Options:	Deactivated
	Activated

- Inactive:
  - Input telegrams are not saved during the blocking phase.
- Active:
  - Input telegrams are saved during the blocking phase.

The parameter is used to specify whether input signals are saved during the blocking phase. The further behaviour depends on the setting of the "Data flow direction" parameter.

Example:

Direction of data flow: Input towards the output.

If the setting "activated" has been selected, the output sends its value after the blocking phase if a telegram has been received on the input during the blocking phase.

11.9.5 Staircase lighting

With the "Staircase lighting" application, switching telegrams or value telegrams can be provided with a switch-off delay. Depending on the parameterisation, the application offers different communication objects:

11.9.5.1 Data point type

Options:	Combined communication object "1.001 Switching"
	Separate communication objects "1.001 Switching"
	Separate Communication Objects "5.001 Percent"

The parameter is used to specify the data type that is to be used.

11.9.5.2 Switch-off delay

Options:	00:00:10 … 00:03:00 … 01:30:00 hh:mm:ss

The parameter is used to set the switch-off delay of the staircase lighting.

11.9.5.3 Re-triggering

Options:	Deactivated
	Activated

- Inactive:
  - The set switch-off delay always runs to its end so that a telegram is always sent via object "Function x – staircase lighting: input/output" after the expiry of the delay time.
- Active:
  - The switch-off delay is always restarted when a telegram is received via the "Function x – staircase lighting: input/output" is received.

The parameter is used to specify whether the switch-off delay is restarted when a further telegram is received via the "Function x – staircase lighting: input/output" is received. This behaviour is called retriggering.

If telegrams with different values are received during the retriggering phase, only the last value received is always sent via the "Function x – staircase lighting input/output" object after expiration of the switch-off delay.

11.9.5.4 Switch-off pre-warning

Options:	Deactivated
	Activated

- Deactivated:
  - The staircase lighting goes out without flickering at the end of the switch-off delay.
- Activated:
  - The staircase lighting flickers before the expiry of the switch-off delay.

Before the staircase lighting switches itself off, the end of the illumination period is signalled by means of brief flickering or dimming darker. The user can then keep the light-on in time.

The parameter is used to specify whether an additional value is sent via the output object just before the switch-off delay expires.

When parameter "Switch-off prewarning" is activated, additional parameters are available.

11.9.5.5 Duration

Options:	1 … 5 … 5400 s

The parameter is used to specify when the staircase lighting by means of flickering or dimming darker is to warn of the end of the switch-off delay. The warning is carried out according to the set time before the expiry of the light-on time.

11.9.5.6 Value

Options:	0 - 10 - 100%

The parameter is used to specify the value of the switch-off prewarning.

This parameter can only be set if the option "Separate communication objects 5.001 Percent" is selected in the "Data point type" parameter.

11.9.5.7 Overwrite light-on time and switch-off prewarning time during download

Options:	Deactivated
	Activated

- Deactivated:
  - The switch-off delay and switch-off prewarning time will not be overwritten when the device is reprogrammed.
- Activated:
  - The switch-off delay and switch-off prewarning time will be overwritten when the device is reprogrammed.

By means of the the communication objects "Function x – Staircase lighting: Switch-off delay" and "Function x – Staircase lighting: Shut-off warning period", telegrams containing new times can be received. The received 2-byte values are written to the memory of the device and are retained even after a power failure.

The parameter is used to specify whether the received storage values are to be retained for a reprogramming of the device or replaced by the values specified in the parameterising software.

11.9.6 Delay

Telegrams can be received via the "Input" object using the "Delay" application. The telegrams received are sent out on the "Output" object with a set delay time.

11.9.6.1 Data point type

Options:	1.001 Switching
	1.008 Up/Down
	1.007 Step
	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	9.001 Temperature (°C)
	8.001 Pulse difference
	7.001 Pulses
	14.005 Amplitude
	13.001 Counting pulses (signed)
	12.001 Counting pulses (unsigned)

The parameter is used to specify the data type that is to be used.

11.9.6.2 Delay time

Options:	00:00:01.000 - 01:00:00.000 hh:mm:ss.fff

The parameter is used to specify the delay time in seconds.

11.9.6.3 Re-triggering

Options:	Deactivated
	Activated

- Inactive:
  - The set delay time always runs until the end, so that via the object "Function x – Delay: Output" after the expiry of the delay time.
- Active:
  - The switch-off delay is always restarted when a telegram is received via the "Function x – delay: Input" object.

The parameter is used to specify whether the switch-off delay is restarted when a further telegram is received via the "Function x – delay: Output" object. This behaviour is called retriggering.

11.9.6.4 Filter active

Options:	Deactivated
	Activated

- Deactivated:
  - Filter is not active.
- Activated:
  - Filter is active. Filter function and filter value can be set.

The parameter is used to specify whether a filter is used for the delay of telegrams.

11.9.6.5 Filter function

Options:	Filter value is delayed, other values are sent directly
	Filter value is delayed, other values are suppressed
	Filter value is sent directly, other values are delayed
	Filter value is suppressed, other values are delayed

- Filter value is delayed, other values are sent directly
  - Only the filter value is sent delayed. All other values are sent directly.
- Filter value is delayed, others are suppressed
  - Only the filter value is sent delayed. All other values are blocked.
- Filter value is sent directly, others are delayed
  - Only the filter value is sent direct. All other values are sent delayed.
- Filter value is suppressed, others are delayed
  - Only the filter value is blocked. All other values are sent delayed.

The parameter can be used to specify a condition for the sending of filter values compared to all other values.

This parameter can only be set when Parameter "Filter active" has been activated.

11.9.6.6 Filter value

Options for selection "1 bit switching" and "1-bit alarm":

Options:	Off
	On

Options for selection "1 byte 0-100%":

Options:	0 - 100 (%)

Options for selection "1 byte 0-255":

Options:	0 - 255

Options for selection "2-byte float":

Options:	-671088.64 - 670760.96

Options for selection "2-byte signed":

Options:	-32768 - +32767

Options for selection "2-byte unsigned":

Options:	0 - 65535

Options for selection "2-byte temperature":

Options:	-273 - 500

Options for selection "4-byte float":

Options:	-4000000 - 4000000

Options for selection "4-byte signed":

Options:	-2147483648 - 2147483647

Options for selection "4-byte unsigned":

Options:	0 - 4294967295

The parameter is used to specify the filter value. The data type or the size depends on parameter "Data type".

The connected "Filter function" parameter fixes a condition for the sending of the filter value.

This parameter can only be set when Parameter "Filter active" has been activated.

11.9.6.7 Overwrite delay time during download

Options:	Deactivated
	Activated

The parameter is used to specify whether the delay time is to be overwritten during the download.

11.9.7 Min/Max

11.9.7.1 Data point type

Options:	5.001 Percent (0..100%)
	5.010 Counting pulses (0 - 255)
	9.001 Temperature (°C)
	8.001 Pulse difference
	7.001 Pulses
	14.005 Amplitude
	13.001 Counting pulses (signed)
	12.001 Counting pulses (unsigned)

The parameter is used to specify the data type that is to be used.

11.9.7.2 Number of inputs

Options:	1 … 2 ... 8

The parameter is used to set the number of input telegrams to be compared with each other.

11.9.7.3 Send output at

Options:	Each input telegram
	Value change

- Each input telegram:
  - When a telegram is received on one of the input objects, a telegram is always sent via the output object.
- Value change:
  - An output telegram is only sent when the value of the output object changes.

The parameter is used to specify the conditions under which a telegram is sent.

For the setting "Input assignment" an output telegram is sent at every receipt of a telegram on one of the inputs. In this case, also an output telegram is sent if the value of the output does not change.

11.9.7.4 Output value is equal

Options:	Maximum input value
	Minimum input value
	Average input value

- Maximum input value:
  - The largest value of all input telegrams is sent via the output object.
- Minimum input value:
  - The smallest value of all input telegrams is sent via the output object.
- Average input value:
  - The average value of the input telegrams is sent via the output object.

The "Min/max" application compares the values that are present on the input objects.

The parameter is used to specify whether the largest, smallest or average of all input values is sent. If the average value is sent, the application calculates the arithmetic mean of the inputs. Decimal points are rounded up or down.

Example:

- Object type: "2 byte signed", 2 input objects
- Input 1: Value “4”
- Input 2: Value “5”

(Input 1 + Input 2) / 2 = arithmetic mean; (4 + 5) / 2 = 4.5 sent average value: 5

11.9.8 Scene actuator

With the "Light scene actuator" application it is possible to call up scenes that are stored in the device via the receipt of a scene number. A maximum of eight scenes with up to eight actuator objects can be created.

11.9.8.1 Number of scenes

Options:	1 ... 8

The parameter is used to select up to eight scenes.

11.9.8.2 Number of actuator groups

Options:	1 ... 8

The parameter is used to configure up to eight actuator groups for the light scene actuator.

When a scene is called, the following is sent via the communication object "Function x – Scene actuator: Actuator group x". If, for example, four lamp groups, a blind and an absolute temperature value are to be sent at the call-up of a scene, the parameter must be set on "6" actuator groups.

11.9.8.3 Telegram delay between the outputs

Options:	00.100 … 01.000 … 10.000 ss.fff s

The parameter is used to set the delay time between the individual telegrams.

When a scene is called, the following is sent via the communication objects "Function x – Scene actuator: Actuator group x". The sequence is strictly specified. First the telegram of actuator group A is sent out, then the telegram of actuator group B, etc.

11.9.8.4 Overwrite scenes at download

Options:	Deactivated
	Activated

- Inactive:
  - The scene values saved by the user remain in the device.
- Active:
  - When reprogramming the device, the values saved by the user are overwritten with the preset values in the parameterisation software.

A scene storage can be triggered with a long press of the button on the device. When the 8-bit scene object receives the telegram value "Learn #X", the communication objects of the actuator groups send a read request. The communication objects "Function x – Scene actuator: Actuator groups x" send read requests to the connected actuators. If the L-flag is set for the objects of the linked actuators, the actuators send an answer telegram to the device with their current values.

If the parameter is activated, the current scene values are saved and at the same time overwrite the previous values.

Configuration of the actuator objects

11.9.8.5 Data point type: Actuator group X

Options:	5.001 Percent (0..100%)
	18.001 Scene control
	1.001 Switching
	1.008 Up/Down
	9.001 Temperature (°C)

This parameter specifies the data type of the communication object "Function x – Scene actuator: Actuator group x" is set for different applications.

Configuration of scene

11.9.8.6 Communication object

Options:	Scene 1 ... 8

11.9.8.7 Scene number

Options:	1 ... 64

11.9.8.8 Scene can be saved

Options:	Deactivated
	Activated

11.9.8.9 Actuator group X

Options:	Deactivated
	Activated

11.9.8.10 Value

Options:	1 - 0 ... 100%
	1 ... 64
	Off On
	Up Down
	-33.5 - 20 - 93.5°C

The parameter is used to specify the configuration of the scene.

11.9.9 Sequence

With the "Sequence " application it is possible to send out multiple telegrams with different values in a predefined sequence consecutively over the same object.

In contrast to the scene actuator, the "Sequence" application has only one communication object on which up to twelve individual values are consecutively sent in twelve firmly set times. The times can be freely set from 1 s to 2 h. The "Sequence" application lends itself to controlling showrooms for example.

The function can be temporarily blocked via an enable object.

11.9.9.1 Data type

Options:	1.001 Switching
	5.001 Percent
	5.010 Counting pulses (0 - 255)
	18.001 scene control
	9.001 Temperature (°C)
	7.001 Pulses

The parameter is used to specify the data type that is to be used.

11.9.9.2 Enable communication object "Sequence status"

Options:	Deactivated
	Activated

This parameter is used to enable the "Status Sequence" communication object.

When parameter "Enable communication object "Status sequence" is activated, additional parameters are available.

11.9.9.3 Value when active

Options:	1
	0

The parameter is used to specify the value for communication object "Status sequence".

11.9.9.4 Enable communication object "Disable"

Options:	Deactivated
	Activated

The parameter is used to enable the "Block" communication object.

When parameter "Enable 'Disable' communication object" is activated, additional parameters are available.

11.9.9.5 Block at value

Options:	1
	0

The parameter is used to specify the value with which the function can be disabled.

11.9.9.6 Disabling behaviour

Options:	Process sequence to end
	Abort sequence

The parameter is used to specify the disabling behaviour.

11.9.9.7 Behaviour after return of bus voltage

Options:	Do not start sequence
	Start sequence

The parameter is used to specify the behaviour after the bus voltage is restored.

11.9.9.8 Start sequence at

Options:	1
	0

The parameter is used to specify the value for the start of the sequence.

11.9.9.9 Infinite loop

Options:	Deactivated
	Activated

The parameter is used to specify whether the sequence is repeated in an infinite loop.

11.9.9.10 Number of steps

Options:	1 ... 12

The parameter is used to specify the number of steps.

11.9.9.11 Value after end of sequence

Options:	Off On
	0 ... 100%
	0 ... 255
	1 ... 64
	-671088.64 - 0 - 670760.96
	0 - 0 - 65535

The parameter is used to specify the value for the start of the sequence.

12 Communication objects

12.1 Overview of communication objects

For a quick overview of the function options, all communication objects are listed in an overview table. The detailed function can be read in the following description of the individual communication objects.



Note
Some communication objects are dynamic and only visible when the corresponding parameters have been activated in the application program.

The communication objects are listed in the following overview:

12.1.1 Device settings

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
In operation	Output	1 bit	[1.002] Boolean	K	-	-	U	A	-
Alarm	Input	1 bit	[1.001] Switching	K	-	S	U	A	L
Alarm acknowledgment	Input	1 bit	[1.017] Trigger	K	-	S	-	-	-
Day/Night	Input	1 bit	[1.024] Enable	K	-	S	U	A	L
Presence	Input	1 bit	[1.018] Occupancy	K	-	S	U	A	L
Display top left: Humidity	Bidirectional	2 bytes	[9.007] Moisture	K	-	S	U	A	L
Display top left: Percent	Bidirectional	8 bit	[5.001] Percent	K	-	S	U	A	L
Display: Time	Output	3 bytes	[10.001] Daytime	K	-	S	-	-	-
Display bottom centre: Temperature	Bidirectional	2 bytes	[9.001] Temperature	K	-	S	U	A	L
Display top centre: Temperature	Bidirectional	2 bytes	[9.001] Temperature	K	-	S	U	A	L
Display top right: CO2	Bidirectional	3 bytes	[9.008] Parts/million (ppm)	K	-	S	U	A	L
Display bottom centre: Temperature	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	L
Second level of operation: Switching	Bidirectional	2 bytes	[1.001] Switching	K	-	S	U	A	-

12.1.2 Function when disabled

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Switching	Bidirectional	1 bit	[1.001] Switching	K		S	U	A	-
Scene 1 - 64	Bidirectional	1 byte	[18.001] Scene control	K	-	S	U	A	-
Block	Input	1 bit	[1.003] Enable	K	-	S	-	-	-
Value x: Switching	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Value x: Forced operation	Bidirectional	2 bit	[2.001] Prio. Switching	K	-	S	U	A	-
Value x: Percent	Bidirectional	1 bit	[5.001] Percent	K	-	S	U	A	-
Value x: 1 byte	Bidirectional	1 byte	[5.010] Counting pulses (0..255)	K	-	S	U	A	-
Value x: 1 byte with a sign	Bidirectional	1 byte	[6.010] Counting pulses (-128..127)	K	-	S	U	A	-
Value x: 2 bytes	Bidirectional	2 bytes	[7.001] Pulse	K	-	S	U	A	-
Value x: 2 byte with a sign	Bidirectional	2 bytes	[8.001] Pulse difference	K	-	S	U	A	-
Value x: 4 bytes	Bidirectional	4 bytes	[12.001] Counting pulses (unsigned)	K	-	S	U	A	-
Value x: Temperature	Bidirectional	2 bytes	[9.001] Temperature	K	-	S	U	A	-
Value x: Brightness	Bidirectional	2 bytes	[7.013] Brightness	K	-	S	U	A	-
Value x: Colour	Bidirectional	3 bytes	[232.600] RGB value	K	-	S	U	A	-
Value x: HVAC mode	Bidirectional	1 byte	[20.102] HVAC mode	K	-	S	U	A	-

12.1.3 Operating area x-buttons

12.1.3.1 Switching

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Switching x	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Block x	Input	1 bit	[1.003] Enable	K	-	S	-	-	-

12.1.3.2 Blinds/roller blinds

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Up/down	Bidirectional	1 bit	[1.008] Up/Down	K	-	S	U	A	-
Stop	Bidirectional	1 bit	[1.007] Step	K	-	S	U	A	-
Step/stop	Bidirectional	1 bit	[1.007] Step	K	-	S	U	A	-
Status end position top	Input	1 bit	[1.002] Boolean	K	-	S	-	A	-
Status end position bottom	Input	1 bit	[1.002] Boolean	K	-	S	-	A	-
Move up/down status	Input	1 bit	[1.002] Boolean	K	-	S	-	A	-
Move status	Output	1 bit	[1.002] Boolean	K	-	S	-	A	-
On/working position	Bidirectional	1 bit	[1.008] Up/Down	K	-	S	U	A	-
Moving to height	Output	1 byte	[5.001] Percent (0..100%)	K	-	S	U	A	-
Move slat	Output	1 byte	[5.001] Percent (0..100%)	K	-	S	U	A	-
Static height	Output	1 bit	[5.002] Boolean	K	-	S	-	A	-
Block	Input	1 bit	[1.003] Enable	K	-	S	-	-	

12.1.3.3 Switching/dimming

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Dimming	Output	4 bit	[3,007] Dimmer step	K	-	-	U	-	-
Switching	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Block	Input	1 bit	[1.003] Enable	K	-	S	-	-	-

12.1.3.4 Switching sequence

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Value x: Switching	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Value x: Percent	Bidirectional	1 byte	[5.001] Percent (0..100%)	K	-	S	U	A	-
Value x: Byte	Bidirectional	1 byte	[5.010] Counting pulses	K	-	S	U	A	-
Value x: Scene	Bidirectional	1 byte	[18.001] Scene control	K	-	S	U	A	-
Value x: Colour	Bidirectional	1 byte	[232.600] RGB value	K	-	S	U	A	-
Value x: HVAC mode	Bidirectional	1 byte	[20.102] HVAC mode	K	-	S	U	A	-
Actuating number	Bidirectional	1 byte	[5.010] Counting pulses (0..255)	K	-	S	U	A	-
Next/previous step	Input	1 bit	[1.007] Step	K	-	S	-	-	-
Reset switching sequence	Input	1 bit	[1.017] Trigger	K	-	S	-	-	-
Block	Input	1 bit	[1.003] Enable	K	-	S	-	-	-

12.1.3.5 Scenes

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Scene 1 - 64	Output	1 byte	[18.001] Scene control	K	-	-	U	-	
Block	Input	1 bit	[1.003] Enable	K	-	S	-	A	

12.1.3.6 Send value/multiple actuation

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Value x: Switching	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Value x: Forced operation	Bidirectional	2 bit	[2.001] Prio. Switching	K	-	S	U	A	-
Value x: Percent	Bidirectional	1 bit	[5.001] Percent	K	-	S	U	A	-
Value x: 1 byte	Bidirectional	1 byte	[5.010] Counting pulses	K	-	S	U	A	-
Value x: 1 byte with a sign	Bidirectional	1 byte	[6.010] Counting pulses	K	-	S	U	A	-
Value x: 2 bytes	Bidirectional	2 bytes	[7.001] Pulse	K	-	S	U	A	-
Value x: 2 byte with a sign	Bidirectional	2 bytes	[8.001] Pulse difference	K	-	S	U	A	-
Value x: 4 bytes	Bidirectional	4 bytes	Data type: [12.001] Counting pulses (unsigned)	K	-	S	U	A	-
Value x: Temperature	Bidirectional	2 bytes	[9.001] Temperature	K	-	S	U	A	-
Value x: Brightness	Bidirectional	2 bytes	[7.013] Brightness	K	-	S	U	A	-
Value x: Colour	Bidirectional	3 bytes	[232.600] RGB value	K	-	S	U	A	-
Value x: HVAC mode	Bidirectional	1 byte	[20.102] HVAC mode	K	-	S	U	A	-

12.1.3.7 LED x

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Status LED	Input	1 bit	[1.001] Switching	K	-	S	-	A	-
Status LED	Input	1 byte	[5.001] Percent	K		S		A	-
Input	Input	1 byte	[18.001] Scene control	K	-	S	-	A	-

12.1.4 Temperature sensor

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Temperature	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
Temperature offset (difference): Input	Input	2 bytes	[9.002] Temperature (°C)	K	-	S	-	A	-

12.1.5 Humidity/dew point

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
External temperature	Input	2 bytes	[9.001] Temperature (°C)	K	-	S	-	A	L
relative humidity	Output	2 bytes	[9.007] Moisture (%)	K	L	-	U	-	-
relative humidity	Output	8 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Relative humidity at 20°C	Output	2 bytes	[9.007] Moisture (%)	K	L	-	U	-	-
Relative humidity at 20°C	Output	8 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Humidity offset (difference)	Input	2 bytes	[8.010] Percentage difference (%)	K	-	S	-	A	-
Humidity offset (measured value)	Input	2 bytes	9.007 Moisture (%)	K	-	S	-	A	-
Absolute humidity	Output	2 bytes	[9.029] Absolute moisture content (g/m³)	K	L	-	U	-	-
External relative humidity	Input	2 bytes	[9.001] Temperature (°C)	K	-	S	-	A	L
Request humidity reading	Input	1 bit	[1.017] Trigger	K	-	S	U	-	-
Sensor error	Output	1 bit	[1.001] Switching	K	L	-	U	-	-
Humidification level x	Output	1 bit	[1.001] Switching	K	L	-	U	-	-
Humidification: humidity setpoint	Input	2 bytes	[9.007] Moisture (%)	K	-	S	U	-	
Humidification: humidity setpoint	Input	2 bytes	[5.001] Percent (0..100%)	K	-	S	U	-	
Disable humidification control output	Input	1 bit	[1.001] Switching	K	-	S	-	A	-
Humidification control variable	Output	8 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Humidification control variable	Output	8 bit	[5.010] Counting pulses (0..255)	K	L	-	U	-	-
Humidification scene	Output	1 byte	[17.001] Scene number	K	L	-	U	-	-
Dehumidification level x	Output	1 bit	[1.001] Switching	K	L	-	U	-	-
Dehumidification level x	Output	1 bit	[2.001] Prio. Switching	K	L	-	U	-	-
Dehumidification control variable	Output	8 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Dehumidification control variable	Output	8 bit	[5.010] Counting pulses (0..255)	K	L	-	U	-	-
Disable dehumidification	Input	1 bit	[1.002] Boolean	K	-	S	-	A	-

Function	Object function	Length	Data type	Flags					
control output									
Dew point temperature TF100	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
Dew point temperature TF80	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
Dew point temperature TF70	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
Request humidity reading	Input	1 bit	[1.017] Trigger	K	-	S	-	A	-
Surface temperature	Input	2 bytes	[9.001] Temperature (°C)	K	-	S	-	A	L
Dew point alarm x (switch)	Output	1 bit	[1.001] Switching	K	L	-	U	-	-
Dew point alarm x (priority)	Output	1 bit	[2.001] Prio. Switching	K	L	-	U	-	-
Dew point alarm x (0..100%)	Output	8 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Dew point alarm x (0..255)	Output	8 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Dew point alarm x (1..64)	Output	Scene number	[17.001] Scene number	K	L	-	U	-	-
Dew point alarm x (RTC operating mode)	Output	1 byte	[20.102] HVAC mode	K	L	-	U	-	-

12.1.6 CO_2 sensor

Function	Object function	Length	Data type	Flags					
				K	**L**	**S**	**U**	**A**	**L**
CO_2 value	Output	2 bytes	[9.008] Parts/million (ppm)	K	L	-	U	-	-
Request CO_2 value	Input	1 bit	[1.017] Trigger	K	-	S	-	A	-
Level 1	Output	1 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Level 2	Output	1 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
Level 3	Output	1 bit	[5.001] Percent (0..100%)	K	L	-	U	-	-
External CO_2 value	Input	2 bytes	[9.008] Parts/million (ppm)	K	-	S	-	A	-
Sensor error	Output	1 bit	[1.005] Alarm	K	L	S	U	A	-
CO_2 setpoint	Output	2 bytes	[9.008] Parts/million (ppm)	K	L	S	U	A	-
Disable control output	Input	1 bit	[1.001] Switching	K	L	S	U	A	-

12.1.7 RTR

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Control variable, base level: heating/cooling	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Control variable, base level: heating/cooling	Output	8 bit	[5.001] Percent (0..100%)	K	-	-	U	-	-
Heating control variable – primary level	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Heating control variable – primary level	Output	8 bit	[5.001] Percent (0..100%)	K	-	-	U	-	-
Additional heating stage	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Additional heating stage	Output	8 bit	[5.001] Percent (0..100%)	K	-	-	U	-	-
Control variable, basic level: cooling	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Control variable, basic level: cooling	Output	8 bit	[5.001] Percent (0..100%)	K	-	-	U	-	-
Additional cooling stage	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Additional cooling stage	Output	8 bit	[5.001] Percent (0..100%)	K	-	-	U	-	-
Actual temperature	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
Actual temperature weighted	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
External actual temperature	Input	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
External actual temperature	Input	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Fault, actual temperature	Output	1 bit	[1.001] Switching	K	L	-	U	-	-
Fault: actual temperature (Main)	Output	1 bit	[1.001] Switching	K	-	S	U	-	-
Fault: actual temperature (Secondary)	Output	1 bit	[1.001] Switching	K	-	S	U	-	-
Current setpoint	Output	2 bytes	[9.001] Temperature (°C)	K	L	-	U	-	-
Request setpoint adjustment	Input	2 bytes	[9.002] Temperature difference (K)	K	-	S	-	A	-
Confirm setpoint adjustment	Output	2 bytes	[9.002] Temperature difference (K)	K	L		U		-
Reset setpoint adjustment	Input	1 bit	[1.015] Reset	K		S		A	-

Function	Object function	Length	Data type	Flags					
Setpoints heating	Bidirectional	2 bytes	[275.100] Temperature setpoint adjustment for 4 HVAC modes	K	-	S	U	A	-
Cooling set values	Bidirectional	2 bytes	[275.100] Temperature setpoint adjustment for 4 HVAC modes	K	-	S	U	A	-
Basic setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Comfort heating setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Standby heating setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Economy cooling setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Heating setpoint for building protection	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Comfort cooling setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Standby cooling setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Economy cooling setpoint	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Cooling setpoint for building protection	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Operating mode	Bidirectional	1 byte	[20.102] HVAC mode	K	-	S	U	A	-
Operating mode (Main)	Bidirectional	1 byte	[20.102] HVAC mode	K	-	S	U	A	-
Operating mode (Secondary)	Bidirectional	1 byte	[20.102] HVAC mode	K	-	S	U	A	-
Current operating mode	Output	1 byte	[20.102] HVAC mode	K	L	-	U	-	-
Current operating mode (Main/Secondary)	Output	1 byte	[20.102] HVAC mode	K	L	-	U	-	-
Window contact	Bidirectional	1 bit	[1.019] Window/door	K	-	S	U	A	-
Window contact (Main/Secondary)	Input	1 bit	[1.001] Switching	K	-	S	U	A	-
Dew point alarm	Input	1 bit	[1.005] Alarm	K	-	S	U	A	-
Presence detector	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Presence detector (Main/Secondary)	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Outside temperature for summer compensation	Input	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Summer	Output	1 bit	[1.002] Boolean	K	L	-	U	-	-

Function	Object function	Length	Data type	Flags					
compensation active									
RTC status control (Main/Secondary)	Output	8 bit	[21.107] Combined RTSM status	K	L	-	U	-	-
RTC status controller (main/secondary)	Output	16 bit	[22.103] Combined status	K	L	-	U	-	-
RHCC status control	Output	16 bit	[22.101] RHCC status	K	L	-	U	-	-
Enable Fahrenheit	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
Heating active	Output	1 bit	[1.011] Status	K	L	-	U	-	-
Cooling active	Output	1 bit	[1.011] Status	K	L	-	U	-	-
Heating/cooling changeover	Output	1 bit	[1.001] Status	K	-	-	U	-	-
	Input	1 bit	[1.001] Status	K	-	-	U	-	-
	Bidirectional	1 bit	[1.001] Status	K	-	-	U	-	-
Heating/cooling mode switch status	Bidirectional	1 bit	[1.007] Step	K	-	-	U	-	-
Disable/enable heating	Bidirectional	1 bit	[1.003] Enable	K	-	S	U	A	-
Disable/enable heating levels individually	Bidirectional	1 byte	[20.116] Activate H/C level	K	-	S	U	A	-
Control synchronisation output	Output	1 byte	[20.105] HVAC control mode	K	-	S	U	A	-
Control synchronisation input	Bidirectional	1 byte	[20.105] HVAC control mode	K	-	S	U	A	-
Heating temperature limit basic stage	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Temperature limit for additional heating level	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Cooling temperature limit basic stage	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Temperature limit for cooling (additional level)	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Underfloor heating: switch heating on	Bidirectional	1 bit	[1.011] Status	K	-	S	U	A	-
Underfloor heating	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Underfloor heating: additional heating level	Bidirectional	1 bit	[1.011] Status	K	-	S	U	A	-
Underfloor heating: additional heating level	Bidirectional	2 bytes	[9.001] Temperature (°C)	K	-	S	U	A	-
Enable boost heating	Bidirectional	1 bit	[1.011] Status	K	-	S	U	A	-
Enable "Boost	Bidirectional	1 bit	[1.011] Status	K	-	S	U	A	-

Function	Object function	Length	Data type	Flags					
heating" additional setting									
Enable boost cooling	Bidirectional	1 bit	[1.011] Status	K	-	S	U	A	-
Enable boost cooling additional level	Bidirectional	1 bit	[1.011] Status	K	-	S	U	A	-
Scene	Input	Scene control	[18.001] Scene control	K	-	S	-	A	-
Fan manual	Output	1 bit	[1.001] Switching	K	-	S	U	A	-
Manual fan (Main)	Output	1 bit	[1.001] Switching	K	-	S	U	A	-
Manual fan (Secondary)	Output	1 bit	[1.001] Switching	K	-	S	U	A	-
Fan speed	Output	8 bit	[5.001] Percent (0..100%) [6.010] Counter value	K	-	S	U	A	-
Fan speed (Main)	Output	8 bit	[5.001] Percent (0..100%) [6.010] Counter value	K	-	S	U	A	-
Fan speed (Secondary)	Output	8 bit	[5.001] Percent (0..100%) [6.010] Counter value	K	-	S	U	A	-
Fan manual status	Output	1 bit	[1.002] Boolean	K	-	-	U	-	-
Current fan speed	Output	8 bit	[5.001] Percent (0..100%) [6.010] Counter value	K	-	S	-	A	-
Current fan speed (Main)	Output	8 bit	[5.001] Percent (0..100%) [6.010] Counter value	K	-	S	-	A	-
Current fan speed (Secondary)	Output	8 bit	[5.001] Percent (0..100%) [6.010] Counter value	K	-	S	-	A	-

12.1.8 Function x

12.1.8.1 Cyclic telegram

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Input	Input	1 bit	[1.001] Switching	K	-	S	-	-	-
Output	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Input	Input	1 bit	[1.005] Alarm	K	-	S	-	-	-
Output	Output	1 bit	[1.005] Alarm	K	-	-	U	-	-
Input	Input	1 byte	[5.001] Percent	K	-	S	-	-	-
Output	Output	1 byte	[5.001] Percent	K	-	-	U	-	-
Input	Input	1 byte	[5.010] Counting pulses	K	-	S	-	-	-
Output	Output	1 byte	[5.010] Counting pulses	K	-	-	U	-	-
Input	Input	2 bytes	[9.001] Temperature	K	-	S	-	-	-
Output	Output	2 bytes	[9.001] Temperature	K	-	-	U	-	-
Input	Input	2 bytes	[8.001] Pulse difference	K	-	S	-	-	-
Output	Output	2 bytes	[8.001] Pulse difference	K	-	-	U	-	-
Input	Input	2 bytes	[7.001] Pulse	K	-	S	-	-	-
Output	Output	2 bytes	[7.001] Pulse	K	-	-	U	-	-
Input	Input	4 bytes	[14.005] Amplitude	K	-	S	-	-	-
Output	Output	4 bytes	[14.005] Amplitude	K	-	-	U	-	-
Input	Input	4 bytes	[13.001] Counting pulses (signed)	K	-	S	-	-	-
Output	Output	4 bytes	[13.001] Counting pulses (signed)	K	-	-	U	-	-
Input	Input	4 bytes	[12.001] Counting pulses (unsigned)	K	-	S	-	-	-
Output	Output	4 bytes	[12.001] Counting pulses (unsigned)	K	-	-	U	-	-

12.1.8.2 Priority

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Switching	Input	1 bit	[1.001] Switching	K	-	S	-	-	-
Priority	Input	2 bit	[2.001] Switching	K	-	S	-	-	-
Output	Output	1 bit	[1.001] Switching	K	L	-	U	-	-

12.1.8.3 Logic functions

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Output	Output	1 bit	[1.001] Switching	K	L	-	U	-	-
Input x	Input	1 bit	[1.001] Switching	K	-	S	-	A	-
Output	Output	1 byte	[5.010] Counting pulses	K	L	-	U	-	-
Input x	Input	1 byte	[5.010] Counting pulses	K	-	S	-	A	-

12.1.8.4 Gate

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Input	Input	1 bit	[1.001] Switching	K	-	S	-	-	-
Output	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Input	Input	1 bit	[1.008] Up/Down	K	-	S	-	-	-
Output	Output	1 bit	[1.008] Up/Down	K	-	-	U	-	-
Input	Input	1 bit	[1.007] Step	K	-	S	-	-	-
Output	Output	1 bit	[1.007] Step	K	-	-	U	-	-
Input	Input	2 bit	[2.001] Prio. Switching	K	-	S	-	-	-
Output	Output	2 bit	[2.001] Prio. Switching	K	-	-	U	-	-
Input	Input	4 bit	[3.007] Dimming	K	-	S	-	-	-
Output	Output	4 bit	[3.007] Dimming	K	-	-	U	-	-
Input	Input	1 byte	[5.001] Percent	K	-	S	-	-	-
Output	Output	1 byte	[5.001] Percent	K	-	-	U	-	-
Input	Input	1 byte	[5.010] Counting pulses	K	-	S	-	-	-
Output	Output	1 byte	[5.010] Counting pulses	K	-	-	U	-	-
Input	Input	2 bytes	[9.001] Temperature	K	-	S	-	-	-
Output	Output	2 bytes	[9.001] Temperature	K	-	-	U	-	-
Input	Input	2 bytes	[8.001] Pulse difference	K	-	S	-	-	-
Output	Output	2 bytes	[8.001] Pulse difference	K	-	-	U	-	-
Input	Input	2 bytes	[7.001] Pulse	K	-	S	-	-	-
Output	Output	2 bytes	[7.001] Pulse	K	-	-	U	-	-
Input	Input	3 bytes	[10.001] Daytime	K	-	S	-	-	-
Output	Output	3 bytes	[10.001] Daytime	K	-	-	U	-	-
Input	Input	3 bytes	[11.001] Date	K	-	S	-	-	-
Output	Output	3 bytes	[11.001] Date	K	-	-	U	-	-

Function	Object function	Length	Data type	Flags					
Input	Input	4 bytes	[14.005] Amplitude	K	-	S	-	-	-
Output	Output	4 bytes	[14.005] Amplitude	K	-	-	U	-	-
Input	Input	4 bytes	[13.001] Counting pulses (signed)	K	-	S	-	-	-
Output	Output	4 bytes	[13.001] Counting pulses (signed)	K	-	-	U	-	-
Input	Input	4 bytes	[12.001] Counting pulses (unsigned)	K	-	S	-	-	-
Output	Output	4 bytes	[12.001] Counting pulses (unsigned)	K	-	-	U	-	-
Block	Input	1 bit	[1.003] Enable	K	-	S	-	-	-

12.1.8.5 Staircase lighting

Function	Object function	Length	Data type	Flags					
				K	**L**	**S**	**U**	**A**	**L**
Input / output	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	-	-
Input	Input	1 bit	[1.001] Switching	K	-	S	U	-	-
	Input	1 byte	[5.001] Percent	K	-	S	U	-	-
Output	Output	1 bit	[1.001] Switching	K	-	S	U	-	-
	Output	1 byte	[5.001] Percent	K	-	S	U	-	-
Switch-off delay	Bidirectional	2 bytes	[7.005] Time (s)	K	L	S	-	-	-

12.1.8.6 Delay

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Input	Input	1 bit	[1.001] Switching	K	-	S	-	-	-
Output	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Input	Input	1 bit	[1.008] Up/Down	K	-	S	-	-	-
Output	Output	1 bit	[1.008] Up/Down	K	-	-	U	-	-
Input	Input	1 bit	[1.007] Step	K	-	S	-	-	-
Output	Output	1 bit	[1.007] Step	K	-	-	U	-	-
Input	Input	1 byte	[5.001] Percent (0..100%)	K	-	S	-	-	-
Output	Output	1 byte	[5.001] Percent (0..100%)	K	-	-	U	-	-
Input	Input	2 bytes	[9.001] Temperature	K	-	S	-	-	-
Output	Output	2 bytes	[9.001] Temperature	K	-	-	U	-	-
Input	Input	2 bytes	[8.001] Pulse difference	K	-	S	-	-	-
Output	Output	2 bytes	[8.001] Pulse difference	K	-	-	U	-	-
Input	Input	2 bytes	[7.001] Pulse	K	-	S	-	-	-
Output	Output	2 bytes	[7.001] Pulse	K	-	-	U	-	-
Input	Input	4 bytes	[14.005] Amplitude	K	-	S	-	-	-
Output	Output	4 bytes	[14.005] Amplitude	K	-	-	U	-	-
Input	Input	4 bytes	[13.001] Counting pulses (signed)	K	-	S	-	-	-
Output	Output	4 bytes	[13.001] Counting pulses (signed)	K	-	-	U	-	-
Input	Input	4 bytes	[12.001] Counting pulses (unsigned)	K	-	S	-	-	-
Output	Output	4 bytes	[12.001] Counting pulses (unsigned)	K	-	-	U	-	-
Delay time	Bidirectional	2 bytes	[7.005] Time (s)	K	-	S	-	-	-

12.1.8.7 Min/Max

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Output	Output	1 byte	[1.001] Switching	K	-	-	U	-	-
Input x	Input	1 byte	[1.001] Switching	K	-	S	-	-	-
Output	Output	1 byte	[5.001] Percent (0..100%)	K	-	-	U	-	-
Input x	Input	1 byte	[5.001] Percent (0..100%)	K	-	S	-	-	-
Output	Output	1 byte	[5.010] Counting pulses (0..255)	K	-	-	U	-	-
Input x	Input	1 byte	[5.010] Counting pulses (0..255)	K	-	S	-	-	-
Output	Output	2 bytes	[9.001] Temperature	K	-	-	U	-	-
Input x	Input	2 bytes	[9.001] Temperature	K	-	S	-	-	-
Output	Output	2 bytes	[8.001] Pulse difference	K	-	-	U	-	-
Input x	Input	2 bytes	[8.001] Pulse difference	K	-	S	-	-	-
Output	Output	2 bytes	[7.001] Pulse	K	-	-	U	-	-
Input x	Input	2 bytes	[7.001] Pulse	K	-	S	-	-	-
Output	Output	4 bytes	[14.005] Amplitude	K	-	-	U	-	-
Input x	Input	4 bytes	[14.005] Amplitude	K	-	S	-	-	-
Output	Output	4 bytes	[13.001] Counting pulses (signed)	K	-	-	U	-	-
Input x	Input	4 bytes	[13.001] Counting pulses (signed)	K	-	S	-	-	-
Output	Output	4 bytes	[12.001] Counting pulses (unsigned)	K	-	-	U	-	-
Input x	Input	4 bytes	[12.001] Counting pulses (unsigned)	K	-	S	-	-	-

12.1.8.8 Scene actuator

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Scene number	Input	1 byte	[18.001] Scene control	K	-	S	-	A	-
Actuator group x	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
		1 bit	[1.008] Up/Down	K	-	S	U	A	-
		1 byte	[5.001] Percent (0..100%)	K	-	S	U	A	-
		1 byte	[18.001] Scene control	K	-	S	U	A	-
		2 bytes	[9.001] Temperature	K	-	S	U	A	-

12.1.8.9 Sequence

Function	Object function	Length	Data type	Flags					
				K	L	S	U	A	L
Value sequence	Bidirectional	1 bit	[1.001] Switching	K	-	S	U	A	-
		1 byte	[5.001] Percent (0..100%)	K	-	S	U	A	-
		1 byte	[5.010] Counting pulses (0..255)	K	-	S	U	A	-
		1 byte	[18.001] Scene control	K	-	S	U	A	-
		2 bytes	[9.001] Temperature	K	-	S	U	A	-
		2 bytes	[7.001] Pulse	K	-	S	U	A	-
Sequence start	Input	1 bit	[1.001] Switching	K	-	S	-	-	-
Sequence status	Output	1 bit	[1.001] Switching	K	-	-	U	-	-
Block	Input	1 bit	[1.003] Enable	K	-	S	-	-	-

12.2 Communication objects

12.2.1 Device settings

12.2.1.1 Device settings: In operation

Function	Object function	Length	Data type
In operation	Output	1 bit	1.002 Boolean

This communication object sends an in-operation telegram cyclic to the bus. The sending cycle is set in parameter "Sending cycle".

Telegram value:

- 1 = Device in operation
- 0 = Device in operation



Note
With this communication object the operational readiness can be monitored by another KNX device. If no telegram is received, the sending device may be defective or the bus line to the sending device may have been interrupted.

12.2.1.2 Device settings: Alarm

Function	Object function	Length	Data type
Alarm	Input	1 bit	1.005 Alarm

An alarm signal is received via the 1-bit communication object.

If an On telegram is received via the object, the LEDs of the buttons on which the parameter "Consider alarm function" has been set on "Activated" flash. If an Off telegram is received via the object, the LEDs light up continuously.

12.2.1.3 Device settings: Alarm acknowledgement

Function	Object function	Length	Data type
Alarm acknowledgment	Input	1 bit	1.017 Trigger

The 1-bit communication object "Alarm acknowledgement" can be used to acknowledge a pending alarm or fault message.

The LEDs involved in the alarm switch from flashing to normal mode. The alarm is still active on the alarm object.

12.2.1.4 Device settings: Day/Night

Function	Object function	Length	Data type
Day/Night	Input	1 bit	1.024 Day/Night

The strength of the backlighting of the display is switched via the 1-bit communication object according to the specifications from parameter "Display backlighting day/night". When a telegram with value "1" is received via the object, the display lights up according to the setting of parameter "Display backlighting day". When a telegram with value "0" (Day) is received, the display lights up according to the setting of parameter "Display backlighting night".

The "Enable day/night switching" parameter must be set to "Enabled".

12.2.1.5 Device settings: Presence

Function	Object function	Length	Data type
Presence	Bidirectional	1 bit	1.018 Occupancy

The assignment is reported via the 1-bit communication object. The "Activate display/LED via" parameter must be set to "Communication object and local operation".

12.2.1.6 Device settings – display top left: Humidity

Function	Object function	Length	Data type
Display top left: Humidity	Bidirectional	2 bytes	9.007 Moisture (%)

The humidity value for showing in the display is received via the 2-byte communication object.

The "Top left" parameter must be set to "Percent (communication object)".

12.2.1.7 Device settings – display top left: Percent

Function	Object function	Length	Data type
Display top left: Percent	Bidirectional	8-bit unsigned	5.001 Percent (0..100%)

The humidity value for showing in the display is received via the 8-bit communication object in percent.

The "Top left" parameter must be set to "Percent (communication object)".

12.2.1.8 Device settings – display bottom centre: Temperature

Function	Object function	Length	Data type
Display bottom centre: Temperature	Bidirectional	2 bytes	9.001 Temperature (°C)

The temperature for showing in the display is received via the 2-byte communication object.

The "Top centre" parameter must be set to "Temperature (RTC)".

12.2.1.9 Device settings – top centre display: Temperature

Function	Object function	Length	Data type
Display top centre: Temperature	Bidirectional	2 bytes	9.001 Temperature (°C)

Depending on the parameter settings, the temperature value for display is received via the 2-byte communication object.

12.2.1.10 Device settings – display top right: CO2

Function	Object function	Length	Data type
Display top right: CO2	Bidirectional	3 bytes	9.008 Parts/million (ppm)

The CO_2 value for showing in the display is received via the 3-byte communication object.

The "Display top right" parameter must be set to "CO_2 value (communication object)".

12.2.1.11 Device settings – Display: Time

Function	Object function	Length	Data type
Display: Time	Output	3 bytes	10.001 Daytime

The time for showing in the display is received via the 3-byte communication object.

The "Top centre" parameter must be set to "Time (communication object)".

12.2.1.12 Device settings – display bottom centre: Temperature

Function	Object function	Length	Data type
Display bottom centre: Temperature	Bidirectional	2 bytes	9.001 Temperature (°C)

The time for showing in the display is received via the 3-byte communication object.

The "Top centre" parameter must be set to "Time (communication object)".

12.2.1.13 Device settings – Second operating level: Switching

Function	Object function	Length	Data type
Second level of operation: Switching	Bidirectional	1 bit	1.001 Switching

The device has a second operating level for controlling the parameterised room temperature control functions.

As no room temperature control function can be assigned to button 10, users can configure and control it freely via a 1-bit object. This can be used, for example, to control another device.

12.2.1.14 Device settings – Disable operating area

Function	Object function	Length	Data type
Disable control panel	Input	1 bit	1.001 Switching

Depending on the parameter settings, the control area is disabled via the 1-bit communication object.

12.2.2 Function when disabled

12.2.2.1 Function when disabled – Switching: Switching

Function	Object function	Length	Data type
Switching	Bidirectional	1 bit	1.001 Switching

This communication object sends a switching telegram to the bus.

Telegram value:

- 1 = ON
- 0 = OFF

12.2.2.2 Function when disabled – Switching: Block

Function	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

The parameters are used to set whether the function is blocked with value 0 or 1 . The other value is used to cancel the blockage.

12.2.2.3 Function when disabled – Scene: Scene 1...64

Function	Object function	Length	Data type
Scene 1 - 64	Bidirectional	1 byte	18.001 scene control

This communication object sends a switching telegram to the bus. When the device is disabled, a defined scene (1–64) is sent to the bus instead of the normal control signal.

12.2.2.4 Function when disabled – Scene: Block

Function	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

The parameters are used to set whether the function is blocked with value 0 or 1 . The other value is used to cancel the blockage.

12.2.2.5 Function when disabled – Value x: Switching

Function	Object function	Length	Data type
Value x: Switching	Bidirectional	1 bit	1.001 Switching

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.2.6 Function when disabled – Value x: Forced operation

Function	Object function	Length	Data type
Value x: Forced operation	Bidirectional	1 bit	1.001 Switching

This 1-bit communication object is used to force the actuator to the ON or OFF state with priority.

It is available if the data point type for "Value x" is set to "2.001 Prio. Switching".

12.2.2.7 Function when disabled – Value x: Percent

Function	Object function	Length	Data type
Value x: Percent	Bidirectional	8 bit	5.001 Percent (0..100%)

When the lock function is enabled, a configured 8-bit value, expressed as a percentage, is output via the communication object.

It is available when the data point type for "Value x" is set to "5.001 Percent".

12.2.2.8 Function when disabled – Value x: Byte

Function	Object function	Length	Data type
Value x: Byte	Bidirectional	8 bit	5.010 Counting pulses (0 - 255)

When the disable function is enabled, a parameterised 8-bit value is output via the communication object.

It is available when the data point type for "Value x" is set to "5.010 Count pulses (0–255)".

12.2.2.9 Function when disabled – Value x: 1 byte with a sign

Function	Object function	Length	Data type
Value x: Byte	Bidirectional	8-bit signed	6.010 Counting pulses (-128..127)

When the disable function is enabled, a parameterised 8-bit value is output via the communication object.

It is available when the data point type for "Value x" is set to "6.010 Counting pulses (-128..127)".

12.2.2.10 Function when disabled – Value x: 2 bytes

Function	Object function	Length	Data type
Value x: 2 bytes	Bidirectional	2-byte unsigned	7.001 Pulses

When the lock function is enabled, a parameterised 2-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "7.001 Pulses".

12.2.2.11 Function when disabled – Value x: 2 bytes

Function	Object function	Length	Data type
Value x: 2 byte with a sign	Bidirectional	2-byte signed	8.001 Pulse difference

When the lock function is enabled, a parameterised 2-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "8.001 Pulse difference".

12.2.2.12 Function when disabled – Value x: 4 bytes

Function	Object function	Length	Data type
Value x: 4 bytes	Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

When the lock function is enabled, a parameterised 4-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "12.001 Counting pulses".

12.2.2.13 Function when disabled – Value x: Temperature

Function	Object function	Length	Data type
Value x: Temperature	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

When the lock function is enabled, a parameterised 2-byte floating-point value is output via the communication object.

It is available when the data point type for "Value x" is set to "9.001 Temperature".

12.2.2.14 Function when disabled – Value x: Brightness

Function	Object function	Length	Data type
Value x: Brightness	Bidirectional	2-byte floating point value	9.004 lux (lux)

When the lock function is enabled, a parameterised 2-byte floating-point value is output via the communication object.

It is available when the data point type for "Value x" is set to "9.004 Lux".

12.2.2.15 Function when disabled – Value x: Colour

Function	Object function	Length	Data type
Value x: Colour	Bidirectional	3-byte RGB colour	232.600 RGB value 3x (0 - 255)

When the lock function is enabled, a parameterised 3-byte colour value is output via the communication object.

It is available when the data point type for "Value x" is set to "232,600 RGB value 3x(0..255)".

12.2.2.16 Function when disabled – Value x: HVAC mode

Function	Object function	Length	Data type
Value x: HVAC mode	Bidirectional	1 byte	20.102 HVAC mode

When the lock function is enabled, a parameterised 1-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "20.102 HVAC mode".

12.2.3 Operating area x Switching

12.2.3.1 Operating area x Switching – Switching

Name	Object function	Length	Data type
Switching	Bidirectional	1 bit	1.001 Switching

This communication object sends a switching telegram to the bus.

Telegram value:

- 1 = ON
- 0 = OFF

12.2.3.2 Operating area x Switching – Disable

Name	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

The parameters are used to set whether the function is blocked with value 0 or 1 . The other value is used to cancel the blockage.

12.2.4 Operating area x Blinds/roller blinds

12.2.4.1 Operating area x – Blinds/roller blinds: Up/down

Function	Object function	Length	Data type
Up/down	Bidirectional	1 bit	1.008 Up/Down

This communication object sends the command for moving the curtain to the bus.

Telegram value:

- 1 = ON
- 0 = OFF

12.2.4.2 Operating area x – Blinds/roller blinds: Stop

Function	Object function	Length	Data type
Stop	Output	1 bit	1.007 Step

This communication object sends the command for moving the curtain to the bus.

Telegram value:

- 1 = stop
- 0 = stop

12.2.4.3 Operating area x – Blinds/roller blinds: Step/stop

Function	Object function	Length	Data type
Step/stop	Bidirectional	1 bit	1.007 Step

This communication object sends the command for stopping the movement action or changing the slat position to the bus.

Telegram value:

- 1 = Stop / Closing the slats
- 0 = Stop / Opening the slats

12.2.4.4 Operating area x – Blinds/roller blinds: Status end position top

Function	Object function	Length	Data type
Status end position top	Input	1 bit	1.002 Boolean

With this communication object the information as to whether the curtain is in the top end position is received via the bus.

Telegram value:

- 1 = Curtain in top end position
- 0 = Curtain not in top end position

12.2.4.5 Operating area x – Blinds/roller blinds: Status end position bottom

Function	Object function	Length	Data type
Status end position top	Input	1 bit	1.002 Boolean

With this communication object the information as to whether the curtain is in the top end position is received via the bus.

Telegram value:

- 1 = Curtain in top end position
- 0 = Curtain not in top end position

12.2.4.6 Operating area x – Blinds/roller blinds: Move up/down status

Function	Object function	Length	Data type
Move up/down status	Input	1 bit	1.002 Boolean

With this communication object the information as to whether the curtain is to be moved is received via the bus.

Telegram value:

- 1 = Curtain moves
- 0 = Curtain rests

12.2.4.7 Operating area x – Blinds/roller blinds: Move status

Function	Object function	Length	Data type
Move status	Input	1 bit	1.002 Boolean

With this communication object the information as to whether the curtain is to be moved is received via the bus.

Telegram value:

- 1 = Curtain moves
- 0 = Curtain rests

12.2.4.8 Operating area x – Blinds/roller blinds: Up/operating position

Function	Object function	Length	Data type
On/working position	Bidirectional	1 bit	1.008 Up/Down

With this communication object the information as to whether the curtain is to be moved is received via the bus.

12.2.4.9 Operating area x – Blinds/roller blinds: Move to height

Function	Object function	Length	Data type
Moving to height	Output	1 byte	5.001 Percent (0..100%)

This communication object sends the command for moving the height of the curtain to the bus.

- 0 ... 100%

12.2.4.10 Operating area x – Blinds/roller blinds: Move slat

Function	Object function	Length	Data type
Move slat	Output	1 byte	5.001 Percent (0..100%)

This communication object sends the command for moving the slats to the bus.

- 0 ... 100%

12.2.4.11 Operating area x – Blinds/roller blinds: Height status

Function	Object function	Length	Data type
Height status	Input	1 byte	5.001 Boolean

With this communication object the information as to whether the curtain is to be moved is received via the bus.

Telegram value:

- 0 ... 100%

12.2.4.12 Operating area x – Blinds/roller blinds: Block

Function	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

- 1 = Operation is blocked
- 0 = Operation enabled

12.2.5 Operating area x Switching/dimming

12.2.5.1 Operating area x – Switching/dimming: Switching

Function	Object function	Length	Data type
Switching x	Bidirectional	1 bit	1.001 Switching

This communication object sends a switching telegram to the bus.

- 1 = ON
- 0 = OFF

12.2.5.2 Operating area x – Switching/dimming: Dimming

Function	Object function	Length	Data type
Dimming	Output	4 bit	3.007 Dimming step

This communication object sends a dimming telegram on the bus.

- 0000: Stop
- 0001: 100 % darker
- 1000: Stop
- 1001: 100 % brighter

12.2.5.3 Operating area x – Switching/dimming: Block

Function	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

The parameters are used to set whether the function is blocked with value 0 or 1 . The other value is used to cancel the blockage.

12.2.6 Operating area x Switching sequence

12.2.6.1 Operating area x – Switching sequence: Value x: Switching

Function	Object function	Length	Data type
Value x: Switching	Bidirectional	1 bit	1.001 Switching

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.6.2 Operating area x – Switching sequence: Value x: Percent

Function	Object function	Length	Data type
Value x: Percent	Bidirectional	1 bit	5.001 Percent (0..100%)

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.6.3 Operating area x – Switching sequence: Value x: Byte

Function	Object function	Length	Data type
Value x: Byte	Bidirectional	1 bit	5.010 Counting pulses (0 - 255)

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.6.4 Operating area x – Switching sequence: Value x: Scene

Function	Object function	Length	Data type
Value x: Scene	Bidirectional	1 byte	18.001 scene control

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.6.5 Operating area x – Switching sequence: Value x: Colour

Function	Object function	Length	Data type
Value x: Colour	Bidirectional	3 bytes	232.600 RGB value 3x (0 - 255)

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.6.6 Operating area x – Switching sequence: Value x: HVAC mode

Function	Object function	Length	Data type
Value x: HVAC mode	Bidirectional	1 byte	20.102 HVAC mode

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.6.7 Operating area x – Switching sequence: Actuating number

Function	Object function	Length	Data type
Actuating number	Bidirectional	1 byte	5.010 Counting pulses (0 - 255)

This communication object sends the current actuating number of up to six-step switching sequence to the bus.

12.2.6.8 Operating area x – Switching sequence: Next/previous step

Function	Object function	Length	Data type
Next/previous step	Input	1 bit	1.007 Step

A telegram for switching a step up or down in the switching sequence is sent to the bus via this communication object.

12.2.6.9 Operating area x – Switching sequence: Reset switching sequence

Function	Object function	Length	Data type
Reset switching sequence	Input	1 bit	1.017 Trigger

A telegram for resetting the switching sequence is sent to the bus via this communication object.

12.2.6.10 Operating area x – Switching sequence: Block

Function	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

The parameters are used to set whether the function is blocked with value 0 or 1 . The other value is used to cancel the blockage.

12.2.7 Operating area x Scene

12.2.7.1 Operating area x – Scene: Scene 1...64

Function	Object function	Length	Data type
Scene 1 ... 64	Output	1 byte	18.001 scene control

This communication object sends a scene telegram to the bus.

Telegram value:

- 0 ... 63 = Call up scene x (x = 1 - 64)

12.2.7.2 Operating area x – Scene: Block

Function	Object function	Length	Data type
Block	Input	1 bit	1.003 enable

With this communication object the execution of operation is blocked.

The parameters are used to set whether the function is blocked with value 0 or 1 . The other value is used to cancel the blockage.

12.2.8 Operating area x Sending the value

12.2.8.1 Send value – Value x: Switching

Function	Object function	Length	Data type
Value x: Switching	Bidirectional	1 bit	1.001 Switching

This communication object sends a value to the bus. The telegram value depends on the setting in the parameter value x.

12.2.8.2 Send value – Value x: Forced operation

Function	Object function	Length	Data type
Value x: Forced operation	Bidirectional	1 bit	1.001 Switching

This 1-bit communication object is used to force the actuator to the ON or OFF state with priority.

It is available if the data point type for "Value x" is set to "2.001 Prio. Switching".

12.2.8.3 Send value – Value x: Percent

Function	Object function	Length	Data type
Value x: Percent	Bidirectional	8 bit	5.001 Percent (0..100%)

When the lock function is enabled, a configured 8-bit value, expressed as a percentage, is output via the communication object.

It is available when the data point type for "Value x" is set to "5.001 Percent".

12.2.8.4 Send value – Value x: Byte

Function	Object function	Length	Data type
Value x: Byte	Bidirectional	8 bit	5.010 Counting pulses (0 - 255)

When the disable function is enabled, a parameterised 8-bit value is output via the communication object.

It is available when the data point type for "Value x" is set to "5.010 Count pulses (0–255)".

12.2.8.5 Send value – Value x: 1 byte with a sign

Function	Object function	Length	Data type
Value x: Byte	Bidirectional	8-bit signed	6.010 Counting pulses (-128..127)

When the disable function is enabled, a parameterised 8-bit value is output via the communication object.

It is available when the data point type for "Value x" is set to "6.010 Counting pulses (-128..127)".

12.2.8.6 Send value – Value x: 2 bytes

Function	Object function	Length	Data type
Value x: 2 bytes	Bidirectional	2-byte unsigned	7.001 Pulses

When the lock function is enabled, a parameterised 2-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "7.001 Pulses".

12.2.8.7 Send value – Value x: 2 bytes

Function	Object function	Length	Data type
Value x: 2 byte with a sign	Bidirectional	2-byte signed	8.001 Pulse difference

When the lock function is enabled, a parameterised 2-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "8.001 Pulse difference".

12.2.8.8 Send value – Value x: 4 bytes

Function	Object function	Length	Data type
Value x: 4 bytes	Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

When the lock function is enabled, a parameterised 4-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "12.001 Counting pulses".

12.2.8.9 Send value – Value x: Temperature

Function	Object function	Length	Data type
Value x: Temperature	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

When the lock function is enabled, a parameterised 2-byte floating-point value is output via the communication object.

It is available when the data point type for "Value x" is set to "9.001 Temperature".

12.2.8.10 Send value – Value x: Brightness

Function	Object function	Length	Data type
Value x: Brightness	Bidirectional	2-byte floating point value	9.004 lux (lux)

When the lock function is enabled, a parameterised 2-byte floating-point value is output via the communication object.

It is available when the data point type for "Value x" is set to "9.004 Lux".

12.2.8.11 Send value – Value x: Colour

Function	Object function	Length	Data type
Value x: Colour	Bidirectional	3-byte RGB colour	232.600 RGB value 3x (0 - 255)

When the lock function is enabled, a parameterised 3-byte colour value is output via the communication object.

It is available when the data point type for "Value x" is set to "232,600 RGB value 3x(0..255)".

12.2.8.12 Send value – Value x: HVAC mode

Function	Object function	Length	Data type
Value x: HVAC mode	Bidirectional	1 byte	20.102 HVAC mode

When the lock function is enabled, a parameterised 1-byte value is output via the communication object.

It is available when the data point type for "Value x" is set to "20.102 HVAC mode".

12.2.9 Operating area x LED

12.2.9.1 Operating area x – LED: Status LED

Function	Object function	Length	Data type
Status LED	Input	1 bit	1.001 Switching

This communication object is used to switch the LED on or off via the bus.

This communication object is the 1-bit input for the LED function. The LED colours for input values 0 and 1 are set in the parameters.

Function	Object function	Length	Data type
Status LED	Input	1 byte	5.001 Percent

This communication object is the 1-byte input for the LED function. The LED colours for input value areas are set in the parameters.

12.2.9.2 Operating area x – LED: Input

Function	Object function	Length	Data type
Input	Input	1 bit	1.001 Switching

This communication object is used to receive a "Save scene" telegram from the bus. The LED flashes for approx. 4 seconds upon reception to indicate that the data is being saved.

12.2.10 Temperature sensor

12.2.10.1 Temperature sensor – Temperature

Function	Object function	Length	Data type
Temperature	Output	2 bytes	9.001 Temperature (°C)

The communication object outputs the measured temperature of the internal temperature sensor.

12.2.10.2 Temperature sensor – Current temperature for calibration

Function	Object function	Length	Data type
Current temperature for calibration	Bidirectional	2 bytes	9.001 Temperature (°C)

The communication object receives the value of the current room temperature (e.g. after measurement via a different temperature measurer) for calibrating the internal temperature sensor.

For a correct calibration the measuring location of the external temperature measurer must be close to the device. Otherwise effects from the movement of air or mounting location (e.g. inside wall, outside wall) can reduce the quality of the calibration.



Note
The temperature sent must not deviate to a maximum of +/- 12.7 K from the temperature measured currently in the device.

12.2.11 Humidity/dew point

12.2.11.1 Humidity/dew point – External temperature

Function	Object function	Length	Data type
External temperature	Input	2-byte floating point value	9.001 Temperature (°C)

The external humidity value measured by the device is available via the communication object.

12.2.11.2 Humidity/dew point – Relative humidity

Function	Object function	Length	Data type
relative humidity	Output	2-byte floating point value	9.007 Moisture (%)
	Output	8-bit unsigned	5.001 Percent (0..100%)

The humidity value measured by the device is available via the communication object.

12.2.11.3 Humidity/dew point – Relative humidity at 20°C

Function	Object function	Length	Data type
Relative humidity at 20°C	Output	2-byte floating point value	9.007 Moisture (%)
	Output	8-bit unsigned	5.001 Percent (0..100%)

The humidity value measured by the device is available via the communication object.

12.2.11.4 Humidity/dew point – Humidity offset (difference)

Function	Object function	Length	Data type
Humidity offset (difference)	Input	2-byte signed	8.010 Percentage difference (%)

The humidity difference measured by the device is available via the communication object.

12.2.11.5 Humidity/ dew point – Humidity offset (measured value)

Function	Object function	Length	Data type
Humidity offset (measured value)	Input	2-byte floating point value	9.007 Moisture (%)

The humidity difference measured by the device is available via the communication object.

12.2.11.6 Humidity/dew point – Absolute humidity

Function	Object function	Length	Data type
Absolute humidity	Output	2-byte floating point value	9.029 Absolute moisture content (g/m³)

The absolute humidity value measured by the device is available via the communication object.

12.2.11.7 Humidity/dew point – external relative humidity

Function	Object function	Length	Data type
External relative humidity	Input	2-byte floating point value	9.007 Moisture (%)

The external humidity value measured by the device is available via the communication object.

12.2.11.8 Humidity/dew point – Request humidity data

Name	Object function	Length	Data type
Request humidity data	Input	1 bit	1.017 Trigger

If the external value is not to be sent cyclically or if the device is being reset, the external value is requested via this object.

12.2.11.9 Humidity/dew point – Sensor error

Name	Object function	Length	Data type
Sensor error	Output	1 bit	1.001 Switching

If a sensor defect occurs or no current value is available to the KNX bus, a telegram with the value "1" is sent to the KNX bus.

A telegram with the value "0" resets the error.

12.2.11.10 Humidity/dew point – Humidification level x

Name	Object function	Length	Data type
Humidification level x	Output	1 bit	1.001 Switching

The 1-bit communication object "Humidification level x" transmits an on/off signal and is used to activate or deactivate the corresponding humidification level.

12.2.11.11 Humidity/dew point – Humidification, target humidity value

Name	Object function	Length	Data type
Humidification: humidity setpoint	Input	2 bytes	9.007 Moisture (%)
	Input	2 bytes	5.001 Percent (0..100%)

The communication object provides the current setpoint for humidity control as a percentage (0 … 100 %). A value of 0 % corresponds to no humidification requirement, whilst a value of 100 % corresponds to the maximum humidification requirement.

12.2.11.12 Humidity/dew point – Humidification control variable

Name	Object function	Length	Data type
Humidification control variable	Output	8-bit unsigned	5.001 Percent (0..100%)
	Output	8-bit unsigned	5.010 Counting pulses (0 - 255)

The "Humidification control variable" communication object specifies the humidification control variable either as a percentage (5.001) or as count pulses (5.010).

12.2.11.13 Humidity/dew point – Humidification scene

Name	Object function	Length	Data type
Humidification scene	Output	1 byte	17.001 Scene number

The 1-bit communication object "Lock humidification output" is used to disable the humidification function. When the disable is activated, control of the humidification is disabled; once the disable is released, the humidity control resumes operation in accordance with the set parameters.

12.2.11.14 Humidity/dew point – Disable humidification control output

Name	Object function	Length	Data type
Disable humidification control output	Input	1 bit	1.001 Switching

The 1-bit communication object "Lock humidification output" is used to disable the humidification function. When the disable is activated, control of the humidification is disabled; once the disable is released, the humidity control resumes operation in accordance with the set parameters.

12.2.11.15 Humidity/dew point – Dehumidification level x

Name	Object function	Length	Data type
Dehumidification level x	Output	1 bit	1.001 Switching
	Output	1 bit	2.001 Prio. Switching

The 1-bit communication object "Dehumidification level x" transmits an on/off signal and is used to activate or deactivate the corresponding dehumidification level.

12.2.11.16 Humidity/dew point – Dehumidification control variable

Name	Object function	Length	Data type
Dehumidification control variable	Output	8-bit unsigned	5.001 Percent (0..100%)
	Output	8-bit unsigned	5.010 Counting pulses (0 - 255)

The "Dehumidification control variable" communication object specifies the dehumidification control variable either as a percentage (5.001) or as count pulses (5.010).

12.2.11.17 Humidity/dew point – Dehumidification scene

Name	Object function	Length	Data type
Dehumidification scene	Output	1 byte	17.001 Scene number

The 1-bit communication object "Lock dehumidification output" is used to disable the dehumidification function. When the disable is activated, control of the dehumidification function is disabled; once the disable is released, the humidity control resumes operation in accordance with the set parameters.

12.2.11.18 Humidity/dew point – Disable dehumidification control output

Name	Object function	Length	Data type
Disable dehumidification control output	Input	1 bit	1.002 Boolean

The 1-bit communication object "Lock dehumidification output" is used to disable the dehumidification function. When the disable is activated, control of the humidification is disabled; once the disable is released, the humidity control resumes operation in accordance with the set parameters.

12.2.11.19 Humidity/dew point – Dew point temperature TF100

Name	Object function	Length	Data type
Dew point temperature TF100	Output	2-byte floating point value	9.001 Temperature (°C)

The calculated dew point temperature is output via the "TF100" communication object. It corresponds to the temperature at which the relative humidity reaches 100 % and condensation begins.

12.2.11.20 Humidity/dew point – Dew point temperature TF80

Name	Object function	Length	Data type
Dew point temperature TF80	Output	2-byte floating point value	9.001 Temperature (°C)

The calculated dew point temperature is output via the "TF100" communication object. It corresponds to the temperature at which the relative humidity reaches 80 % and condensation begins.

12.2.11.21 Humidity/dew point – Dew point temperature TF70

Name	Object function	Length	Data type
Dew point temperature TF70	Output	2-byte floating point value	9.001 Temperature (°C)

The calculated dew point temperature is output via the "TF100" communication object. It corresponds to the temperature at which the relative humidity reaches 70 % and condensation begins.

12.2.11.22 Humidity/dew point – Request dew point temperature

Name	Object function	Length	Data type
Request humidity reading	Input	1 bit	1.017 Trigger

If the external value is not to be sent cyclically or if the device is being reset, the external value is requested via this object.

12.2.11.23 Humidity/dew point – Surface temperature

Name	Object function	Length	Data type
Surface temperature	Input	2-byte floating point value	9.001 Temperature (°C)

The "Surface temperature" communication object is used to transmit the current surface temperature as a 2-byte floating-point value in °C. This value can be used to monitor the risk of condensation or for control functions in heating and cooling modes.

12.2.11.24 Humidity/dew point – Dew point alarm x

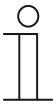
Name	Object function	Length	Data type
Dew point alarm x (switch)	Output	1 bit	1.001 Switching
Dew point alarm x (priority)	Output	1 bit	2.001 Prio. Switching
Dew point alarm x (0..100%)	Output	8-bit unsigned	5.001 Percent (0..100%)
Dew point alarm x (0..255)	Output	8-bit unsigned	5.001 Percent (0..100%)
Dew point alarm x (1..64)	Output	Scene number	17.001 Scene number
Dew point alarm x (RTC operating mode)	Output	1 byte	20.102 HVAC mode

The "Dew point alarm active" communication object indicates whether the monitored surface temperature has fallen below the calculated dew point limit or whether a risk of condensation has been detected. This value can be used to disable cooling functions or to trigger warning messages.

12.2.11.25 Humidity/dew point – Lock output

Name	Object function	Length	Data type
Block output	Input	1 bit	1.001 Switching

When the value "1" is received, all the KNX communication of the humidity sensor is blocked and is no longer part of KNX bus communication. Unblocking happens when the value "0" is received.



Note

The communication objects regarding the function blocks appear for each function block in the same sequence depending on the parameterisation.

- Only one sequence is explicitly presented in the following.
- The individual function blocks are differentiated by the numbering of the blocks (e.g. S1, L1, etc.).
- The same applies to the numbering of the step switches.

12.2.11.26 Humidity/dew point – External humidity reading

Function	Object function	Length	Data type
External humidity reading	Input	8-bit unsigned	5.001 Percent (0..100%)

The external humidity value measured by the device is available via the communication object.

12.2.12 RTR

12.2.12.1 RTC – heating control variable, basic level

Name	Object function	Length	Data type
Control variable, base level: heating/cooling	Output	1 bit	1.001 Switching
	Output	8-bit unsigned	5.001 Percent (0..100%)

- The 1-bit communication object is used to operate a switching actuating drive, e.g. a thermoelectric actuating drive, that is controlled by a switching/heating actuator.
- The 1-byte communication object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.2.12.2 RTC – control variable, basic level: heating/cooling

Name	Object function	Length	Data type
Heating control variable – primary level	Output	1 bit	1.001 Switching
	Output	8-bit unsigned	5.001 Percent (0..100%)

- The 1-bit communication object is used to operate a switching actuating drive, e.g. a thermoelectric actuating drive, that is controlled by a switching/heating actuator.
- The 1-byte communication object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.2.12.3 RTC – Additional heating stage

Name	Object function	Length	Data type
Additional heating stage	Output	1 bit	1.001 Switching
	Output	8-bit unsigned	5.001 Percent (0..100%)

- The 1-bit communication object is used to operate a switching actuating drive, e.g. a thermoelectric actuating drive, that is controlled by a switching/heating actuator.
- The 1-byte communication object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.



Note
The additional stage can also be used as a parallel second heating stage. To do this, the parameter for the temperature difference to the basic stage must be set on 0°C.

12.2.12.4 RTC – Additional heating/cooling stage

Name	Object function	Length	Data type
Additional stage heating/cooling	Output	1 bit	1.001 Switching
	Output	8-bit unsigned	5.001 Percent (0..100%)

- The 1-bit communication object is used to operate a switching actuating drive, e.g. a thermoelectric actuating drive, that is controlled by a switching/heating actuator.
- The 1-byte communication object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.



Note
The additional stage can also be used as a parallel second heating stage. To do this, the parameter for the temperature difference to the basic stage must be set on 0°C.

12.2.12.5 RTC – control variable, basic cooling stage

Name	Object function	Length	Data type
Control variable, basic level: cooling	Output	1 bit	1.001 Switching
	Output	8-bit unsigned	5.001 Percent (0..100%)

- The 1-bit communication object is used to operate a switching actuating drive, e.g. a cooling ceiling, that is controlled by a switching/heating actuator.
- The 1-byte communication object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.2.12.6 RTC – Additional cooling stage

Name	Object function	Length	Data type
Additional cooling stage	Output	1 bit	1.001 Switching
	Output	8-bit unsigned	5.001 Percent (0..100%)

- The 1-bit communication object is used to operate a switching actuating drive, e.g. a cooling ceiling, that is controlled by a switching/heating actuator.
- The 1-byte communication object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.



Note
The additional stage can also be used as a parallel second cooling stage. To do this, the parameter for the temperature difference to the basic stage must be set on 0°C.

12.2.12.7 RTC – actual temperature (weighted)

Name	Object function	Length	Data type
RTC: Actual temperature	Output	2-byte floating point value	9.001 Temperature (°C)
RTC: Actual temperature weighted	Output	2-byte floating point value	9.001 Temperature (°C)

- Current temperature:
  - The communication object outputs the measured (room) temperature, adjusted by the calibration value.
- Actual temperature weighted:
  - The communication object outputs the temperature value which is calculated from the recording and weighting of the internal temperature with up to two external temperatures.

12.2.12.8 RTC – External actual temperature

Name	Object function	Length	Data type
External actual temperature	Input	2-byte floating point value	9.001 Temperature (°C)

The temperature value of an external temperature sensor is received via the 2-byte communication object.



Note
An external temperature measurement for room temperature control may be practical for larger rooms and/or floor heating.

12.2.12.9 RTC – External actual temperature 2

Name	Object function	Length	Data type
External actual temperature 2	Input	2-byte floating point value	9.001 Temperature (°C)

The temperature value of a second external temperature sensor is received via the 2-byte communication object.



Note
An external temperature measurement for room temperature control may be practical for larger rooms and/or floor heating.

12.2.12.10 RTC – Fault of actual temperature

Name	Object function	Length	Data type
Fault, actual temperature	Output	1 bit	1.001 Switching
Fault: actual temperature (Main)	Output	1 bit	1.001 Switching
Fault: actual temperature (Secondary)	Output	1 bit	1.001 Switching

If one of the parameterised input temperatures is unavailable to the controller for a period longer than the monitoring time, the controller enters the error mode. The device sends a telegram on the bus with value"1".



Note
When main/secondary mode is enabled, the object "RTC: Fault: Actual temperature (main)" on the main unit must be connected to indicate fault operation with the object "RTC: "Actual temperature fault (secondary)" on the secondary device.

12.2.12.11 RTC – current setpoint (main/secondary)

Name	Object function	Length	Data type
Current setpoint	Output	2-byte floating point value	9.001 Temperature (°C)

The group object outputs the current setpoint temperature value. The value results from the set setpoint temperature of the current operating mode, the manual setpoint temperature adjustment and a change in the basic setpoint temperature via the object "RTC: Basic setpoint".

12.2.12.12 RTC – request setpoint adjustment (main/secondary)

Name	Object function	Length	Data type
Request setpoint adjustment	Input	2-byte floating point value	9.002 Temperature difference (K)

A setpoint offset in Kelvin can be specified via the communication object. Positive values increase the current setpoint, whilst negative values decrease it.

12.2.12.13 RTC – Confirm setpoint adjustment (main/secondary)

Name	Object function	Length	Data type
Confirm setpoint adjustment	Output	2-byte floating point value	9.002 Temperature difference (K)

The communication object is used to report back the setpoint adjustment value received from the room temperature control.

12.2.12.14 RTC – Reset setpoint adjustment

Name	Object function	Length	Data type
Reset setpoint adjustment	Input	1 bit	1.015 Reset

The communication object is used to reset the currently active setpoint offset. Once the reset function has been carried out, the previously requested setpoint adjustment is discarded and the original setpoint is restored.

12.2.12.15 RTC – Heating setpoints

Name	Object function	Length	Data type
Setpoints heating	Bidirectional	2-byte floating point value	275.100 Temperature setpoint adjustment for 4 HVAC modes

The "Heating setpoint" communication object is used to receive the setpoint for heating operation in °C and to report back the currently valid heating setpoint.

12.2.12.16 RTC – cooling setpoints

Name	Object function	Length	Data type
Cooling set values	Bidirectional	2-byte floating point value	275.100 Temperature setpoint adjustment for 4 HVAC modes

The "Cooling setpoint" communication object is used to receive the setpoint for cooling mode in °C and to report back the currently valid cooling setpoint.

12.2.12.17 RTC – basic setpoint for comfort heating

Name	Object function	Length	Data type
Basic setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

This 2-byte communication object can be used to change the parameterised basic setpoint value of the RTC. The parameter "Basic setpoint" is used to specify the set value the device accesses. The following can be selected:

- "Comfort heating setpoint"
- "Comfort cooling setpoint"
- "Mean value between comfort heating and cooling"

12.2.12.18 RTC – Setpoint for heating comfort

Name	Object function	Length	Data type
Comfort heating setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint heating comfort as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.19 RTC – Setpoint for heating standby

Name	Object function	Length	Data type
Standby heating setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint heating standby as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.20 RTC – heating economy setpoint

Name	Object function	Length	Data type
Economy cooling setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint cooling economy as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.21 RTC – Heating setpoint for building protection

Name	Object function	Length	Data type
Heating setpoint for building protection	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint heating building protection as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.22 RTC – Setpoint for cooling comfort

Name	Object function	Length	Data type
Comfort cooling setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint cooling comfort as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.23 RTC – Setpoint for cooling standby

Name	Object function	Length	Data type
Standby cooling setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint cooling standby as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.24 RTC – Cooling setpoint economy

Name	Object function	Length	Data type
Economy cooling setpoint	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint cooling economy as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.25 RTC – Cooling setpoint for building protection

Name	Object function	Length	Data type
Cooling setpoint for building protection	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The RTC receives a setpoint cooling building protection as absolute temperature value via the communication object, which replaces the parameterised value. When option "Save local operation continuously" has been activated, the setting is retained also after a restart of the device. If the option has not been set, the value parameterised with the ETS becomes active again after a restart of the device.

12.2.12.26 RTC – Operating mode (main/secondary)

Name	Object function	Length	Data type
Operating mode	Bidirectional	1 byte	20.102 HVAC mode
Operating mode (Main)	Bidirectional	1 byte	20.102 HVAC mode
Operating mode (Secondary)	Bidirectional	1 byte	20.102 HVAC mode

The value for the switchover of the operating mode is received via the 1-byte communication object. Meaning of values:

- "1": Comfort
- "2": Standby
- "3": Economy
- "4": Building protection

In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller is defined by the following communication objects: (listed in decreasing order of priority).

- "RTC: Override operating mode"
- "RTC: Condensate water alarm"
- "RTC: Dew point alarm"
- "RTC: Window contact"
- "RTC: Control ON/OFF"
- "RTC: Presence detector"
- "RTC: Normal operating mode"



Note
When main/secondary mode is enabled, the object "RTC: "Normal (main) operating mode" of the main unit with the object "RTC: "Normal (Secondary) operating mode" of the secondary device.

12.2.12.27 RTC – Current operating mode (main/secondary)

Name	Object function	Length	Data type
Current operating mode	Output	1 byte	20.102 HVAC mode
Current operating mode (Main/Secondary)	Output	1 byte	20.102 HVAC mode

The value for the switchover of the operating mode is received via the 1-byte communication object. Meaning of values:

- "0": Override disabled
- "1": Comfort
- "2": Standby
- "3": Economy
- "4": Building protection

In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller is defined by the following communication objects: (listed in decreasing order of priority).

- "RTC: Override operating mode"
- "RTC: Condensate water alarm"
- "RTC: Dew point alarm"
- "RTC: Window contact"
- "RTC: Control ON/OFF"
- "RTC: Presence detector"
- "RTC: Normal operating mode"



Note
When main/secondary mode is enabled, the object "RTC: Override operating mode (main/secondary)" of the main and secondary devices must be connected to the group address of the transmitting device.

12.2.12.28 RTC – window contact

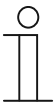
Name	Object function	Length	Data type
Window contact	Bidirectional	1 bit	1.019 Window/door
Window contact (Main/Secondary)	Input	1 bit	1.001 Switching

The signal of a window contact is received via the 1-bit communication object. At an open window a telegram with value 1 is sent to the RTC.

If no other communication object with a higher priority is active, the RTC is set on the setpoint value for frost/heat protection by the message "Window open".

In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller is defined by the following communication objects: (listed in decreasing order of priority).

- "RTC: Override operating mode"
- "RTC: Condensate water alarm"
- "RTC: Dew point alarm"
- "RTC: Window contact"
- "RTC: Control ON/OFF"
- "RTC: Presence detector"
- "RTC: Normal operating mode"



Note
When main/secondary mode is enabled, the object "RTC: Override operating mode (main/secondary)" of the main and secondary devices must be connected to the group address of the transmitting device.

12.2.12.29 RTC – dew point alarm

Name	Object function	Length	Data type
RTC: Dew point alarm	Input	1 bit	1.005 Alarm

A dew point detector signals the occurrence of dew formation, e.g. on the cooling medium feed lines of a cooling machine. The 1-bit communication object is used to set the controller into the dew point protection mode. This causes the current setpoint to be set on the heat protection setpoint in order to prevent the formation of water.



Note
This protective mechanism is only active in the cooling mode. It remains in place until it is cancelled by the value "0". When an alarm is active, manual operation of the controller is blocked. The information is displayed by a corresponding icon on the control unit.

12.2.12.30 RTC – presence detector

Name	Object function	Length	Data type
Presence detector	Bidirectional	1 bit	1.001 Switching
Presence detector (Main/Secondary)	Bidirectional	1 bit	1.001 Switching

The signal of a movement detector is received via the 1-bit communication object. If a person is present in the room, a telegram with value "1" is sent to the RTC.

If no other communication object with a higher priority is active, the RTC is set on the comfort setpoint value by the message "Person present in the room".

In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller is defined by the following communication objects: (listed in decreasing order of priority).

- "RTC: Override operating mode"
- "RTC: Condensate water alarm"
- "RTC: Dew point alarm"
- "RTC: Window contact"
- "RTC: Control ON/OFF"
- "RTC: Presence detector"
- "RTC: Normal operating mode"



Note
When main/secondary mode is enabled, the object "RTC: The "Presence detector (Main/Secondary)" of the main and secondary devices must be linked to the group address of the transmitting device.

12.2.12.31 RTC – Outside temperature for summer compensation

Name	Object function	Length	Data type
Outside temperature for summer compensation	Input	2-byte floating point value	9.001 Temperature (°C)

In order to save energy, and to ensure that the temperature difference occurring during entry and exit of a climate-controlled building stays within comfortable limits, the reduction of room temperature by cooling devices should be limited as a function dependent on the outside temperature (summer compensation). This, for example, prevents the air-conditioning system from running continuously when the outside temperature is 35°C in order to reduce the room temperature to 22°C.

An open air temperature sensor is required for this application. For this the current outside temperature must be made available to the controller via the 2-byte communication object.

12.2.12.32 RTC – Summer compensation active

Name	Object function	Length	Data type
Summer compensation active	Output	1 bit	1.002 Boolean

The controller uses this 1-bit communication object to send a switching signal to the bus. If summer compensation is active, value "1" is sent. If summer compensation is not active, value "0" is sent.

If summer compensation is active, the set setpoint temperature for cooling operation is raised in dependence of the outside temperature. A decrease of the cooling mode setpoint temperature below the value calculated by the summer compensation function is not possible. An increase of the setpoint temperature for the cooling mode is always possible.

12.2.12.33 RTC – RTSM status controller (main/secondary)

Name	Object function	Length	Data type
RTC status control (Main/Secondary)	Output	8-bit field	21.107 Combined RTSM status

The communication object is used to transmit the current operating or control status of the main or auxiliary control as an 8-bit status value.

The value can be used for visualisation, diagnosis or analysis of the current control behaviour.

12.2.12.34 RTC – RTC status controller (main/secondary)

Name	Object function	Length	Data type
RTC status controller (main/secondary)	Output	16-bit field	22.103 Combined status

The current status of the room temperature control is transmitted via the communication object as a 16-bit bit field.

The individual bits represent various operating and control states and can be used for visualisation, diagnostics or further processing.

12.2.12.35 RTC – RHCC status control

Name	Object function	Length	Data type
RHCC status control	Output	16-bit field	22.101 RHCC status

The current operating and control status of the heating/cooling control is transmitted via the communication object as a 16-bit bit field.

The individual bits represent different states of the control and can be used for visualisation, diagnostics or further processing.

12.2.12.36 RTC – Enable Fahrenheit

Name	Object function	Length	Data type
Enable Fahrenheit	Bidirectional	1 bit	1.001 Switching

You can switch between °C and °F on the device display via this setting. °F is activated with a 1

12.2.12.37 RTC – Heating on

Name	Object function	Length	Data type
Heating active	Output	1 bit	1.011 status

The communication object indicates whether the control is currently in heating mode. The variable is set as soon as the control generates a heating demand.

12.2.12.38 RTC – Active cooling

Name	Object function	Length	Data type
Cooling active	Output	1 bit	1.011 status

The communication object indicates whether the control is currently in cooling mode. The variable is set as soon as the control generates a cooling demand.

12.2.12.39 RTC – Heating/cooling switchover

Name	Object function	Length	Data type
Heating/cooling changeover	1. Output 2. Input 3. Input / output	1 bit	1.001 Switching

1. Automatic:
   – When the switchover between heating and cooling is carried out automatically by the RTC, the current status is sent o the bus via the communication object. Here the status "Heating" has value "1" and status "cooling" has value "0".
2. Only via object:
   – In the RTC, switching between heating and cooling is carried out solely via the communication object. Receiving the value "1" activates heating mode, while receiving the value "0" activates cooling mode.
3. On-site/via extension unit and via object:
   – Switching between heating and cooling on the room temperature controller occurs in the RTC by user interaction or via the communication object. The current status is sent to the bus or received via via the object. Here the status "Heating" has value "1" and status "cooling" has value "0".

12.2.12.40 RTC – heating/cooling mode switch

Name	Object function	Length	Data type
Heating/cooling mode switch status	Bidirectional	1 bit	1.007 Step

An On telegram is sent on the bus via the 1-bit communication object as soon as the RTC is in active heating mode.

If the controller is in cooling mode or in the inactive zone between heating and cooling, the RTC sends an OFF telegram via the object "RTC: Send an "Off" telegram to "Heating status".

12.2.12.41 RTC – disable/enable heating

Name	Object function	Length	Data type
Disable/enable heating	Bidirectional	1 bit	1.003 enable

The "Lock/unlock heating" communication object enables the heating control system to be controlled remotely. Whilst a disable is active, the control suppresses the output of heating setpoints and heating requests. Once the disable has been lifted, the heating control system will resume operation in accordance with the set parameters.

12.2.12.42 RTC – Disable/enable heating levels individually

Name	Object function	Length	Data type
Disable/enable heating levels individually	Bidirectional	1 byte	20.116 Activate H/C level

The communication object is used to selectively enable or disable individual heating levels. This allows the maximum available heating output to be limited or adjusted to operational requirements.

12.2.12.43 RTC – Controller synchronisation output

Name	Object function	Length	Data type
Control synchronisation output	Output	1 byte	20.105 HVAC control mode

The communication object provides a 1-byte value which is used to synchronise control states between the main and secondary controls or between several KNX devices.

12.2.12.44 RTC – Controller synchronisation input

Name	Object function	Length	Data type
Control synchronisation input	Bidirectional	1 byte	20.105 HVAC control mode

The communication object is used to receive a 1-byte synchronisation value, which is used to coordinate several room temperature controls. The value received influences the internal state logic of the control (e.g. main/auxiliary operation or synchronised operating modes).

12.2.12.45 RTC – temperature limitation for basic heating mode

Name	Object function	Length	Data type
Heating temperature limit basic stage	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The communication object receives the measured temperature value for the limit temperature of the basic heating stage. If, for example, the basic heating stage controls the floor heating, then the floor temperature is received via this communication object. If the temperature received exceeds the limit value, the control value is set on zero.

12.2.12.46 RTC – temperature limit for additional heating stage

Name	Object function	Length	Data type
Temperature limit for additional heating level	Input / output	2-byte floating point value	9.001 Temperature (°C)

The communication object receives the measured temperature value for the limit temperature of the additional heating stage. If, for example, the basic heating stage controls the floor heating, then the floor temperature is received via this communication object. If the temperature received exceeds the limit value, the control value is set on zero.

12.2.12.47 RTC – temperature limit for cooling, basic level

Name	Object function	Length	Data type
Cooling temperature limit basic stage	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The communication object receives the measured temperature value for the limit temperature of the basic cooling stage. The function is analogue to the heating limit temperature.

12.2.12.48 RTC – temperature limit for cooling, additional stage

Name	Object function	Length	Data type
Temperature limit for cooling (additional level)	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The communication object receives the measured temperature value for the limit temperature of the additional cooling stage. The function is analogue to the heating limit temperature.

12.2.12.49 RTC – activate underfloor heating

Name	Object function	Length	Data type
Underfloor heating: switch heating on	Bidirectional	1 bit	1.011 status

The "Activate underfloor heating" communication object controls the activation of the heating function for the underfloor heating system. When the signal is active, the control treats the underfloor heating as a heat source and authorises the corresponding heating setpoints.

12.2.12.50 RTC – Underfloor heating

Name	Object function	Length	Data type
Underfloor heating	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The "Underfloor heating" communication object indicates that the underfloor heating is active or sends a heating request to a connected actuator. It is set depending on the control deviation and the parameters of the room temperature control.

12.2.12.51 RTC – Underfloor heating: Activate additional heating stage

Name	Object function	Length	Data type
Underfloor heating: Activate additional heating level	Bidirectional	1 bit	1.011 status

12.2.12.52 RTC – Underfloor heating: Additional heating stage

Name	Object function	Length	Data type
Underfloor heating: additional heating level	Bidirectional	2-byte floating point value	9.001 Temperature (°C)

The communication object "Underfloor heating: Activate additional heating stage" is used to enable a second heating stage for the underfloor heating system. When activated, the control can request additional heating output in order to compensate for larger temperature deviations more quickly.

12.2.12.53 RTC – Enable boost heating

Name	Object function	Length	Data type
Enable boost heating	Bidirectional	1 bit	1.011 status

The "Enable boost heating" communication object is used to activate a comfort or rapid heating function.

During boost operation, the heating output is temporarily increased and the control system operates at maximum or increased control levels in order to achieve a rapid rise in temperature.

12.2.12.54 RTC – Enable boost heating additional level

Name	Object function	Length	Data type
Enable boost heating additional level	Bidirectional	1 bit	1.011 status

The "Boost heating additional level" communication object is used to enable an extended boost function. In addition to the standard rapid heating mode, a second heating level can be activated to provide higher heating output and shorter heating times.

12.2.12.55 RTC – Enable boost cooling

Name	Object function	Length	Data type
Enable boost cooling	Bidirectional	1 bit	1.011 status

The "Enable boost cooling" communication object is used to activate a comfort or rapid cooling function.

During boost operation, the cooling capacity is temporarily increased and the control system operates at maximum or increased control levels in order to achieve a rapid reduction in temperature.

12.2.12.56 RTC – Enable boost cooling additional stage

Name	Object function	Length	Data type
Enable boost cooling additional level	Bidirectional	1 bit	1.011 status

The "Enable boost cooling additional level" communication object is used to enable an extended boost function. In addition to the standard rapid cooling mode, a second cooling level can be activated to provide greater cooling capacity and reduce cooling times.

12.2.12.57 RTC – scene

Name	Object function	Length	Data type
Scene	Input	Scene control	18.001 scene control

The room temperature control can receive or trigger scenes via the communication object. In this process, defined room and operating conditions, such as setpoints and operating modes, are controlled or stored using scene numbers.

12.2.12.58 RTC – Fan manual

Name	Object function	Length	Data type
Fan manual	Output	1 bit	1.001 Switching
Manual fan (Main)	Output	1 bit	1.001 Switching
Manual fan (Secondary)	Output	1 bit	1.001 Switching

Using the 1-bit communication object, a fan coil actuator can be placed in manual fan mode or returned to automatic fan mode. In the automatic fan mode of the fan coil actuator, the fan's rotational speed is defined in the fan coil actuator using the control value. In manual fan operation, the user of the RTC can set the fan's rotational speed as needed. This setting will remain active until it is reset. The exception is fan speed level 0: To prevent damage to the building, automatic mode is reactivated 18 hours after fan speed level 0 has been selected.

If a fan coil regulator is set for both operating modes of heating and cooling and an own generating device is set for both operating modes, this communication object then operates jointly with fan coil regulator heating.



Note

When main/secondary mode is enabled, the object "RTC: Manual fan (main)" on the main unit with the object "RTC: Manual fan (secondary)" on the secondary unit.

12.2.12.59 RTC – fan speed

Name	Object function	Length	Data type
Fan speed	Output	8-bit unsigned	5.001 Percent (0..100%) 6.010 Counter value
Fan speed (Main)	Output	8-bit unsigned	5.001 Percent (0..100%) 6.010 Counter value
Fan speed (Secondary)	Output	8-bit unsigned	5.001 Percent (0..100%) 6.010 Counter value

The fan speed level in the fan coil actuator is selected via the 8-bit communication object.

The fan speed levels are sent to the bus as percentage values. Example with a 5-level fan: The level value "1" is output as 20 %, and "5" is output as 100 %. The setting of the levels can also be made optionally as counter values, in this example 0 ... 5.

If a fan coil regulator is set for both operating modes of heating and cooling and an own generating device is set for both operating modes, this communication object then operates jointly with fan coil regulator heating.



Note
When main/secondary mode is enabled, the object "RTC: Fan speed (main)" of the main device with the object "RTC: Fan speed (secondary)" of the secondary device.

12.2.12.60 RTC – Fan status (manual)

Name	Object function	Length	Data type
Fan manual status	Output	1 bit	1.002 Boolean

An On telegram is sent on the bus via the 1-bit communication object.

12.2.12.61 RTC – Current fan speed

Name	Object function	Length	Data type
Current fan speed	Output	8-bit unsigned	5.001 Percent (0..100%) 6.010 Counter value
Current fan speed (Main)	Output	8-bit unsigned	5.001 Percent (0..100%) 6.010 Counter value
Current fan speed (Secondary)	Output	8-bit unsigned	5.001 Percent (0..100%) 6.010 Counter value

The fan speed level in the fan coil actuator is selected via the 8-bit communication object.

The fan speed levels are sent to the bus as percentage values. Example with a 5-level fan: The level value "1" is output as 20 %, and "5" is output as 100 %. The setting of the levels can also be made optionally as counter values, in this example 0 ... 5.

If a fan coil regulator is set for both operating modes of heating and cooling and an own generating device is set for both operating modes, this communication object then operates jointly with fan coil regulator heating.



Note
When main/secondary mode is enabled, the object "RTC: Fan speed (main)" of the main device with the object "RTC: Fan speed (secondary)" of the secondary device.

12.2.13 CO_2

12.2.13.1 CO_2 – CO_2 value

Name	Object function	Length	Data type
CO_2 value	Output	2-byte floating point value	9.008 Parts/million (ppm)

The CO2 value measured by the device is available via the communication object.

12.2.13.2 CO_2 – Request CO_2 value

Name	Object function	Length	Data type
Request CO_2 value	Input	1 bit	1.017 Trigger

If the external value is not to be sent cyclically or if the device is being reset, the external value is requested via this object.

12.2.13.3 CO_2 – Level 1

Name	Object function	Length	Data type
Level 1	Output	1 bit	5.001 Percent (0..100%)

The value sent via the object is parameterised in the application. This parameterised value is sent to the KNX bus after the threshold is exceeded.

12.2.13.4 CO_2 – Level 2

Name	Object function	Length	Data type
Level 2	Output	1 bit	5.001 Percent (0..100%)

The value sent via the object is parameterised in the application. This parameterised value is sent to the KNX bus after the threshold is exceeded.

12.2.13.5 CO_2 – Level 3

Name	Object function	Length	Data type
Level 3	Output	1 bit	5.001 Percent (0..100%)

The value sent via the object is parameterised in the application. This parameterised value is sent to the KNX bus after the threshold is exceeded.

12.2.13.6 CO_2 – External CO_2 level

Name	Object function	Length	Data type
External CO_2 value	Input	2-byte floating point value	9.008 Parts/million (ppm)

If another CO2 value is to be included in the measurement, this input can be linked with the other output of a corresponding device.

12.2.13.7 CO_2 – Sensor error

Name	Object function	Length	Data type
Sensor error	Output	1 bit	1.005 Alarm

If a sensor defect occurs or no current value is available to the KNX bus, a telegram with the value "1" is sent to the KNX bus.

A telegram with the value "0" resets the error.

12.2.13.8 CO_2 – CO_2 setpoint

Name	Object function	Length	Data type
CO_2 setpoint	Output	2-byte floating point value	9.008 Parts/million (ppm)

Another basic set value can be specified for the device via the object.

Once a new value has been received, this acts as the new reference point and therefore has a direct impact on the measuring results of the device.

12.2.13.9 CO_2 – Control variable

Name	Object function	Length	Data type
Control value	Output	1 bit	5.001 Percent (0..100%)

The CO2 controller sends its control value to an actuator via the control value communication object when the controller type is set on PI controller.

12.2.13.10 CO_2 – Disable control output

Name	Object function	Length	Data type
Disable control output	Input	1 bit	1.001 Switching

When the value "1" is received, all the KNX communication of the CO2 sensor is blocked and is no longer part of KNX bus communication. Unblocking happens when the value "0" is received.

12.2.14 Function

12.2.14.1 Function – Cyclical telegram: Block

Name	Object function	Length	Data type
Telegram cyclical: Block	Input	1 bit	1.003 enable

The "Cycle-block telegram" object controls whether a 1-bit status or input value is sent cyclically to the KNX bus or is only transmitted when it changes.

12.2.14.2 Function – Cyclical telegram: Input

Name	Object function	Length	Data type
Telegram cyclical: Input	Input	1 bit	1.001 Switching 1.005 Alarm
		1 byte	5.001 Percent 5.010 Counting pulses
		2 bytes	9.001 Temperature 8.001 Pulse difference 7.001 Pulses
		4 bytes	14.005 Amplitude 13.001 Counting pulses (signed) 12.001 Counting pulses (unsigned)

An input object is received from the bus with this communication object.

12.2.14.3 Function – Cyclical telegram: Output

Name	Object function	Length	Data type
Output	Output	1 bit	1.001 Switching 1.005 Alarm
		1 byte	5.001 Percent 5.010 Counting pulses
		2 bytes	9.001 Temperature 8.001 Pulse difference 7.001 Pulses
		4 bytes	14.005 Amplitude 13.001 Counting pulses (signed) 12.001 Counting pulses (unsigned)

An output object is sent to the bus with this communication object.

12.2.14.4 Function – Priority: Switching

Name	Object function	Length	Data type
Priority: Switching	Input	1 bit	1.001 Switching

This communication object receives a switching command from the bus. This is transmitted on the output when no command with priority is pending on the priority input.

12.2.14.5 Function – Priority: Priority

Name	Object function	Length	Data type
Priority: Priority	Input	1-bit controlled	2.001 Prio. Switching

This communication object receives a priority telegram from the bus.

If the priority bit is set, the associated switching value is sent to the output object. If the priority bit is not set, then the value of the input object is passed on to the output object.

- 00: No priority
- 01: No priority
- 10: Priority "Off"
- 11: Priority "On"

12.2.14.6 Function – Priority: Output

Name	Object function	Length	Data type
Priority: Output	Input	1 bit	1.001 Switching

An output object is sent to the bus with this communication object. It takes on the value of the priority function, or the value of the input object when the priority function is not pending.

12.2.14.7 Function – Logical functions: Output

Name	Object function	Length	Data type
Logic functions: Output	Output	1 bit	1.001 Switching
		8-bit unsigned	5.010 Counting pulses (0 - 255)

The result determined from the inputs is sent via the communication object. The value that is to be sent for a logic function that was fulfilled or not fulfilled is adjustable. The bit size of the object is specified via the "Object type output" parameter.

12.2.14.8 Function – Logical functions: Input x

Name	Object function	Length	Data type
Logic functions: Input x	Input	1 bit	1.001 Switching

The values received via the communication objects are linked via the logic gate. The bit size of the object is specified via the "Object type input x" parameter.

12.2.14.9 Function – Gate: Block

Name	Object function	Length	Data type
Gate: Block	Input	1 bit	1.003 enable

About the 1-bit communication object "Tor": The "Lock" function can be used to lock or unlock the gate or logic function of the controller. When the system is in the blocked state, gate-dependent influences on the control are suppressed.

12.2.14.10 Function – Gate: Input

Name	Object function	Length	Data type
Gate: Input	Input Bidirectional	1 bit	1.001 Switching
	Input Bidirectional	1 bit	1.008 Up/Down
	Input Bidirectional	1 bit	1.007 Step
	Input Bidirectional	1-bit controlled	2.001 Prio. Switching
	Input Bidirectional	3-bit controlled	3.007 Dimming step
	Input Bidirectional	8-bit unsigned	5.001 Percent (0..100%)
	Input Bidirectional	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Input Bidirectional	2-byte floating point value	9.001 Temperature (°C)
	Input Bidirectional	2-byte signed	8.001 Pulse difference
	Input Bidirectional	2-byte unsigned	7.001 Pulses
	Input Bidirectional	Time	10.001 Daytime
	Input Bidirectional	Date	11.001 Date
	Input Bidirectional	4-byte floating point value	14.005 Amplitude
	Input Bidirectional	4-byte signed	13.001 Counting pulses (signed)
	Input Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

An input object is sent to the bus with this communication object. This is the source object for the Gate function. Depending on the parameterisation, it sends the minimum or maximum value of the inputs or their average value.

12.2.14.11 Function – Gate: Output

Name	Object function	Length	Data type
Gate: Input	Output Bidirectional	1 bit	1.001 Switching
	Output Bidirectional	1 bit	1.008 Up/Down
	Output Bidirectional	1 bit	1.007 Step
	Output Bidirectional	1-bit controlled	2.001 Prio. Switching
	Output Bidirectional	3-bit controlled	3.007 Dimming step
	Output Bidirectional	8-bit unsigned	5.001 Percent (0..100%)
	Output Bidirectional	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Output Bidirectional	2-byte floating point value	9.001 Temperature (°C)
	Output Bidirectional	2-byte signed	8.001 Pulse difference
	Output Bidirectional	2-byte unsigned	7.001 Pulses
	Output Bidirectional	Time	10.001 Daytime
	Output Bidirectional	Date	11.001 Date
	Output Bidirectional	4-byte floating point value	14.005 Amplitude
	Output Bidirectional	4-byte signed	13.001 Counting pulses (signed)
	Output Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

An output object is sent to the bus with this communication object. This is the source object for the Gate function. Depending on the parameterisation, it sends the minimum or maximum value of the inputs or their average value.

12.2.14.12 Function – Staircase lighting: Shut-off warning time

Name	Object function	Length	Data type
Staircase lighting: Shut-off warning time	Bidirectional	1-byte unsigned	7.005 Time (s)

About the 1-byte communication object "Staircase lighting: Shut-off warning time" specifies the advance warning time, in seconds, before the staircase light switches off automatically. During this time, a visual or audible warning function can be activated.

12.2.14.13 Function – Staircase lighting: Input / output

Name	Object function	Length	Data type
Staircase lighting: On-/Outlet	Bidirectional	1 bit	1.001 Switching

An input or output object is sent to the bus or received from the bus with this communication object. The communication object is bidirectional.

12.2.14.14 Function – Staircase lighting: Input

Name	Object function	Length	Data type
Staircase lighting: Input	Input	1 bit	1.001 Switching
	Input	8-bit unsigned	5.001 Percent (0..100%)

An input object is received from the bus with this communication object. An input or output object is sent to the bus or received from the bus with this communication object. The communication object is bidirectional.

12.2.14.15 Function – Staircase lighting: Output

Name	Object function	Length	Data type
Output	Output	1 bit	[1.001] Switching
		1 byte	[5.001] Percent

An output object is sent to the bus with this communication object. An input or output object is sent to the bus or received from the bus with this communication object. The communication object is bidirectional.

12.2.14.16 Function – Staircase lighting: Switch-off delay

Name	Object function	Length	Data type
Staircase lighting: Switch-off delay	Bidirectional	2-byte unsigned	7.005 Time (s)

With this communication object a communication object is sent to the bus via the switch-off delay or received from the bus. The communication object is bidirectional.

12.2.14.17 Function – Delay: Input

Name	Object function	Length	Data type
Delay: Input	Input	1 bit	1.001 Switching
	Input	1 bit	1.008 Up/Down
	Input	1 bit	1.007 Step
	Input	8-bit unsigned	5.001 Percent (0..100%)
	Input	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Input	2-byte floating point value	9.001 Temperature (°C)
	Input	2-byte signed	8.001 Pulse difference
	Input	2-byte unsigned	7.001 Pulses
	Input	4-byte floating point value	14.005 Amplitude
	Input	4-byte signed	13.001 Counting pulses (signed)
	Input	4-byte unsigned	12.001 Counting pulses (unsigned)

An input object is received from the bus with this communication object.

12.2.14.18 Function – Delay: Output

Name	Object function	Length	Data type
Delay: Output	Output	1 bit	1.001 Switching
	Output	1 bit	1.008 Up/Down
	Output	1 bit	1.007 Step
	Output	8-bit unsigned	5.001 Percent (0..100%)
	Output	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Output	2-byte floating point value	9.001 Temperature (°C)
	Output	2-byte signed	8.001 Pulse difference
	Output	2-byte unsigned	7.001 Pulses
	Output	4-byte floating point value	14.005 Amplitude
	Output	4-byte signed	13.001 Counting pulses (signed)
	Output	4-byte unsigned	12.001 Counting pulses (unsigned)

An input object is received from the bus with this communication object.

12.2.14.19 Function – Delay time: Input

Name	Object function	Length	Data type
Delay time: Input	Bidirectional	1 bit	1.001 Switching
	Bidirectional	1 bit	1.008 Up/Down
	Bidirectional	1 bit	1.007 Step
	Bidirectional	8-bit unsigned	5.001 Percent (0..100%)
	Bidirectional	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Bidirectional	2-byte floating point value	9.001 Temperature (°C)
	Bidirectional	2-byte signed	8.001 Pulse difference
	Bidirectional	2-byte unsigned	7.001 Pulses
	Bidirectional	4-byte floating point value	14.005 Amplitude
	Bidirectional	4-byte signed	13.001 Counting pulses (signed)
	Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

The delay time can be set via the bus with this communication object. This changes the parameterised delay time.

12.2.14.20 Function – Min/Max: Input

Name	Object function	Length	Data type
Min/max: Input	Input	1 bit	1.001 Switching
	Input	1 bit	1.008 Up/Down
	Input	1 bit	1.007 Step
	Input	8-bit unsigned	5.001 Percent (0..100%)
	Input	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Input	2-byte floating point value	9.001 Temperature (°C)
	Input	2-byte signed	8.001 Pulse difference
	Input	2-byte unsigned	7.001 Pulses
	Input	4-byte floating point value	14.005 Amplitude
	Input	4-byte signed	13.001 Counting pulses (signed)
	Input	4-byte unsigned	12.001 Counting pulses (unsigned)

This is the input object of the min/max function. Up to eight input objects can be activated.

12.2.14.21 Function – Min/Max: Output

Name	Object function	Length	Data type
Min/max: Output	Output	1 bit	1.001 Switching
	Output	1 bit	1.008 Up/Down
	Output	1 bit	1.007 Step
	Output	8-bit unsigned	5.001 Percent (0..100%)
	Output	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Output	2-byte floating point value	9.001 Temperature (°C)
	Output	2-byte signed	8.001 Pulse difference
	Output	2-byte unsigned	7.001 Pulses
	Output	4-byte floating point value	14.005 Amplitude
	Output	4-byte signed	13.001 Counting pulses (signed)
	Output	4-byte unsigned	12.001 Counting pulses (unsigned)

This is the output object of the min/max function. Depending on the parameterisation, it sends the minimum or maximum value of the inputs or their average value.

12.2.14.22 Function – Scene actuator: Actuator group A

Name	Object function	Length	Data type
Scene actuator: Actuator group A	Bidirectional	1 bit	1.001 Switching
	Bidirectional	1 bit	1.008 Up/Down
	Bidirectional	1 bit	1.007 Step
	Bidirectional	8-bit unsigned	5.001 Percent (0..100%)
	Bidirectional	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Bidirectional	2-byte floating point value	9.001 Temperature (°C)
	Bidirectional	2-byte signed	8.001 Pulse difference
	Bidirectional	2-byte unsigned	7.001 Pulses
	Bidirectional	4-byte floating point value	14.005 Amplitude
	Bidirectional	4-byte signed	13.001 Counting pulses (signed)
	Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

With this communication object an actuator group is activated with its current scene value. This is the output object of the min/max function. Depending on the parameterisation, it sends the minimum or maximum value of the inputs or their average value.

12.2.14.23 Function – Scene actuator: Input

Name	Object function	Length	Data type
Scene number: Input	Input	1 bit	1.001 Switching
	Input	1 bit	1.008 Up/Down
	Input	1 bit	1.007 Step
	Input	8-bit unsigned	5.001 Percent (0..100%)
	Input	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Input	2-byte floating point value	9.001 Temperature (°C)
	Input	2-byte signed	8.001 Pulse difference
	Input	2-byte unsigned	7.001 Pulses
	Input	4-byte floating point value	14.005 Amplitude
	Input	4-byte signed	13.001 Counting pulses (signed)
	Input	4-byte unsigned	12.001 Counting pulses (unsigned)

This communication object sends a scene control telegram to the bus.

12.2.14.24 Function – Sequence: Sequence status

Name	Object function	Length	Data type
Sequence: Sequence status	Input	8-bit unsigned	5.001 Percent (0..100%)
	Input	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Input	2-byte floating point value	9.001 Temperature (°C)
	Input	2-byte signed	8.001 Pulse difference
	Input	2-byte unsigned	7.001 Pulses
	Input	4-byte floating point value	14.005 Amplitude
	Input	4-byte signed	13.001 Counting pulses (signed)
	Input	4-byte unsigned	12.001 Counting pulses (unsigned)

The status of a sequence is sent to the bus with this communication object.

Telegram value:

- 1 = ON
- 0 = OFF

12.2.14.25 Function – Sequence: Block

Name	Object function	Length	Data type
Sequence: Block	Input	1 bit	1.003 enable

With this communication object the execution of the sequence is blocked.

- 1 = Execution is blocked
- 0 = Execution is enabled

12.2.14.26 Function – Sequence: Value sequence

Name	Object function	Length	Data type
Sequence: Value sequence	Bidirectional	8-bit unsigned	5.001 Percent (0..100%)
	Bidirectional	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Bidirectional	2-byte floating point value	9.001 Temperature (°C)
	Bidirectional	2-byte signed	8.001 Pulse difference
	Bidirectional	2-byte unsigned	7.001 Pulses
	Bidirectional	4-byte floating point value	14.005 Amplitude
	Bidirectional	4-byte signed	13.001 Counting pulses (signed)
	Bidirectional	4-byte unsigned	12.001 Counting pulses (unsigned)

The parameterised sequence value is sent to the bus with this communication object.

12.2.14.27 Function – Sequence: Sequence start

Name	Object function	Length	Data type
Sequence: Sequence start	Input	8-bit unsigned	5.001 Percent (0..100%)
	Input	8-bit unsigned	5.010 Counting pulses (0 - 255)
	Input	2-byte floating point value	9.001 Temperature (°C)
	Input	2-byte signed	8.001 Pulse difference
	Input	2-byte unsigned	7.001 Pulses
	Input	4-byte floating point value	14.005 Amplitude
	Input	4-byte signed	13.001 Counting pulses (signed)
	Input	4-byte unsigned	12.001 Counting pulses (unsigned)

A sequence is started or stopped with this communication object.

Telegram value:

- 1 = start
- 0 = stop

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Service

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