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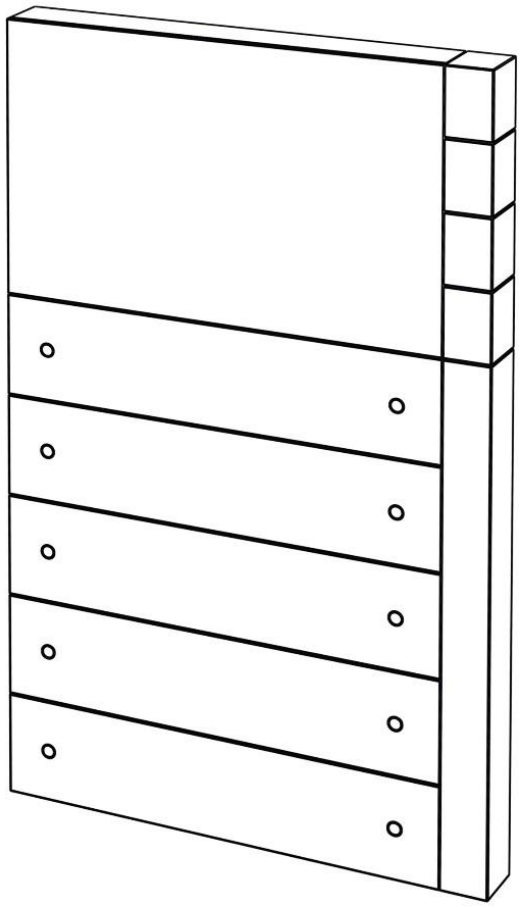
KNX Technical Reference Manual

ABB i-bus® KNX PEONIA

PEB/U2.0.1-xxx 2 / 4 gang
PEB/U3.0.1-xxx 3 / 6 gang
PEB/U5.0.1-xxx 5 /10 gang
PEBR/U2.0.1-xxx 2 / 4 gang with RTC
PEBR/U3.0.1-xxx 3 / 6 gang With RTC
PEBR/U5.0.1-xxx 5 /10 gang with RTC



KNX Technical Reference Manual
ABB i-Bus®KNX PEONIA

1 Information on the manual

1.1 General information

Please read this manual through carefully and adhere to the information listed. This will ensure reliable operation and long service life of your product.
For reasons of clarification, this manual does not contain all the detailed information on all the models of the product, nor can it taken into consideration all conceivable circumstances related to installation, operation and maintenance.

If additional information is required or problems arise that are not dealt with in this manual, the necessary information can be requested from the manufacturer.
The product has been manufacture 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.
To maintain this state for the period of its operation, the specifications of this manual must be observed and adhered to.
Modifications and repairs to the product must only be undertaken if the manual expressly permits this.
It is only the adherence to the safety instructions and all safety and warning symbols in this manual that will ensure the optimum protection of the user and the environment as well as the safe and trouble-free operation of the product.

1.2 Structure of the manual

This manual provides you with the detailed technical information on the device, its installation and programming. The use of the device is explain by means of examples.

• The chapters "Information on the manual", "Safety" and "Environment" contain general specifications and basic information as well as a description of functions.
• Chapters "Setup and function", "Technical data" and "Circuit diagrams and dimensional drawings" explain the device instrumentation.
• Chapter "Installation and electrical connection" describes the installation, mounting and the electrical connections.
• Chapters "Commissioning" and "Operation" contain instructions on commissioning and how to operate the device.
• One or several chapters "Application ..." contain general information on the individual applications of the device, the setting options of all device parameters and a list of all objects.

1.3 Symbol of the manual

Danger-danger to life

This symbol in connection with the signal word “Danger” indicates dangerous situations which could lead to immediate death or to serious injury.

Warning-danger to life

This symbol in connection with the signal word “Warning” indicates dangerous situations which could lead to immediate death or to serious injury.

Caution-risk to injury

This symbol in connection with the signal word “Caution” indicates a possibly dangerous situations which could lead to slight or moderately serious injury.

Attention-damage to property

This symbol indicates a possibly harmful situation. Non-observance of the safety instructions can lead to damage or destruction of the product.

NOTE

This symbol indicates information or references to addition useful topics. This is not a signal word for a dangerous situation.

This symbol refers to integrated video with addition information on the respective chapter. An Acrobat Reader from Version 9.0 is required to view the videos.

This symbol indicates information on the protection of the environment.

Examples on application, installation and programming are displayed with a grey background.

2 Safety

2.1 Intended use

The device must only be operate within the specified technical data!
Extensive functions are available for the control elements. The scope of applications is contained in chapter "Application ... " (only in languages of the countries EN and CN).
The integrated bus coupler makes possible the connection to a KNX bus line.

Note: They may only be install in dry interior rooms in flush-mounted sockets according to BS 4662:2006+A1:2009.

2.2 Improper use

The device represents a danger if it is improperly used. Each non-intended use is deem improper use. The manufacturer is not liable for damages resulting from such improper use. The associated risk is borne by the user/operator.

The device must never be use outdoors or in bathroom areas. Do not push objects through the openings in the device. The device has an integrated bus coupler. The use of an additional bus coupler is therefore not admissible.

2.3 Target groups and qualifications

Installation, commissioning and maintenance of the product must only be carried out by trained and properly qualified electrical installers. The electrical installers must have read and understood the manual and follow the instructions provided. The operator must adhere to the valid national regulations in his country governing the installation, functional test, repair and maintenance of electrical products.

2.4 Liability and warranty

Improper use, non-observance of this manual, the use of inadequately qualified personnel, as well as unauthorized modification excludes the liability of the manufacturer for the damages caused. It voids the warranty of the manufacturer.

3 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 2002/96/EC WEEE and 2002/95/EC RoHS)
(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006)

4 Setup and Function

4.1 Features of function and equipment

The 2/4gang, 3/6gang, 5/10gang and 2/4gang with RTC, 3/6gang with RTC, 5/10gang with RTC control elements are part of the ABB i-bus® KNX sensor PEONIA KNX sensor range. They are monoblock application modules, which are suitable for installation in flush-mounted boxes according to BS 4662:2006+A1:2009. The devices are equipped with an integrated bus coupler.

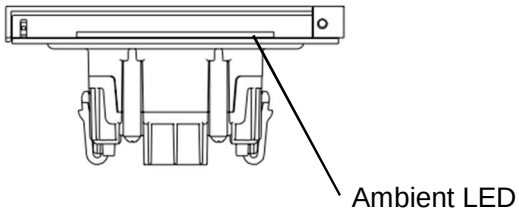
The control elements can send switching, dimming or blind control commands to KNX actuators. They can also be used for storing and/or sending light scenes.

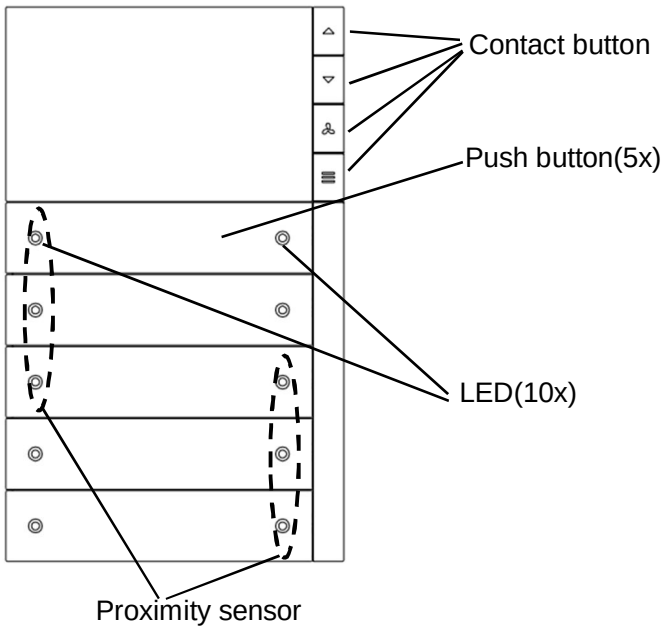
The following table lists the options for use:

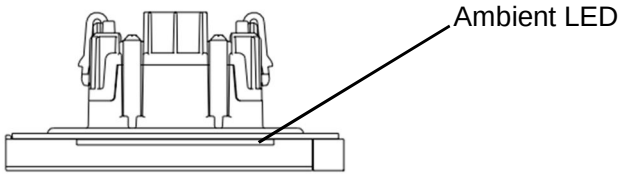
Special features	**Function**	**General functions**
• Status illumination • Orientation illumination • Freely programmable • LED colour concept • Day / night switchover of the LEDs • Replaceable rocker for symbol button • General functions • Comprehensive application program • Proximity sensor function • Energy saving mode	• Switching • Dimming • Blind • Value sender • Light scene extension unit • Multiple operation • Step switch • Short/long operation • Logic functions (separate logic and value objects) • among others	• Light scene actuator • Logic • Delay • Staircase lighting • Preset • Cyclic telegram • Flashing • Gate • Min/max value transducer • Threshold value / hysteresis • Priority

4.2 Overview of devices

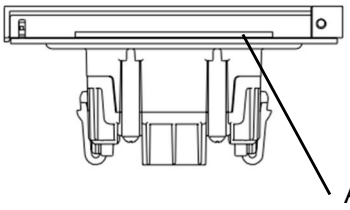
4.2.1 Front – Picture of product

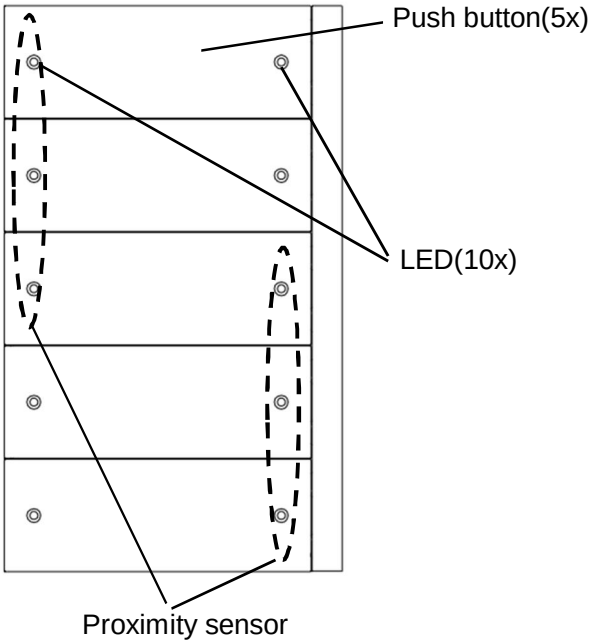


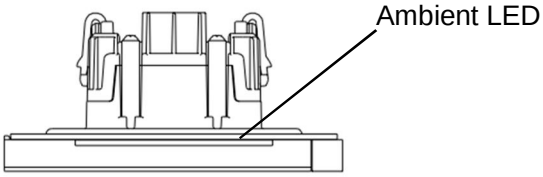




Product with RTC

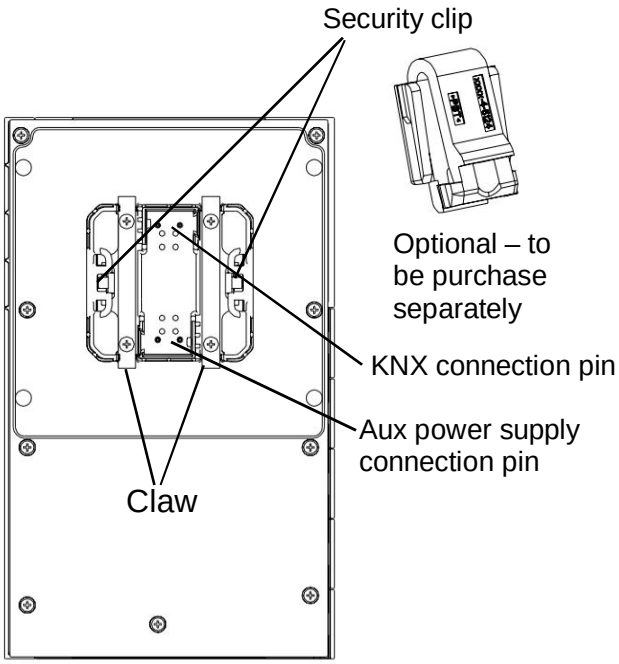




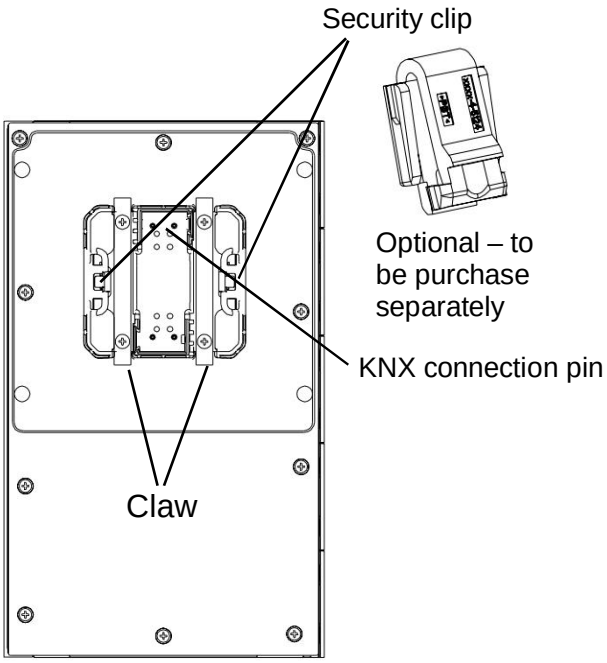


Product without RTC

4.2.2 Rear – Picture of product

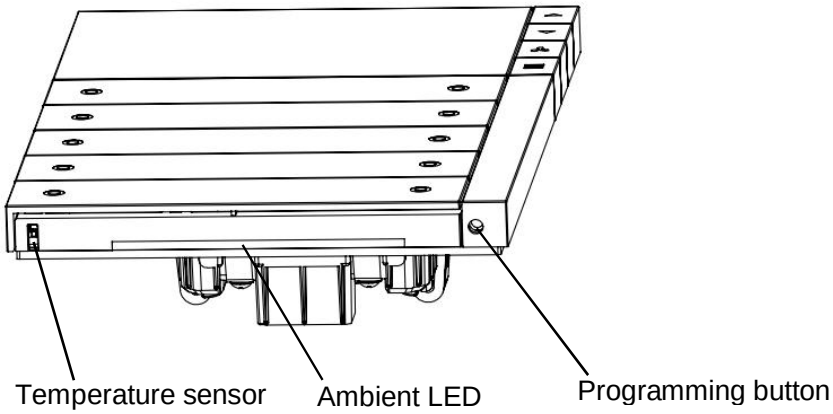


Product with RTC

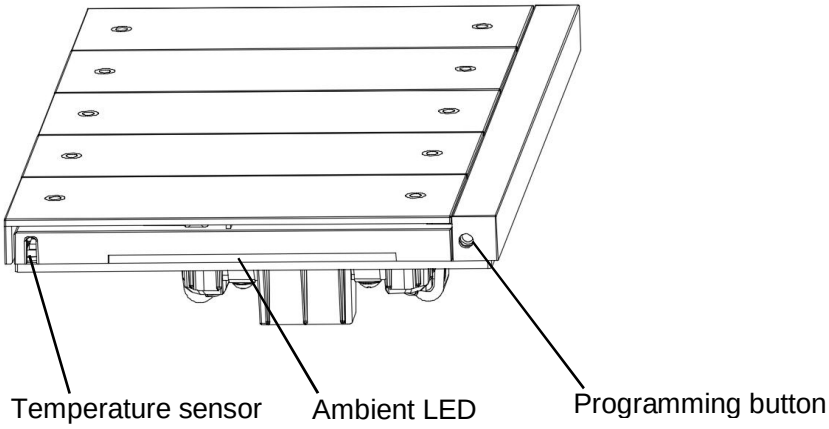


Product without RTC

4.2.3 Bottom – Picture of product, location of programming button and temperature sensor

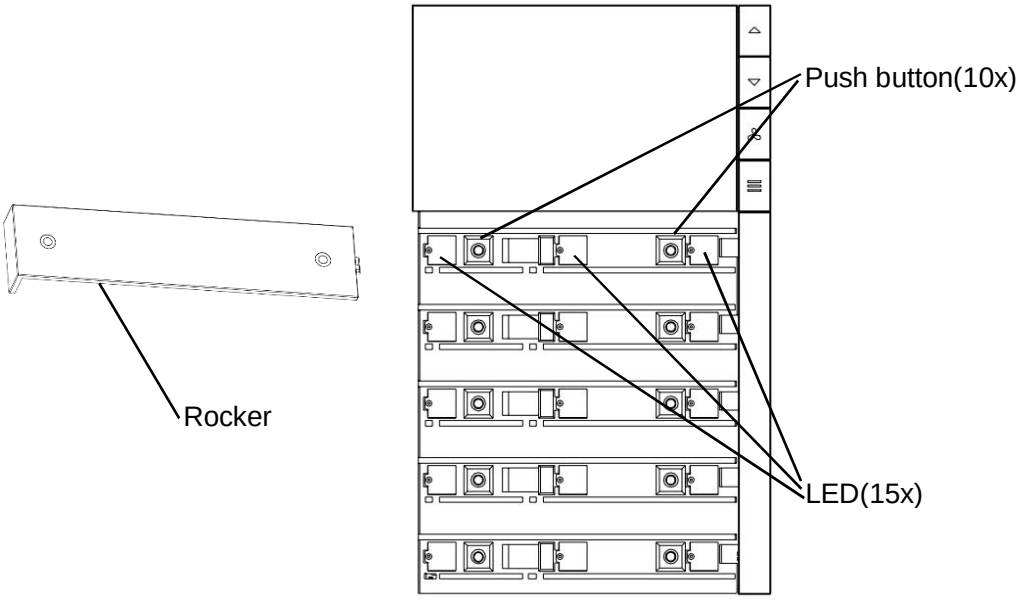


Product with RTC

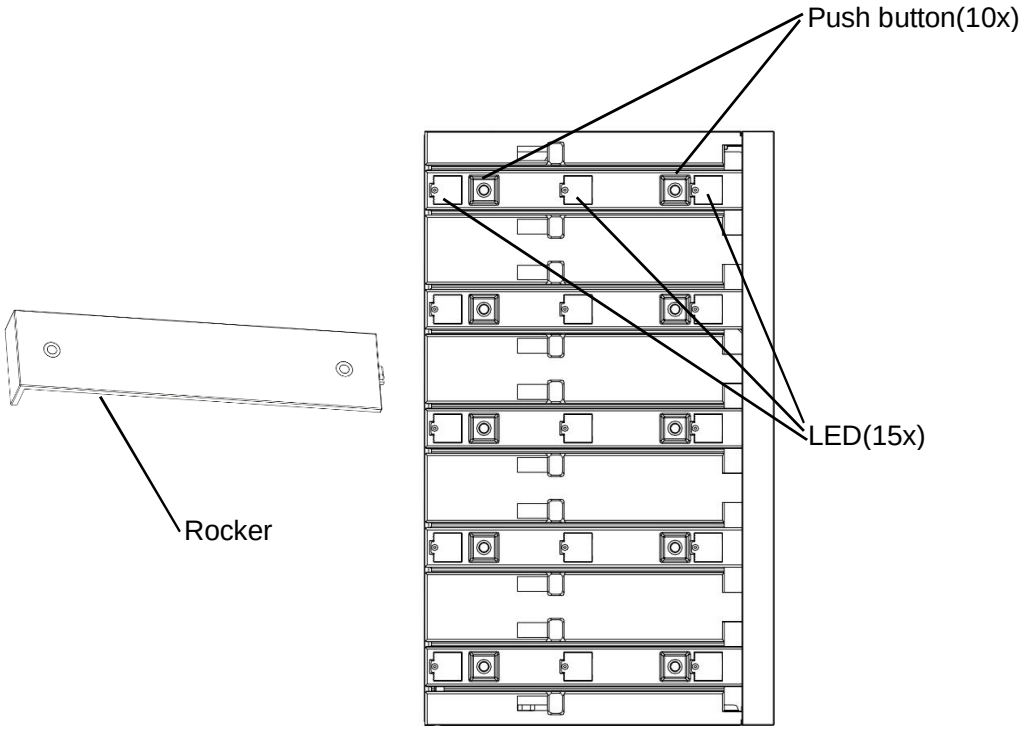


Product without RTC

4.2.4 Front without rocker cover plate – Picture of product



Product with RTC



Product without RTC

5 Technical data

Control element

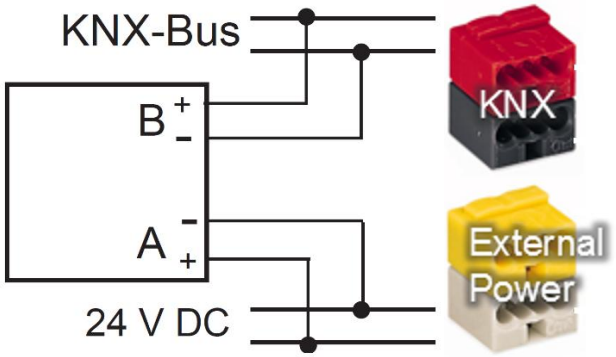
Supply	KNX bus voltage	21…31 V DC
Current consumption via bus		< 12 mA
Power consumption via bus		Maximum 250 mW
Supply	auxiliary bus voltage	21…31 V DC
Current consumption via auxiliary power supply		< 120 mA
Power consumption via auxiliary power supply		Maximum 1.5W
Electrical endurance: IEC 60669-2-5		
Connections	KNX	Via bus connection terminals, 0.8 mm Ø, solid
Operating and display elements	Programming button/LED	For assignment of the physical address
Degree of protection	IP 20	To EN 60529
Protection class	III	To EN 61140
Isolation category	Overvoltage category III	To EN 60664-1
Pollution degree	2	To EN 60664-1
KNX safety extra low voltage		SELV 24 V DC
Temperature range	Operation Storage Transport	- 5 °C…+45 °C -25 °C…+55 °C -25 °C…+70 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
	Maximum air pressure	Equivalent to 2000 m altitude
Type		2.6.2.1 /4.6.2.1 /8.6.2.1 /12.6.2.1
Dimensions		90 x W x 64.5 mm (H x W x D)
Width W in mm		36 /72 /144 /216
Mounting depth in mm		64.5
Weight	in kg	0.15
Mounting position		Vertical
Housing/color		Plastic housing, gray
Approvals	KNX acc. to EN 50090-1, -2	Certification
CE mark		In accordance with the EMC guideline and low voltage guideline

LCD display screen

ITEM	requirement	units
LCD type	TFT	
Color	Negative display,	
Module size	50(W)x69.2(H)	mm
Active area (from ID view)	57.6x35.4	mm
resolution	320x196	dots
Backlight Light	4 White LED	

6 Circuit diagrams and dimensional drawings

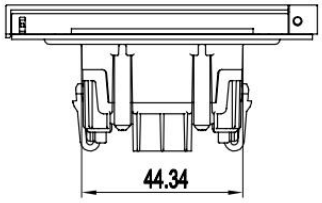
6.1 Circuit diagram

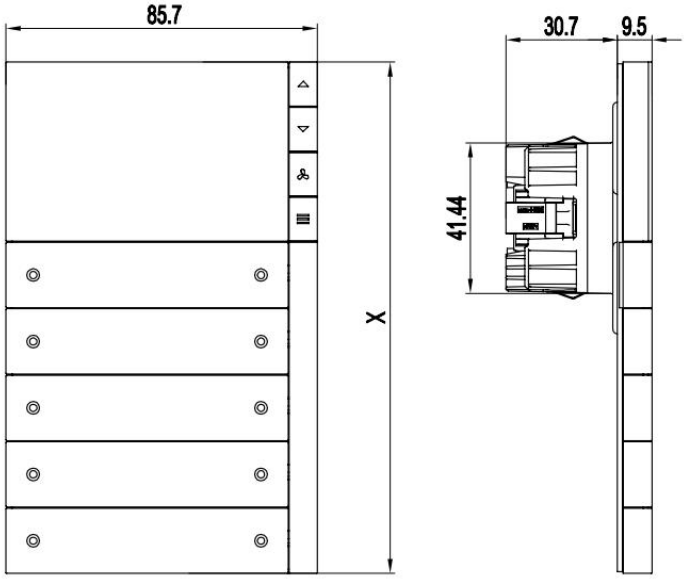


B= bus (KNX)
A= auxiliary supply

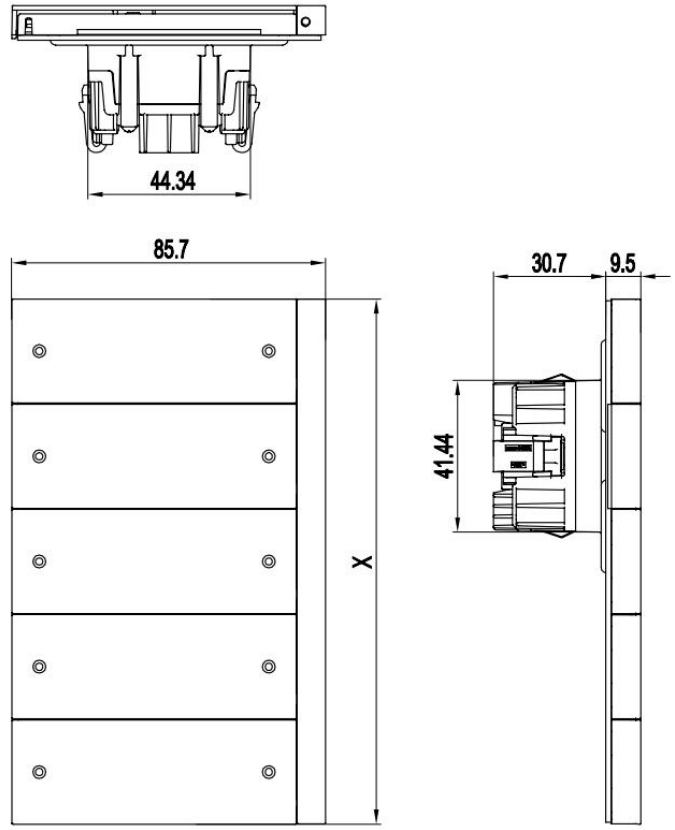
6.2 Dimensional drawing

Front / side / top dimension:

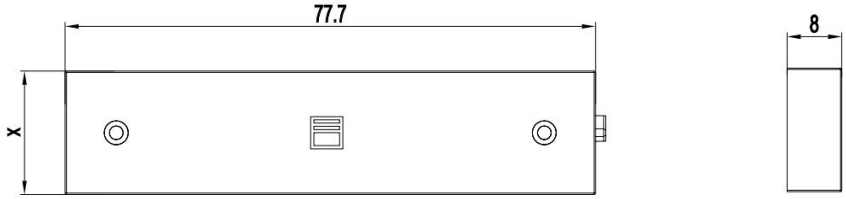




Product with RTC



Product without RTC



Rocker

No	Product description	X(mm)
1	2/4 Gang with RTC	86
2	3/6 Gang with RTC	104.3
3	5/10 Gang with RTC	140.7
4	2/4 Gang	86
5	3/6 Gang	86
6	5/10 Gang	143.55
7	Rocker 2/4 Gang with RTC	18
8	Rocker 3/6 Gang with RTC	18
9	Rocker 5/10 Gang with RTC	18
10	Rocker 2/4 Gang	42.85
11	Rocker 3/6 Gang	28.47
12	Rocker 5/10 Gang	28.47

7 Installation and electrical connection

Warning
Electric voltage!
Risk of death due to electrical voltage of 230 V during short-circuit in the low-voltage line.
– Low-voltage and 230 V lines must not be installed together in a flush-mounted socket!

7.1 Requirements for the electricians

Warning
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 from power;
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 supply network type (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

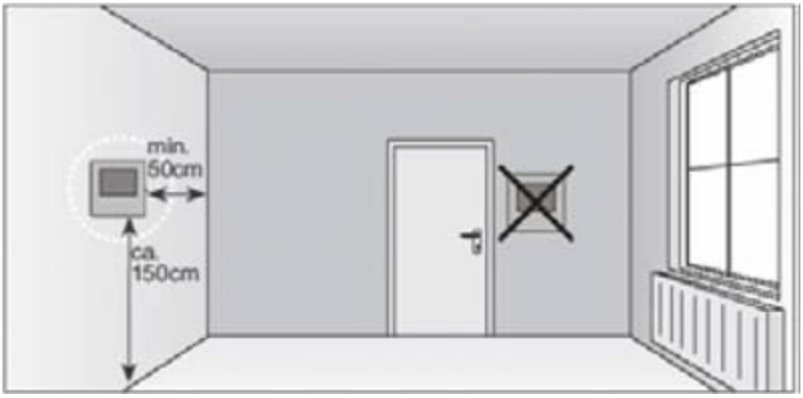
7.2 Mounting

7.2.1 Installation consideration

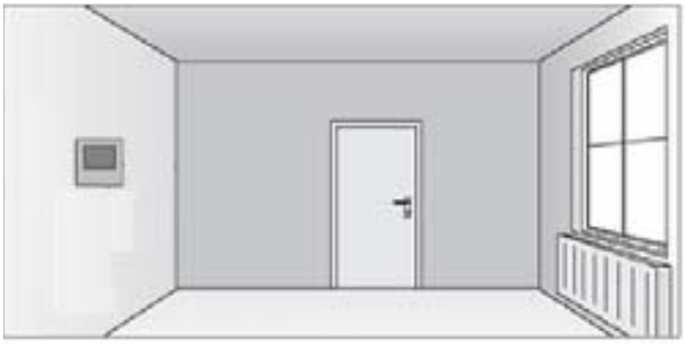
The 2-4gang, 3-6gang, 5-10gang and 2-4gang with RTC, 3-6gang with RTC, 5-10gang with RTC control elements are surface mounted device (AP) with an integrated bus coupler. The device with RTC function operates with additional supply voltage. It can be install on flush-mounted sockets (UP) (VDE, China, and BS).

Selection of a suitable installation location for the controller and suitable parameter settings are essential for good temperature and proximity detection.

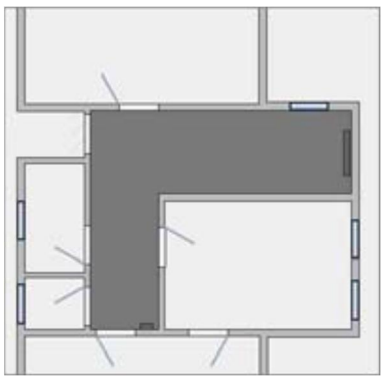
- The room temperature controller should be installed approximately 150 cm above the floor and 50 cm from the door frame.



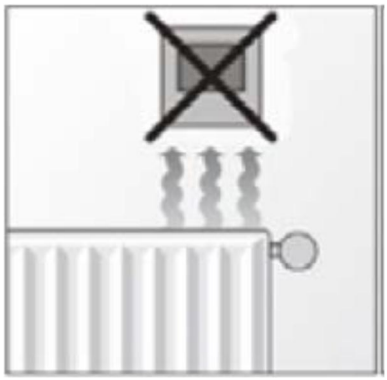
- The room temperature controller should be installed on a wall opposite the radiator.

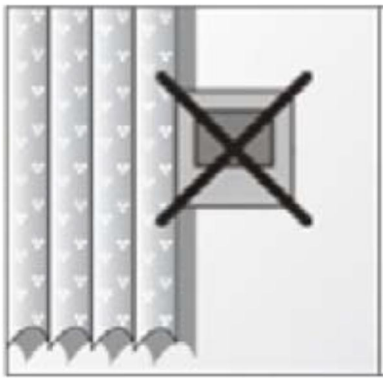


- The radiator and the room temperature controller must not be separated by corners in the room.



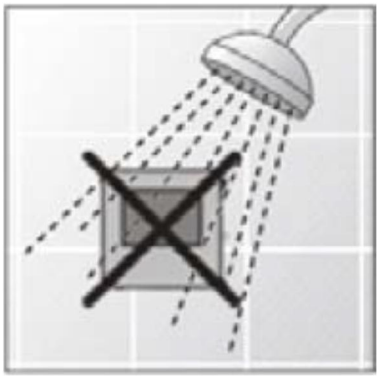
- The room temperature controller should not be installed near a radiator or behind curtains.





- The room temperature controller should also not be installed on an exterior wall - low outside temperatures will influence the temperature regulation.

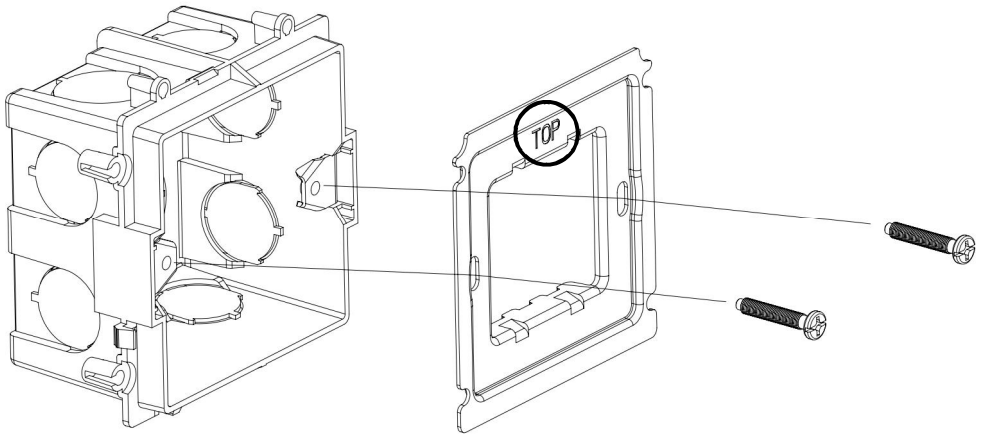
- The room temperature controller must not be exposed to direct contact with liquids.



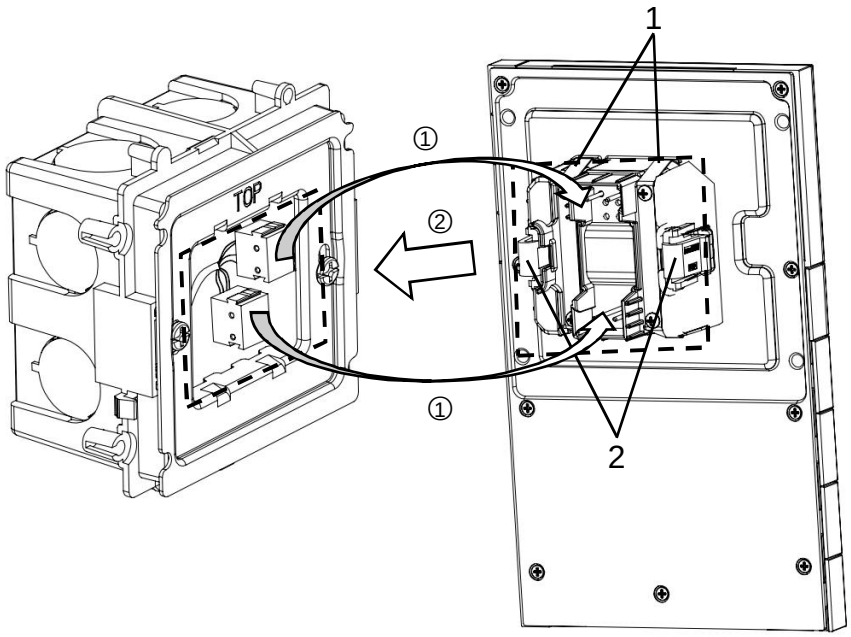
- Temperature regulation will also be affected by exposure to heat from electrical appliances and direct sunlight on the ambient temperature controller.

7.2.2 Installation of the device

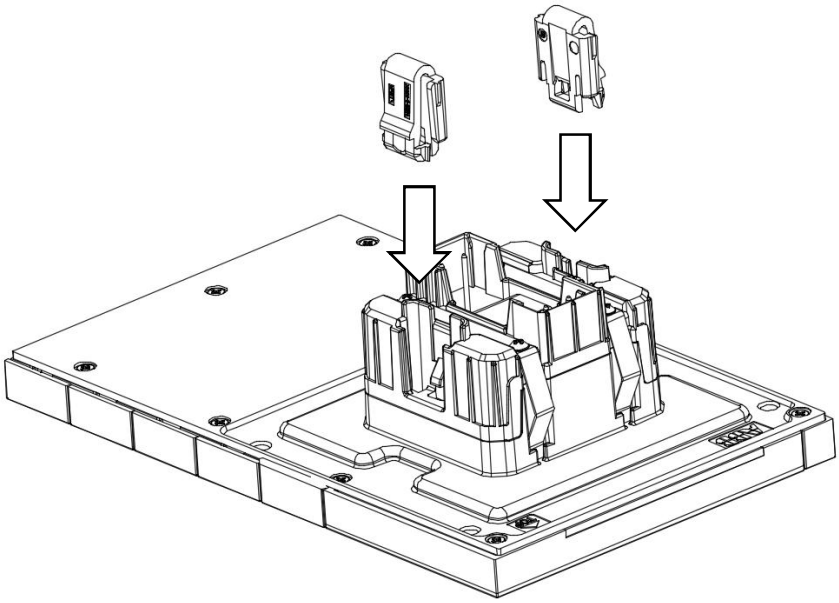
1. Install the supporting metal plate onto the flush-mounted box (“TOP” toward the top) and screw it on to secure.



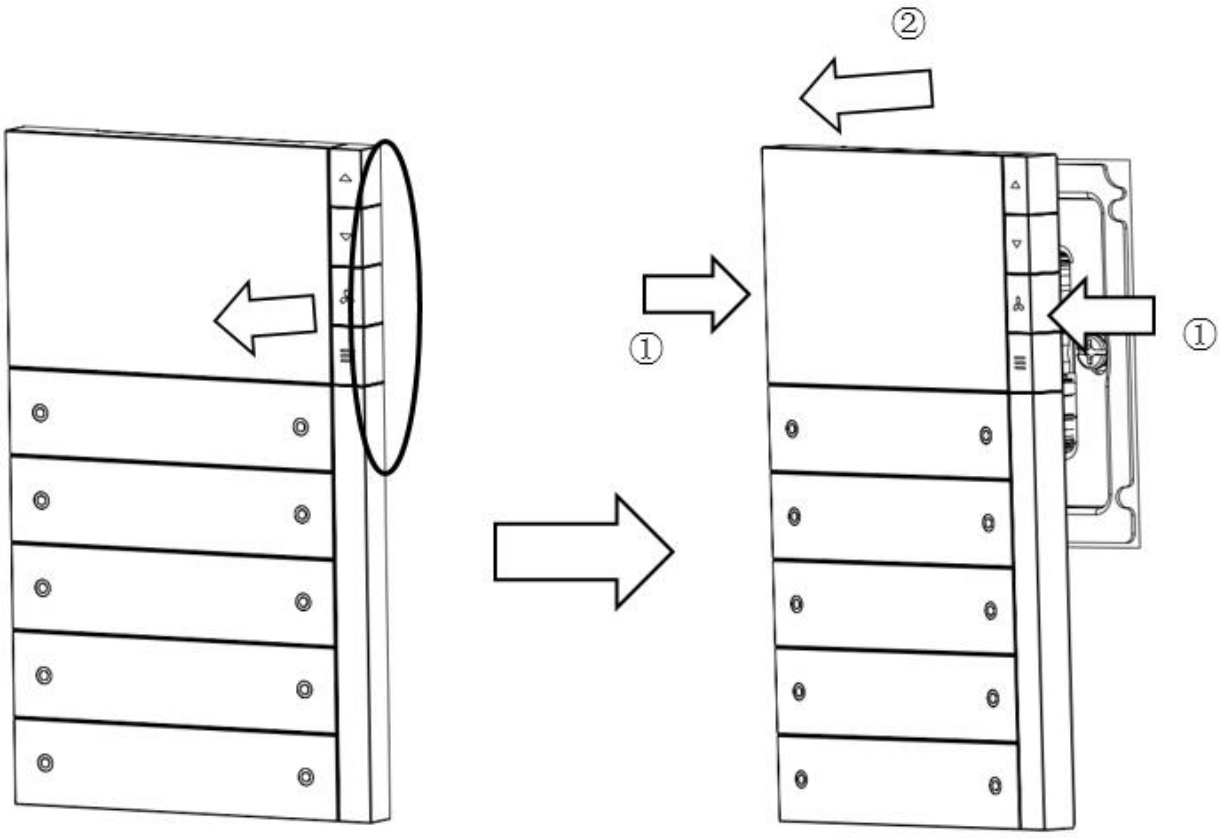
2. Install KNX and auxilary (RTC version) connectors onto the pins at the back of the device. Insert the device aiming at the rectangular hole of the supporting metal plate and push at the front of the device in until it flush with the surface of the wall. The metal clip (1) and security clip (2) secure and limit the movement of the device in all direction.



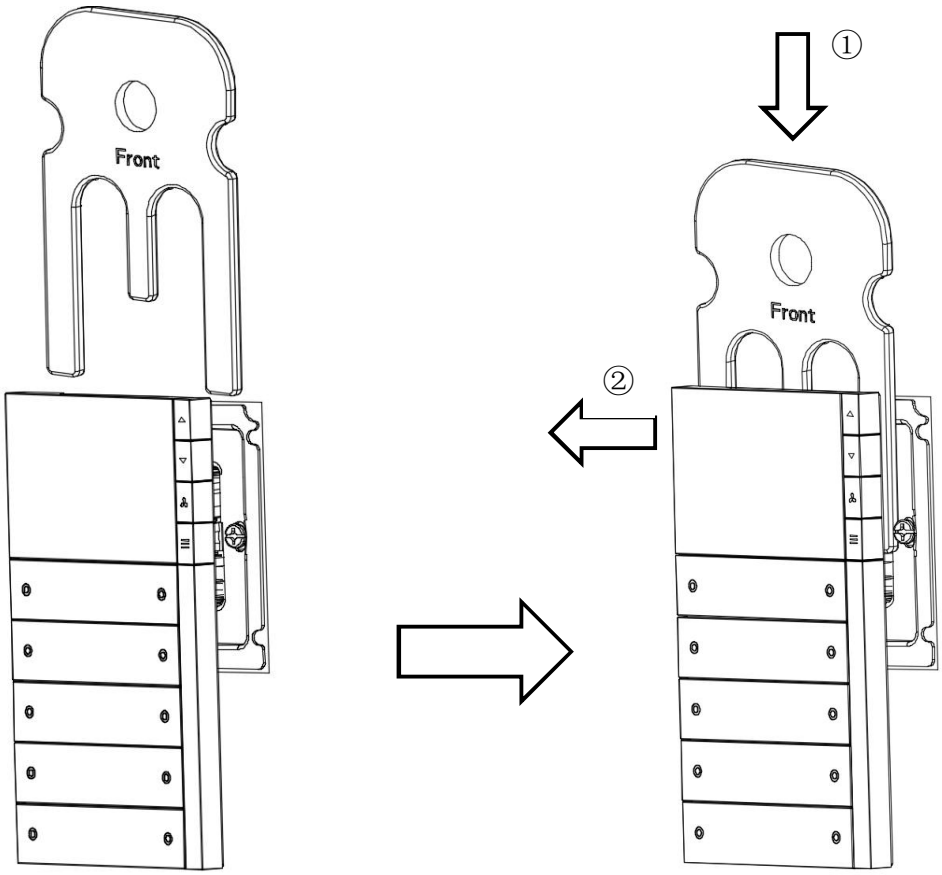
3. Optional – security clip can be purchase separately and clip at the side of the device



4. To remove the device, use finger to pull the device out from side (RTC button or metal strip) and create an opening between the device and the wall. Hold onto the three sides near the upper area of the device and pull outward until it was remove out from the supporting metal plate.

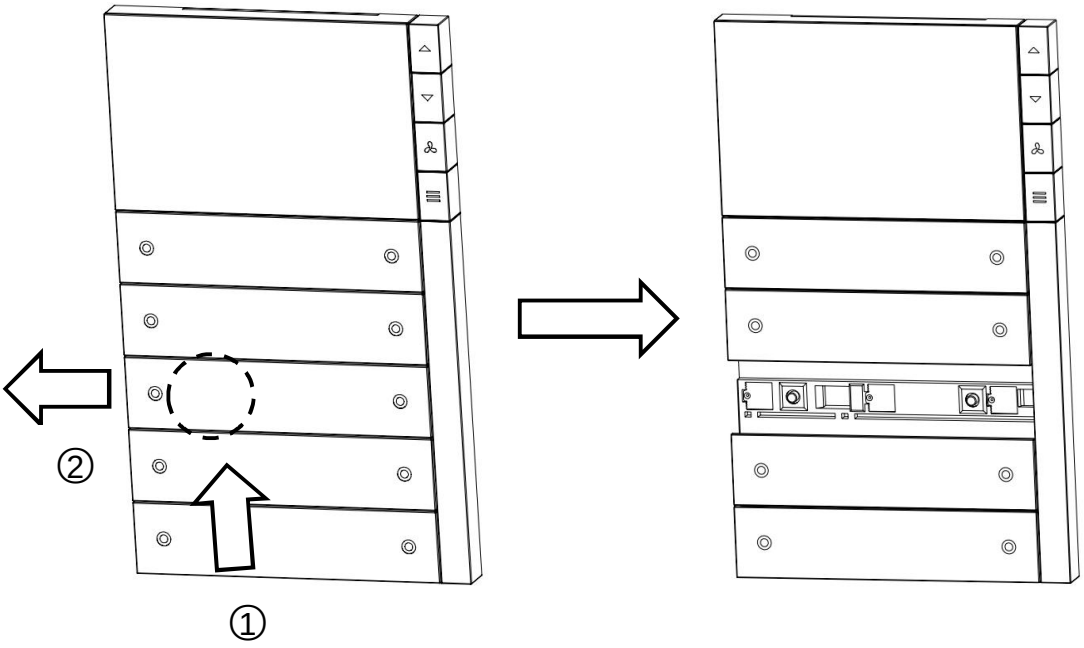


5. To remove device install with security clip, a removal tools (come together with the security clip) will be required. Use finger to pull the device out from side (RTC button or metal strip) and create an opening between the device and the wall. Hold onto the three sides near the upper area of the device and pull outward until it stop to display the security clip. Insert the removal tools into the side of the device as per diagram. Once removal tools is in place, device would be able to be remove out from the supporting metal plate.

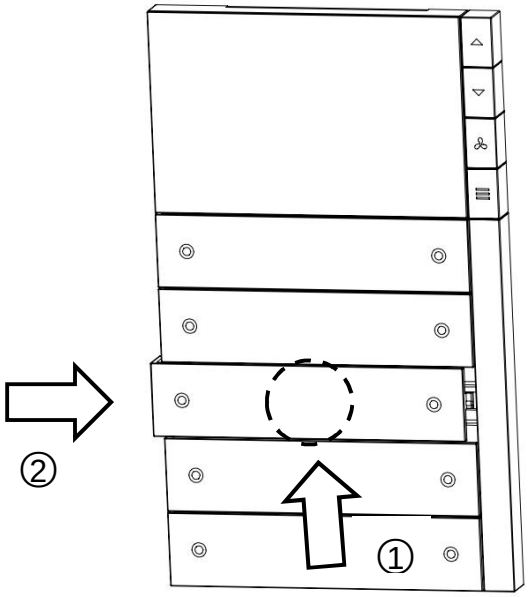


7.3 Replacement of rocker button

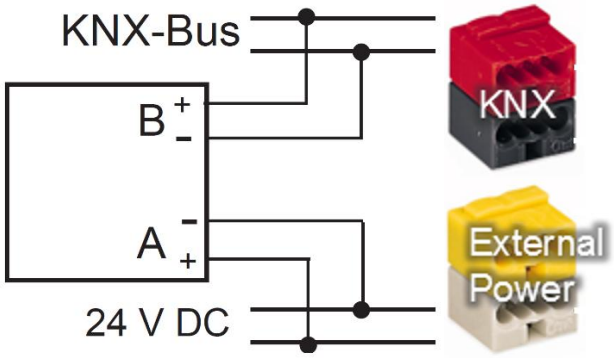
1. Press down onto the identified area (circle) on the rocker that need to be replace. While pressing down on the rocker, at the same time push the rocker parallel toward the left of the device to slide and remove the rocker from the device.



2. Place the new rocker on the placement as per picture and ensure that the rocker surface is flush with existing rocker of the device. Press down on the identified area (circle) on the rocker and push the left side of the rocker toward the right until the rocker is install in place.

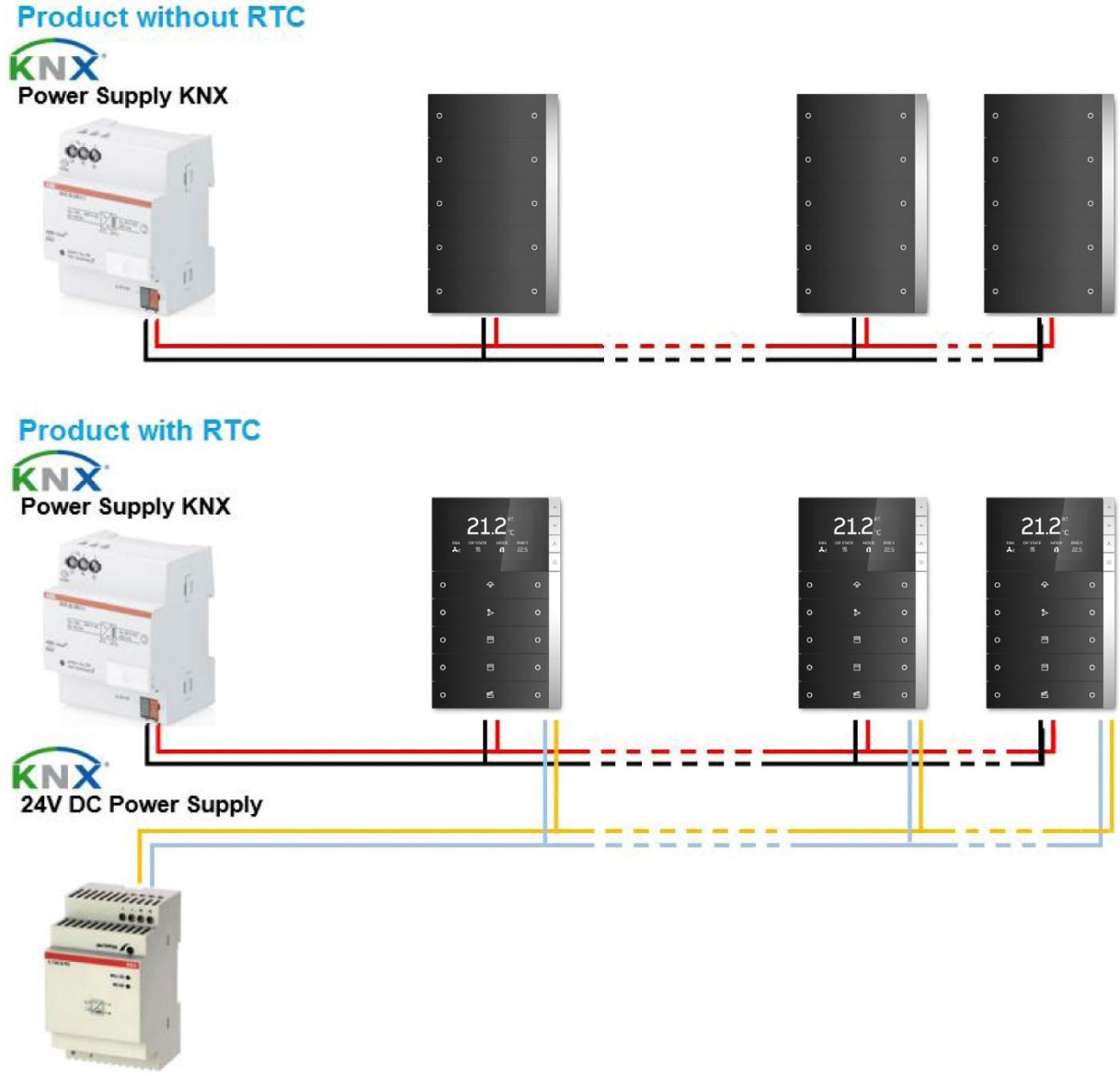


7.4 Electrical connection



B= bus (KNX)
A= auxiliary supply

System topology illustration



7.5 Maximum number of PEONIA devices per TP line

The RTC version requires an external power pack. The table below describes the corresponding device combinations.

Number of RTC Combinations per line	Total Number of Combinations：with RTC & without RTC
0	0 + 60
1	1 + 59
2	2 + 58
3	3 + 57
4	4 + 56
5	5 + 55
6	6 + 54
7	7 + 53
8	8 + 52
9	9 + 51
10	10 + 45
11	11 + 37
12	12 + 30
13	13 + 22
14	14 + 15
15	15 + 7
16	16 + 0

*Estimated under 5-gang without RTC & 5-gang with RTC

The system capacity calculation is based on the worst-case scenario as per describe in the table below:

System Capacity per line	Maximum capacity of 5gang RTC	16	pcs
Prerequisite	Total Cable length (Max)	350	m
	Distance in between two device	20	m
	Lowest working Voltage of Auxiliary power supply	10	V
	Total number of operating devices synchronously	3	pcs
	Cable wire diameter	0.6	mm

8 Commissioning

8.1 Software

Note
The devices are products of the KNX system and meet KNX guidelines. Detailed expert knowledge by means of KNX training sessions for a better understanding is assume.

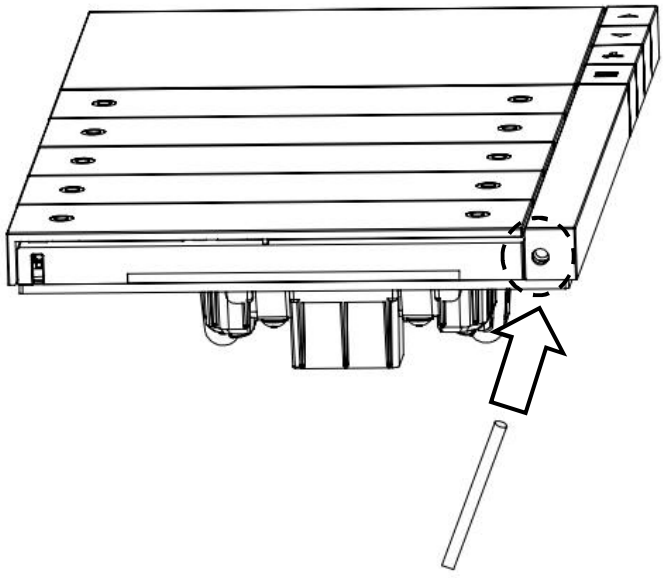
To start the device a physical address must be assign first. The physical address is assign and the parameters are set with the Engineering Tool Software ETS (from version ETS 4.2 – Build 3884, ETS 5).

8.2 Preparatory steps

1. Connect a PC via the KNX interface, e.g. the commissioning interface / adapter IP/S 3.1.1, to the KNX bus line. The Engineering Tool Software ETS (from version ETS 4.2 – Build 3884, ETS 5) must have been install on the PC.
2. Switch on the bus voltage.

8.3 Assigning a physical address

Use a tool to press the programming button at the bottom of the device (right side, specified hole). The diameter of the tool should be less than 2mm.



8.4 Assigning the group address(es)

The group addresses are assigne in connection with the ETS.

8.5 Selecting the application program

Please contact our Internet support unit (www.abb.com/KNX). The application is loaded into the device via the ETS.

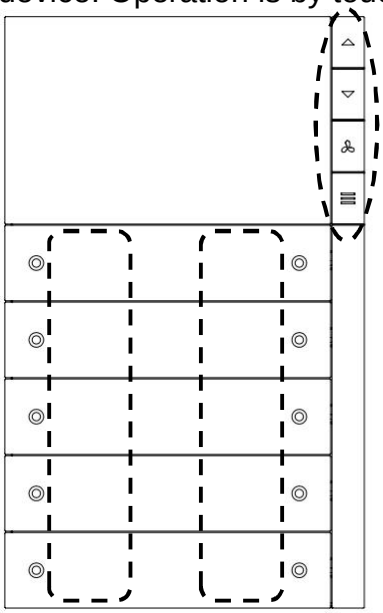
8.6 Differentiating the application program

Various functions can be implement via the software application (ETS) (detailed descriptions of parameters are contained as Help text in chapter "Application ..." (only in languages of the countries EN and CN).

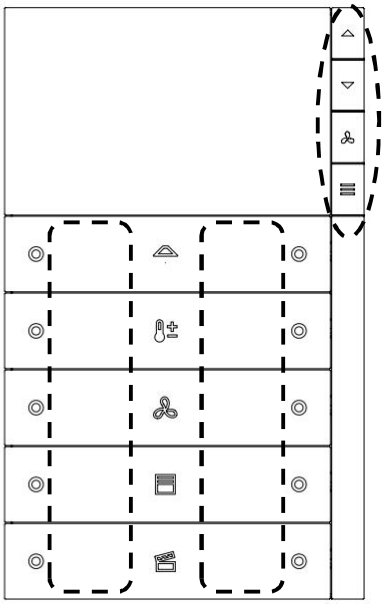
9 Operation

9.1 Control buttons

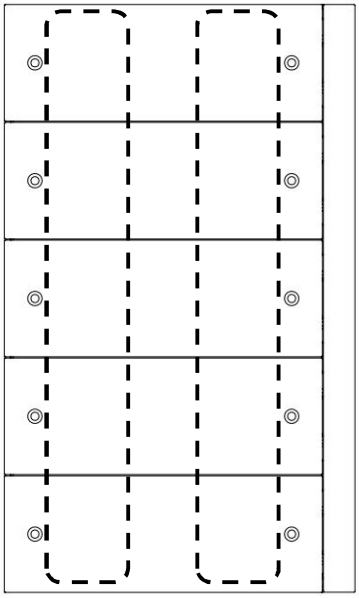
The rocker (in rectangular area marked) need to be press with strength for operation to carry out. Device with RTC function will have capacitive button on the right side of the device. Operation is by touching the elliptical region with fingers



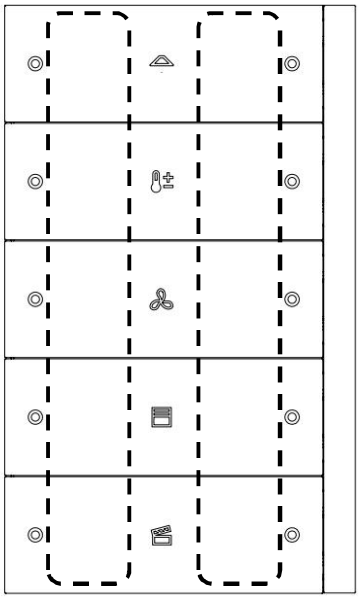
Product with RTC



Product with RTC



Product without RTC



Product with RTC

9.2 LED concept

The KNX function are supported by an innovation LED colour concept

Rocker / Symbol LED

Colour	Meaning
Red	“On” Status
Green	“Off” Status
Yellow	Lighting
Blue	Blind control
Red-Orange	Room temperature control (RTC)
Violet	Scene
White	Neutral / no assignment of function

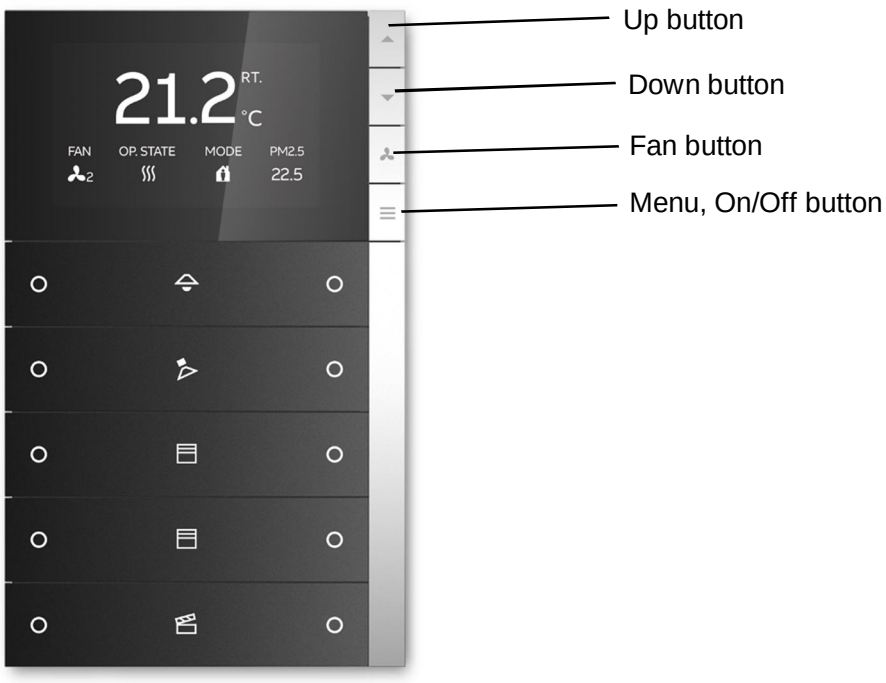
Ambient LED

Colour	Meaning
Red	Neutral / no assignment of function
Green	Neutral / no assignment of function
Yellow	Neutral / no assignment of function
Blue	Neutral / no assignment of function
Red-Orange	Neutral / no assignment of function
Violet	Neutral / no assignment of function
White	Neutral / no assignment of function

9.3 Proximity sensor operation

Proximity sensor type	Infrared Ray
Trigger method	To be activate with a flat hand in parallel to the device. Triggering hand must be in front of the device.
Sensing distance	10mm ~ 50mm from surface
Detect speed	Approx. 0.2m/s
Trigger objects	Object equal or bigger than teenager hand shape, no black colour and IR light absorption object
Operating condition	Less than 3000Lux, no direct sunlight, no direct spotlight, no direct IR light. If saturation happen, upon it relieve, IR sensor revert back to operation in 1 second
Recommend install requirement	No object in 25cm

9.4 RTC function operation



9.4.1 Setting of the setpoint temperature

A single press on the up or down button will adjust the setpoint temperature by 0.5 °C. Continues press on the up or down button will have no reaction.

9.4.2 Setting of Fan speed

Function will be only be available if heating / cooling control is select as fan coil control. A single press on the fan button will adjust the fan speed. Continues press on the fan button will have no reaction. Fan speed adjustment will be in looping sequence.

9.4.3 Selection of operating mode

Function will only be available if “Combine heating and cooling mode” with “on-site/via extension unit and via object” is select. A single press on the menu button will enter into operation mode selection (blinking of symbol). Press on up or down button will adjust the operating mode (heating / cooling). Upon selection, symbol will stop blinking after 3 sec. Once blinking stop, operating mode is confirm.

9.4.4 Selection of mode

If “Combine heating and cooling mode” and “on-site/via extension unit and via object” is Selected. ‘Menu’ button need to be press twice to enter into mode selection else press once will enter into mode selection. Press on up or down button will adjust the operating mode (comfort / ECO). Upon selection, symbol will stop blinking after 3 sec. Once blinking stop, mode is confirm.

9.4.5 On/Off RTC function

To turn on or off RTC controller, press and hold on menu button for 3 sec.

10 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 moisten slightly with a soap solution.

11 Maintenance

The unit is maintenance-free. In case of damage (e.g., during transport or storage), do not perform repairs. Once the unit is open, the warranty is void!

Access to the device must be guarantee for operation, testing, inspection, maintenance and repairs (according to DIN VDE 0100-520).

12 Description of applications / Objects

12.1 Overview of applications

The application program for the control element contains the applications listed:

General setting
Temperature sensor – Non RTC version
Proximity sensor function
Energy saving function
Top Ambient LED
Bottom Ambient LED
LCD display backlight
LCD display subdisplay
1-button switching
1-button dimming
1-button blind
1-button short-long operation
1-button value transmitter
1-button value transmitter, 2 objects
1-button light scene extension unit with memory function
1-button step switch
1-button multiple operation
1-button operating mode, Adjust thermostat settings
2-button switching
2-button dimming
2-button blind
2-button value transmitter
2-button value dimming sensor
2-button step switch
Status / Orientation illumination LED
Symbol LED function
Dynamic display – Dimming
Dynamic display – Blind
Dynamic display – Scene
Cyclic telegram
Priority
Logic gate
Gate
Staircase lighting
Light scene actuator
Delay
Min/max value transducer
Threshold value hysteresis
Room Temperature Controller (RTC)

12.2 Application “General”

General setting of device rocker configuration, Left/Right individual – 1 button or Left/Right pair – 2 button and master status / symbol LED brightness activate/deactivate by group object

12.2.1 General – Send cyclic "In operation" object

Options	Send value “0” cyclically Send value “1” cyclically

– The "In operation" communication object serves to inform that the controller still operates. Value "1" is sent cyclic. This parameter is use to set the cycle for sending. If the cyclic telegram fails, the function of the device is faulty and the air-conditioning of the room can be maintain with a forced operation. However, for this the system and/or actuator must have "Forced operation" function.

12.2.2 General – Send cyclic "In operation" time (min)

Options	Time input from 5 min to 3000 min

– Interval time of sending cyclic

12.2.3 Common parameter – Rocker 1 - 5

Options	Inactive Left/Right individual – 1 button Left/Right pair – 2 button

Left/Right individual – 1 button: Rocker will be split into 1st (left) and 2nd (right) button. Individual button will have its own assign application that make a set of parameters and communication objects. When the 1st (left) or 2nd (right) button is actuate or release, a telegram is sent out.

Left/Right pair – 2 button: Rocker will function as “rocker total”, Both left and right button will have the same assign application that make a set of parameters and communication objects. When either left or right button is actuate or release, a telegram is send out. It does not differentiates here between whether the rocker is operate on the left or right button.

12.2.4 Common parameter – Master - status/symbol LED brightness activate/deactivate by group object

Options	Inactive 1 = LED on / 0 = LED off 1 = LED off / 0 = LED on

This 1 bit communication object is use as master control of the Master - status/symbol LED brightness. Example application can be for turning off the status / symbol LED illumination during the night. When the application is apply combine with proximity sensor function and/or energy saving mode. The operation is a follow:

Note: Status/symbol LED illumination to be deactivated by group object setting must be in “1 = LED on / 0 = LED off”

Either proximity sensor function and/or energy saving mode is activate.
1 = LED: Status/Symbol illumination operator as per standard operation
0 = LED: Status/Symbol Illumination will turn off

- Proximity sensor trigger = Status/Symbol LED illuminate up and upon “Time before status change from active to efficiency mode in second” in Energy saving mode expire, Status/Symbol LED illumination will be off (not minimum), energy saving mode must be activate to compliment Proximity sensor function.

- Energy saving mode = Status/Symbol LED illuminate up and upon “Time before status change from active to efficiency mode in second” expire, Status/Symbol LED illumination will be off (not minimum)

If proximity sensor function and energy saving mode is not activate.
1 = LED: Status/Symbol illumination operator as per standard operation
0 = LED: Status/Symbol illumination will turn off and remain off until 1 bit communication object status is revert back to 1.

12.2.5 Objects no

No	Object name	Data type	Flags
2	LED illumination controller	1 Bit DPT 1.001	C, W

12.3 Application “Temperature sensor – Non RTC version”

The device can be activate as temperature sensor. As such it serves as slave device/temperature sensor for a room temperature controller which functions as master device. Slave devices are to be link to the master device with the appropriately labelled communication objects. The slave device handles the room temperature control functions of the master device.

12.3.1 Common parameter – Send measured values

Options	Only cyclical Cyclic and during change

The "Send measured values" parameter specifies whether the actual temperature is to be sent out only cyclically if the actual temperature has also changed. However, it can also be specified whether the actual temperature is always sent out in the interval in which the "Cycle time for the sending of the actual temperature" parameter is set.

12.3.2 Common parameter – Send cyclic "Measure temperature" (hh:mm:ss)

Options	Input from 00:00:25 to 01:30:00

The actual temperature is sent on the bus cyclically. The "Cycle time for sending the actual temperature" parameter determines the interval after which a new sending out of the actual temperature occurs.

12.3.3 Common parameter – Temperature difference for sending within the cycle time (x 0.1 K)

Options	Input from 1 to 255

Note: This parameter is only visible if the "Send measured values" parameter is set on "Cyclic and during change of value".

The actual temperature is sent on the bus cyclically. The "Cycle time for sending the actual temperature" parameter determines the interval after which a new sending out of the actual temperature occurs.

12.3.4 Common parameter – Temperature difference for sending within the cycle time (x 0.1 K)

Options	Input from -127 to 127

If the measured temperature is distort by external influences or the device is mount at a location, where it is always constantly being measured too much or too little, a compensation value for the temperature measurement can be set. The compensation value is specify via the "Offset of the temperature sensor" parameter. The mounting location of the controller and the suitable selection of the parameter settings are decisive for a good temperature reading.

12.3.5 Objects no

No	Object name	Data type	Flags
4	TS output	2 byte DPT 9.001	C, T

12.4 Application “Proximity sensor function”

The device have proximity sensor integrate at the rocker position. It will activate the status/symbol LED illumination and LCD display (RTC controller) when object are place/move close to the surface of the device. It will have the option to send out an assign telegram when proximity sensor is trigger; there will also be an option to send off telegram automatically (like presence detector).

Note: The duration of resetting proximity sensor trigger is following the “Time before status change from active to efficiency mode (sec)”, energy saving mode must be activate to compliment Proximity sensor function.

12.4.1 Common parameter – Proximity sensor function activate / deactivate by group object

Options	Inactive 1 = Deactivated / 0 = Activated 1 = Activated / 0 = Deactivated

This parameter is use to define whether the proximity sensor function can be activate or deactivate by a 1 bit communication object via the bus line

12.4.2 Common parameter – Reinstate proximity sensor function group object last status after bus voltage recovery

Options	Deactivated Activated

Note: This parameter is only visible if “Proximity sensor function activate / deactivate by group object” is activate.

The " Reinstate proximity sensor function group object last status after bus voltage recovery" parameter is use to specify whether the device status for “Proximity sensor function activate/deactivate by group object” is to be reinstate after a bus voltage failure and subsequent return of bus voltage.

Deactivate: After a bus voltage failure and subsequent return of bus voltage “Proximity sensor function activate/deactivate by group object” status have to be updated via bus line.

Activate: After a bus voltage failure and subsequent return of bus voltage “Proximity sensor function activate/deactivate by group object” status will be reinstate back as per before a bus voltage failure.

12.4.3 Common parameter – Send telegram when proximity sensor is trigger – primary function

Options	Inactive Value 1 Value 2 Alternating value1/value2

This parameter is use to specify whether the trigger of proximity sensor will sends out "Value 1" or "Value 2". With the behavior "Alternating Value1/Value2", switching is always between Value 1 and Value 2. That means, for example, if value 1 was last sent out, a renewed trigger of the proximity sensor will send out value 2. When the proximity sensor is trigger again, value 1 is again sent out, etc. The proximity sensor trigger thus always remembers the last state and then switches over to the other value.

12.4.4 Common parameter – Interval time for proximity sensor to resend telegram (sec)

Options	Input from 1 to 1800

Note: This parameter is only visible if “Send telegram when proximity sensor is trigger – primary function” is activate.

This parameter is use to specify the duration that proximity sensor will not send out telegram upon trigger. It will only resend out telegram after the duration is expire before retrigger of proximity sensor will send out a telegram.

12.4.5 Common parameter – Send "off" telegram automatic after interval time expire

Options	Deactivate Activate

Note: This parameter is only visible if “Send telegram when proximity sensor is trigger – primary function” is activate.

This parameter is use to specify whether to send an off value when “Interval time for proximity sensor to resend telegram” expire. It will remember the last value (value 1 or 2) send and then 0 value.

12.4.6 Common parameter – Telegram object type

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned Number of light scene 1..64

Note: This parameter is only visible if “Send telegram when proximity sensor is trigger – primary function” is activate.

The bit size of the communication object to be send out by proximity sensor via the "Send telegram when proximity sensor is trigger – primary function" parameter.

For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Group object type for telegram". For every multiple operation function, a different object size and thus a different function can be select.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295
– *1 byte*: arbitrary values from 1 to 64

12.4.7 Common parameter – Value 1

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295 1..64

Note: This parameter is only visible if “Send telegram when proximity sensor is trigger – primary function” is activate.

Value 1 options are dependent on the setting of the "Object type" parameter.
1 bit: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.4.8 Common parameter – Value 2

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295 1..64

Note: This parameter is only visible if “Send telegram when proximity sensor is trigger – primary function” is activate.

Value 2 options are dependent on the setting of the "Object type" parameter.
1 bit: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.4.9 Object no

No	Object name	Data type	Flags
0	Proximity sensor state – 1 bit	1 bit DPT 1.001	C, R, T
1	Send value when proximity trigger - 1 bit	1 bit DPT 1.001	C, W ,T ,U
1	Send value when proximity trigger - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
1	Send value when proximity trigger - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
1	Send value when proximity trigger - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
1	Send value when proximity trigger - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
1	Send value when proximity trigger - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
1	Send value when proximity trigger - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
1	Send value when proximity trigger - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
1	Send value when proximity trigger - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U
1	Send value when proximity trigger – 1 byte	1 byte DPT 18.001	C, W ,T ,U
2	Deactivate/activate proximity sensor - 1 bit	1 bit DPT 1.001	C, W, U

12.5 Application “Energy saving mode”

The device have the features of energy saving. After non-actuation of the control element, the brightness of the all LED and LCD display screen will switchover to minimum/off brightness.

12.5.1 Common parameter – Interval time for switchover, active to energy saving (sec)

Options	Input from 1 to 30

This parameter is use to specify the duration for control element to switchover to energy saving mode after non-actuation of the control element.

12.5.2 Common parameter – LED status/symbol brightness

Options	Inactive Off Minimum Dark

This parameter is use to specify the brightness of status/Symbol LED illumination when control element is switchover to energy saving mode after non-actuation of the control element.

12.5.3 Common parameter – Ambient LED brightness

Options	Inactive Off Minimum Dark

This parameter is use to specify the brightness of ambient LED illumination when control element is switchover to energy saving mode after non-actuation of the control element.

12.5.4 Common parameter – Energy saving function activate/deactivate by group object

Options	Inactive 1 for activate – 0 for deactivate 1 for deactivate – 0 for activate

Energy saving mode can be activate / deactivate by a 1 bit communication object via bus line. This parameter is use to specify energy saving mode operating status upon receiving the 1 bit communication object.

12.5.5 Common parameter – Reactivate energy saving mode object after bus voltage recovery

Options	Inactive 1 for activate – 0 for deactivate 1 for deactivate – 0 for activate

Note: This parameter is only visible if “Energy saving function activate/deactivate by group object” is activate.

The "Reactivate energy saving mode object after bus voltage recovery" parameter is use to specify whether the device status for “Energy saving mode activate by group object” is to be reinstate after a bus voltage failure and subsequent return of bus voltage.

Deactivate: After a bus voltage failure and subsequent return of bus voltage “Energy saving mode activate by group object” status have to be updated via bus line.

Activate: After a bus voltage failure and subsequent return of bus voltage “Energy saving mode activate by group object” status will be reinstate back as per before a bus voltage failure.

12.5.6 Object no

No	Object name	Data type	Flags
0	Energy saving state – 1 bit	1 bit DPT 1.001	C, R, T
1	Energy saving mode activate by group object - 1 bit	1 bit DPT 1.001	C, W, U

12.6 Application “Top Ambient LED”

The device have ambient LED build in at the top. Ambient LED can be used as orientation illumination or for mood setting.

12.6.1 Common parameter – Ambient LED activate/deactivate by group object

Options	Inactive 1 = LED on / 0 = LED off 1 = LED off / 0 = LED on

This parameter is use to define whether the top ambient LED can be activate or deactivate by a 1 bit communication object via the bus line

12.6.2 Common parameter – Colour of ambient LED

Options	Yellow Red/orange Red Violet Blue Green White

When ambient LED is activate, it can light up in different colors. Alternatively, the LED can also be deactivate by a communication object.

12.6.3 Common parameter – Day/night mode

Options	Deactivate Activate

Ambient LED can light up with two different brightness levels. When an ON telegram is receive, the LED lights up "bright"; when an OFF telegram is receive, the LED lights up "dark".

12.6.4 Common parameter – Master / Proximity / Energy saving function

Options	Deactivated Activated

This 1-bit communication object can be associated with the following function:

1. Proximity sensor state (Proximity sensor function, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Proximity sensor state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.
2. Energy saving state (Energy saving mode, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Energy saving state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.

12.6.5 Common parameter – Brightness of the LED illumination

Options	Dark Bright

Note: This parameter is only visible if “– Day/night mode” is not activate

Ambient LED can light up with two different brightness levels. The brightness can be set to "dark" or "bright" via the "Brightness of the LED illumination" parameter.

12.6.6 Object no

No	Object name	Data type	Flags
0	Deactivate/activate ambient LED – 1 bit	1 bit DPT 1.001	C, R, T
1	Proximity/Energy function - 1 bit	1 bit DPT 1.001	C, W, U

12.7 Application “Bottom Ambient LED”

The device have ambient LED build in at the bottom. Ambient LED can be used as orientation illumination or for mood setting.

12.7.1 Common parameter – Ambient LED activate/deactivate by group object

Options	Inactive 1 = LED on / 0 = LED off 1 = LED off / 0 = LED on

This parameter is use to define whether the top ambient LED can be activate or deactivate by a 1 bit communication object via the bus line

12.7.2 Common parameter – Colour of ambient LED

Options	Yellow Red/orange Red Violet Blue Green White

When ambient LED is activate, it can light up in different colors. Alternatively, the LED can also be deactivate by a communication object.

12.7.3 Common parameter – Day/night mode

Options	Deactivate Activate

Ambient LED can light up with two different brightness levels. When an ON telegram is receive, the LED lights up "bright"; when an OFF telegram is receive, the LED lights up "dark".

12.7.4 Common parameter – Master / Proximity / Energy saving function

Options	Deactivated Activated

This 1-bit communication object can be associated with the following two types of communication object:

1. Proximity sensor state (Proximity sensor function, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Proximity sensor state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.
2. Energy saving state (Energy saving mode, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Energy saving state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.

12.7.5 Common parameter – Brightness of the LED illumination

Options	Dark Bright

Note: This parameter is only visible if “– Day/night mode” is not activate

Ambient LED can light up with two different brightness levels. The brightness can be set to "dark" or "bright" via the "Brightness of the LED illumination" parameter.

12.7.6 Object no

No	Object name	Data type	Flags
0	Deactivate/activate ambient LED – 1 bit	1 bit DPT 1.001	C, R, T
1	Proximity/Energy function - 1 bit	1 bit DPT 1.001	C, W, U

12.7.7 Bottom ambient LED programming status
When assigning physical address. Pressing of the programming button at the bottom right of the device will send the bottom ambient LED colour to be RED.

12.8 Application “LCD display backlight”

The device have an LCD display that indicated the current operating status and values. The use of simple symbol on the display of the room temperature controller is meant for easy and intuitively operation.

12.8.1 Common parameter – Master – LCD backlight to be activate/deactivate by group object

Options	Inactive 1 = LCD backlight on / 0 = LCD Backlight off 1 = LCD Backlight off / 0 = LCD Backlight on

This parameter is use to define whether the LCD backlight can be activate or deactivate by a 1 bit communication object via the bus line

12.8.2 Common parameter – Day/night mode

Options	Deactivate Activate

LCD backlight can light up with two different brightness levels. When an ON telegram is receive, the LCD backlight lights up "bright"; when an OFF telegram is receive, the LCD backlight lights up "dark".

12.8.3 Common parameter – Master / Proximity / Energy saving function

Options	Deactivated Activated

This 1-bit communication object can be associated with the following two types of communication object:

1. Proximity sensor state (Proximity sensor function, common parameter). If an ON telegram was receive, LCD display will be in bright illumination, if an OFF telegram was receive, LCD display will be in dark illumination.
   Proximity sensor state with “Deactivate/activate LCD display” (1= LCD backlight on / 0 = LCD Backlight off) activate. If an ON telegram was receive, LCD display will be in bright illumination, if an OFF telegram was receive, LCD display will be off.
2. Energy saving state (Energy saving mode, common parameter). If an ON telegram was receive, LCD display will be in bright illumination, if an OFF telegram was receive, LCD display will be in dark illumination.
   Energy saving state with “Deactivate/activate LCD display” (1= LCD backlight on / 0 = LCD Backlight off) activate. If an ON telegram was receive, LCD display will be in bright illumination, if an OFF telegram was receive, LCD display will be off.

12.8.4 Common parameter – LCD backlight brightness in Master / Proximity / Energy saving function

Options	Off Minimum Dark

This parameter is use to specify the brightness of LCD display when control element have proximity / energy saving mode activate after non-actuation of the control element.

12.8.5 Common parameter – LCD backlight brightness in active

Options	Dark Bright

Note: This parameter is only visible if “– Day/night mode” is not activate

LCD display can light up with two different brightness levels. The brightness can be set to "dark" or "bright" via the "LCD backlight brightness" parameter.

12.8.6 Object no

No	Object name	Data type	Flags
0	Deactivate/activate LCD display – 1 bit	1 bit DPT 1.001	C, W, U
1	Activate day/night mode - 1 bit	1 bit DPT 1.001	C, W, U
1	Activate proximity/energy saving function - 1 bit	1 bit DPT 1.001	C, W, U

12.9 Application “LCD display subdisplay”

The device have an LCD display that indicated the current operating status and values. It can also display six other values receive from the bus line.

12.9.1 Common parameter – Subdisplay selection

Options	Inactive Actual temperature Humility Pm2.5 VOC CO2 Time

This parameter is use to define what value is to be display at the subdisplay located at the bottom of the LCD display. Value have to be transmitted by an external device and receive by the control element via the bus line.

12.9.2 Common parameter – Time format

Options	24 hr 12 hr

Note: This parameter is only visible if “– Subdisplay” is activate and selection is “Time”

This parameter is use to specify the time format in the subdiaplay.

12.9.3 Object no

No	Object name	Data type	Flags
0	Value for subdisplay – 2 byte	2 byte DPT 9.001	C, W, T, U
0	Value for subdisplay – 1 byte	1 byte DPT 5.001	C, W, T, U
0	Value for subdisplay – 2 byte	2 byte DPT 7.001	C, W, T, U
0	Value for subdisplay – 2 byte	2 byte DPT 7.001	C, W, T, U
0	Value for subdisplay – 2 byte	2 byte DPT 9.009	C, W, T, U
0	Value for subdisplay – 3 byte	3 byte DPT 10.001	C, W, T, U

12.10 Application “1-button switching”

When the 1st or 2nd button is actuated or released, a switching telegram is sent out. In each case, the application makes a separate set of parameters and communication objects available for the 1st and the 2nd button. The other side of the button can be assigned a further "button-oriented" function.

12.10.1 Common parameter – Reaction on rising edge

Options	On Off Alternating on/off Deactivated

The application can differentiate between the operation and the releasing of the button. An operation is designate as "Rising edge" and the releasing is designate as "Falling edge". The application "1-button switching" makes two separate "Switching" communication objects available for the left or right side of the button. The value 1 is always sent out on the first object (Value 1) and the value 2 is always sent out on the second object (Value 2). The "Reaction to rising edge" parameter specifies whether the "Value 1 for rising edge" or the "Value 2 for rising edge" is sent out for rising edge.

Alternatively, Value1/Value2 can also be alternatingly set for a rising edge, i.e. after Value 1 was sent (or received), a renewed operation will send out Value 2. After it is operate again, Value 1 is again sent out. The values 1 and 2 are specify via the parameters "Value 1 for rising edge" and "Value 2".

The "Deactivated" setting causes no telegram to be sent out for an operation of the button.

12.10.2 Common parameter – Reaction on falling edge

Options	On Off Alternating on/off Deactivated

The application can differentiate between the operation and the releasing of the button. An operation is designate as "Rising edge" and the releasing is designate as "Falling edge". The application "1-button switching" makes two separate "Switching" communication objects available for the left or right side of the button. The value 1 is always sent out on the first object (Value 1) and the value 2 is always sent out on the second object (Value 2). The "Reaction to falling edge" parameter specifies whether the "Value 1 for falling edge" or the "Value 2 for falling edge" is sent out for falling edge.

Alternatively, Value1/Value2 can also be alternatingly set for a rising edge, i.e. after Value 1 was sent (or received), a renewed operation will send out Value 2. After it is operate again, Value 1 is again sent out. The values 1 and 2 are specify via the parameters "Value 1 for rising edge" and "Value 2".

The "Deactivated" setting causes no telegram to be sent out for an operation of the button.

12.10.3 Objects no

No	Object name	Data type	Flags
0	Switching	1 Bit DPT 1.001	C, W ,T ,U

12.11 Application “1-button dimming”

The push-buttons have communication objects for switching and dimming. A distinction is made between a short (switching) and long (dimming) press of the button. In each case, the application makes a separate set of parameters and communication objects available for the 1st and the 2nd button. The application allows a lamp to be dim with the one button and the other button to be assign with other "button-oriented" functions.

12.11.1 Common Parameter – Duration of long operation (ss:ms)

Options	Time input from 0.3 to 3.0 seconds

A differentiation can be made between a short or long operation of the button. With a short operation of the button, the next level forward is switch to in each case. With a long operation, the first level is activate. Thus with a long button press a jump back from every position to the first level is possible, without having to run through the remaining levels.

Via the "Duration of long operation", the time is specified from which a long button press is recognized and the object values are reset. The first level must be set again with a press of the button. Any time from 0.3 to 3 seconds can be set. A typical value after which a jump-back to level 1 is set at 0.4 s.

12.11.2 Common parameter – Working mode of the buttons for switching

Options	On Off Alternating on/off Deactivated

The "Working mode of the buttons for switching" is use to specified whether an operation of the left or right side of the button will send out an ON or an OFF telegram. Alternatively, for the selection "Alternating on/off", you can switch between switching on and switching off for every operation that triggers a switching telegram. This means that after a switch-on telegram has been sent out (or received), a switch-off telegram will be sent out for a renewed operation. After it is operate again, a switch-on telegram is sent out.

If a switching telegram is trigger by operation of the button, this will sent out on the 1-bit communication object "Switching".

12.11.3 Common parameter – Working mode of the buttons for dimming

Options	Darker Brighter Alternating brighter/darker

For a long operation of the button, a "Relative dimming" dimming telegram is sent out on the 4-bit communication object. The "Working mode of the buttons for dimming" is use to specify whether a long operation sends out a dim brighter or a dim darker

telegram. Alternatively, when selecting "Alternating brighter/darker", you can switch between dimming brighter and darker with each long operation.

This means that after a dim brighter telegram has been sent out (or received), a dim darker telegram will be sent out for a renewed operation. After it is operate again, a dim brighter telegram is sent out.

12.11.4 Objects no

No	Object name	Data type	Flags
0	Switching	1 Bit DPT 1.001	C, W ,T ,U
1	Relative dimming	4 bit DPT 3.007	C,T

12.12 Application “1-button blind”

The buttons differentiate between a short press (stop / slat adjustment) and a long press (moving) for roller shutter operation (up/down) and between a short press (moving) and a long press (stop / slat adjustment) for blind operation (left/right). For control, the button that is assigned with the "1-button blind" application always remembers the last action performed.

Example:
If a blind was lowered and halted at half open via a long button press, then a renewed short button press will close the blind.

12.12.1 Common parameter – Duration of long operation (ss:ms)

Options	Time input from 0.3 to 3.0 seconds

A differentiation can be made between a short or long operation of the button. With a short operation of the button, the next level forward is switch to in each case. With a long operation, the first level is activate. Thus with a long button press a jump back from every position to the first level is possible, without having to run through the remaining levels.

Via the "Duration of long operation", the time is specified from which a long button press is recognized and the object values are reset. The first level must be set again with a press of the button. Any time from 0.3 to 3 seconds can be set. A typical value after which a jump-back to level 1 is set at 0.4 s.

12.12.2 Common parameter – Cyclic time of telegram repetition (ss:ms)

Options	Time input from 0.1 to 5.0 seconds

Note: This parameter is only visible if the “Object type” parameter is set to 1 bit.

Telegrams are sent out on the "Adjust" object cyclically as long as the button is operate. The intervals can be freely set from 0.1 s to 5.0 s. As standard, the telegrams are sent out cyclic at an interval of 1 second.

Via this function, it is possible to adjust accurately position of larger slats that require a longer time for a complete slat rotation. This means that the user holds the button pressed until the slats are set to the desired position and then releases the button.

12.12.3 Common parameter – Object type

Options	1 bit 1 byte 0..100%

Via the parameter object type, you can specified whether the blind control occurs via two 1-bit or two 1-byte communication objects "Move blinds / shutter up-down" and "Slats adjustm / stop up-down".

If 1-byte was selected as object type, the communication objects can be connected with 1-byte position objects from blind actuators.

For example: One side of the button could lower the blind to 50% with slats closed 50%, while the other button side can lower the blind to 80% with slats closed 100%

12.12.4 Extended parameter – Switchover of function roller shutter/blind

Options	Roller shutter Blind

The "Function switchover roller shutters/blind" specifies whether a roller shutter or blind is to be driven by a button operation. With the "blind" setting, the value for the slats adjustment does not apply.

12.12.5 Extended parameter – Value for position down (%)

Options	0..100%

Note: This parameter is only visible if the “Function switchover roller shutter/blind” parameters is set on roller shutter

The position that a connected blind is to be lowered to is set via this parameter. The associated 1-byte "Move" communication object must hereby be connected with a 1-byte position object of a blind actuator. Percentage values from 0% to 100% can be set in 1% steps. The value 0% means travel up completely; the value 100% means travel down completely.

12.12.6 Extended parameter – Value for position up (%)

Options	0..100%

Note: This parameter is only visible if the “Function switchover roller shutter/blind” parameters is set on roller shutter

The position that a connected blind is to be raised to is set via this parameter. The associated 1- byte "Move" communication object must hereby be connected with a 1-byte position object of a blind actuator. Percentage values from 0% to 100% can be set in 1% steps. The value 0% means travel up completely; the value 100% means travel down completely.

12.12.7 Extended parameter – Value for slat position down (%)

Options	0..100%

Note: This parameter is only visible if the “Function switchover roller shutter/blind” parameters is set on roller shutter

The position that a connected blind slat is to be opened to is set via this parameter. The associated 1-byte "Adjust" communication object must hereby be connected with a 1-byte slat position object of a blind actuator. Percentage values from 0% to 100% can be set in 1% steps. The value 0% means opened completely; the value 100% means closed completely.

12.12.8 Extended parameter – Value for slat position up (%)

Options	0..100%

Note: This parameter is only visible if the “Function switchover roller shutter/blind” parameters is set on roller shutter

The position that a connected blind slat is to be close to is set via this parameter. The associated 1-byte "Adjust" communication object must hereby be connected with a 1-byte slat position object of a blind actuator. Percentage values from 0% to 100% can be set in 1% steps. The value 0% means opened completely; the value 100% means closed completely.

12.12.9 Objects no for “Function switchover roller shutter

No	Object name	Data type	Flags
0	Move blinds / shutter up-down	1 Bit DPT 1.008	C, W ,T ,U
0	Move blinds / shutter up-down	1 byte DPT 5.001	C, W ,T ,U
1	Stop up-down	1 Bit DPT 1.007	C, W ,T ,U
1	Slats adjustm / stop up-down	1 byte DPT 5.001	C, W ,T ,U

12.12.10 Objects no for “Function switchover blind

No	Object name	Data type	Flags
0	Move blinds / shutter up-down	1 Bit DPT 1.008	C, W ,T ,U
1	Stop up-down	1 Bit DPT 1.007	C, W ,T ,U

12.13 Application “1-button short-long operation”

The application makes two separate functions available on one side of the button which can be called up via a short or long button press, while the other side of the button can be assigned a further "button-oriented" function. In each case, the application makes a separate set of parameters and communication objects available for the 1st and the 2nd button.

12.13.1 Common parameter – Object type

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

The application "1-button short-long-operation" makes two communication objects available: "Reaction for short operation" and "Reaction for long operation". The bit size of both communication objects is specified together via the "Object type" parameter. For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type".
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.13.2 Common parameter – Reaction for short operation

Options	No reaction Value 1 Value 2 Alternating value1/value2

Here it is specify whether the "Value 1" or the "Value 2" is sent out for a short operation of the button. Alternatively, Value1/Value2 can also be alternatingly set for a short operation, i.e. after Value 1 was sent (or received), a renewed operation will send out a Value 2. After it is operate again, Value 1 is again sent out. The "No reaction" setting causes no telegram to be sent out for a short operation of the button.

12.13.3 Common parameter – Reaction for long operation

Options	No reaction Value 1 Value 2 Alternating value1/value2

Here it is specify whether the "Value 1" or "Value 2" is sent out for a long operation of the button. Alternatively, Value1/Value2 can also be alternating set for a long operation, i.e. after Value 1 was sent (or received), a renewed operation will send out a Value 2. After it is operate again, Value 1 is again sent out. The "No reaction" setting causes no telegram to be sent out for a long operation of the button.

12.13.4 Extended parameter – Duration of long operation (ss:ms)

Options	Time input from 0.3 to 3.0 seconds

A differentiation can be made between a short or long operation of the button. With a short operation of the button, the next level forward is switch to in each case. With a long operation, the first level is activate. Thus with a long button press a jump back from every position to the first level is possible, without having to run through the remaining levels.

Via the "Duration of long operation", the time is specified from which a long button press is recognized and the object values are reset. The first level must be set again with a press of the button. Any time from 0.3 to 3 seconds can be set. A typical value after which a jump-back to level 1 is set at 0.4 s.

12.13.5 Extended parameter – Value 1 for short operation

Options	Off On

Note”: This parameter is only visible if the "Reaction at short operation" parameter is set on either "Value 1" or "Alternating Value1/Value2".

Value 1 is specified here which is sent out at a short operation of the button. This is dependent on the setting of the "Object type" parameter.

12.13.6 Extended parameter – Value 2 for short operation

Options	Off On

Note”: This parameter is only visible if the "Reaction at short operation" parameter is set on either "Value 2" or "Alternating Value1/Value2".

Value 2 is specified here which is sent out at a short operation of the button. This is dependent on the setting of the "Object type" parameter.

12.13.7 Extended parameter – Value 1 for long operation

Options	Off On

Note”: This parameter is only visible if the "Reaction at long operation" parameter is set on either "Value 1" or "Alternating Value1/Value2".

Value 1 is specified here which is sent out at a long operation of the button. This is dependent on the setting of the "Object type" parameter.

12.13.8 Extended parameter – Value 2 for long operation

Options	Off On

Note”: This parameter is only visible if the "Reaction at long operation" parameter is set on either "Value 2" or "Alternating Value1/Value2".

Value 2 is specified here which is sent out at a long operation of the button. This is dependent on the setting of the "Object type" parameter.

12.13.9 Object no

No	Object name	Data type	Flags
0	Value switching for short operation - 1 bit	1 bit DPT 1.001	C, W ,T ,U
0	Value switching for short operation - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
0	Value switching for short operation - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
0	Value switching for short operation - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
0	Value switching for short operation - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
0	Value switching for short operation - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
0	Value switching for short operation - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
0	Value switching for short operation - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
0	Value switching for short operation - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U
1	Value switching for long operation - 1 bit	1 bit DPT 1.001	C, W ,T ,U
1	Value switching for long operation - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
1	Value switching for long operation - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
1	Value switching for long operation - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
1	Value switching for long operation - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
1	Value switching for long operation - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
1	Value switching for long operation - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
1	Value switching for long operation - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
1	Value switching for long operation - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U

12.14 Application “1-button value transmitter”

The application "1-button value transmitter" makes its own communication object available for the left or right side of the button. The bit size of the communication object is specify via the "Object type" parameter. For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type".

12.14.1 Common parameter – Object type

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

The "1-button value transmitter" application makes its own "Value switching" communication object available for the button. The bit size of the communication object is specify via the "Object type" parameter.

For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type". For every multiple operation function, a different object size and thus a different function can be select.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.14.2 Extended parameter – Reaction on rising edge

Options	No reaction Value 1 Value 2 Alternating value1/value2

The application can differentiate between the operation and the releasing of the button. An operation is designate as "Rising edge" and the releasing is designate as "Falling edge". The application "1-button value transmitter" makes two separate "Switching" communication objects available for the left or right side of the button. The value 1 is always sent out on the first object (Value 1) and the value 2 is always sent out on the second object (Value 2)

The "Reaction to rising edge" parameter specifies whether the "Value 1 for rising edge" or the "Value 2 for rising edge" is sent out for rising edge. Alternatively, Value1/Value2 can also be alternatingly set for a rising edge, i.e. after Value 1 was sent (or received), a renewed operation will send out Value 2. After it is operate again, Value 1 is again sent out. The values 1 and 2 are specified via the parameters "Value 1" and "Value 2".

The "No reaction" setting causes no telegram to be sent out for an operation of the button.

12.14.3 Extended parameter – Reaction on failing edge

Options	No reaction Value 1 Value 2 Alternating value1/value2

The application can differentiate between the operation and the releasing of the button. An operation is designate as "Rising edge" and the releasing is designate as "Falling edge". The application "1-button value transmitter" makes two separate "Switching" communication objects available for the left or right side of the button. The value 1 is always sent out on the first object (Value 1) and the value 2 is always sent out on the second object (Value 2)

The "Reaction to falling edge" parameter specifies whether the "Value 1 for falling edge" or the "Value 2 for falling edge" is sent out for falling edge. Alternatively, Value1/Value2 can also be alternatingly set for a rising edge, i.e. after Value 1 was sent (or received), a renewed operation will send out Value 2. After it is operate again, Value 1 is again sent out. The values 1 and 2 are specify via the parameters "Value 1" and "Value 2".

The "No reaction" setting causes no telegram to be sent out for an operation of the button.

12.14.4 Extended parameter – Value 1

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Value 1 options are dependent on the setting of the "Object type" parameter.
1 bit: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.14.5 Extended parameter – Value 2

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Value 2 options are dependent on the setting of the "Object type" parameter.
1 bit: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.14.6 Object no

No	Object name	Data type	Flags
0	Value switching - 1 bit	1 bit DPT 1.001	C, W ,T ,U
0	Value switching - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
0	Value switching - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
0	Value switching - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
0	Value switching - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
0	Value switching - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
0	Value switching - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
0	Value switching - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
0	Value switching - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U

12.15 Application “1-button value transmitter, 2 objects”

With the "1-button value transmitter, 2 objects" application, two telegrams with predefined values from two different communication objects can be sent out for an operation and/or upon release of the button. In each case, the application "1-button value transmitter, 2 objects" makes a separate set of parameters and communication objects available in each case for the right and left side of the button. The application makes it possible, for example, to send out a switching function and a floating point value when actuating one side of the button and to assign an additional "button-oriented" function to the other side of the button.

12.15.1 Common parameter – Object type for rising edge

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

The application "1-button value transmitter" makes two separate "Switching" communication objects available for the left or right side of the 1st and 2nd button. The bit size of the first communication object is specify via the "Object type for rising edge" parameter.

For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type for rising edge".
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.15.2 Common parameter – Object type for failing edge

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

The application "1-button value transmitter" makes two separate "Switching" communication objects available for the left or right side of the 1st and 2nd button. The bit size of the first communication object is specify via the "Object type for failing edge" parameter.

For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type for failing edge".
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.15.3 Extended parameter – Reaction on rising edge

Options	No reaction Value 1 Value 2 Alternating value1/value2

The application can differentiate between the operation and the releasing of the button. An operation is designate as "Rising edge" and the releasing is designate as "Falling edge". The application "1-button value transmitter, 2 objects" makes two separate "Switching" communication objects available for the left or right side of the button. The value 1 is always sent out on the first object (Value 1) and the value 2 is always sent out on the second object (Value 2).

The "Reaction to rising edge" parameter specifies whether the "Value 1 for rising edge" or the "Value 2 for rising edge" is sent out for rising edge. Alternatively, Value1/Value2 can also be alternatingly set for a rising edge, i.e. after Value 1 was sent (or received), a renewed operation will send out Value 2. After it is operate again, Value 1 is again sent out. The values 1 and 2 are specify via the parameters "Value 1" and "Value 2".

The "No reaction" setting causes no telegram to be sent out for a operation of the button.

12.15.4 Extended parameter – Reaction on failing edge

Options	No reaction Value 1 Value 2 Alternating value1/value2

The application can differentiate between the operation and the releasing of the button. An operation is designated as "Rising edge" and the releasing is designate as "Falling edge". The application "1-button value transmitter, 2 objects" makes two separate "Switching" communication objects available for the left or right side of the button. The value 1 is always sent out on the first object (Value 1) and the value 2 is always sent out on the second object (Value 2).

The "Reaction to falling edge" parameter specifies whether the "Value 1 for falling edge" or the "Value 2 for falling edge" is sent out for falling edge. Alternatively, Value1/Value2 can also be alternatingly set for a rising edge, i.e. after Value 1 was sent (or received), a renewed operation will send out Value 2. After it is operate again, Value 1 is again sent out. The values 1 and 2 are specify via the parameters "Value 1" and "Value 2".

The "No reaction" setting causes no telegram to be sent out for a operation of the button.

12.15.5 Extended parameter – Value 1 for rising edge

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Note": This parameter is only visible if the "Reaction at rising edge" parameter is set on either "Value 1" or "Alternating Value1/Value2". The options are dependent on the setting of the "Object type for rising edge" parameter.

Value 1 options are dependent on the setting of the "Object type for rising edge" parameter.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.15.6 Extended parameter – Value 2 for rising edge

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Note": This parameter is only visible if the "Reaction at rising edge" parameter is set on either "Value 2" or "Alternating Value1/Value2". The options are dependent on the setting of the "Object type for rising edge" parameter.

Value 2 options are dependent on the setting of the "Object type for rising edge" parameter.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.15.7 Extended parameter – Value 1 for failing edge

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Note": This parameter is only visible if the "Reaction at failing edge" parameter is set on either "Value 1" or "Alternating Value1/Value2". The options are dependent on the setting of the "Object type for failing edge" parameter.

Value 1 options are dependent on the setting of the "Object type for failing edge" parameter.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.15.8 Extended parameter – Value 2 for failing edge

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Note": This parameter is only visible if the "Reaction at failing edge" parameter is set on either "Value 2" or "Alternating Value1/Value2". The options are dependent on the setting of the "Object type for failing edge" parameter.

Value 2 options are dependent on the setting of the "Object type for failing edge" parameter.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.15.9 Object no

No	Object name	Data type	Flags
0	Switching (rising edge) - 1 bit	1 bit DPT 1.001	C, W ,T ,U
0	Switching (rising edge) - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
0	Switching (rising edge) - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
0	Switching (rising edge) - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
0	Switching (rising edge) - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
0	Switching (rising edge) - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
0	Switching (rising edge) - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
0	Switching (rising edge) - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
0	Switching (rising edge) - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U
1	Switching (failing edge) - 1 bit	1 bit DPT 1.001	C, W ,T ,U
1	Switching (failing edge) - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
1	Switching (failing edge) - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
1	Switching (failing edge) - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
1	Switching (failing edge) - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
1	Switching (failing edge) - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
1	Switching (failing edge) - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
1	Switching (failing edge) - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
1	Switching (failing edge) - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U

12.16 Application “1-button light scene extension unit with memory function”

When a button is activate, a predefined light scene number is call backlight up. In each case, the application makes a separate set of parameters and communication objects available for the 1st and the 2nd button. The application makes it possible to call up a light scene via one button side while the other button side can be assign with a further "button-oriented" function. The user has the option to trigger a light scene memory command via a long actuation of the button.

12.16.1 Common Parameter – Duration of long operation (ss:ms)

Options	Time input from 0.3 to 10.0 seconds

A short and long operation can be differentiate between for the operation of the button. For a short operation of the button, a preset light scene is call up on the 1-byte communication object "Light scene number". For a long operation, a command for storage of the preset light scene is sent out on the same communication object.

Via the "Duration of long operation (ss:ms)", the time is specified after which a long button press is recognized and a command for the light scene storage is sent out instead of the light scene number. Any time from 0.3 to 10.0 seconds can be set. A typical value, after which a button triggers a storage for a long press is 5 s.

12.16.2 Common Parameter – Storage function light scene

Options	Deactivate Activate

Within the 1-byte value, a memory bit is set in addition to the light scene number. If a light scene module (e.g. Busch-ComfortTouch®) receives this 1-byte value, the module can identify the affected light scene and trigger a storage procedure. Read requests are sent to all connected actuators that in turn answer with their current communication object values. The answers are saved by the light scene module and are sent out again for every future receipt of the light scene number.

12.16.3 Common Parameter – Number of light scene

Options	1 to 64

In the parameter "Light scene number", an arbitrary light scene number from 1 to 64 can be specified which can be sent out via the 1-byte communication object "Light scene number" for operation of the button.

The button only serves as light scene extension unit, i.e. the button only calls up the light scene number. The individual values for the dimming actuators or blind actuators to be adjusted are stored either in the actuator itself or in connected light scene modules (e.g. Busch-ComfortTouch®).

A light scene module will receive the light scene number and subsequently send the stored light scene values consecutively to the connected actuators.

12.16.4 Object no

No	Object name	Data type	Flags
0	Number of light scene	1 Byte DPT 18.001	C, T

12.17 Application “1-button step switch”

Different switching processes are triggered with each new actuation of the 1st or 2nd button.

For example:
■ First actuation (2nd button) switches on lamp 1.
■ Second actuation (2nd button) switches lamp 1 off and lamp 2 on.
■ Third actuation (2nd button) switches lamp 2 off and lamp 3 on.
■ Fourth actuation (1st button) switches lamp 3 off and lamp 2 on.
■Fifth actuation (1st button) switches lamp 2 off and lamp 1 on.
■ etc.

Up to five switching levels can be activate.
The application differentiates between whether the 1st or 2nd button was actuated. Depending on the setting, one lower or one higher level can be switch to.

12.17.1 Common parameter – Number of objects

Options	1 to 5

The application can switch up to five levels. For every level, its own 1-bit communication object is available. The number of the levels is specify via the "Number of objects" parameter.

12.17.2 Common parameter – Evaluation period (sec)

Options	Time input from 2 to 5 seconds

The application can differentiate between a single, double, triple, quadruple or quintuple operation of the button. If the button is to recognize a multiple operation, then the button must be operate multiple times in a relatively short period of time. The period during which the button evaluates a multiple operation will start anew after each operation.

12.17.3 Extended Parameter – Duration of long operation (ss:ms)

Options	Time input from 0.3 to 2.5 seconds

A differentiation can be made between a short or long operation of the button. With a short operation of the button, the next level forward is switch to in each case. With a long operation, the first level is activate. Thus with a long button press a jump back from every position to the first level is possible, without having to run through the remaining levels.

Via the "Duration of long operation", the time is specified from which a long button press is recognized and the object values are reset. The first level must be set again with a press of the button. Any time from 0.3 to 2.5 seconds can be set. A typical value after which a jump-back to level 1 is set at 0.4 s.

12.17.4 Extended Parameter – Sending of objects

Options	For change of value For operation

The parameter "Sending of objects" specifies whether the object values for every button operation are sent out or only if the object values have changed since the last sending out.

12.17.5 Extended Parameter –Object values

Options	Normal Inverse

The object values can be sent "normal" or "inverse" via their associated 1-bit communication objects. If the parameter "Object values" is set to "inverse" then all 1-bit communication objects of the individual levels, send out their values inverted.

12.17.6 Extended Parameter – Bit pattern of object values

Options	x of n 1 of n

12.17.7 The levels can be switch in two different bit patterns:

x of n (for 5 objects, object 0 to 4)	1 of n (for 5 objects, object 0 to 4)
00000	00000
10000	10000
11000	11000
11100	11100
11110	11110
11111	11111

12.17.8 Objects no

No	Object name	Data type	Flags
0	Switching stage 1	1 Bit DPT 1.001	C, W ,T
1	Switching stage 2	1 Bit DPT 1.001	C, W ,T
2	Switching stage 3	1 Bit DPT 1.001	C, W ,T
3	Switching stage 4	1 Bit DPT 1.001	C, W ,T
4	Switching stage 5	1 Bit DPT 1.001	C, W ,T

12.18 Application “1-button multiple operation”

With the "1-button multiple actuation" application, a differentiation can be made between a single, double, triple, quadruple or quintuple actuation of the button. For each actuation, single, double, triple, quadruple, or quintuple, different values can be sent out. In each case, the application "1-button multiple operation" makes a separate set of parameters and communication objects available in each case for the right or left side of the button. This makes multiple operation possible via one button and assigning a further "button-oriented" function to the other button.

12.18.1 Common parameter – Number of objects or operation

Options	1 to 5

The application can differentiate between a single, double, triple, quadruple or quintuple operation of the button.

The "Number of objects or actuations" parameter specifies how many multiple operations are to be differentiate between.
– 1 object: single operation
– 2 objects: single and double operation
– 3 objects: single, double and triple operation
– 4 objects: single, double and triple and quadruple operation
– 5 objects: single, double and triple, quadruple quintuple operation

12.18.2 Common parameter – Evaluation period (sec)

Options	Time input from 1 to 5 seconds

The application can differentiate between a single, double, triple, quadruple or quintuple operation of the button. If the button is to recognize a multiple operation, then the button must be operate multiple times in a relatively short period of time. The period during which the button evaluates a multiple operation will start anew after each operation.

12.18.3 Extended parameter –Object type for object 0 to 4

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

The "1-button multiple operation" application makes a separate communication object, "Switching multiple operation" for single, double, triple, quadruple and quintuple operation available in each case. The bit size of the communication objects is specify together via the "Object type for object 0 to 4" parameter. For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type for object 0 to 4". For every multiple operation function, a different object size and thus a different function can be select.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.18.4 Extended parameter –Function for object type 1-bit for object 0-4

Options	Transmit value Alternative on/off

Note: This parameter is only visible if the "Object type for object 0-4" parameter is set to 1 bit.

If the "Object type for object 0-4" parameter was specified with "1 bit", an ON or an OFF telegram can be sent out using the setting "Send value". Whether an ON or an OFF telegram is sent is specify by the "Function for object type 1-bit for object 0-4" parameter.

The "Alternating on/off" setting means that switching always takes place between ON and OFF. This means that after a switch-on telegram has been sent out (or received), a switch-off telegram will be sent out for a renewed operation. After it is operate again, a switch-on telegram is sent out.

12.18.5 Extended parameter –Value for object 0-4

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

Note: The options are dependent on the setting of the "Object type for object 0-4" parameter.

Value 0-4 is specified here which is sent out at a multiple operation (1-5) of the button.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.18.6 Objects no

No	Object name	Data type	Flags
0	Switching 1 actuator - 1 bit	1 bit DPT 1.001	C, W ,T
0	Switching 1 actuator - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T
0	Switching 1 actuator - 1 byte 0..255	1 byte DPT 5.010	C, W ,T
0	Switching 1 actuator - 2 byte float	2 byte DPT 9.xxx	C, W ,T
0	Switching 1 actuator - 2 byte signed	2 byte DPT 8.001	C, W ,T
0	Switching 1 actuator - 2 byte unsigned	2 byte DPT 7.001	C, W ,T
0	Switching 1 actuator - 4 byte float	4 byte DPT 14.xxx	C, W ,T
0	Switching 1 actuator - 4 byte signed	4 byte DPT 13.001	C, W ,T
0	Switching 1 actuator - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T
1	Switching 2 actuator - 1 bit	1 bit DPT 1.001	C, W ,T

1	Switching 2 actuator - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T
1	Switching 2 actuator - 1 byte 0..255	1 byte DPT 5.010	C, W ,T
1	Switching 2 actuator - 2 byte float	2 byte DPT 9.xxx	C, W ,T
1	Switching 2 actuator - 2 byte signed	2 byte DPT 8.001	C, W ,T
1	Switching 2 actuator - 2 byte unsigned	2 byte DPT 7.001	C, W ,T
1	Switching 2 actuator - 4 byte float	4 byte DPT 14.xxx	C, W ,T
1	Switching 2 actuator - 4 byte signed	4 byte DPT 13.001	C, W ,T
1	Switching 2 actuator - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T
2	Switching 3 actuator - 1 bit	1 bit DPT 1.001	C, W ,T
2	Switching 3 actuator - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T
2	Switching 3 actuator - 1 byte 0..255	1 byte DPT 5.010	C, W ,T
2	Switching 3 actuator - 2 byte float	2 byte DPT 9.xxx	C, W ,T
2	Switching 3 actuator - 2 byte signed	2 byte DPT 8.001	C, W ,T
2	Switching 3 actuator - 2 byte unsigned	2 byte DPT 7.001	C, W ,T
2	Switching 3 actuator - 4 byte float	4 byte DPT 14.xxx	C, W ,T
2	Switching 3 actuator - 4 byte signed	4 byte DPT 13.001	C, W ,T
2	Switching 3 actuator - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T
3	Switching 4 actuator - 1 bit	1 bit DPT 1.001	C, W ,T
3	Switching 4 actuator - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T
3	Switching 4 actuator - 1 byte 0..255	1 byte DPT 5.010	C, W ,T
3	Switching 4 actuator - 2 byte float	2 byte DPT 9.xxx	C, W ,T
3	Switching 4 actuator - 2 byte signed	2 byte DPT 8.001	C, W ,T
3	Switching 4 actuator - 2 byte unsigned	2 byte DPT 7.001	C, W ,T
3	Switching 4 actuator - 4 byte float	4 byte DPT 14.xxx	C, W ,T
3	Switching 4 actuator - 4 byte signed	4 byte DPT 13.001	C, W ,T

3	Switching 4 actuator - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T
4	Switching 5 actuator - 1 bit	1 bit DPT 1.001	C, W ,T
4	Switching 5 actuator - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T
4	Switching 5 actuator - 1 byte 0..255	1 byte DPT 5.010	C, W ,T
4	Switching 5 actuator - 2 byte float	2 byte DPT 9.xxx	C, W ,T
4	Switching 5 actuator - 2 byte signed	2 byte DPT 8.001	C, W ,T
4	Switching 5 actuator - 2 byte unsigned	2 byte DPT 7.001	C, W ,T
4	Switching 5 actuator - 4 byte float	4 byte DPT 14.xxx	C, W ,T
4	Switching 5 actuator - 4 byte signed	4 byte DPT 13.001	C, W ,T
4	Switching 5 actuator - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T

12.19 Application “1-button operating mode, “Adjust thermostat settings”

With the "1-button operating mode" "Adjust room temperature controller"" application, an operating mode switchover for connected room temperature controllers can be carried out with an operation of one button side.

Depending on the setting of the "Object type for output" parameter, the application offers either 1-bit communication objects "Comfort operating mode", "Standby operating mode", "ECO operating mode" and Frost protection, heat protection operating mode" or 1-byte communication objects "Auto operating mode", "Comfort operating mode", "Standby operating mode", "ECO operating mode" and "Frost protection, heat protection operating mode".

The selection "1-bit" is use for activating room temperature controllers that have 1-bit communication objects for operating mode switchover. The "1-byte" selection is use for activating room temperature controllers that have a 1-byte communication object for operating mode switchover to KNX. In this case, the values mean:
– 0 = Auto
– 1 = Comfort
– 2 = Standby
– 3 = Eco
– 4 = Frost- / heat protection
The function can be temporarily block via a 1-bit "Enable" communication object.

12.19.1 Common parameter – Object type for output

Options	1 bit 1 byte

The "Object type for output" parameter is use to specified the size of the output communication object. You can select between "1-bit" and "1-byte". The selection "1-bit" is use for activating room temperature controllers that have 1-bit communication objects for operating mode switchover. The "1-byte" selection is use for activating room temperature controllers that have a 1-byte communication object for operating mode switchover to KNX. In this case, the values mean:
– 0 = Auto
– 1 = Comfort
– 2 = Standby
– 3 = Night
– 4 = Frost- / heat protection

12.19.2 Common parameter – Operating mode

Options	Auto (1 byte only) Comfort Standby Eco Frost protection, heat protection

Note: The options are dependent on the setting of the "Object type for output" parameter.
The "Operating mode" parameter specifies the operating mode that is sent out on the 1-byte communication object for the KNX operating mode switchover when a button is operated. The possible selections are:
– Auto (1 byte only)
– Comfort
– Standby
– Eco
– Frost protection, heat protection
With selection "Auto" the value "0" is sent out on the1-byte object. For a connected room temperature controller, this means that for every new operation, the individual operating modes "Comfort", "Standby" and "Night" will be switch between. When forced guidance is activate, selection "Auto" is use to switch over to the standard operating mode object.

With the selection of "Comfort", a "1" is sent out on the 1-byte object and a connected room temperature controller switches to the comfort operating mode.

With the selection of "Standby", a "2" is sent out on the 1-byte object and a connected room temperature controller switches to the standby operating mode.

With the selection of "ECO", a "3" is sent out on the 1-byte object and a connected room temperature controller switches to the night time temperature reduction operating mode.

With the selection of "Frost protection, heat protection", a "4" is sent out on the 1-byte object and a connected room temperature controller switches to the frost/heat protection operating mode.

12.19.3 Extended parameter – Application activate/deactivate by group object

Options	Deactivate Activate

If the "Enable object" parameter is set to "activated", the function can temporarily be block via the 1-bit communication object "Enable". The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable". This means that no telegram is sent out on the "Output" communication object.

12.19.4 Extended parameter – Group object value

Options	Normal Inverse

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".
The enable function normally functions as follows:
The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable".

Via the parameter "Logic of the enable function", the above-described behavior can be reversed, i.e. if an ON telegram is received on the 1-bit communication object "Enable", the function is blocked. The function is active if an OFF telegram is receive on the 1-bit communication object "Enable".

12.19.5 Extended parameter – Enable group object after return of voltage

Options	Blocked Enable

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The parameter "Enable after return of voltage" exists to permit a defined behavior at the "Enable" communication object after a return of bus voltage. A determination is made here about whether a "1" ("enable") or a "0" ("blocked") is present on the enable object after the return of bus voltage.

Note: If the logic of the enable function is set to "inverse", the behavior is also inverted after the return of bus voltage, i.e. if the parameter "enable after return of bus voltage" is set to "enable", and at the same time the "logic of the enable function" is parameterized to "inverse", then the function will initially not be active after return of bus voltage. This must first be activate via the receipt of an OFF telegram on the enable object.

12.19.6 Extended parameter –Send comfort object

Options	Deactivate Activate

Only available when parameter "Object type for output" is set on "1 bit", and for operating modes "Comfort", "Standby" and "ECO".

12.19.7 Extended parameter –Send ECO object

Options	Deactivate Activate

Only available when parameter "Object type for output" is set on "1 bit" and for operating modes "Standby", and "ECO".

12.19.8 Extended parameter – Send frost object

Options	Deactivate Activate

Only available when parameter "Object type for output" is set on "1 bit", and for operating modes "Comfort", "Standby" and "ECO".

12.19.9 Objects no

No	Object name	Data type	Flags
0	Operating mode	1 byte DPT 20.102	C,T
0	Enable	1 bit DPT 1.001	C, W ,U
0	Comfort operating mode	1 bit DPT 1.001	C, T
0	ECO operating mode	1 bit DPT 1.001	C, T
0	Frost protection / Heating protection mode	1 bit DPT 1.001	C, T

12.20 Application “2-button switching”

With the application "2-button switching”, a switching telegram is sent when the button is actuated and/or released. Here it does not differentiate between whether the button is operate 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. It also makes a switching function possible via one side of the button and assigning a further "button-oriented" function to the other side of the button.

12.20.1 Common parameter – Reaction on rising edge

Options	1st button off / 2nd button on 1st button on / 2nd button off Alternating on/off

The "Working mode of the button for switching" is use to specified whether an operation of the left or right side of the button will send out an ON or an OFF telegram. Alternatively, for the selection "Alternating on/off", you can switch between switching on and switching off for every operation that triggers a switching telegram. This means that after a switch-on telegram is sent out (or received), a switch-off telegram is sent out for a renewed operation. After it is operate again, a switch-on telegram is sent out.
If a switching telegram is trigger by operation of the button, this will be sent out on the 1-bit communication object "Switching".

12.20.2 Objects no

No	Object name	Data type	Flags
0	Switching	1 Bit DPT 1.001	C, W ,T ,U

12.21 Application “2-button dimming”

The push-buttons have two communication objects for switching and dimming. A distinction is made between a short (switching) and long (dimming) press of the button. A differentiation is made between whether the 1st or 2nd button is actuated. The parameter "Working mode of the buttons for switching and dimming" is used to set whether the 1st button or 2nd button switches on or off or whether it is dimmed brighter or darker.

12.21.1 Common parameter - Duration of long operation (ss:ms)

Options	Time input from 0.3 to 3.0 seconds

A differentiation can be made between a short or long operation of the button. With a short operation of the button, the next level forward is switch to in each case. With a long operation, the first level is activate. Thus with a long button press a jump back from every position to the first level is possible, without having to run through the remaining levels.

Via the "Duration of long operation", the time is specified from which a long button press is recognized and the object values are reset. The first level must be set again with a press of the button. Any time from 0.3 to 3 seconds can be set. A typical value after which a jump-back to level 1 is set at 0.4 s.

12.21.2 Common parameter – Method of dimming

Options	Start-stop dimming Step-wise dimming

You can switch between the two dimming versions "Start-Stop dimming" and "Step-wise dimming" via this parameter.

"Start-Stop dimming" means that exactly two 4-bit telegrams for dimming are always sent out. For triggering of a dimming command, a telegram with the information "Dim by 100% brighter" or "Dim by 100% darker". When the button is release, the second telegram is sent out with the "Dimming stop" information. Hence, a connected dimming actuator can be halt at any time during the dimming phase.

The second dimming procedure is the step-wise dimming ("Dim stop is not sent" setting). For step-wise dimming, a defined value, e.g. "Dim brighter by 6.25%" is always sent out for triggering of a dimming command. This dimming procedure can be utilized if dimming sensor and actuator are install in different lines. In this case, telegram delays can occur through a coupler and thus varying brightness values if multiple dimming actuators are to be activate in different lines.

12.21.3 Extended parameter – Working mode of the buttons for switching

Options	1st button off / 2nd button on 1st button on / 2nd button off Alternating on/off

The "Working mode of the button for switching" application determines whether switching on or switching off occurs via the right or the left side of the button. Using the behavior "Alternating on/off" always switches between ON and OFF. That means, for example, if an ON telegram was last sent out, then a renewed operation of the rocker switch will trigger an OFF telegram. If the button is operate again, an ON telegram will be sent again, etc. The button thus always remembers the last state and then switches over to the other value.

This also applies for values that are received via the associated 1-bit communication object. This means that if an ON telegram was sent out for the last button operation, thereafter an OFF telegram was received via the communication object, the next operation of the button will send out an ON telegram. It must be observe here that the S-flag (writing) of the communication object is activate.

12.21.4 Extended parameter – Working mode of the buttons for dimming

Options	1st button brighter / 2nd button darker 1st button darker / 2nd button brighter

The "Working mode of the button for dimming" determines whether operation of the left or right side of the button will send out a dim brighter or a dim darker telegram.
If a dimming telegram is trigger by operation of the button, a dimming telegram will be sent out on the 4-bit communication object "Relative dimming".

12.21.5 Objects no

No	Object name	Data type	Flags
0	Switching	1 Bit DPT 1.001	C, W ,T ,U
1	Relative dimming	4 bit DPT 3.007	C,T

12.22 Application “2-button blind”

Via the application "2-button blind", blind movement and/or slats adjustment commands can be sent to connected blind actuators with a short or long actuation of the button. A short button press always triggers a travel command and a long button press always triggers a slats adjustment or stop command. In each case, the "2-button blind" application makes a separate set of parameters and communication objects available for the right or left side of the button.

This thus facilitates controlling a blind using one side of the button and assigning a "button orientated" function to the other side of the button. The control always remembers the last action performed on the side of the button that is assigned with the "2-button blind" application.

For example: If a blind was lowered and halted at half height via a long press of the button, then a renewed short press of the button will raise the blind.

12.22.1 Common parameter - Duration of long operation (ss:ms)

Options	Time input from 0.3 to 3.0 seconds

A differentiation can be made between a short or long operation of the button. With a short operation of the button, the next level forward is switch to in each case. With a long operation, the first level is activate. Thus with a long button press a jump back from every position to the first level is possible, without having to run through the remaining levels.

Via the "Duration of long operation", the time is specified from which a long button press is recognized and the object values are reset. The first level must be set again with a press of the button. Any time from 0.3 to 3 seconds can be set. A typical value after which a jump-back to level 1 is set at 0.4 s.

12.22.2 Common parameter – Object type

Options	1 bit 1 byte 0..100%

Via the parameter object type, you can specified whether the blind control occurs via two 1-bit or two 1-byte communication objects " Move blinds / shutter up-down " and " Slats adjustm / stop up-down ".

If 1-byte was selected as object type, the communication objects can be connected with 1-byte position objects from blind actuators.

For example: One side of the button could lower the blind to 50% with slats closed 50%, while the other button side can lower the blind to 80% with slats closed 100%

12.22.3 Extended parameter – Working mode of the buttons

Options	1st button up / 2nd button down 1st button down / 2nd button up

The "Working mode of the buttons" is use to specified whether an operation of the left or right side of the button will send out a travel up or travel down telegram.

12.22.4 Objects no

No	Object name	Data type	Flags
0	Move blinds / shutter up-down	1 Bit DPT 1.008	C, T
0	Move blinds / shutter up-down	1 byte DPT 5.001	C, T
1	Stop up-down	1 Bit DPT 1.007	C, T
1	Slats adjustm / stop up-down	1 byte DPT 5.001	C, T

12.23 Application “2-button value transmitter”

With an actuation of the 1st or 2nd button a telegram with a predefined value is sent out. The application differentiates here between whether the 1st or 2nd button is actuated.

12.23.1 Common Parameter – Object type

Options	1 bit 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 4-byte float 4-byte signed 4-byte unsigned

The "2-button value transmitter" application makes its own "Value switching" communication object available for the buttons. The bit size of the communication object is specify via the "Object type" parameter.

For the most diverse applications, the bit size of the communication objects can be adapted from "1-bit" up to "4-byte unsigned" via "Object type". For every multiple operation function, a different object size and thus a different function can be selected.
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.23.2 Extended parameter – Working mode of the buttons

Options	1st button value 1 / 2nd button value 2 1st button value 2 / 2nd button value 1 Alternative value 1 / value 2

The parameter "Working mode of the buttons" is used to specify whether the 1st button or 2nd button sends out "Value 1" or "Value 2". With the behavior "Alternating Value1/Value2", switching is always between Value 1 and Value 2. That means, for example, if value 1 was last sent out, then a renewed operation of the button will send out value 2. When the button is operate again, value 1 is again sent out, etc. The button thus always remembers the last state and then switches over to the other value.

This also applies for values that are receive via the associated communication object, i.e. if value 1 was sent out for the last button operation, thereafter value 2 was received via the communication object, the next operation of the button will send out value 1 again. It must be observe here that the S-flag (writing) of the communication object is activate.

12.23.3 Common parameter – Value 1

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Value 1 options are dependent on the setting of the "Object type" parameter.
1 bit: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.23.4 Common parameter – Value 2

Options	On/off 0..100% 0..255 -671088.6..+670760.9 -32768..+32767 0..65535 -4000000..+4000000 2147483648..2147483647 0..4294967295

Value 2 options are dependent on the setting of the "Object type" parameter.
1 bit: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.23.5 Object no

No	Object name	Data type	Flags
0	Value switching - 1 bit	1 bit DPT 1.001	C, W ,T ,U
0	Value switching - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
0	Value switching - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U
0	Value switching - 2 byte float	2 byte DPT 9.xxx	C, W ,T ,U
0	Value switching - 2 byte signed	2 byte DPT 8.001	C, W ,T ,U
0	Value switching - 2 byte unsigned	2 byte DPT 7.001	C, W ,T ,U
0	Value switching - 4 byte float	4 byte DPT 14.xxx	C, W ,T ,U
0	Value switching - 4 byte signed	4 byte DPT 13.001	C, W ,T ,U
0	Value switching - 4 Byte unsigned	4 byte DPT 12.001	C, W ,T ,U

12.24 Application “2-button value dimming sensor”

With the "2-button value dimming sensor" application, it is possible to send 1-byte value telegrams via an operation of the rocker. Each operation of the left or right side of the rocker will increase or reduce a 1-byte value (percent or value from 0 to 255). The 1-byte value can be connected with 1-byte brightness value objects of dimming actuators. This allows a dimming actuator to be dimmed brighter or darker with the rocker via value telegrams.

12.24.1 Common parameter – Object type

Options	1 byte 0 - 100% 1 byte (0 - 255)

The 1-byte communication object "Value" is set via the "Object type" parameter. With the setting "1 byte 0..100%", the momentary value is increased or reduced by a percentage amount for every operation. With the setting "1 byte 0..255", the momentary value is increased or reduced by an absolute value for every operation. How large the percentage value or the absolute value will be is specified via the "Step size" parameter.

12.24.2 Common parameter – Step size

Options	1 … 50 % 1 … 128

Note: The options are dependent on the setting of the "Object type" parameter

1 byte 0 - 100%: The size by which the momentary value is to be increase or reduce for an operation is set via the "Step size" parameter. A percentage value can be specified. Example: The current value on the 1-byte communication object "Value" amounts to 40%. For a step size of "10%", the current value is increase from 40% to 50% for an operation (for an increase).

1 byte 0 - 255: The size by which the momentary value is to be increase or reduce for an operation is set via the "Step size" parameter. An absolute value from 1 to 128 can be specified. Example: The current value on the 1-byte communication object "Value" amounts to 100. For a step size of "20", the current value is increase from 100 to 120 for an operation (for an increase).

12.24.3 Common parameter – Working mode of the rocker as value dimming sensor

Options	1st button brighter, 2nd button darker 1st button darker, 2nd button brighter

If the rocker left 1st button or right 2nd button is operate, the value that is sent out from the 1- byte communication object "Value" is increased (brighter) or lowered (darker). Whether the operation of the button increases or lowers the value depends on the setting of the "Working mode of the rocker as value dimming sensor" parameter.

12.24.4 Object no

No	Object name	Data type	Flags
0	Value - 1 byte 0..100%	1 byte DPT 5.001	C, W ,T ,U
0	Value - 1 byte 0..255	1 byte DPT 5.010	C, W ,T ,U

12.25 Application “2-button step switch”

The application "2-button step-type switch" facilitates step-type switching. This means that the user can trigger different switching processes with each new actuation of the button.

For example:
- First operation switches lamp 1 on.
- Second operation switches lamp 1 off and lamp 2 on.
- The third actuation switches lamp 2 off and lamp 3 on.
- The fourth actuation switches lamp 3 off and lamp 1 on.
- etc.

Up to five switching levels can be activate. In each case, the "2-button step switch" application makes a separate set of parameters and communication objects available for the right or left side of the button. The application enables realizing switching functions via one button side while the other button side can be assign with an additional "button-orientated" function.

12.25.1 Common parameter – Number of objects

Options	1 to 5

The application can switch up to five levels. For every level, its own 1-bit communication object is available. The number of the levels is specify via the "Number of objects" parameter.

12.25.2 Common parameter – Evaluation period (sec)

Options	Time input from 1 to 5 seconds

The application can differentiate between a single, double, triple, quadruple or quintuple operation of the button. If the button is to recognize a multiple operation, then the button must be operated multiple times in a relatively short period of time. The period during which the button evaluates a multiple operation is start anew after each operation.

12.25.3 Extended parameter –Working mode of the buttons

Options	1st button down , 2nd button up 1st button up , 2nd button down

The "Working mode of the buttons" is use to specified whether an operation of the left or right side of the button will send out a travel up or travel down telegram.

12.25.4 Extended Parameter – Sending of objects

Options	For change of value For operation

The parameter "Sending of objects" specifies whether the object values for every button operation are sent out or only if the object values have changed since the last sending out.

12.25.5 Extended Parameter –Object values

Options	Normal Inverse

The object values can be sent "normal" or "inverse" via their associated 1-bit communication objects. If the parameter "Object values" is set to "inverse" then all 1-bit communication objects of the individual levels, send out their values inverted.

12.25.6 Extended Parameter – Bit pattern of object values

Options	x of n 1 of n

12.25.7 The levels can be switch in two different bit patterns:

x of n (for 5 objects, object 0 to 4)	1 of n (for 5 objects, object 0 to 4)
00000	00000
10000	10000
11000	01000
11100	00100
11110	00010
11111	00001

12.25.8 Objects no

No	Object name	Data type	Flags
0	Switching stage 1	1 Bit DPT 1.001	C, W ,T
1	Switching stage 2	1 Bit DPT 1.001	C, W ,T
2	Switching stage 3	1 Bit DPT 1.001	C, W ,T
3	Switching stage 4	1 Bit DPT 1.001	C, W ,T
4	Switching stage 5	1 Bit DPT 1.001	C, W ,T

12.26 Application “Status / Orientation LED ”

With the application "LED functionality", the LED of the button can be used for orientation illumination, for status display or for function display. The LED can light up in different colors. The LED can also flash for alarm display and/or scene storage display.

12.26.1 Common parameter – Operating mode

Options	Status illumination Orientation illumination

The LED can serve either as a status display ("Status illumination") or orientation ("Orientation illumination"). If the operating mode "Status illumination" is selected, the LED has its own communication object "Status". This can either be a 1-bit or a 1-byte object (setting parameter "Object type for status object"). When a telegram is receive on the status object, the LED changes colour. Which colour the LED takes on depends on the parameter settings "Colour for Off/On".
If the operating mode "Orientation illumination" is select, the colour of the LED does not support the button function. The colour is specify via the "Colour of the orientation illumination" parameter.

12.26.2 Common parameter – Status feedback object type

Options	1 bit 1 Byte 0 - 100%

The status object can either be set to the size "1 bit" or "1 byte 0 - 100%". *1 bit:* With the setting "1-bit", the communication object "Status" has the size "1-bit". If an ON telegram is, receive on the object, the LED takes on the colour that is stored in the "Colour for “1”" parameter. If an OFF telegram is receive, the LED takes on the colour that is stored in the "Colour for “0”" parameter.

1 byte: With the setting "1-byte 0 - 100%", the communication object "Status" has the size "1- byte". When a value telegram is receive on the object, the LED can change colour. Whether the colour and to which colour will be switched to depend on the parameter settings "Colour for value …".

The five adjustable zones have the following behavior:
■ Colour for 0%
■ Colour for value between 1% to value A-1%
■ Colour for value between value A to value B-1%
■ Colour for value between value B to 99%
■ Colour for value 100%

The two threshold values Value A and Value B are specified via the parameters "Threshold between value 1% to value A-1% and A to value B-1% and "Threshold between B-1% to value B and value B% to 99%.

12.26.3 Common parameter – Brightness of the LED illumination

Options	Dark Bright

The LED can light up with two different brightness levels. The brightness can be set to "dark" or "bright" via the "Brightness of the LED illumination" parameter.

12.26.4 Common parameter – Colour of orientation illumination

Options	Off Yellow (light) Red/orange (HVAC) Red Violet (scene) Blue (blind) Green White (neutral)

When the LED is use for orientation, i.e. the button or rockers are easier to see, it can light up in different colors. Alternatively, the LED can also be deactivate, such as when the device is in a sleeping area.

12.26.5 Extended parameter – Day/night mode

Options	Deactivated Activated

The LED can light up with two different brightness levels. When an ON telegram is receive, the LED lights up "bright"; when an OFF telegram is receive, the LED lights up "dark".

NOTE
If the operating mode of the LED is set to status illumination, the Day/Night mode object can also be used for the status display.

Example: The button was assigned with the application "1-button switching" and connected with a switching actuator that switches a lamp group. The LED of the button is parameterized to "Status illumination" and the colour set to "yellow" so that the user is signal LED that the button triggers a light function. If the Day/Night mode object is connected with the status response object of the switching actuator via a group address/action, the LED lights up bright when the light is switch on. The LED lights up dark if the light is switch off.

12.26.6 Extended parameter – Master / Proximity / Energy saving function

Options	Deactivated Activated

This 1-bit communication object can be associated with the following three types of communication object:

3. LED illumination controller (General setting, common parameter): Depending on the parameter setting, upon receiving a telegram, status/Symbol LED illumination will be turn on/off (override). To revert back to normal operation, there must be a change on the status on the telegram receive.
4. Proximity sensor state (Proximity sensor function, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Proximity sensor state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.
5. Energy saving state (Energy saving mode, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Energy saving state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.

12.26.7 Extended parameter – Storage function light scenes

Options	Deactivated Activated

NOTE: If the LED is currently serving as an orientation light, it will not blink. This also applies if orientation illumination is switch to during the flashing.

If a scene storage telegram is received on the 1-byte communication object "Scene storage", the LED will blink for 3 s and then stop blinking automatically. The LED always flashes in the same colour and brightness that is specify via the status function or function display.

12.26.8 Extended parameter – Alarm function

Options	Deactivated Activated

NOTE: If the LED is currently serving as an orientation light, it will not blink. This also applies if during the flashing it is switch to orientation lighting, i.e. the LED stops flashing immediately.

The LED will flash if an ON telegram is receive on the 1-bit communication object "Alarm". If the object receives an OFF telegram, the LED will no longer flash.

The LED always flashes in the same colour and brightness that was specified via the status function or function display.

The alarm function could be used to display a wind alarm to the user, for example, so that the user knows that no blind operation is possible at that time. An additional application would be the signaling of an open door when user would like to lower a roller blind.

12.26.9 Objects no

No	Object name	Data type	Flags
0	LED status	1 Bit DPT 1.001	C, W ,U
0	LED status	1 byte DPT 5.001	C, W ,U
1	Day/night mode	1 Bit DPT 1.001	C, W ,U
2	Master/proximity/energy saving	1 Bit DPT 1.001	C, W ,U
3	Alarm	1 Bit DPT 1.005	C, W ,U
4	Scene storage	1 Byte DPT 18.001	C, W ,U

12.27 Application “Symbol LED function”

With the application "LED functionality", LED of rocker symbol will be illuminated. The LED can light up in different colors.

12.27.1 Common parameter – Brightness of the LED illumination

Options	Dark Bright

The LED can light up with two different brightness levels. The brightness can be set to "dark" or "bright" via the "Brightness of the colors" parameter.

12.27.2 Common parameter – Colour of symbol illumination

Options	Off Yellow (light) Red/orange (HVAC) Red Violet (scene) Blue (blind) Green White (neutral)

When the LED is illuminate, it will illuminate the rocker symbol. It can light up in different colors.

12.27.3 Extended parameter – Day/night mode

Options	Deactivated Activated

The LED can light up with two different brightness levels. When an ON telegram is receive, the LED lights up "bright"; when an OFF telegram is receive, the LED lights up "dark".

12.27.4 Extended parameter – Master / Proximity / Energy saving function

Options	Deactivated Activated

This 1-bit communication object can be associated with the following three types of communication object:

1. LED illumination controller (General setting, common parameter): Depending on the parameter setting, upon receiving a telegram, status/Symbol LED illumination will be turn on/off (override). To revert back to normal operation, there must be a change on the status on the telegram receive.
2. Proximity sensor state (Proximity sensor function, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Proximity sensor state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.
3. Energy saving state (Energy saving mode, common parameter). If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be in dark illumination.
   Energy saving state with LED illumination controller (1=LED on / 0=LED off) activate. If an ON telegram was receive, LED will be in bright illumination, if an OFF telegram was receive, LED will be off.

12.27.5 Objects no

No	Object name	Data type	Flags
0	Day/night mode	1 Bit DPT 1.001	C, W ,U
1	Master/proximity/energy saving	1 Bit DPT 1.001	C, W ,U

12.28 Application “Dynamic display – Dimming”

To have dimming up or down graphic animation when triggering on dimming control button. Animation will be display on LCD display screen.

12.28.1 Common parameter – Dynamic display animation format

Options	Inactive Display of graphic and percentage Display of graphic

Dynamic display have the following display options:
- Inactive (No display of dynamic graphic and percentage)
- Display of graphic and percentage: During the adjusting, there will be display of graphic and percentage. Once completed adjustment, percentage display will get the feedback and display with the feedback from actuator
- Display of graphic:
  - With feedback: During the adjusting, there will only be display of graphic (synchronize) and percentage will be in "-". Once completed adjustment, percentage will be display with the feedback from actuator
  - Without feedback: During the adjusting, there will only be display of graphic, graphic display will be looping and stop upon release of button.

12.28.2 Common parameter – Relative dimming speed from 0..100% in second

Options	Input from 0 to 65535

Time taken for dimming up from 0% to 100% vice versa for 100% to 0%. Must be the same “value” as per actuator configure for dimming in order to synchronize the dynamic graphic with physical dimming speed.

12.29 Application “Dynamic display – Blind”

To have roller shutter / blind up / open or down / close graphic animation when triggering on roller shutter / blind control button. Animation will be display on LCD display screen.

12.29.1 Common parameter – Animation display

Options	Shutter Roller blind

Dynamic display graphic have the following display options:
- Shutter: blind display will be up for open and down for close format
- Roller blind: blind display will from left to right for open and right to left for close format

12.29.2 Common parameter – Dynamic display animation format

Options	Inactive Display of graphic and percentage Display of graphic

Dynamic display have the following display options:
- Inactive (No display of dynamic graphic and percentage)
- Display of graphic and percentage: During the adjusting, there will be display of graphic and percentage. Once completed adjustment, percentage display will get the feedback and display with the feedback from actuator
- Display of graphic:
    - With feedback: During the adjusting, there will only be display of graphic (synchronize) and percentage will be in "-". Once completed adjustment, percentage will be display with the feedback from actuator
    - Without feedback: During the adjusting, there will only be display of graphic, graphic display will be looping and stop upon release of button.

12.29.3 Common parameter – Time travel up (sec)

Options	Input from 0 to 5400

Time taken for roller shutter / blind to move up / open. Must be the same “value” as per actuator configure for time travel in order to synchronize the dynamic graphic with physical travel speed.

12.29.4 Common parameter – Time travel down (sec)

Options	Input from 0 to 5400

Time taken for roller shutter / blind to move down / close. Must be the same “value” as per actuator configure for time travel in order to synchronize the dynamic graphic with physical travel speed.

12.30 Application “Dynamic display – Scene”

To configure scene name graphic display when triggering on 1 button light scene extension with memory control button. Scene name graphic will be display on LCD display screen.

12.30.1 Common parameter – Scene dynamic display graphic

Options	No display Scene 1 Scene 2 Scene 3 Scene 4 Scene 5 Movie Party Master on Master off Speech Leisure Welcome Reading Meeting Banquet Night Away

Scene dynamic display graphic have the following selection. Graphic are preload in device

12.31 Application “Telegram cyclic”

Via the "Telegram cyclic" application and after receipt of a telegram on the "Input" object, a telegram with the same volume is cyclically sent out on the "Cyclic output" object. The object types for "Input" and "Output" can be collectively parameterized for the different applications. The times for cyclic sending on the "Output" object are adjustable. Via an additional "Enable" object, there is the option of temporarily blocking the function.

12.31.1 Channel – Object type

Options	1 bit switching 1 bit alarm 1 byte 0 - 100% 1 byte (0 - 255) 2-byte float 2-byte signed 2-byte unsigned 2-byte temperature 4-byte float 4-byte signed 4-byte unsigned

The object types for "Input" and "Output" can be collectively parameterized for the different application cases. The following sizes can be selected:
– *1 bit*: switching functions (e.g. On/Off, enable/blocked, true/untrue)
– *1 bit*: alarm (e.g. alarm status)
– *1 byte 0 - 100%:* percentage values (0 = 0%, 255 = 100%)
– *1 byte 0 - 255*: arbitrary values from 0 to 255
– *2-byte float*: floating point value (physical values such as temperature or brightness)
– *2-byte signed*: arbitrary values from -32768 to +32767
– *2-byte unsigned*: arbitrary values from 0 to 65,535
– *2-byte temperature:* Temperature value
– *4-byte float*: floating point value (physical values)
– *4-byte signed:* arbitrary values from -2147483648 to 2147483647
– *4-byte unsigned*: arbitrary values from 0 to 4294967295

12.31.2 Channel – Cycle time (hh:mm:ss)

Options	Time input from 00:00:55 to 01:30:00

Via the "Cycle time" parameter, the interval is specify with which telegrams are sent on the "Output" object. The default time of 00:10:00 can be changed against a time of 00:00:55 to 01:30:00 in 1 s steps.

12.31.3 Extended parameter – Application activate/deactivate by group object

Options	Deactivate Activate

If the "Enable object" parameter is set to "activated", the function can temporarily be block via the 1-bit communication object "Enable". The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable". This means that no telegram is sent out on the "Output" communication object.

12.31.4 Extended parameter – Group object value

Options	Normal Inverse

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The enable function normally functions as follows:
The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable".

Via the parameter "Logic of the enable function", the above-described behavior can be reversed, i.e. if an ON telegram is received on the 1-bit communication object "Enable", the function is blocked. The function is active if an OFF telegram is receive on the 1-bit communication object "Enable".

12.31.5 Extended parameter – Enable group object after return of voltage

Options	No Yes

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The parameter "Enable after return of voltage" exists to permit a defined behavior at the "Enable" communication object after a return of bus voltage. A determination is made here about whether a "1" ("enable") or a "0" ("blocked") is present on the enable object after the return of bus voltage.

Note: If the logic of the enable function is set to "inverse", the behavior is also inverted after the return of bus voltage, i.e. if the parameter "enable after return of bus voltage" is set to "enable", and at the same time the "logic of the enable function" is parameterized to "inverse", then the function will initially not be active after return of bus voltage. This must first be activate via the receipt of an OFF telegram on the enable object.

12.31.6 Extended parameter – Cyclical sending

Options	Always activated Activate for specified value Activate except for specified value

The "Cyclical sending" parameter specifies whether the telegrams that are received on the "Input" object are always directly forwarded to the "Output" object and permanently sent out cyclically there ("Activated" setting). Or it is specified with the "Activated for specified value" setting that the "Output" object sends out this value cyclically only upon receipt of a specifically set value. If a different value is receive on the "Input" object, no telegram is sent out on the "Output" object.

12.31.7 Extended parameter – Value for cyclical sending

Options	Off On

Note: This object is only adjustable if the "Cyclical sending" parameter is set to “Activate for specified value” or “Activate except for specified value”.

The parameter "Value for cyclical sending" specifies which value must be receive on the "Input" object so that the same value is cyclically sent out on the output. The set value is an ON or an OFF telegram.

12.31.8 Object no

No	Object name	Data type	Flags
0	Input - 1 bit	1 bit DPT 1.001	C, W
0	Input - 1 byte 0..100%	1 byte DPT 5.001	C, W
0	Input - 1 byte 0..255	1 byte DPT 5.010	C, W
0	Input - 2 byte float	2 byte DPT 9.xxx	C, W
0	Input - 2 byte signed	2 byte DPT 8.001	C, W
0	Input - 2 byte unsigned	2 byte DPT 7.001	C, W
0	Input - 4 byte float	4 byte DPT 14.xxx	C, W
0	Input - 4 byte signed	4 byte DPT 13.001	C, W
0	Input - 4 Byte unsigned	4 byte DPT 12.001	C, W
1	Output- 1 bit	1 bit DPT 1.001	C, T
1	Output- 1 byte 0..100%	1 byte DPT 5.001	C, T
1	Output- 1 byte 0..255	1 byte DPT 5.010	C, T
1	Output- 2 byte float	2 byte DPT 9.xxx	C, T
1	Output- 2 byte signed	2 byte DPT 8.001	C, T
1	Output- 2 byte unsigned	2 byte DPT 7.001	C, T
1	Output- 4 byte float	4 byte DPT 14.xxx	C, T
1	Output- 4 byte signed	4 byte DPT 13.001	C, T
1	Output- 4 Byte unsigned	4 byte DPT 12.001	C, T
2	Enable – 1 bit	1 bit DPT 1.001	C, W

12.32 Application “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 states are differentiate: - "Input priority" has value "3": the value that is present on "Switch input" has no meaning. The "Output" is switch 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 switch off positively driven and has the value "0".

– "Input priority" has the value "1" or "0". The "Output" is not positively driven. The "Switch input" is linked to the status bit of the priority object OR and transferred to the "Output".

During a positive drive, changes of the "Switch input" object are save, even if the current state on the "Output" object does not immediately change through this. If the positive drive is terminate, a telegram transmission on the "Output" occurs according to the current value of the "Switch input" object.

12.32.1 Object no

No	Object name	Data type	Flags
0	Switch input - 1 bit	1 bit DPT 1.001	C, W
0	Priority input - 1 bit	1 bit DPT 2.001	C, W
0	Output - 1 bit	1 bit DPT 1.001	C, T

12.33 Application “Logic gate”

12.33.1 Channel – Logic function

Options	AND OR XOR (exclusive OR) XNOR (exclusive NOR) NAND NOR

The "Logical function" parameter specifies the function that shall be execute between the input objects and the output object. The default setting is always an AND element.

12.33.2 Channel – Number of input objects

Options	1 to 10

Up to ten input objects can act on every logical function. The input objects are enable with the "Number of input objects" parameter.
Note: If the parameter is set to "1", the logical function works as NOT element.

12.33.3 Parameter input 1 – Object type input 1

Options	1 bit 1 byte

The communication object "Input 1" can be set to the size "1 bit" or "1 byte". The default setting is "1-bit". If the size "1-byte" is selected, the receipt of a telegram with a value greater than "0" always means that a logical "1" is placed on the input.

12.33.4 Parameter input 1 – Initial value input 1

Options	Initialized with 0 Initialized with 1

The "Initial value input 1" parameter specifies which input value shall be pending on the input after the initial startup and after return of voltage. You can select between the logical values "0" and "1". Thus, no undefined states can arise.

12.33.5 Parameter input 1 – Logic input 1

Options	Normal Inverse

The input signal can be inverted via the "Logic input 1" setting.
Note: For a 1-byte size input object, the "inverse" setting means that only upon receipt of the value "0" will a logical "1" be present on the input. All other values (1 to 255) cause a logical "0" on the input.

12.33.6 Parameter input 1 – Object type input 2

Options	1 bit 1 byte

The communication object "Input 1" can be set to the size "1 bit" or "1 byte". The default setting is "1-bit". If the size "1-byte" is selected, the receipt of a telegram with a value greater than "0" always means that a logical "1" is placed on the input.

12.33.7 Parameter input 1 – Initial value input 2

Options	Initialized with 0 Initialized with 1

The "Initial value input 1" parameter specifies which input value shall be pending on the input after the initial startup and after return of voltage. You can select between the logical values "0" and "1". Thus, no undefined states can arise.

12.33.8 Parameter input 1 – Logic input 2

Options	Normal Inverse

The input signal can be inverted via the "Logic input 1" setting.
Note: For a 1-byte size input object, the "inverse" setting means that only upon receipt of the value "0" will a logical "1" be present on the input. All other values (1 to 255) cause a logical "0" on the input.

12.33.9 Parameter output – Object type output

Options	1 bit 1 byte

The "Output" communication object can be set to the size "1 bit" or "1 byte". The default setting is "1-bit". In both cases you can set which value is sent out if the function is fulfill ("true") or not fulfill ("untrue").

12.33.10 Parameter output – Send output object

Options	With each input telegram With a change of the output object

The "Send output object" specifies whether a telegram is trigger on the "Output" communication object "For a change of an input object" or only "For a change of the output object".

The first setting ("For change of an input object") means that as soon as a telegram is receive on an input communication object, the value of the output communication object is immediately sent out. This also happens if the output value has not changed at all.

Example OR function with 2 inputs. An input already had received an ON telegram so that an ON telegram was also trigger on the output. If the second output now receives an ON or OFF telegram, the output value does not change thereby. Nonetheless, an additional telegram is sent out on the output communication object.
The second setting ("For change of the output object") means that only one telegram is sent out on the output communication object when the value has also really changed.

Example AND function with 2 inputs. An input already had received an ON telegram that has, however, still not trigger an ON telegram on the output. If the second output now receives an ON telegram, the output value changes. Only now is a telegram sent out the output communication object.

12.33.11 Parameter output – Value of the output object for logic true

Options	Output is set to 1 Defined via output default value true

The "Value of the output object for logic true" is set to "1" by default. I.e. as soon as the function is fulfill, a logical "1" is present on the output. The value that is present on the output for fulfill logic can be set via the setting "Defined via output default value true".

Note: The output value is also set to "1" with the output object size of 1-byte for the standard setting (output object is set to 1) and a fulfill function.

12.33.12 Parameter output – Value of the output object for logic untrue

Options	Output is set to 0 Defined via output default value untrue

The "Value of the output object for logic untrue" is set to "0" by default. I.e. as soon as the function is not fulfill, a logical "0" is present on the output. The value that is present on the output for unfulfilled logic can be set via the setting "Defined via output default value untrue".

Note: The output value is also set to "0" with the output object size of 1-byte for the standard setting (output object is set to 0) and an unfulfilled function.

12.33.13 Object no

No	Object name	Data type	Flags
0	Output - 1 bit	1 bit DPT 1.001	C, R, T
0	Output - 1 byte	1 bit DPT 5.010	C, R, T
1	Input - 1 bit	1 bit DPT 2.001	C, W, U
1	Input - 1 byte	1 bit DPT 5.010	C, W, U
2	Input - 1 bit	1 bit DPT 2.001	C, W, U
2	Input - 1 byte	1 bit DPT 5.010	C, W, U
3	Input - 1 bit	1 bit DPT 2.001	C, W, U
3	Input - 1 byte	1 bit DPT 5.010	C, W, U
4	Input - 1 bit	1 bit DPT 2.001	C, W, U
4	Input - 1 byte	1 bit DPT 5.010	C, W, U
5	Input - 1 bit	1 bit DPT 2.001	C, W, U
5	Input - 1 byte	1 bit DPT 5.010	C, W, U
6	Input - 1 bit	1 bit DPT 2.001	C, W, U
6	Input - 1 byte	1 bit DPT 5.010	C, W, U
7	Input - 1 bit	1 bit DPT 2.001	C, W, U
7	Input - 1 byte	1 bit DPT 5.010	C, W, U
8	Input - 1 bit	1 bit DPT 2.001	C, W, U
8	Input - 1 byte	1 bit DPT 5.010	C, W, U
9	Input - 1 bit	1 bit DPT 2.001	C, W, U
9	Input - 1 byte	1 bit DPT 5.010	C, W, U
10	Input - 1 bit	1 bit DPT 2.001	C, W, U
10	Input - 1 byte	1 bit DPT 5.010	C, W, U

12.34 Application “Gate”

The "Gate" application allows specific signals to be filter and the signal flow to be temporarily blocked. The function has three communication objects: "Control input", "Input" and "Output".

The input or output object can assume different sizes. The bit size can be freely assign with the "Not assigned" setting. This means that the first internal or external group address/action that is assigned and already connected to some other communication object will specified the size.

The control can occur from "Input to output" or also from "Output to input", provided the control input allows this. Enabling via the control input can occur via an ON or an OFF telegram.

If, for example, the "Control input" setting is set to "ON telegram", only telegrams from the input are transmitted to the output, if prior to this the control input has received an ON telegram.

It is also possible to block signals via the "Filter function" setting. Either "nothing is filter out" or the signal "ON is filter out" or the signal "OFF is filter out". This function is always necessary, for example, when only the ON telegram is interesting for a sensor and the sensor does not offer any filter function in its application program.

12.34.1 Channel – Object type

Options	1 bit switching 1 bit move blinds / shutter up-down 1 bit stop up-down 2 bit priority 4 bit relative dimming 1 byte 0..100% 1 byte 0..255 2 byte float 2 byte signed 2 byte unsigned 3 byte time of day 3 byte date 4 byte float 4 byte signed 4 byte unsigned Not assigned

The input or output object can assume different sizes. The bit size can be freely assigned with the "Not assigned" setting. That means the first internal or external group address/action that is assigned and already connected to some other communication object will specified the size. The set selection specifies the size for the input and output object together.

12.34.2 Extended parameter – Data flow direction

Options	Input towards the output Output towards the input In both direction

The parameter defines in which direction the signal transfer shall occur. This can occur either from the "Input towards the output", from the "Output towards the input" or "In both directions".

12.34.3 Extended parameter – Application activate/deactivate by group object

Options	Deactivate Activate

If the "Enable object" parameter is set to "activated", the function can temporarily be block via the 1-bit communication object "Enable". The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable". This means that no telegram is sent out on the "Output" communication object.

12.34.4 Extended parameter – Group object value

Options	Normal Inverse

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The enable function normally functions as follows:
The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable".

Via the parameter "Logic of the enable function", the above-described behavior can be reversed, i.e. if an ON telegram is received on the 1-bit communication object "Enable", the function is blocked. The function is active if an OFF telegram is receive on the 1-bit communication object "Enable".

12.34.5 Extended parameter – Enable group object after return of voltage

Options	No Yes

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The parameter "Enable after return of voltage" exists to permit a defined behavior at the "Enable" communication object after a return of bus voltage. A determination is made here about whether a "1" ("enable") or a "0" ("blocked") is present on the enable object after the return of bus voltage.

Note: If the logic of the enable function is set to "inverse", the behavior is also inverted after the return of bus voltage, i.e. if the parameter "enable after return of bus voltage" is set to "enable", and at the same time the "logic of the enable function" is parameterized to "inverse", then the function will initially not be active after return of bus voltage. This must first be activate via the receipt of an OFF telegram on the enable object.

12.34.6 Extended parameter – Save input signal

Options	Deactivate Activate

Via the "Save input signal", you can set whether the signals are saved or not for 1-bit input and output objects "During the blocking phase".
Example: Data flow direction: Input towards the output. If the setting "Activate" is select, the output sends out its value if a telegram has been receive on the input during the blocking phase.

12.34.7 Object no

No	Object name	Data type	Flags
0	Input - 1 bit	1 bit DPT 1.001	C, W
0	Input – 2 bit	2 bit DPT 2.001	C, W
0	Input – 4 bit	4 bit DPT 3.007	C, W
0	Input - 1 byte 0..100%	1 byte DPT 5.001	C, W
0	Input - 1 byte 0..255	1 byte DPT 5.010	C, W
0	Input - 2 byte float	2 byte DPT 9.xxx	C, W
0	Input - 2 byte signed	2 byte DPT 8.001	C, W
0	Input - 2 byte unsigned	2 byte DPT 7.001	C, W
0	Input – 3 byte	3 byte DPT 10.001	C, W
0	Input – 3 byte	3 byte DPT 11.001	C, W
0	Input - 4 byte float	4 byte DPT 14.xxx	C, W
0	Input - 4 byte signed	4 byte DPT 13.001	C, W
0	Input - 4 Byte unsigned	4 byte DPT 12.001	C, W
1	Input - 1 bit	1 bit DPT 1.001	C, T
1	Input – 2 bit	2 bit DPT 2.001	C, T
1	Input – 4 bit	4 bit DPT 3.007	C, T
1	Input - 1 byte 0..100%	1 byte DPT 5.001	C, T
1	Input - 1 byte 0..255	1 byte DPT 5.010	C, T
1	Input - 2 byte float	2 byte DPT 9.xxx	C, T
1	Input - 2 byte signed	2 byte DPT 8.001	C, T
1	Input - 2 byte unsigned	2 byte DPT 7.001	C, T
1	Input – 3 byte	3 byte DPT 10.001	C, T
1	Input – 3 byte	3 byte DPT 11.001	C, T
1	Input - 4 byte float	4 byte DPT 14.xxx	C, T
1	Input - 4 byte signed	4 byte DPT 13.001	C, T
1	Input - 4 Byte unsigned	4 byte DPT 12.001	C, T
2	Control input – 1 bit	1 bit DPT 1.001	C, W

12.35 Application “Staircase lighting”

With the "Staircase lighting" application, switching telegrams or value telegrams can be provided with a light-on time. Depending on the parameterization, the application shows different communication objects:

- a 1-bit object for input and output If an ON telegram is received via the "Input/Output" object, the light-on time is started immediately. This can be a light-on time of 00:10 min to 88:45 min, which is adjustable in 0.1 s steps. After expiration of the light-on time, the "Input/Output" object sends an OFF telegram.
- two 1-bit objects for input and output
- and two 1-byte objects for input and output

If a telegram is receive via the "Input" object, the light-on time is start immediately and a telegram with the same value of the telegram received on the input is sent out on the "Output" object. This can be a light-on time of 00:10 min to 88:45 min, which is adjustable in 0.1 s steps. After expiration of the light-on time, the "Output" object sends out an OFF telegram (1-bit) or a telegram with the value "0" (1-byte).

Via two additional communication objects, it is possible to specify the light-on time and the switch-off prewarning time. The 2-byte values received are written to the memory of the device and are retained even after a bus power failure and subsequent return of voltage.

12.35.1 Channel – Object type / number

Options	A 1 bit object for input and output Two 1 bit objects for input and output Two 1 byte objects for input and output

The "Object type/number" parameter sets the size and number of communication objects:

- a 1-bit object for input and output
If an ON telegram is receive via the "Input/Output" object, the light-on time is started immediately. This can be a light-on time of 1.0 s to 20 s, which is adjustable in 0.1 s steps. After expiration of the light-on time, an OFF telegram is sent out on the "Input/Output" object.

- two 1-bit objects for input and output
If a switching telegram is receive via the "Input" object, the light-on time is started immediately and a telegram with the same value of the telegram received (ON or OFF) on the input is sent out on the "Output" object. This can be a light-on time of 1.0 s to 20 s, which is adjustable in 0.1 s steps. After expiration of the light-on time, an OFF telegram is sent out on the "Output" object.

- two 1-byte objects for input and output
If a value telegram is receive via the "Input" object, the light-on time start immediately and a telegram with the same value of the telegram received on the input is sent out on the "Output" object. This can be a light-on time of 1.0 s to 20 s, which is adjustable in 0.1 s steps. After expiration of the light-on time, the "Output" object sends out a telegram with the value "0".

12.35.2 Channel – Follow-up time (hh:mm:ss)

Options	Time input from 00:00:10 to 01:30:00

For the behavior of the light-on time, depending on the set "Object type/number":

1-bit object for input and output:
If an ON telegram is receive via the "Input/Output" object, the light-on time start immediately. This can be a light-on time of 1.0 s to 20 s, which is adjustable in 0.1 s steps. After expiration of the light-on time, an OFF telegram is sent out on the "Input/Output" object.

two 1-bit/1-byte objects for input and output:
If a telegram is receive via the "Input" object, the light-on time start immediately and a telegram with the same value of the telegram received on the input is sent out on the "Output" object. This can be a light-on time of 1.0 s to 20 s, which is adjustable in 0.1 s steps. After expiration of the light-on time, the "Output" object sends out an OFF telegram (1-bit) or a telegram with the value "0" (1-byte).

12.35.3 Extended parameter – Retriggering

Options	Deactivate Activate

The "Retriggering possible" parameter specifies whether the light-on time is restart for arrival of an additional telegram on the input. This behavior is call retriggering.

For example, a retriggering makes sense for a light-on time of motion detectors. This ensures that the delay time continues to be reset as long as there is motion detected. If 1-byte telegrams with different values are receive during the retriggering phase, the values are immediately transfer to the output and the light-on time is restart. With the "no" setting, the set light-on time always proceeds to the end so that a telegram is always sent out on the "Output" object after the light-on time.

12.35.4 Extended parameter – Switch-off prewarning

Options	Deactivate Activate

Via the "Switch-off prewarning" parameter, you can activate whether an additional value is sent out on the output object shortly before expiration of the light-on time. This signals to the user that the staircase lighting time has almost expired and that the light will be switching off shortly.

12.35.5 Extended parameter – Overwrite light on and switch off prewarning time for download

Options	Deactivate Activate

Telegrams with new times can be receive via the 2-byte communication objects "Light-on time" and "Switch-off prewarning time". The received 2-byte values are written to the memory of the device and are retained even after a bus power failure and subsequent return of voltage.

The "Overwrite light-on and switch-off prewarning time for download" parameter specifies whether the received storage values are to be retained for a reprogramming of the device or whether the storage values are to be replaced by the values specified in the parameterizing software.

12.35.6 Object no

No	Object name	Data type	Flags
0	Input - 1 bit	1 bit DPT 1.001	C, W
0	Input – 1 byte	1 byte DPT 5.010	C, W
0	Input / output – 1 bit	1 bit DPT 1.001	C, W, T
0	Light on time – 2 byte	2 byte DPT 7.001	C, R, W
0	Switch off prewarning – 2 byte	2 byte DPT 7.001	C, R, W
0	Output – 1 bit	1 bit DPT 1.001	C, T
0	Output – 1 byte	1 byte DPT 5.010	C, T

12.36 Application “Light scene actuator”

Via the application "Light scene extension unit with memory function", a predefined light scene number is call up when the rocker is actuated.
The application "Light scene extension unit with memory function" makes a separate set of parameters and communication objects available in each case for the right or left side of the rocker.

The application facilitates calling up a light scene via a rocker side while the other rocker side can be assign an additional "button orientated" function. The user has the option to trigger a light scene memory command with a long button contact.

12.36.1 Channel – Number of scene

Options	1 to 8

Up to eight different scenes can be call up via the device. The "Number of scenes" parameter defines this. Any arbitrary number from 1 to 8 seconds can be entered. The values that are sent out over the different actuator objects for the scene call-up are adjustable but they can also be save in the device by the user.

12.36.2 Channel – Number of actuator

Options	1 to 8

For the call-up of a scene, consecutive telegrams are sent out on the actuator groups communication objects. The "Number of actuator groups" parameter defines this. An arbitrary number from 1 to 8 actuator groups can be entered. That means if a blind and an absolute temperature value are to be sent out during call-up of a scene of four lamp groups, the parameter is to be set to "6" actuator groups.

The size of the actuator groups communication objects can be adjust under the "Type actuator group" parameter. The following object sizes are available:
- 1-bit switching
- 1-bit blind
- 1-byte 0..100%
- 1-byte light scene number
- 2-byte temperature values absolute (-33.5°C to +93.5°C)

12.36.3 Channel – Time for telegram delay

Options	Time input from 0.1 to 10.0 seconds

For the call-up of a scene, consecutive telegrams are sent out on the actuator groups communication objects. The sequence is strictly specified. First the telegram of the actuator group A is sent out, then the telegram of the actuator group B and then the telegram of the actuator group C etc. The time between the telegrams can be adjust. An arbitrary time between 0.1 and 60 seconds (in 0.1 s intervals) can be set.

12.36.4 Channel – Overwrite scene for download

Options	Deactivate Activate

The user has the option of triggering a scene storage via the receipt of a corresponding scene storage command. The actuator groups communication objects in this case send read requests to the connected actuators. Provided that the L-flag is set for the communication objects of the connected actuators, these will send their current values to the device via an answer telegram. The values are stored in the memory and overwrite the previous values.

When reprogramming the device, the values stored by the user can be overwritten by the preset values in the parameterizing software. To do this, the "Overwrite scenes for download" must be set to "activated". The values stored by the user remain in the device with the "deactivated" setting.

12.36.5 Extended parameter – Object type actuator group A..H

Options	Number of light scene 1 bit switching 1 bit blind 1 byte 0..100% Temperature

This parameter is only adjustable if the "Number of actuator groups" is set to at least "2". The size of the actuator group communication object can be adjusted for different application cases under the "Type actuator group A..H" parameter. The following object sizes are available:
- 1-bit switching, for the activation of switching functions or actuators
- 1-bit blind, for the activation of blind actuators
- 1-byte 0..100 %, for the activation of dimming actuators or blind positions (default setting)
- 1-byte light scene number for the calling up of additional actuator groups
- 2-byte temperature values absolute (-33.5°C to +93.5°C) for specifying a new default value in room thermostats

12.36.6 Extended parameter – Scene number

Options	1 to 64

The "Scene number" parameter specifies with which value the Scene 1 or a scene storage can be call up that is received on the 1-byte "Scene call-up" communication object. An arbitrary scene number from 1 to 64 can be set.

12.36.7 Extended parameter – Scene can be saved

Options	Deactivate Activate

The scene values that are stored in the device and which are sent out via the actuator objects can be overwritten by the user. If the "Overwrite scene for download" parameter is activated, the user has the option of carrying out a scene storage. In this case, read requests are sent to the connected actuators on the actuator objects for receipt of a scene storage command. The values of the reply telegrams are stored in the memory of the device and overwrite the previously current values. These are also not lost in the event of a possible power failure.

12.36.8 Extended parameter – Object type actuator group A..H

Options	Deactivate Activate

Via the "Actuator group A" parameter, you can specified whether the actuator group A is sent out or not for a call of the scene 1. Select the "activated" setting if the actuator group A is to trigger a telegram for call of the scene 1.

12.37 Application “Delay”

Telegrams can be receive via the "Input" object using the "Delay" application. The telegrams received are sent out on the "Output" object with a set delay time.
The object types for "Input" and "Output" can be collectively parameterized for different applications.

12.37.1 Channel – Object type

Options	1 bit switching 1 bit move blinds / shutter up-down 1 bit stop up-down 1 byte 0..100% 1 byte 0..255 2 byte float 2 byte signed 2 byte unsigned 4 byte float 4 byte signed 4 byte unsigned

The object types for "Input" and "Output" can be collectively parameterized for the different application cases. The following sizes can be selected.

12.37.2 Channel – Delay time (hh:mm:ss:ms)

Options	Time input from 00:00:01:00 to 01:00:00:00

The telegrams received via the "Input" object are sent out on the "Output" object after the time set under "Delay time". This can be a delay time of 1 s to 1 hour, which is adjustable in 0.01 s steps.

12.37.3 Extended parameter – Retriggering

Options	Deactivate Activate

The "Retriggering possible" parameter specifies whether the delay time is restarted for arrival of an additional telegram on the input. This behavior is call retriggering.

For example, a retriggering makes sense for a light-on time of motion detectors. This ensures that the delay time continues to be reset as long as there is motion detected. If telegrams with different values are receive during the retriggering phase, only the last received value on the "Output" object is sent out after expiration of the delay time. With the "no" setting, the set delay time always proceeds to the end so that a telegram is always sent out on the "Output" object after the delay time.

12.37.4 Extended parameter – Filter active

Options	Deactivate Activate

If the "Filter active" parameter is set to "yes", the delayed transferring of the input values to the output can be influence. A filter value can be specified appropriate to the set object type for this.

Through the "Filter function" parameter, you can specified whether
- only the filter value is sent with delay and all other values are sent directly.
- only the filter value is sent with delay and all other values are blocked.
- only the filter value is sent directly and all other values are sent with delay.
- only the filter value is blocked and all other values are sent with delay.

12.37.5 Extended parameter – Overwrite delay time by group object

Options	Deactivate Activate

A telegram with a new delay time can be received via the 2-byte communication object "Delay time". The received 2-byte value is written to the memory of the device and is retain even after a bus power failure and subsequent return of voltage.

The "Overwrite for download" parameter specifies whether the received storage value is to be retain for a reprogramming of the device or whether the storage value is to be replaced by the value specified in the parameterizing software.

12.37.6 Object no

No	Object name	Data type	Flags
0	Input - 1 bit	1 bit DPT 1.001	C, W
0	Move blinds / shutter up-down – 1 bit	1 Bit DPT 1.008	C, W
0	Stop up-down – 1 bit	1 Bit DPT 1.007	C, W
0	Input- 1 byte 0..100%	1 byte DPT 5.001	C, W
0	Input- 1 byte 0..255	1 byte DPT 5.010	C, W
0	Input- 2 byte float	2 byte DPT 9.xxx	C, W
0	Input- 2 byte signed	2 byte DPT 8.001	C, W
0	Input- 2 byte unsigned	2 byte DPT 7.001	C, W
0	Input- 4 byte float	4 byte DPT 14.xxx	C, W
0	Input- 4 byte signed	4 byte DPT 13.001	C, W
0	Input- 4 Byte unsigned	4 byte DPT 12.001	C, W
1	Output - 1 bit	1 bit DPT 1.001	C, T
1	Move blinds / shutter up-down – 1 bit	1 Bit DPT 1.008	C, T
1	Stop up-down – 1 bit	1 Bit DPT 1.007	C, T
1	Output - 1 byte 0..100%	1 byte DPT 5.001	C, T
1	Output - 1 byte 0..255	1 byte DPT 5.010	C, T
1	Output - 2 byte float	2 byte DPT 9.xxx	C, T
1	Output - 2 byte signed	2 byte DPT 8.001	C, T
1	Output - 2 byte unsigned	2 byte DPT 7.001	C, T
1	Output - 4 byte float	4 byte DPT 14.xxx	C, T
1	Output - 4 byte signed	4 byte DPT 13.001	C, T
1	Output - 4 Byte unsigned	4 byte DPT 12.001	C, T
2	Delay time – 2 byte	2 byte DPT 7.001	C, R, W

12.38 Application “Min/max value transducer”

Up to eight input values can be compare with each other using the "Min/max value transducer" application. The application can output the highest input value, the smallest input value or the average of all input values on the output.

The size of the input objects, and with it also the size of the output object can be adapted for the most diverse applications. You can select from the following object types:
- 1-byte 0..100 %, for comparison of percent values
- 1-byte 0..255, for the comparison of decimal values between 0 and 255
- 2-byte float, for the comparison of 2-byte floating point values (physical values such as temperature, brightness value etc.)
- 2-byte signed, for the comparison of decimal values between -32,768 and +32,767
- 2-byte unsigned, for the comparison of decimal values between 0 and 65,535
- 4-byte float, for the comparison of 4-byte floating point values (physical values such as acceleration, electrical current,
work etc.)
- 4-byte signed, for the comparison of decimal values between -2,147,483,648 and 2,147,483,647
- 4-byte unsigned, for the comparison of decimal values between 0 and 4,294,967,295

Hint: With whole numbers the average value is rounded.

12.38.1 Channel – Object type

Options	1 byte 0..100% 1 byte 0..255 2 byte float 2 byte signed 2 byte unsigned 4 byte float 4 byte signed 4 byte unsigned

The size of the input objects and thus also the size of the output object can be adapted for the most diverse applications. You can select from the following object types:
- 1-byte 0..100 %, for comparison of percent values
- 1-byte 0..255, for the comparison of decimal values between 0 and 255

2-byte float, for the comparison of 2-byte floating point values (physical values such as temperature, brightness value etc.)
- 2-byte signed, for the comparison of decimal values between -32,768 and +32,767
- 2-byte unsigned, for the comparison of decimal values between 0 and 65,535

4-byte float, for the comparison of 4-byte floating point values (physical values such as acceleration, electrical current, work etc.)
- 4-byte signed, for the comparison of decimal values between -2.147.483.648 and 2.147.483.647
- 4-byte unsigned, for the comparison of decimal values between 0 and 4,294,967,295

12.38.2 Channel – Number of input objects

Options	1 to 8

The number of available input objects is adjustable. A maximum of eight input objects can be enable. All input objects assume the size that is specify under the "Object type" parameter.

12.38.3 Channel – Output sends

Options	For every assignment of the input With a change of the output object

The "Min/max value transducer" application compares the values that are present on the input objects Depending on the setting of the "Output object" parameter, it will send out the largest, the smallest or the average value on the output object.

The "Output sends" parameter allows you to set whether the output value is sent out "for every assignment of the inputs" or only "with a change of the output object".

The "for every assignment of the inputs" setting means that the output communication object always sends out its value immediately if a telegram is receive on an input communication object. It does not matter whether the value of the output has changed by the receipt of the input telegram or not.

The "with a change of the output object" setting means that only one telegram is always sent out on the output communication object if its value has changed.

12.38.4 Channel – Output object

Options	Adopts the largest value of the inputs Adopts the smallest value of the inputs Adopts the average value of the inputs

The "Min/max value transducer" application compares the values that are present on the input objects

Depending on the setting of the "Output object" parameter,
- the largest value ("adopts the largest value of the inputs"),
- the smallest value ("adopts the smallest value of the inputs"),
- or the average value ("adopts the average value of the inputs"),

of the inputs is sent out on the output object.

Provided the average value is sent out, the application always calculates the arithmetic mean of the inputs. Decimal places are rounded.
Example 2-byte signed, 2 inputs:
Input 1 = 4
Input 2 = 5
Arithmetic mean = (input 1 + input 2): 2 = 4.5
Average value = 5

12.38.5 Object no

No	Object name	Data type	Flags
0	Output - 1 bit	1 bit DPT 1.001	C, T
0	Output - 1 byte 0..255	1 byte DPT 5.010	C, T
0	Output - 2 byte float	2 byte DPT 9.xxx	C, T
0	Output - 2 byte signed	2 byte DPT 8.001	C, T
0	Output - 2 byte unsigned	2 byte DPT 7.001	C, T
0	Output - 4 byte float	4 byte DPT 14.xxx	C, T
0	Output - 4 byte signed	4 byte DPT 13.001	C, T
0	Output - 4 Byte unsigned	4 byte DPT 12.001	C, T
1..10	Input - 1..10 1 byte 0..100%	1 byte DPT 5.001	C, W
1..10	Input - 1..10 1 byte 0..255	1 byte DPT 5.010	C, W
1..10	Input - 1..10 2 byte float	2 byte DPT 9.xxx	C, W
1..10	Input - 1..10 2 byte signed	2 byte DPT 8.001	C, W
1..10	Input - 1..10 2 byte unsigned	2 byte DPT 7.001	C, W
1..10	Input - 1..10 4 byte float	4 byte DPT 14.xxx	C, W
1..10	Input - 1..10 4 byte signed	4 byte DPT 13.001	C, W
1..10	Input - 1..10 4 Byte unsigned	4 byte DPT 12.001	C, W

12.39 Application “Threshold value hysteresis”

With the "Threshold value / Hysteresis" application, value telegrams can be received on an input communication object and compared with threshold values specified in the device.

Predefined values are sent out on the communication "Output" communication object if the upper or lower thresholds are exceeded. The size of the object can be adjust for different applications. The function can be temporarily block via an enable object. If the value of the lower threshold lies above the value for the upper threshold, the function is not execute.

12.39.1 Channel – Object type input

Options	1 byte 0..100% 1 byte 0..255 2 byte float 2 byte signed 2 byte unsigned 4 byte float

The size of the input object can be adapted for different applications. You can select from the following object types:

- 1-byte 0..100 %, for comparison of percent values
- 1-byte 0..255, for the comparison of decimal values between 0 and 255

2-byte float, for the comparison of 2-byte floating point values (physical values such as temperature, brightness value etc.)

- 2-byte signed, for the comparison of decimal values between -32.768 and +32.767
- 2-byte unsigned, for the comparison of decimal values between 0 and 65,535

4-byte float, for the comparison of 4-byte floating point values (physical values such as acceleration, electrical current, work etc.)

12.39.2 Channel – Object type output

Options	1 bit switching 1 byte 0..100% 1 byte 0..255

Predefined values are sent out on the communication "Output" communication object if the upper or lower thresholds are exceeded. The size of the object can be adjusted for different applications.

12.39.3 Extended parameter – Application activate/deactivate by group object

Options	Deactivate Activate

If the "Enable object" parameter is set to "activated", the function can temporarily be block via the 1-bit communication object "Enable". The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable". This means that no telegram is sent out on the "Output" communication object.

12.39.4 Extended parameter – Group object value

Options	Normal Inverse

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The enable function normally functions as follows:
The function is active if an ON telegram is receive on the 1-bit communication object "Enable". The function is block if an OFF telegram is receive on the 1-bit communication object "Enable".

Via the parameter "Logic of the enable function", the above-described behavior can be reversed, i.e. if an ON telegram is received on the 1-bit communication object "Enable", the function is blocked. The function is active if an OFF telegram is receive on the 1-bit communication object "Enable".

12.39.5 Extended parameter – Enable group object after return of voltage

Options	No Yes

Note: This object is only adjustable if the "Enable object" parameter is set to "activated".

The parameter "Enable after return of voltage" exists to permit a defined behavior at the "Enable" communication object after a return of bus voltage. A determination is made here about whether a "1" ("enable") or a "0" ("blocked") is present on the enable object after the return of bus voltage.

Note: If the logic of the enable function is set to "inverse", the behavior is also inverted after the return of bus voltage, i.e. if the parameter "enable after return of bus voltage" is set to "enable", and at the same time the "logic of the enable function" is parameterized to "inverse", then the function will initially not be active after return of bus voltage. This must first be activate via the receipt of an OFF telegram on the enable object.

12.39.6 Extended parameter – Input monitoring

Options	Deactivate Activate

Should there the upper or lower threshold value be exceeded (i.e. above the upper limit or below the lower limit) during the blocking, the relevant output telegrams are sent out after the cancellation of the blocking. The "Deactivated" setting causes that no input value to be evaluate after cancellation of the blocking.

12.39.7 Extended parameter – Behavior output after return of voltage

Options	Deactivate Output value upper threshold Output value lower threshold

The parameter "Behavior output after return of voltage" exists to permit a defined behavior at the "Output" communication object after a return of voltage. A determination is made here about whether the "Output value upper threshold" or the "Output value lower threshold" is sent out on the output object. The "Deactivated" setting causes no telegram to be sent out after return of voltage.

12.39.8 Extended parameter – Send behavior

Options	For every object receipt Only with a change of the output object

The parameter “Send behavior” sets weather an outgoing signal should only be sent if the ingoing value changed or not.

12.39.9 Extended parameter – Upper threshold (%)

Options	0 to 100

The "Upper threshold (%)" parameter specifies the upper threshold. i.e. if the value on the "Input" object is higher than the set value, the "Output value for exceeding the upper threshold" telegram is sent out on the "Output" communication object. Values from 0 to 100 % can be set in 2.55 % steps.

12.39.10 Extended parameter – Output value for exceeding the upper threshold

Options	Off On

The parameter "Output value for exceeding the upper threshold" specifies the value that is sent out on the 1-bit communication object "Output" if the set upper threshold is exceeded. The values ON and OFF can be set.

12.39.11 Extended parameter – Lower threshold (%)

Options	0 to 100

The "Lower threshold (%)" parameter specifies the lower threshold. i.e. if the value on the "Input" object is lower than the set value, the "Output value for falling below the lower threshold" telegram is sent out on the "Output" communication object. Percent values from 0 to 100 % can be set in 2.55 % steps.

12.39.12 Extended parameter – Output value for failing below the lower threshold

Options	Off On

The parameter "Output value for falling below the lower threshold" specifies the value that is sent out on the 1-bit communication object "Output" if the set upper threshold is fallen below. The values ON and OFF can be set.

12.39.13 Object no

No	Object name	Data type	Flags
0	Input - 1 byte 0..100%	1 bit DPT 5.001	C, W
0	Input - 1 byte 0..255	1 byte DPT 5.010	C, W
0	Input - 2 byte float	2 byte DPT 9.xxx	C, W
0	Input - 2 byte signed	2 byte DPT 8.001	C, W
0	Input - 2 byte unsigned	2 byte DPT 7.001	C, W
0	Input - 4 byte float	4 byte DPT 14.xxx	C, W
0	Input - 4 byte signed	4 byte DPT 13.001	C, W
0	Input - 4 Byte unsigned	4 byte DPT 12.001	C, W
1	Output - 1 bit	1 bit DPT 1.001	C, T
1	Output - 1 byte 0..100%	1 byte DPT 5.001	C, T
1	Output - 1 byte 0..255	1 byte DPT 5.010	C, T
2	Enable	1 bit DPT 1.001	C, W

12.40 Application “RTC”

12.40.1 General – Display language

Options	English Chinese

Configuration of display language on RTC LCD display screen.

12.40.2 General – Main Temperature display

Options	Setpoint Actual

If the actual temperature is to be shown on the display, the parameter must be set on “Actual”. The device will then primarily display the actual temperature. When actuating the control element the display changes to the setpoint adjustment. After non-actuation of the control element, the current actual temperature again appears in the display after the set waiting period.

12.40.3 General – Interval time for switchover to RTC page (sec)

Options	Time input from 3 sec to 30 sec

After non-actuation of the control element the temperature again appears in the display after the set waiting period.

12.40.4 General – RTC button feedback (vibrate)

Options	Deactivate Activate

Configuration of vibration feedback upon pressing of RTC control button. Up, Down, Fan, Menu button.

12.40.5 General – Device function

Options	Single device Master device Slave device

– *Single device*: The device is use singly in a room as room temperature controller.

– *Master device*: At least two room temperature controllers are located in one room. One device is to be set up as a master device, while the others are to be program as slave devices / temperature sensors. The master device is to be link to the slave devices using the appropriately labelled communication objects. The master device regulates the temperature.

– *Slave device*/temperature sensor: At least two room temperature controllers are located in one room. One device is to be set up as a master device, while the others are to be program as slave devices / temperature sensors. The slave devices are to be link to the master device with the appropriately labelled communication objects. The slave device serves the room temperature control functions of the master.

12.40.6 General – Control function

Options	Heating Heating with additional stage Cooling Cooling with additional stage Heating and cooling Heating and cooling with additional stage

Note: This parameter is only available if the "Device function" parameter is set on "Single device" or "Master device".

– *Heating*: For operating a heat-based automatic single-room control. The temperature is regulated to the setpoint value defined in the parameter. The "Controller type" and "Heating type" can be program for optimal control.

– *Heating with additional stage*: In addition to the control function described under heating, the additional stage enables the activation of an additional heating circuit. This type of additional stage is use, for example, to heat up a bathroom quickly with floor heating via a heated towel rack.

– *Cooling*: For operating a cooling-based automatic single-room control. The temperature is regulated to the setpoint value defined in the parameter. The "Controller type" and "Cooling type" can be program for optimal control.

– *Cooling with additional stage*: In addition to the control function described under cooling, the additional stage enables the activation of an additional cooling device. This type of additional stage is use, for example, to cool a room quickly via an added cooling device.

– *Heating and cooling*: For operating a two-wire or four-wire system used to heat or cool a room. Switching between heating and cooling takes place using a central switch (two-wire system) or is carry out manually and / or automatically via the single room temperature controller (four-wire system).

– *Heating and cooling* with an additional stage: In addition to the heating and cooling functions, one additional stage each with an autonomous controller type can be program.

12.40.7 General – Operating mode after reset

Options	Comfort Standby Eco mode Frost/heat protection

Note: This parameter is only available if the "Device function" parameter is set on "Single device" or "Master device".

After a reset the device will run in the operating mode after a restart until a new operating mode is set as the result of device operation or by communication objects, as the case may be. This operating mode should be define during the planning phase. An improperly defined operating mode can result in a loss of comfort or increased energy consumption.

– *Comfort*: If the room temperature is not automatically lower and the room is therefore controlled independent of its use.
– *Standby*: If the room is controlled automatically, e.g. by a presence detector, as a function of its use.
– *Eco mode*: If the room is controlled automatically or manually as a function of it use.
– *Frost/heat protection*: If only the building protection function is necessary in the room after a reset.

12.40.8 General – Send cyclic “In operation” (min)

Options	Time input from 5 min to 3000 min

– The "In operation" communication object serves to inform that the controller still operates. Value "1" is sent cyclic. This parameter is use to set the cycle for sending. If the cyclic telegram fails, the function of the device is faulty and the air-conditioning of the room can be maintain with a forced operation. However, for this the system and/or actuator must have "Forced operation" function.

12.40.9 General – Additional functions / objects

Options	No Yes

– This parameter enables additional functions and communication objects.

Single / master / Slave:
- RTC controller On/Off
- Send fault actual temperature
- Window contact
- Presence detector
- Controller status RHCC
- Controller status HVAC
- Units switchover Celsius (°C) or Fahrenheit (°F)

Single / Master:
- Set basic setpoint by group object

Slave:
- RTC condensate water alarm

12.40.10 General – Delay time for read telegrams after reset (s)

Options	Time input from 1 sec to 255 sec

A delay in reading additional functions / objects after the reset of device

12.40.11 Operating functions – Temperature unit

Options	°C °F

This is where the temperature unit is select to be display on the device. The parameter is use to choose between Celsius (°C) and Fahrenheit (°F).

12.40.12 Operating functions – Hide temperature unit

Options	No Yes

To select whether to display or not to display the temperature unit on the RTC LCD main display

12.40.13 Operating functions – Switchover heating / cooling

Options	No Yes

Note: This parameter is only available if the "Device function" parameter is set on "slave device".

To switchover between heating and cooling on the room temperature controller via the 1 bit communication object

12.40.14 Operating functions – Fan coil control during heating mode

Options	No Yes

Note: This parameter is only available if the "Device function" parameter is set on "slave device".

To set the fan coil actuator to be in manual fan mode or in automatic fan mode via the 1 bit communication object when in heating mode.

12.40.15 Operating functions – Fan coil control during cooling mode

Options	No Yes

Note: This parameter is only available if the "Device function" parameter is set on "slave device".

To set the fan coil actuator to be in manual fan mode or in automatic fan mode via the 1 bit communication object when in cooling mode.

12.40.16 Control heating – Control value type

Options	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating", "Heating with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

The actuation of the control valve is determine by the selection of the controller type.
– *2-Point 1 Bit, Off/On*: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
– *2-Point 1 Byte, 0/100%*: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmit as 1-byte values (0% / 100%).
– *PI continuous, 0-100%*: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmit cyclically.
– *PI PWM, On/Off*: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is convert into a pulse-interval signal.
– *Fan coil*: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 – 3/5).

12.40.17 Control heating – Heating type

Options PI continuous, 0 – 100% and PI PWM, On/Off:	Area (e.g. floor heating) 4°C 200 min Convector (e.g. heater) 1.5°C 100 min Free configuration
Options Fan coil:	Fan coil 4°C 90 min Free configuration

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".

Multiple heating types (panel heating, convector heating or fan coil) with preset parameters are available to the user. If the required heating type is not available, individual parameters can be specified in free configuration.

12.40.18 Control heating – P-component (x 0.1 °C)

Options	Input from 10 to 100

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".

The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.

12.40.19 Control heating – I-component (min)

Options	Input from 0 to 255

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".

The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.

12.40.20 Control heating – Extended setting

Options	No Yes

This parameter enables additional functions and communication objects, e.g. "Basic stage heating".

12.40.21 Basic stage heating – Status object heating

Options	No Yes

Note: Only available when the "Extended settings" parameter under "Heating control" is set on "Yes".

This parameter enables the “Status heating” communication object.

12.40.22 Basic stage heating – Control direction of control valve

Options	Normal Inverse

Note: Only available when the "Extended settings" parameter under "Heating control" is set on "Yes".

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

– N*ormal*: Value 0 means "Valve closed".
– *Inverse*: Value 0 means "Valve open".

12.40.23 Basic stage heating – Hysteresis (x 0.1 °C)

Options	Input from 3 to 255

Note: This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".

12.40.24 Basic stage heating – Control value difference for sending of heating control value

Options	2 % 5 % 10 % Send cyclic only

Note: This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%" or "Fan coil".

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmit when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be enter here.

12.40.25 Basic stage heating – Cyclic sending of the control value (min)

Options	Input from 1 to 60

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".

The current control value used by the device can be cyclically transmit to the bus.

12.40.26 Basic stage heating – PWM cycle heating (min)

Options	Input from 1 to 60

Note: This parameter is only available when the "Control value type" parameter is set on "PI PWM, On/Off“.

In PI PWM, On/off the control value percentage values are convert into a pulse-interval signal. This means that a selected PWM cycle will be divided into an on-phase and an off-phase based on the control value. Accordingly, a control value output of 33% in a PWM cycle of 15 min. results in an "On-phase" of five minutes and an "Off-phase" of 10 min. The time for a PWM cycle can be specified here.

12.40.27 Basic stage heating – Maximum control value

Options	Input from 0 to 255

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".

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.

12.40.28 Basic stage heating – Minimum control value for basic load

Options	Input from 0 to 255

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".

The minimum control value of the PI controller defines the minimum value output by the controller. If a minimum value greater than zero is chosen, the controller will not output a lower value, even if it calculates a value that is lower. This parameter can be used to set a basic 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.

12.40.29 Control of heating additional stage – Control value type

Options	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages".

The actuation of the control valve is determine by the selection of the controller type.
– *2-Point 1 Bit, Off/On*: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
– *2-Point 1 Byte, 0/100%*: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmit as 1-byte values (0% / 100%).
– *PI continuous, 0-100%*: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmit cyclically.
– *PI PWM, On/Off*: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is convert into a pulse-interval signal.
– *Fan coil*: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 – 3/5).

12.40.30 Control of heating additional stage – Additional heating type

Options PI continuous, 0 – 100% and PI PWM, On/Off:	Area (e.g. floor heating) 4°C 200 min Convector (e.g. heater) 1.5°C 100 min Free configuration
Options Fan coil:	Fan coil 4°C 90 min Free configuration

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages" ,only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

Multiple heating types (panel heating, convector heating or fan coil) with preset parameters are available to the user. If the required heating type is not available, individual parameters can be specified in free configuration.

12.40.31 Control of heating additional stage – P-component (x 0.1 °C)

Options	Input from 10 to 100

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", 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".

The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.

12.40.32 Control of heating additional stage – I-component (min)

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages" 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".

The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.

12.40.33 Control of heating additional stage – Temperature difference to basic stage (x 0.1 °C)

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages"

The setpoint temperature of the additional stage is define as a function of the current setpoint temperature of the base stage and is express as a difference. The value represents the setpoint value starting at which the additional stage will operate.

12.40.34 Control of heating additional stage – Extended setting

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages"

This parameter enables additional functions and communication objects, e.g. "additional heating stage".

12.40.35 Additional heating stage – Control direction of control valve

Options	Normal Inverse

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when the "Extended settings" parameter under "Control of heating additional stage" is set on "Yes".

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

– N*ormal*: Value 0 means "Valve closed".
– *Inverse*: Value 0 means "Valve open".

12.40.36 Additional heating stage– Hysteresis (x 0.1 °C)

Options	Input from 3 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".

12.40.37 Additional heating stage – Control value difference for sending of heating control value

Options	2 % 5 % 10 % Send cyclic only

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%" or "Fan coil".

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmit when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be enter here.

12.40.38 Additional heating stage – Cyclic sending of the control value (min)

Options	Input from 1 to 60

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

The current control value used by the device can be cyclically transmit to the bus.

12.40.39 Additional heating stage – PWM cycle heating (min)

Options	Input from 1 to 60

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when the "Control value type" parameter is set on "PI PWM, On/Off“.

In PI PWM, On/off the control value percentage values are convert into a pulse-interval signal. This means that a selected PWM cycle will be divided into an on-phase and an off-phase based on the control value. Accordingly, a control value output of 33% in a PWM cycle of 15 min. results in an "On-phase" of five minutes and an "Off-phase" of 10 min. The time for a PWM cycle can be specified here.

12.40.40 Additional heating stage – Maximum control value

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.

12.40.41 Additional heating stage – Minimum control value for basic load

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

The minimum control value of the PI controller defines the minimum value output by the controller. If a minimum value greater than zero is chosen, the controller will not output a lower value, even if it calculates a value that is lower. This parameter can be used to set a basic 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.

12.40.42 Control cooling – Control value type

Options	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling", "Cooling with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

The actuation of the control valve is determine by the selection of the controller type.
– *2-Point 1 Bit, Off/On*: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
– *2-Point 1 Byte, 0/100%*: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmit as 1-byte values (0% / 100%).
– *PI continuous, 0-100%*: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmit cyclically.
– *PI PWM, On/Off*: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is convert into a pulse-interval signal.
– *Fan coil*: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 – 3/5).

12.40.43 Control cooling – Cooling type

Options PI continuous, 0 – 100% and PI PWM, On/Off:	Area (e.g. cooling ceiling) 5°C 200 min Free configuration
Options Fan coil:	Fan coil 4°C 90 min Free configuration

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".

Two cooling types (area or fan coil) with preset parameters are available to the user. If the required cooling type is not available, individual parameters can be specified in free configuration.

12.40.44 Control cooling – P-component (x 0.1 °C)

Options	Input from 10 to 100

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 "Cooling type" parameter must be set on "Free configuration".

The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.

12.40.45 Control cooling – I-component (min)

Options	Input from 0 to 255

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 "Cooling type" parameter must be set on "Free configuration".

The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.

12.40.46 Control cooling – Extended setting

Options	No Yes

This parameter enables additional functions and communication objects, e.g. "Basic stage cooling".

12.40.47 Basic stage cooling – Cooling status object

Options	No Yes

Note: Only available when the "Extended settings" parameter under "Cooling control" is set on "Yes".

This parameter enables the “Status cooling” communication objects.

12.40.48 Basic stage cooling – Control direction of control valve

Options	Normal Inverse

Note: Only available when the "Extended settings" parameter under "Cooling control" is set on "Yes".

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

– N*ormal*: Value 0 means "Valve closed".
– *Inverse*: Value 0 means "Valve open".

12.40.49 Basic stage cooling – Hysteresis (x 0.1 °C)

Options	Input from 3 to 255

Note: This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".

12.40.50 Basic stage cooling – Control value difference for sending of cooling control value

Options	2 % 5 % 10 % Send cyclic only

Note: This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%" or "Fan coil".

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmit when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be enter here.

12.40.51 Basic stage cooling – Cyclic sending of the control value (min)

Options	Input from 1 to 60

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".

The current control value used by the device can be cyclically transmit to the bus.

12.40.52 Basic stage cooling – PWM cycle cooling (min)

Options	Input from 1 to 60

Note: This parameter is only available when the "Control value type" parameter is set on "PI PWM, On/Off“.

In PI PWM, On/off the control value percentage values are convert into a pulse-interval signal. This means that a selected PWM cycle will be divided into an on-phase and an off-phase based on the control value. Accordingly, a control value output of 33% in a PWM cycle of 15 min. results in an "On-phase" of five minutes and an "Off-phase" of 10 min. The time for a PWM cycle can be specified here.

12.40.53 Basic stage cooling – Maximum control value

Options	Input from 0 to 255

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".

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.

12.40.54 Basic stage cooling – Minimum control value for basic load

Options	Input from 0 to 255

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".

The minimum control value of the PI controller defines the minimum value output by the controller. If a minimum value greater than zero is chosen, the controller will not output a lower value, even if it calculates a value that is lower. This parameter can be used to set a basic load, e.g. for operating floor cooling. Even if the controller calculates the control value zero, a cooling medium will flow through the floor cooling 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.

12.40.55 Control of cooling additional stage – Control value type

Options	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Cooling and cooling with additional stages".

The actuation of the control valve is determine by the selection of the controller type.
– *2-Point 1 Bit, Off/On*: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
– *2-Point 1 Byte, 0/100%*: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmit as 1-byte values (0% / 100%).
– *PI continuous, 0-100%*: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmit cyclically.
– *PI PWM, On/Off*: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is convert into a pulse-interval signal.
– *Fan coil*: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 – 3/5).

12.40.56 Control of cooling additional stage – Additional cooling type

Options PI continuous, 0 – 100% and PI PWM, On/Off:	Area (e.g. floor cooling) 5°C 200 min Free configuration
Options Fan coil:	Fan coil 4°C 90 min Free configuration

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages" ,only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

Two cooling types (area or fan coil) with preset parameters are available to the user. If the required cooling type is not available, individual parameters can be specified in free configuration.

12.40.57 Control of cooling additional stage – P-component (x 0.1 °C)

Options	Input from 10 to 100

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", 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 "Cooling type" parameter must be set on "Free configuration".

The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.

12.40.58 Control of cooling additional stage – I-component (min)

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages" 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 "Cooling type" parameter must be set on "Free configuration".

The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.

12.40.59 Control of cooling additional stage – Temperature difference to basic stage (x 0.1 °C)

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages"

The setpoint temperature of the additional stage is define as a function of the current setpoint temperature of the base stage and is expressed as a difference. The value represents the setpoint value starting at which the additional stage will operate.

12.40.60 Control of cooling additional stage – Extended setting

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages"

This parameter enables additional functions and communication objects, e.g. "additional cooling stage".

12.40.61 Additional cooling stage – Control direction of control valve

Options	Normal Inverse

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when the "Extended settings" parameter under "Control of cooling additional stage" is set on "Yes".

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

– N*ormal*: Value 0 means "Valve closed".
– *Inverse*: Value 0 means "Valve open".

12.40.62 Additional cooling stage– Hysteresis (x 0.1 °C)

Options	Input from 3 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".

12.40.63 Additional cooling stage – Control value difference for sending of cooling control value

Options	2 % 5 % 10 % Send cyclic only

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%" or "Fan coil".

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmit when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be enter here.

12.40.64 Additional cooling stage – Cyclic sending of the control value (min)

Options	Input from 1 to 60

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

The current control value used by the device can be cyclically transmit to the bus.

12.40.65 Additional cooling stage – PWM cycle cooling (min)

Options	Input from 1 to 60

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when the "Control value type" parameter is set on "PI PWM, On/Off“.

In PI PWM, On/off the control value percentage values are convert into a pulse-interval signal. This means that a selected PWM cycle will be divided into an on-phase and an off-phase based on the control value. Accordingly, a control value output of 33% in a PWM cycle of 15 min. results in an "On-phase" of five minutes and an "Off-phase" of 10 min. The time for a PWM cycle can be specified here.

12.40.66 Additional cooling stage – Maximum control value

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.

12.40.67 Additional cooling stage – Minimum control value for basic load

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages", only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%", "PI PWM, On/Off“ or "Fan coil".

The minimum control value of the PI controller defines the minimum value output by the controller. If a minimum value greater than zero is chosen, the controller will not output a lower value, even if it calculates a value that is lower. This parameter can be used to set a basic load, e.g. for operating floor cooling. Even if the controller calculates the control value zero, a cooling medium will flow through the floor cooling 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.

12.40.68 Setting of basic load – Minimum control value for basic load > 0

Options	Always active Activate via object

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage", "Cooling with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

The function finds application when in the desired area, e.g. with floor heating, the floor is to have a basic warmth. The size of the minimum control value specifies the volume of heating medium that flows through the controlled area, even when the calculation of the control value of the controller would indicate a lower value.
– *Always active*: Here it is possible to define whether this basic load will be permanently active or whether it will be switch via the "Basic load" object.
– *Activate via object*: When this parameter is select, the basic load function, which means the minimum control value with a value higher than zero, can be activated (1) or deactivated (2). If it is activate, then the heating medium will always be fed through the system with at least the minimum control value. If it is deactivate, the control value can be reduce to zero with the controller.

12.40.69 Setting of basic load – Basic load active when controller is off

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage", "Cooling with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

When room temperature controller is off, it will operate at the min basic load.

12.40.70 Combine heating and cooling mode – Switchover heating / cooling

Options	Automatic Only via object On-site/via extension unit and via object

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating and cooling" or "Heating and cooling with additional stages".

This function makes it possible to switch between the heating and cooling mode of the device.

– *Automatic*: E.g. for four-conductor systems which allow the switchover between heating and cooling at all times. The device switches automatically between heating and cooling and to the associated setpoint. "Switchover heating/cooling" is a transmitting object.

– *Only via object*: E.g. for two-conductor systems which are operated in heating mode in the winter and cooling mode in the summer. The switchover between heating and cooling and to the associated setpoint is carry out via the corresponding communication object. This function is use when a central switchover of the single room controllers is required. "Switchover heating/cooling" is a receiving object.

– *Local/ via extension unit and via object*: E.g. for four-conductor systems which allow the switchover between heating and cooling at all times. The switchover between heating and cooling and to the associated setpoint is carry out manually on the device by the user of the room or via the "Switchover heating/cooling" object via the bus. "Switchover heating/cooling" is a transmitting and receiving object.

12.40.71 Combine heating and cooling mode – Operating state after reset

Options	Cooling Heating

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating and cooling" or "Heating and cooling with additional stages".

After a bus voltage failure, a system reset, or the attachment of a device to the bus coupler, the device starts in the parameterized "Operating state after reset". The operating state can be change when the system is running using the options set under "Switchover heating/cooling".

12.40.72 Combine heating and cooling mode – Output control value heating and cooling

Options	Via 1 object Via 2 objects

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating and cooling" or "Heating and cooling with additional stages".

This parameter is use to define whether the control value is transmitted to the climate control actuator using one or two objects. If the climate control actuator has separate control value inputs for heating and cooling, or if separate actuators are used, then the option "Via 2 objects" must be selected. Select the option "Via 1 object" if a single actuator only has one object that receives both the heating and the cooling control values.

12.40.73 Combine heating and cooling mode – Output control value additional stage heating and cooling

Options	Via 1 object Via 2 objects

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on "Heating and cooling with additional stages".

This parameter is use to define whether the control value is transmitted to the climate control actuator using one or two objects. If the climate control actuator has separate control value inputs for heating and cooling, or if separate actuators are used, then the option "Via 2 objects" must be selected. Select the option "Via 1 object" if a single actuator only has one object that receives both the heating and the cooling control values.

12.40.74 Setpoint setting – Setpoint for heating comfort = setpoint for cooling comfort

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on "Heating and cooling" or "Heating and cooling with additional stages".

This parameter is use to configure the manner in which the setpoint adjustment functions.

– *Yes*: The device has the same setpoint for heating and cooling in the comfort mode. The system switches to heating when the temperature drops below the setpoint minus hysteresis. It switches to cooling when the temperature exceeds the setpoint plus hysteresis. The hysteresis can be parameterize.

– *No*: The function has two separate setpoints for heating and cooling in the comfort mode. The device will display the currently active setpoint value. Switching between heating and cooling occurs via the "Switchover heating/cooling" parameter setting.

12.40.75 Setpoint setting – Hysteresis for switchover heating/cooling (x 0.1°C)

Options	Input from 5 to 100

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on "Heating and cooling" or "Heating and cooling with additional stages", only available when the “switchover heating / cooling” is set to automatic and "Setpoint heating comfort = Setpoint cooling comfort" parameter is set on "Yes".

This parameter specifies the one-sided hysteresis for switching between heating and cooling when "Setpoint heating comfort = Setpoint cooling comfort" is active. If the room temperature exceeds the setpoint temperature value plus hysteresis, the system switches to cooling. If the room temperature falls below the setpoint temperature value minus hysteresis, the system switches to heating.

12.40.76 Setpoint setting – Setpoint temperature for heating and cooling comfort (°C)

Options	Input from 10 to 40

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on "Heating and cooling" or "Heating and cooling with additional stages", only available when "Setpoint heating comfort = Setpoint cooling comfort" parameter is set on "Yes".

Specifies the comfort temperature for heating and cooling when people are present.

12.40.77 Setpoint setting – Setpoint temperature for heating comfort (°C)

Options	Input from 10 to 40

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Heating”, “Heating with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages", only available when "Setpoint heating comfort = Setpoint cooling comfort" parameter is set on "No".

Specifies the comfort temperature for heating when people are present.

12.40.78 Setpoint setting – Reduction for standby heating (°C)

Options	Input from 0 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Heating”, “Heating with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

Specifies the temperature in heating mode when nobody is present. On devices with a display, this mode is indicated by the standby symbol.

12.40.79 Setpoint setting – Reduction for ECO heating (°C)

Options	Input from 0 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Heating”, “Heating with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

Specifies the temperature in heating mode when nobody is present. On devices with a display, this mode is indicated by the ECO symbol.

12.40.80 Setpoint setting – Setpoint temperature for frost protection (°C)

Options	Input from 5 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Heating”, “Heating with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

Function for protecting the building against the cold. On devices with a display, this mode is indicated by the frost protection symbol. Manual operation is lock.

12.40.81 Setpoint setting – Setpoint temperature for cooling comfort (°C)

Options	Input from 10 to 40

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Cooling”, “Cooling with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages", only available when "Setpoint heating comfort = Setpoint cooling comfort" parameter is set on "No".

Specifies the comfort temperature for cooling when people are present.

12.40.82 Setpoint setting – Increase for standby cooling (°C)

Options	Input from 0 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Cooling”, “Cooling with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

Specifies the temperature in cooling mode when nobody is present. On devices with a display, this mode is indicated by the standby symbol.

12.40.83 Setpoint setting – Increase for ECO cooling (°C)

Options	Input from 0 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Cooling”, “Cooling with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

Specifies the temperature in cooling mode when nobody is present. On devices with a display, this mode is indicated by the ECO symbol.

12.40.84 Setpoint setting – Setpoint temperature for heat protection (°C)

Options	Input from 5 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the Control function parameter is set on “Cooling”, “Cooling with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

Function for protecting the building against the heat. On devices with a display, this mode is indicated by the heat protection symbol. Manual operation is lock.

12.40.85 Setpoint setting – Display indicates

Options	Actual setpoint Relative setpoint

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

The display can indicate either the absolute or relative setpoint value.

– *Current setpoint*: On devices with a display, the setpoint is shown as an absolute temperature, e.g. 21.0°C.
– *Relative setpoint*: On devices with display, the setpoint is indicated as a relative value, e.g. -5°C .. + 5°C.

12.40.86 Setpoint setting – Send current setpoint

Options	Cyclic and during change Only for change

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

The current setpoint value can be sent to the bus either cyclically and after a change, or only after a change.

12.40.87 Setpoint setting – Cyclic sending of the current setpoint temperature (min)

Options	Time input from 5 to 240

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and only available when the "Send current setpoint" is set on "Cyclic and during change".

This parameter is use to specified the amount of time that will elapse before the current setpoint value is automatically transmitted onto the bus line.

12.40.88 Setpoint setting – Basic setpoint is

Options	Setpoint for cooling comfort Setpoint for heating comfort Mean value between heating comfort and cooling comfort

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device"

This parameter is use to specified the reference for basic setpoint.

12.40.89 Changing set value – Maximum manual increase during heating mode (°C)

Options	Input from 0 to 9

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device", and the Control function parameter is set on “Heating”, “Heating with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

This preset is use to limit the manual increase during heating mode.

12.40.90 Changing set value – Maximum manual reduction during heating mode (°C)

Options	Input from 0 to 9

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device", and the Control function parameter is set on “Heating”, “Heating with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

This preset is use to limit the manual reduction during heating mode.

12.40.91 Changing set value – Maximum manual increase during cooling mode (°C)

Options	Input from 0 to 9

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device", and the Control function parameter is set on “Cooling”, “Cooling with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

This preset is use to limit the manual increase during cooling mode.

12.40.92 Changing set value – Maximum manual reduction during cooling mode (°C)

Options	Input from 0 to 9

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device", and the Control function parameter is set on “Cooling”, “Cooling with additional stage”, "Heating and cooling" or "Heating and cooling with additional stages".

This preset is use to limit the manual reduction during cooling mode.

12.40.93 Changing set value – Resetting of the manual adjustment for receipt of a basic setpoint

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

Activating this parameter will cause the manual adjustment to be deleted and the new setpoint value to be provided when a new value is received via the "Basic setpoint" object. If the parameter is deactivate, the manual adjustment is add to the new base setpoint value.

Example: Previous base setpoint value of 21°C + manual adjustment of 1.5°C = 22.5°C. The object receives a new basic setpoint of 18°C plus the previous manual adjustment of 1.5°C for a total of 19.5°C.

12.40.94 Changing set value – Resetting of the manual adjustment for change of operating mode

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

If the device switches to a new operating mode, the manual adjustment is delete and the parameterized setpoint temperature for the operating mode plus any change by the base setpoint value object will be applied if this parameter is activate. Example: Comfort temperature of 21°C plus manual adjustment of 1.5°C = 22.5°C. Change to Eco with programmed temperature 17°C. The device regulates the temperature to 17°C, since the manual adjustment is delete.

If the parameter is deactivate, the manual setpoint adjustment will be added to the temperature in the new operating mode.

Example: Comfort temperature of 21°C plus manual adjustment of 1.5°C = 22.5°C. If the system switches to Eco with a parameterized temperature of 17°C, the device regulates the temperature to 18.5°C, since the manual adjustment is add.

12.40.95 Changing set value – Resetting the manual adjustment via object

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

If this parameter is activate, a separate object can be used to delete the manual adjustment at any time. Example of application: Resetting the manual adjustment on all devices located in a building using a system clock.

12.40.96 Changing set value – Permanent storage of onsite operation

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

If this parameter is activated, the manual settings for setpoint and, where applicable, fan speed level, as well as the value of the "Basic load" object, will be stored in the device and re-activated after a reset. If the device is re-programmed, the stored setpoint values will also be deleted.

12.40.97 Temperature reading – Input of temperature reading

Options	Internal measurement External measurement Weighted measurement

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

The room temperature can be measure 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 three temperature values (1 x internal, 2 x external) is calculated and used as an input value for control.

12.40.98 Temperature reading – Input of weighted temperature reading

Options	Internal and external measurement 2 x external measurement Internal and 2x external measurement

Note: This parameter is only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Inputs of temperature reading" parameter is set on "Weighted measurement".

Specifies the temperature reading inputs for the weighted measurement, in which the calculated weighted average of the inputs is used as an input value for control

12.40.99 Temperature reading – Weighting of internal measurement (%)

Options	Input from 0 to 100

Note: This parameter is only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Inputs of weighted temperature reading" parameter is set on "Internal and external measurement" or "Internal and 2x external measurement".

Specifies the weighting of the internal measurement at a level between 0% and 100%.

12.40.100 Temperature reading – Weighting of external measurement (%)

Options	Input from 0 to 100

Note: This parameter is only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Inputs of weighted temperature reading" parameter is set on "Internal and external measurement" or "Internal and 2x external measurement".

Specifies the weighting of the external measurement at a level between 0% and 100%.

12.40.101 Temperature reading – Weighting of external measurement 2 (%)

Options	Input from 0 to 100

Note: This parameter is only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Inputs of weighted temperature reading" parameter is set on "2 x external measurement" or "Internal and 2x external measurement".

Specifies the weighting of the external measurement 2 at a level between 0% and 100%. When added together with the (0%...100%) weighting of the external measurement, the result must be 100%.

12.40.102 Temperature reading – Cyclic sending of the actual temperature (min)

Options	Input from 5 to 240

Note: This parameter is only available when the "Inputs of temperature reading" parameter is set on "Internal measurement" or "Weighted measurement".

The current actual temperature used by the device can be cyclically transmit onto the bus line.

12.40.103 Temperature reading – Difference of value for sending the actual temperature (x 0.1 °C)

Options	Input from 1 to 100

Note: This parameter is only available when the "Inputs of temperature reading" parameter is set on "Internal measurement" or "Weighted measurement".

If the change in temperature exceeds the parameterized difference between the measured actual temperature and the previous actual temperature that was sent, the changed value will be transmitted.

12.40.104 Temperature reading – Difference value for internal temperature measurement (x 0.1 °C)

Options	Input from -127 to 127

Note: This parameter is only available when the "Inputs of temperature reading" parameter is set on "Internal measurement" or "Weighted measurement". The calibration measurement should not be carry out immediately after the device has been installed. The device should first adjust to the ambient temperature before calibration is carry out. The calibration measurement should be repeated shortly before or after the room is occupy.

Every installation location has different physical conditions (interior or exterior wall, lightweight or solid wall, etc.). In order to use the actual temperature at the installation location as a measured value for the device, a temperature measurement must be performed by an external equalized and / or calibrated thermometer at the installation location.

The difference between the actual temperature displayed on the device and the actual temperature determined by the external measurement device must be entered in the parameter field as an "Adjustment value".

12.40.105 Temperature reading – Monitoring time for temperature reading (0=no monitoring) (min)

Options	Input from 0 to 120

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

If no temperature is read within the parameterized time period, the device switches to error mode. It transmits a telegram to the bus via the "Actual temperature error" object and applies the operating state and control value for error (0 - 255) settings.

12.40.106 Temperature reading – Operating state for fault

Options	Cooling Heating

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and only available when the "Control function" parameter is set on "Heating and cooling" or "heating and cooling with additional stages".

In the event of a failure of the actual temperature measurement, the device will no longer be able to independently specify the heating/cooling operating type. As a result, the operating type best suited to protecting the building will be selected.

12.40.107 Temperature reading – Control value for fault

Options	Input from 0 to 255

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device"

In the event of a failure of the actual temperature measurement, the device will no longer be able to independently determine the control value. Therefore, a control value which is suitable for protecting the building will be selected.

12.40.108 Alarm function – Condensate water alarm

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and only available when the "Control function" parameter is set either on "Cooling", "Cooling with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

If a fan coil is used, condensation may form during operation as a result of excessive cooling and/or humidity. The associated condensate is typically collected in a container. To protect the container against overflowing, and thus prevent potential damage to devices and/or the building, the container alerts the "Condensation alarm" object (receiving only) that the maximum fill level has been exceeded.

This causes the controller to switch to a protective mode. This status is indicated by the corresponding symbol on devices that have a display. Local operation is blocked. Operation is only possible again after the alarm has been deactivated.

12.40.109 Alarm function – Dew point alarm

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and only available when the "Control function" parameter is set either on "Cooling", "Cooling with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

When refrigerating machines are used, dew may appear on the refrigerant supply lines during operation as a result of excessive cooling and/or humidity. The dew indicator reports the dew formation via the "Dew point alarm" object (receiving only).

This causes the controller to switch to a protective mode. This status is indicated by the corresponding symbol on devices that have a display. Local operation is blocked. Operation is only possible again after the alarm has been deactivated.

12.40.110 Alarm function – Frost alarm temperature for HVAC and RHCC status (°C)

Options	Input from 0 to 15

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

The RHCC status and HVAC objects have a frost alarm bit. It the input temperature of the controller drops below the temperature set in this parameter, the frost alarm bit is set in the status objects. It is reset when the temperature is exceed.

12.40.111 Alarm function – Heat alarm temperature for RHCC status (°C)

Options	Input from 25 to 70

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device".

The RHCC status object has a heat alarm bit. If the input temperature of the controller exceeds the temperature set in this parameter, then the heat alarm bit is set in the status object. It is reset when the temperature falls below the set temperature.

12.40.112 Fan coil settings - Fan speed levels – Number of fan stages

Options	3 levels 5 levels

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

This parameter is use to specified the number of fan speed levels the actuator will use to control the fan of the fan coil.

12.40.113 Fan coil settings - Fan speed levels – Format of the stage output

Options	0..5 0..255 1 bit m off n 1 bit m 1 off n

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

– *0 to 5*: The level values (0..3 or 0..5) are output in the 1-byte format as the counter values 0..3 or 0..5.
– *0 to 255*: The level values (0..3 or 0..5) are output as percentage values. Example 5-stage 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 using 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 1 from n*: The level values (0..3 or 0..5) are output using 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.

12.40.114 Fan coil settings - Fan speed levels – Position output

Options	For manual operation and automatic Only for manual operation

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

This parameter is use to specify when the output of the fan speed level values will occur: 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.

12.40.115 Fan coil settings - Fan speed levels – Lowest manually adjustable fan speed level

Options	Stage 0 Stage 1

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

This parameter is use 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 state and operation type are maintained. To avoid damage to the building, level 0 is deactivate after 18 hours and the device is return to automatic state.

12.40.116 Fan coil settings - Fan speed levels – Evaluation stage status

Options	No Yes

Note: Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

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 "Yes" option is select, the "Fan coil step status" object is activate for receiving the fan speed level from the fan coil actuator.

12.40.117 Fan coil settings - Fan coil settings heating – Fan speed level 1 to 5 up to control value heating (0..255)

Options	Input from 0 to 255

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil", and the "Control function" parameter must be set on either "Heating", "Heating with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

- 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 support.
- 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".

In this parameter, the control values of the controller are assign to fan speed levels. This assignment is use if the fan speed levels are transmit together with the control values.

12.40.118 Fan coil settings - Fan coil settings heating – Fan stage limit heating for ECO mode

Options	No Yes

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

This parameter limits the fan speed level when the system is switch to ECO mode.

12.40.119 Fan coil settings - Fan coil settings heating – Max. fan stage heating for ECO mode

Options	Input from 0 to 5

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil", and the “Fan stage limit heating for ECO mode” parameter is set to “Yes”

Specifies the maximum possible fan speed level when the system is switch to ECO mode.

12.40.120 Fan coil settings - Fan coil settings cooling – Fan speed level 1 to 5 up to control value cooling (0..255)

Options	Input from 0 to 255

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil", and the "Control function" parameter must be set on either "Cooling", "Cooling with additional stage", "Heating and cooling" or "Heating and cooling with additional stages".

- 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 support.
- 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".

In this parameter, the control values of the controller are assign to fan speed levels. This assignment is use if the fan speed levels are transmit together with the control values.

12.40.121 Fan coil settings - Fan coil settings cooling – Fan stage limit cooling for ECO mode

Options	No Yes

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

This parameter limits the fan speed level when the system is switch to ECO mode.

12.40.122 Fan coil settings - Fan coil settings cooling – Max. fan stage cooling for ECO mode

Options	Input from 0 to 5

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil", and the “Fan stage limit cooling for ECO mode” parameter is set to “Yes”

Specifies the maximum possible fan speed level when the system is switch to ECO mode.

12.40.123 Summer compensation – Summer compensation

Options	No Yes

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device".

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 increase 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 intend 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.

The following parameters are available for summer compensation:
- "Lower outside temperature value for summer compensation",
- "Upper outside temperature value for summer compensation",
- “Lower setpoint offset for summer compensation",
- “Upper setpoint offset for summer compensation"

Above the "Upper outside temperature value", the minimum setpoint temperature for cooling is the outside temperature minus the "Upper setpoint offset". The outside temperature has no effect on the minimum setpoint temperature for cooling below the "Lower outside temperature value". Between the "Lower" and "Upper outside temperature value", the minimum setpoint temperature for cooling undergoes floating adjustment by the parameterized setpoint temperature equal to the outside temperature minus the "Lower offset" to a value equal to the outside temperature minus the "Upper setpoint offset" as a function of the outside temperature.

Typical values for summer compensation are:
- 21°C: Lower outside temperature value
- 32°C: Upper outside temperature value
0 K: Lower setpoint offset
- 6 K: Upper setpoint offset

This means that a continuous increase of the minimum setpoint value for cooling occurs to a value equal to the outside temperature minus a setpoint offset of 0 to 6 K if the outside temperature increases to 32°C from 21°C.

For example:
For an increasing outside temperature, the minimum setpoint value for cooling will be increase starting at an outside temperature of 21°C. The minimum setpoint temperature for cooling is 25.1°C at an outside temperature of 30°C; 25.5°C at an outside temperature of 31°C; 26°C at an outside temperature of 32°C; and 27°C at an outside temperature of 33°C.

12.40.124 Summer compensation – (Lower) Starting temperature for summer compensation (°C)

Options	Input from -127 to 127

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the “Summer compensation” parameter is set to “Yes”

The parameter defines the lower outside temperature value up to which temperature value the setpoint correction (summer compensation) is perform based on too high an outside temperature.

12.40.125 Summer compensation – Offset of the setpoint temperature for the entry in the summer compensation (x 0.1 °C)

Options	Input from -127 to 127

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the “Summer compensation” parameter is set to “Yes”

The parameter is use to define how many degrees Kelvin the setpoint value will be increased by during summer compensation when the lower temperature value is reached.

Typical values for summer compensation are:
- 20°C: Lower outside temperature value
- 32°C: Upper outside temperature value
- 0 K: Lower setpoint offset
- 4 K: Upper setpoint offset

That means that a flowing setpoint increase of 0 to 4 K occurs if the outside temperature increases from 20°C to 32°C.

12.40.126 Summer compensation – (Upper) Escape temperature for summer compensation (°C)

Options	Input from -127 to 127

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the “Summer compensation” parameter is set to “Yes”

The parameter defines the upper outside temperature value up to which temperature value the setpoint correction (summer compensation) is perform based on too high an outside temperature.

12.40.127 Summer compensation – Offset of the setpoint temperature for the exit in the summer compensation (x 0.1 °C)

Options	Input from -127 to 127

Note: This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the “Summer compensation” parameter is set to “Yes”

The parameter is use to define how many degrees Kelvin the setpoint value will be increased by during summer compensation when the upper temperature value is reached.

Typical values for summer compensation are:
■ 20°C: Lower outside temperature value
■ 32°C: Upper outside temperature value
■ 0 K: Lower setpoint offset
■ 4 K: Upper setpoint offset

That means that a flowing setpoint increase of 0 to 4 K occurs if the outside temperature increases from 20°C to 32°C.

12.41 Communication object for RTC

12.41.1 General – Operating mode - Object no

No	Object name	Data type	Flags
202	1. Operating mode – 1 byte	1 byte DPT 20.102	C, W, T, U
202	2. Operating mode – 1 byte (master)	1 byte DPT 20.102	C, W, T, U
202	3. Operating mode – 1 byte (slave)	1 byte DPT 20.102	C, T

Item 2: If the master/slave mode is the active operating mode, the Operating mode (slave) object must be connected to this object.
Item 3: If the master/slave mode is the active operating mode, the operating mode (master) object must be connected to this object.

The "Operating mode" object receives, as a 1-byte value, the operating mode that is to be set. Here value 1 means "Comfort", value 2 "Standby", value 3 "Economy" and value 4 "Frost/heat protection". In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode", "Condensate ware alarm", "Dew alarm", "Window contact", "Control On/Off", "Presence detector" and "Operating mode (listed in decreasing order of priority).

12.41.2 General – Superimposed operating mode - Object no

No	Object name	Data type	Flags
203	1. Superimposed operating mode – 1 byte	1 byte DPT 20.102	C, W, T, U
203	2. Superimposed operating mode – 1 byte (master / slave)	1 byte DPT 20.102	C, W, T, U

Item 2: If the master/slave mode is active, the "Superimposed operating mode" object of the master and the slave must be connected to the group address of the transmitter.

The "Superimposed operating mode" object receives the operating mode that is to be set as 1- byte value. Here value 0 means "Superimposition inactive", value 1 "Comfort", value 2 "Standby", value 3 "Economy" and value 4 "Frost/heat protection". In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode", "Condensate ware alarm", "Dew alarm", "Window contact", "Control On/Off", "Presence detector" and "Operating mode (listed in decreasing order of priority).

12.41.3 General – In operation - Object no

No	Object name	Data type	Flags
237	Commissioned – 1 bit	1 bit DPT 1.001	C, T

The controller uses this 1-bit communication object to send a cyclical "sign of life". This signal can be used to monitor the device, e.g. by means of a visualization.

12.41.4 General – Additional functions/objects – Control on/off - Object no

No	Object name	Data type	Flags
195	1. Control on/off – 1 bit	1 bit DPT 1.001	C, W, T, U
195	2. Control on/off – 1 bit (master)	1 bit DPT 1.001	C, R, W, T, U
195	3. Control on/off – 1 bit (slave)	1 bit DPT 1.001	C, W, T, U

Item 2: During active ON/OFF controller function in master/slave mode the ON/OFF (master) control object is to be link with this object.
Item 3: During active ON/OFF controller function in master/slave mode the ON/OFF (slave) control object is to be link with this object.

If a 0 telegram is receive, the controller switches to OFF mode and regulates the temperature to the setpoint value for frost/heat protection. When the controller is switch on again, the remaining operating mode objects are require in order determining the new operating mode.

12.41.5 General – Additional functions/objects – Fault actual temperature - Object no

No	Object name	Data type	Flags
199	1. Fault actual temperature – 1 bit	1 bit DPT 1.001	C, T
199	2. Fault actual temperature – 1 bit (master)	1 bit DPT 1.001	C, R, T
199	3. Fault actual temperature – 1 bit (slave)	1 bit DPT 1.001	C, W, T, U

Item 2: This object must be connected to the "Fault, actual temperature (slave)" object in order to indicate the error mode.
Item 3: This object must be connected to the "Fault, actual temperature (slave)" object in order to indicate the error mode.

If one of the parameterized input temperatures is unavailable to the controller for a period longer than the monitoring time, the controller enters the error mode. The error mode is sent to the bus as the value 1.

12.41.6 General – Additional functions/objects – Window contact - Object no

No	Object name	Data type	Flags
204	Window contact – 1 bit	1 bit DPT 1.001	C, W, T, U

Item 2: If the master/slave mode is active, the "Window contact (master/slave)" object of the master and the slave must be connected to the group address of the transmitter.

The object uses the value 1 to signal an open window to the controller. If no other object with a higher priority is present, then the "Window contact" message causes the controller to be set to the setpoint value for frost/heat protection. In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode", "Condensate water alarm", "Dew alarm", "Window contact", "Control On/Off", "Presence detector" and "Operating mode (listed in decreasing order of priority).

12.41.7 General – Additional functions/objects – Presence detector - Object no

No	Object name	Data type	Flags
205	Presence detector – 1 bit	1 bit DPT 1.001	C, W, T, U

Item 2: If the master/slave mode is active, the "Presence detector (master/slave)" object of the master and the slave must be connected to the group address of the transmitter.

This object transmits the value 1 to the controller to signal that there are people in the room. If not other object with a higher priority is present, then the "Presence detector" causes the controller to be set to the comfort setpoint value. In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode", "Condensate water alarm", "Dew alarm", "Window contact", "Control On/Off", "Presence detector" and "Operating mode (listed in decreasing order of priority).

12.41.8 General – Additional functions/objects – Basic setpoint - Object no

No	Object name	Data type	Flags
218	Basic setpoint – 2 byte	2 byte DPT 9.001	C, W, T, U

This 2-byte communication object can be used to change/adjust the parameterized basic setpoint value via the KNX bus. Parameters can be used to define whether the value received by this object is interpreted as "Setpoint heating comfort", "Setpoint cooling comfort" or an average between heating and cooling comfort.

12.41.9 General – Additional functions/objects – Units switchover - Object no

No	Object name	Data type	Flags
225	1. Units switchover – 1 bit	1 bit DPT 1.001	C, W, T, U
225	2. Units switchover – 1 bit (master)	1 bit DPT 1.001	C, W, T, U
225	3. Units switchover – 1 bit (slave)	1 bit DPT 1.001	C, W, T, U

Item 2: If the Fahrenheit object is active in the master/slave mode, the Fahrenheit (slave) object must be connected to this object.
Item 3: If the Fahrenheit object is active in the master/slave mode, the Fahrenheit (master) object must be connected to this object.

The temperature indication on the display can be changed from Celsius (°C) to Fahrenheit (°F). The conversion from Celsius to Fahrenheit always takes place in the display unit, since only Celsius values are sent over the KNX bus. The value (0) results in a temperature indication in Celsius, while the value (1) results in Fahrenheit.

12.41.10 General – Additional functions/objects – Controller status RHCC - Object no

No	Object name	Data type	Flags
235	Controller status RHCC – 2 byte	2 byte DPT 9.001	C, T

This communication object outputs the heating/cooling operation type, active/inactive operation, the frost and heat alarm, and the error (actual temperature reading failure) in accordance with the specification for the RHCC (Room Heating Cooling Controller) status.

12.41.11 General – Additional functions/objects – Controller status HVAC - Object no

No	Object name	Data type	Flags
236	1. Controller status HVAC – 1 byte	1 byte DPT 5.001	C, T
236	2. Controller status HVAC – 1 byte (master)	1 byte DPT 5.001	C, T
236	3. Controller status HVAC – 1 byte (slave)	1 byte DPT 5.001	C, R, T

Item 2: If the master/slave mode is active, the HVAC status (slave) object must be connected to this object.
Item 3: If the master/slave mode is active, the HVAC status (master) object must be connected to this object.

This communication object outputs the current operating mode, the heating/cooling state, active/inactive mode, the frost alarm and the dew point alarm in accordance with the specification for the HVAC (Heating Ventilation Air Conditioning) status.

12.41.12 Control heating - Object no

No	Object name	Data type	Flags
191	Heating control value – 1 bit	1 bit DPT 1.001	C, T
191	Heating control value - 1 byte 0..100%	1 byte DPT 5.001	C, T

- 1 bit: This object is use to operate a switching actuating drive, e.g. a thermoelectric positioner that is controlled by a switching/heating actuator.
- 1 byte This object is use to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.41.13 Control heating – Basic stage heating – Object no

No	Object name	Data type	Flags
206	Status heating – 1 bit	1 bit DPT 1.001	C, T

The room temperature controller sends an ON telegram via the "Heating status" object as soon as it is active in the heating mode. If the controller is in the inactive zone between heating and cooling or is in cooling mode, the room temperature controller transmits an OFF telegram on the "Heating status" object.

12.41.14 Control of heating additional stage - Object no

No	Object name	Data type	Flags
192	Additional heating stage – 1 bit	1 bit DPT 1.001	C, T
192	Additional hating stage - 1 byte 0..100%	1 byte DPT 5.001	C, T

- 1 bit: This object is use to operate a switching actuating drive, e.g. a thermoelectric positioner that is controlled by a switching/heating actuator.
- 1 byte This object is use to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.41.15 Control cooling - Object no

No	Object name	Data type	Flags
193	Cooling control value – 1 bit	1 bit DPT 1.001	C, T
193	Cooling control value - 1 byte 0..100%	1 byte DPT 5.001	C, T

- 1 bit: This object is use to operate a switching actuating drive, e.g. a thermoelectric positioner that is controlled by a switching/heating actuator.
- 1 byte This object is use to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.41.16 Control cooling – Basic stage cooling – Object no

No	Object name	Data type	Flags
207	Status cooling – 1 bit	1 bit DPT 1.001	C, T

The room temperature controller sends an ON telegram via the "Cooling status" object as soon as it is active in the cooling mode. If the controller is in the inactive zone between heating and cooling or is in heating mode, the room temperature controller transmits an OFF telegram on the "Cooling status" object.

12.41.17 Control of cooling additional stage - Object no

No	Object name	Data type	Flags
194	Additional cooling stage – 1 bit	1 bit DPT 1.001	C, T
194	Additional cooling stage - 1 byte 0..100%	1 byte DPT 5.001	C, T

- 1 bit: This object is use to operate a switching actuating drive, e.g. a thermoelectric positioner that is controlled by a switching/heating actuator.
- 1 byte This object is use to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

12.41.18 Setting of basic load – Object no

No	Object name	Data type	Flags
208	Basic load – 1 bit	1 bit DPT 1.001	C, W, T, U

This object uses the value 1 to activate a parameterized base load, i.e. a minimum control value greater than zero. The value 0 deactivates the base load. When the base load is deactivate, the control value can be lowered all the way to zero if necessary when the setpoint temperature is reach, despite the minimum value set in the parameter. Deactivating the basic load for a floor heating system is always useful in the summer, since it saves heating energy.

12.41.19 Setting of basic load – Combined heating and cooling mode - Object no

No	Object name	Data type	Flags
209	Switchover heating / cooling – 1 bit	1 bit DPT 1.001	C, T

1. Automatic: If the switchover between heating and cooling is performed automatically by the room temperature controller, then this object is used to provide information on the current heating (0) or cooling (1) status to the KNX bus. It is a transmitting object.
2. Only via object: The switchover between heating and cooling on the room temperature controller occurs solely via this 1-bit communication object. The value (0) activates the heating mode, and the value (1) activates the cooling mode. This is a receiving object.
3. Manual or via object: The switchover between heating and cooling on the room temperature controller occurs by user interaction or via the 1-bit communication object. The information on the respective heating (0) or cooling (1) status is available to the KNX bus. This is a receiving and sending object.

12.41.20 Setpoint Setting – Object no

No	Object name	Data type	Flags
201	Actual setpoint – 2 byte float value	2 byte DPT 9.001	C, T

The object outputs the current setpoint temperature resulting from the following: the parameterized setpoint temperature of the current operation type and operating mode, the manual setpoint temperature adjustment, a change in the base setpoint temperature via the base setpoint value object. This is purely a transmitting object.

12.41.21 Changing set values – Object no

No	Object name	Data type	Flags
209	Resetting manual setpoints – 1 bit	1 bit DPT 1.001	C, W, U

This 1-bit communication object is use to reset the manual setpoint adjustment that was set on the device.

12.41.22 Temperature reading – Actual temperature - Object no

No	Object name	Data type	Flags
196	1. Actual temperature – 2 byte float value	2 byte DPT 9.001	C, T
196	2. Actual temperature weighted – 2 byte float value	2 byte DPT 9.001	C, T

Item1: The object outputs the measured (room) temperature, adjusted by the calibration value.
Item 2: The object outputs the temperature value, which is calculate from the recording and weighting of internal and up to two external temperatures.

An external temperature measurement for room control may be practical for larger rooms and/or floor heating.

12.41.23 Temperature reading - External actual temperature – Object no

No	Object name	Data type	Flags
197	External actual temperature – 2 byte float value	2 byte DPT 9.001	C, W, T, U

2-byte communication object for reading an external temperature value provided via the KNX bus.

12.41.24 Temperature reading - External actual temperature 2 – Object no

No	Object name	Data type	Flags
198	External actual temperature 2 – 2 byte float value	2 byte DPT 9.001	C, W, T, U

2-byte communication object for reading an additional external temperature value provided via the KNX bus.

12.41.25 Alarm function – Dew point alarm - Object no

No	Object name	Data type	Flags
220	Dew point alarm – 1 bit	1 bit DPT 1.001	C, W, T, U

This protective mechanism is only active in the cooling mode. It remains in place until it is cancel by the value (0). When an alarm is active, manual operation of the controller is block. This information is indicate by a corresponding symbol on the control unit.

This 1-bit communication object is use to place the controller in the dew point alarm mode. This causes the current setpoint value to be set to the heat protection setpoint value in order to keep the structure from being damage by dew.

12.41.26 Alarm function – Condensate water alarm - Object no

No	Object name	Data type	Flags
221	1. Condensate water alarm – 1 bit	1 bit DPT 1.001	C, W, T, U
221	2. Condensate water alarm – 1 bit (master / slave)	1 bit DPT 1.001	C, W, T, U

Item 1: This protective mechanism is only active in the cooling mode. It remains in place until it is cancel by the value (0). When an alarm is active, manual operation of the controller is block. This information is indicate by a corresponding symbol on the device.
Item 2: This protective mechanism is only active in the cooling mode. It remains in place until it is cancel by the value (0). When an alarm is active, manual operation of the controller is block. This information is indicated by a corresponding symbol on the device. When the master/slave mode is active, the condensate water alarm (master/slave) objects must be connected to the alarm transmitter.

This 1-bit communication object is use to place the controller in the condensation alarm mode.
This causes the current setpoint value to be set to the heat protection setpoint value in order to keep the structure from being damage by an overflowing condensation container.

12.41.27 Fan coil setting - Object no

No	Object name	Data type	Flags
210	1. Fan coil manual – 1 bit	1 bit DPT 1.001	C, T
210	2. Fan coil manual – 1 bit (Master)	1 bit DPT 1.001	C, R, T
210	3. Fan coil manual – 1 bit (Slave)	1 bit DPT 1.001	C, W, T, U

Item 2: If fan coil manual is active in the master/slave mode, the fan coil manual (slave) object must be connected to this object.
Item 3: If fan coil manual is active in the master/slave mode, the fan coil manual (master) object must be connected to this object.

Using this 1-bit communication object, a fan coil actuator can be place 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 define in the fan coil actuator using the control value. In manual fan operation, the user of the room temperature controller can set the fan's rotational speed as needed. This setting will remain active until it is reset. The fan speed level 0 is an exception: to avoid damage to the building, automatic mode is activate again 18 hours after fan speed level 0 is select.

12.41.28 Fan coil setting – Fan speed level – Fan coil step - Object no

No	Object name	Data type	Flags
211	1. Fan coil step – 1 byte	1 byte DPT 5.001	C, T
211	2. Fan coil step – 1 byte (Master)	1 byte DPT 5.001	C, T

Item 2: If fan coil step is active in the master/slave mode, the fan coil step (slave) object must be connected to this object.

The fan speed level in the fan coil actuator is select via the 1-byte communication object. Whether the fan speed level information is transmit in manual or also in automatic fan speed level mode can be set. The formats that can be selected for the 1-byte communication object are the fan speed level (0..5) or a percentage value (0..100%) which is calculated back to a fan speed level in the fan coil actuator.

12.41.29 Fan coil setting – Fan speed level – Fan coil step status - Object no

No	Object name	Data type	Flags
212	Fan coil step status – 1 byte	1 byte DPT 5.001	C, W, T, U

Using the "Fan coil step status" object, the room temperature controller receives the current fan speed level of the fan coil actuator.

12.41.30 Summer compensation – Outside temperature for summer compensation - Object no

No	Object name	Data type	Flags
222	Outside temperature for summer compensation – 2 byte	2 byte DPT 9.001	C, W, T, U

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 of the outside temperature (summer compensation). This, for example, prevents the air-conditioning system from further reducing the room temperature to 24°C with an outside temperature of 35°C. This function can only be used with an outside temperature sensor. This 2-byte communication object must then be used to provide the controller with the current outside temperature.

12.41.31 Summer compensation –Summer compensation active - Object no

No	Object name	Data type	Flags
223	Summer compensation active – 1 bit	1 bit DPT 1.001	C, T

This 1-bit communication object is use to indicate via the bus whether the summer compensation is active (1) or inactive (0). If it is active, the setpoint value configured for the cooling mode is increase by the summer compensation function. A decrease of the cooling mode setpoint temperature below the value calculated by the parameterized summer compensation function is not possible. An increase of the setpoint temperature for the cooling mode is always possible.

12.41.32 Slave – General – on/off request - Object no

No	Object name	Data type	Flags
227	On/Off request – 1 bit (master)	1 bit DPT 1.001	C, W, U
227	On/Off request – 1 bit (slave)	1 bit DPT 1.001	C, T

This 1-bit communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.33 Slave – General – Setpoint display - Object no

No	Object name	Data type	Flags
228	Setpoint display – 2 byte (master)	2 byte DPT 9.001	C, R, T
228	Setpoint display – 2 byte (slave)	2 byte DPT 9.001	C, W, T, U

This 2-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.34 Slave – General – Request setpoint - Object no

No	Object name	Data type	Flags
229	Request setpoint – 1 byte (master)	1 byte DPT 5.001	C, W, U
229	Request setpoint – 1 byte (slave)	1 byte DPT 5.001	C, T

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.35 Slave – General – Confirm setpoint - Object no

No	Object name	Data type	Flags
230	Confirm setpoint – 1 byte (master)	1 byte DPT 5.001	C, R, T
230	Confirm setpoint – 1 byte (slave)	1 byte DPT 5.001	C, W, T, U

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.36 Slave – General – Heating / Cooling request - Object no

No	Object name	Data type	Flags
231	Heating / cooling request – 1 bit (master)	1 bit DPT 1.001	C, W, U
231	Heating / cooling request – 1 bit (slave)	1 bit DPT 1.001	C, T

This 1-bit communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.37 Slave – General – Request fan speed level manual - Object no

No	Object name	Data type	Flags
232	Request fan speed level manual – 1 bit (master)	1 bit DPT 1.001	C, W, U
232	Request fan speed level manual – 1 bit (slave)	1 bit DPT 1.001	C, T

This 1-bit communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.38 Slave – General – Request fan speed level - Object no

No	Object name	Data type	Flags
233	Request fan speed level - 1 byte (master)	1 byte DPT 5.001	C, W, U
233	Request fan speed level – 1 byte (slave)	1 byte DPT 5.001	C, T

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

12.41.39 Slave – General – Confirm fan speed level - Object no

No	Object name	Data type	Flags
234	Confirm fan speed level - 1 byte (master)	1 byte DPT 5.001	C, R, T
234	Confirm fan speed level – 1 byte (slave)	1 byte DPT 5.001	C, W, T, U

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

13 Information about planning and application

13.1 Auxiliary power supply capacity

Power consumption for PEONIA with RTC is below:

Supply	KNX bus voltage	21…31 V DC
Current consumption via bus		< 12 mA
Power consumption via bus		Maximum 300 mW
Supply	auxiliary bus voltage	21…31 V DC
Current consumption via auxiliary power supply		< 120 mA
Power consumption via auxiliary power supply		Maximum 1.5W

KNX power supply

Each individual PEONIA device requires standard KNX power supply. Recommend power supplies is as per list below.

Short description	Description	Order No.	bbn 40 16779 EAN	Price group	Weight 1 pcs [kg]	Pkg qty [pcs.]
SV/S 30.160.1.1	KNX Power Supply, 160 mA, MDRC	2CDG 110 044 R0011	86666 8	P2	0.25	1
SV/S 30.320.1.1	KNX Power Supply, 320 mA, MDRC	2CDG 110 066 R0011	90619 7	P2	0.25	1
SV/S 30.640.3.1	KNX Power Supply, 640 mA, MDRC	2CDG 110 067 R0011	90621 0	P2	0.25	1
SV/S 30.320.2.1	KNX Power Supply with diagnostics, 320 mA, MDRC	2CDG 110 145 R0011	83766 8	P2	0.26	1
SV/S 30.640.5.1	KNX Power Supply with diagnostics, 640 mA, MDRC	2CDG 110 146 R0011	86669 9	P2	0.26	1
SU/S 30.640.1	Uninterruptible KNX Power Supply, 640 mA, MDRC	GHQ 631 0049 R0111	51477 4	P2	0.55	1

CAUTION: A KNX certified power supply module shall be use for the KNX bus, otherwise it may cause KNX communication failure and damage to the connected devices.

Auxiliary power supply

Each individual PEONIA device with RTC requires an auxiliary, additional, external power supply. Recommend auxiliary power supply is as per list below.

Input voltage range	Rated output voltage / current	Type	Order code	Price 1 pc	Weight (1 pc) kg (lb)
90-264 V AC/ 120-375 V DC	24 V DC / 0.42 A	CP-D 24/0.42	1SVR427041R0000		0.06 (0.13)
90-264 V AC/ 120-375 V DC	24 V DC / 1.3 A	CP-D 24/1.3	1SVR427043R0100		0.19 (0.41)
90-264 V AC/ 120-375 V DC	24 V DC / 2.5 A	CP-D 24/2.5	1SVR427044R0200		0.25 (0.56)
90-264 V AC/ 120-375 V DC	24 V DC / 4.2 A	CP-D 24/4.2	1SVR427045R0400		0.32 (0.71)

13.2 KNX room climate control

If a room climate control system is in place, it is possible to record and control the factors affecting whether the room air is of good quality. In this case, the KNX bus is provide with data relating to air quality and room temperature control. If the CO2 concentration level in the room is too high, for example, it is possible to have ventilators switched on or windows opened automatically. The air quality in the room is constantly recorded and monitored. There is no need to intervene in the process – everything happens automatically.

A room climate control system is often used in rooms where the number of people varies within a small space, such as supermarkets, shopping centers, hotels, cinemas, hospitals and schools.

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