KNX Technical Reference Manual
Busch-*priOn*®

Busch-*priOn*®

innovative and intuitive

Improved control elements. For example, the new 8.9 cm (3.5") TFT display as informative component of a flush-type combination is both stylish and efficient. Its menu can be individually adapted to every building and at all times provides an overview of the electrical consumers. From here the heating can be controlled, the lights dimmed or comprehensive scenes called up that trigger numerous preprogrammed actions. Meaningful symbols lead even the untrained user to his objective in just a few steps. The division of functions into individual areas such as light, heating or blinds, assists everyone to find his way around intuitively. Yet, this is not the end of possibilities for the **Busch-*priOn*®** in classical building technology. The display can also be used for controlling music.

The combination of pushbutton/rotary control element and display has a universal operating concept. The definition of a primary function makes its use particularly easy. The primary function appears when one approaches the display (a special proximity sensor is available) or when pressing the rotary control element. In principle, any switching, dimming, blinds, scene or sequence function that has been stored in the unit can be defined as primary function. It is only when the menu button is pressed that the display changes to the circuit menu. Up to 8 entries can be displayed via one symbol. By turning the pushbutton/rotary control element the user can bring the desired function into the foreground. An associated text below the focused symbol is shown (e.g. system settings, room control office, room control, living room, etc.). By activating the pushbutton/rotary control element the display changes to the respective list menu, which can consist of up to 15 different functions. The user can scroll through these functions by turning the pushbutton/rotary control element. The function is selected by pressing the button.

Power and productivity
for a better world™

ABB

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Busch-*pri***On**®

Safety instructions

Work on the 230 V power supply system must only be performed by specialist staff. Disconnect the mains power supply prior to mounting and/or disassembly!
Failure to observe the installation and operating instructions may result in fire or other hazards.

Disclaimer
The content of this printed material has been checked for compliance with hardware and software. However, no liability can be assumed for any deviations that may still occur. Any necessary corrections will be implemented in future versions of this manual.
Please advise us of any suggestions concerning the manual's improvement you may have.

Dimensional drawings

Flush-type 8,9 cm (3,5") display with control element, Busch-*priOn*®

15
71
71
107
25
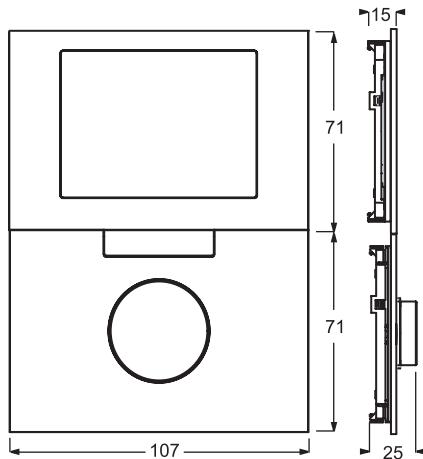
Support frame for Busch-*priOn*® 6346/12-101-500

56
213
84
100
11
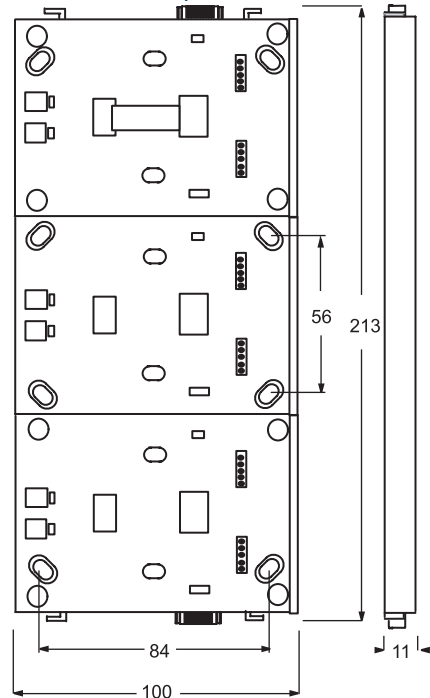
**Flush-type control element, Busch-*priOn*®
6340-xxx-101-500**

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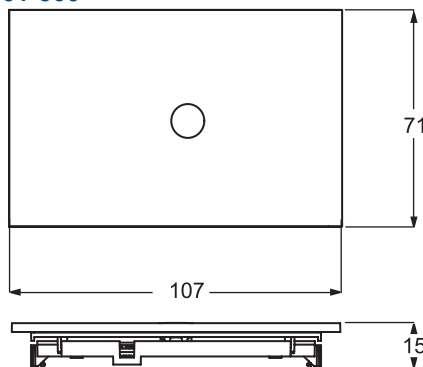
**Flush-type rotary control element,
6341-xxx-101-500**

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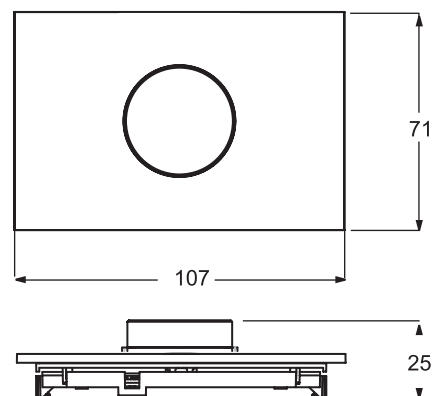
**Flush-type movement detector Busch-*priOn*®
6345-xxx-101-500**

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107
31
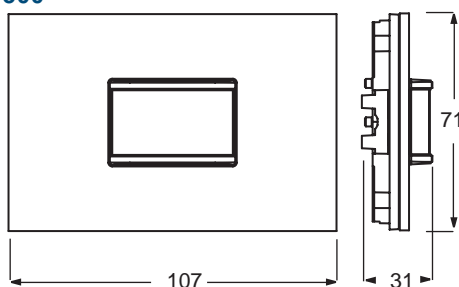
Frame-free variety

It is not merely individuality which characterises **Busch-***priOn*® during programming of the individual buttons:
Also the assembly arrangement of the **Busch-***priOn*® combinations are highly flexible. For Busch-priOn is not bound to frames -- instead, up to 3 individual elements are fixed to a support frame and, at the end, provided with end strips above and below. There are four choices of finish for the control elements: studio white, glass white, glass black and stainless steel. Most of the end strips are also available in these colour versions. For the display (style sheets), there are three choices: black, blue and silver.

Modular design
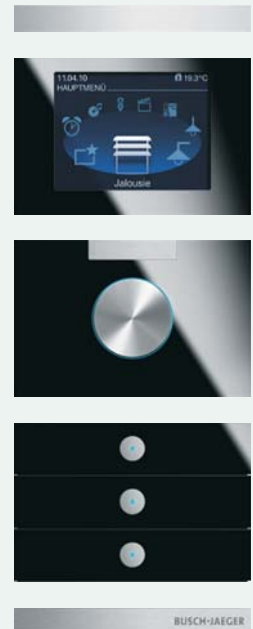
End strips

These not only have a beautiful shape -- they optionally contain a temperature sensor for room temperature control, an infrared interface for the remote control and a proximity sensor for activating the display or LED of the control elements when somebody approaches. This IR / proximity sensor version is only available in glass black and not in the other colours. Additional information about controlling the room temperature with Busch-priOn® is contained in the brochure on heating, ventilation and air conditioning.

Combinations as desired

The control elements and end strips can be freely combined for **Busch-*priOn*®** with regard to colour and function. Up to 3-gang combinations are possible, whereby a single bus coupler will suffice.

	Article number	Support frame		
		1-gang	**2-gang**	**3-gang**
Top end strip, IR / proximity sensor	6350-825-101-500	●	●	●
Top end strip with display, IR / proximity sensor RTC	6351-825-101-500	●	●	●
Top end strip, standard	6348-101-500	●	●	●
1-gang control element	6340-101-500	●	●	●
3-gang control element	6342-101-500	●	●	●
Rotary control element	6341-101-500	●	●	●
Movement detector	6345-101-500	●	●	●
8.9 cm display including control element	6344-101-500	-	●	●
Bottom end strip, temperature	6352-101-500	●	●	●
Bottom end strip, standard	6349-101-500	●	●	●
Bus coupler	6120/12-500	●	-	-
Power bus coupler and additional power supply, MDRC	6120/13-500 + CP-D 2472.5	●	●	●
Flush-type switch actuator	6354-500	-	●	●
Flush-type dimming actuator, 1-gang	6355-500	-	●	●
Flush-type blind / 2-gang actuator	6356-500	-	●	●

Not just any KNX control element

Each of the buttons of the Busch-*priOn*® can be programmed individually, as is usually the case with KNX. The applications range from switching, dimming and blinds on through to scenes. Logic functions are also possible. The use of the display makes additional functions available. Weekly timers, messages and multimedia applications can be integrated here, for example. Also additional applications can be implemented with the assigning of internal group addresses. The user menu can be configured in 19 languages.

Applications

Application	Control element	Rotary control element	8,9 cm (3,5") TFT display with control element	Movement detector	Page number
Switching, rocker total	●	-	-	-	Page 21
Switching, rocker left/right	●	-	●	-	Page 21
Dimming, rocker total	●	-	-	-	Page 21
Dimming, rocker left/right	●	●	●	-	Page 22
Blind, rocker total	●	-	-	-	Page 22
Blind, rocker left/right	●	●	●	-	Page 22
Value sender, rocker total	●	-	-	-	Page 23
Value sender, rocker left/right	●	●	●	-	Page 23
Value sender, 2 objects, rocker left/right	●	-	-	-	Page 24
Value dimming sensor, rocker total	●	-	●	-	Page 24
Light scene extension unit with memory function	●	-	●	-	Page 25
Level switch, rocker total	●	-	-	-	Page 25
Level switch, rocker left/right	●	-	-	-	Page 26
Multiple actuation, rocker left/right	●	-	-	-	Page 26
Short/long operation, rocker left/right	●	-	-	-	Page 28
Setting RTC operation mode	●	-	●	-	Page 28
Media control, CD player	-	-	●	-	Page 29
Media control, radio	-	-	●	-	Page 30
Media control, video player	-	-	●	-	Page 31
Short-time timer	-	-	●	-	Page 31
Weekly timer	-	-	●	-	Page 32
Alarm clock	-	-	●	-	Page 33
Messages	-	-	●	-	Page 34
Title text	-	-	●	-	Page 34
Unit blockage	-	-	●	-	Page 35
RTC settings	-	-	●[1]	-	Page 35
Sequence actuator settings	-	-	●	-	Page 35
Venetian blind application	●	●	●[2]	-	Page 36
Switch actuator application	●	●	●	-	Page 36
Movement detector	-	-	-	●	Page 37
LED functionality	●	●	●	-	Page 39
Alarm function	●	●	-	-	Page 39
Storage function Light scenes	●	●	●	-	Page 39

1   Only in connection with a bottom end strip "temperature sensor" or another external sensor. **Busch- *priOn*®** has 1 internal room thermostat.
2   Only in connection with flush-type blind / 2-gang actuator 6356.

General functions

Function	Large-area control element	Rotary control element	8,9 cm (3,5") TFT display with control element	Movement detector	Page number
Delay	•	•	•	•	Page 40
Staircase lighting	•	•	•	•	Page 41
Light scene actuator settings	•	•	•	•	Page 42
Sequence	•	•	•	•	Page 42
Preset	•	•	•	•	Page 43
Cyclic telegram	•	•	•	•	Page 43
Flahing	•	•	•	•	Page 44
Logic	•	•	•	•	Page 44
Gate	•	•	•	•	Page 45
Min/Max value transducer	•	•	•	•	Page 46
Threshold value / hysteresis	•	•	•	•	Page 47
PWM inverter	•	•	•	•	Page 47
Priority	•	•	•	•	Page 47

Busch-*priOn*®
2-gang combination
Glass black

Busch-*priOn*®
Rotary control element
Glass black

Busch-*priOn*®
3-gang control element
Glass black

Busch-*priOn*®
1-gang control element
Glass black

Busch-*priOn*® Watchdog 180 flush-mounted, glass black

Busch-*priOn*® is ideally combinable with the **carat**® switch series. These switches distinguish themselves through their uniformly designed surfaces.
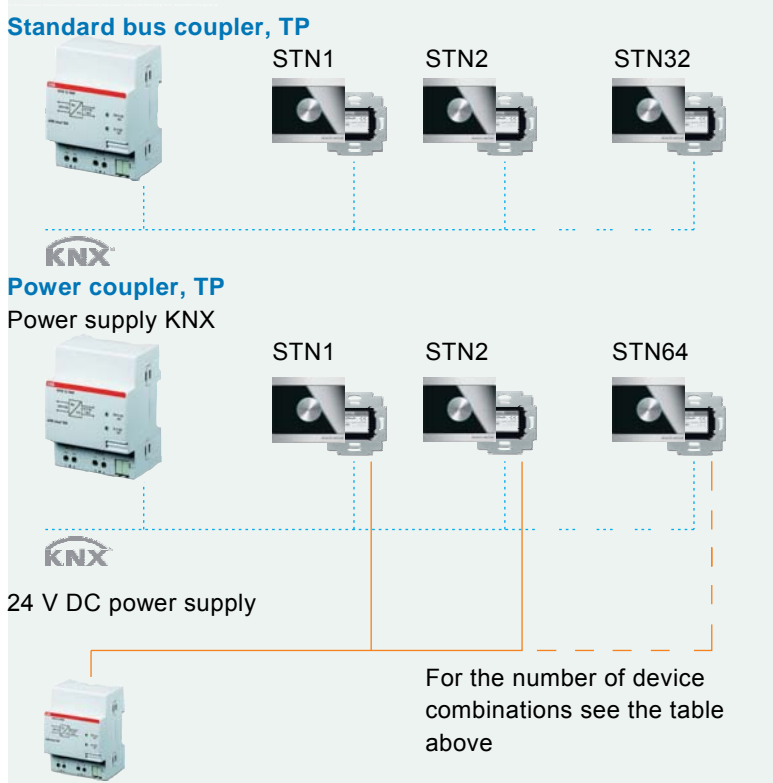
The right bus coupler

Maximum number of Busch-*priOn*® devices per TP line

Number of display combinations per line	Total number of combinations [1]	Total number of TP-Power bus couplers 6120/13 per line
0	0 + 60	60
1	1 + 59	60
2	2 + 58	60
3	3 + 57	60
4	4 + 56	60
5	5 + 55	60
6	6 + 54	60
7	7 + 53	60
8	8 + 52	60
9	9 + 51	60
10	10 + 45	55
11	11 + 37	48
12	12 + 30	42
13	13 + 22	35
14	14 + 15	29
15	15 + 7	22
16	16 + 0	16

1   Composed of display combinations plus 1- to 3-gang combinations without display with end strips

Only one bus coupler is mounted behind every Busch-*priOn*® combination. One standard bus coupler is adequate for one 1-gang support frame. With the use of the 2-gang carrier frame the more powerful power bus coupler must be used.

The twisted pair version requires an external power pack for this purpose. The table to the left describes the corresponding device combinations.

Standard bus coupler, TP

STN1   STN2   STN32

KNX

Power coupler, TP
Power supply KNX

STN1   STN2   STN64

KNX

24 V DC power supply

For the number of device combinations see the table above

Easy to mount

The carrier frame serves to hold and make contact with the individual control elements, the 8.9 cm (3,5") TFT display, the end strips and the flush-type bus coupler. The position of the control elements can be selected freely for multiple combinations. A special strip must be mounted on top as well as below. Its material can be different to that of the module. The support frame is mounted by screwing it to the flush-type bus coupler and, for multiple combinations, also to the wall.

Thanks to the anti-fingerprint surface, the stainless steel Busch-*priOn®* is easy to keep clean and maintains its sophisticated surface finish even when it is in use. Glass surfaces and end strips match the **carat**® series.

Busch-*priOn*®
Glass black

Busch-*priOn*®
Studio white

Busch-*priOn*®
Stainless steel

Busch-*priOn*®
Glass white
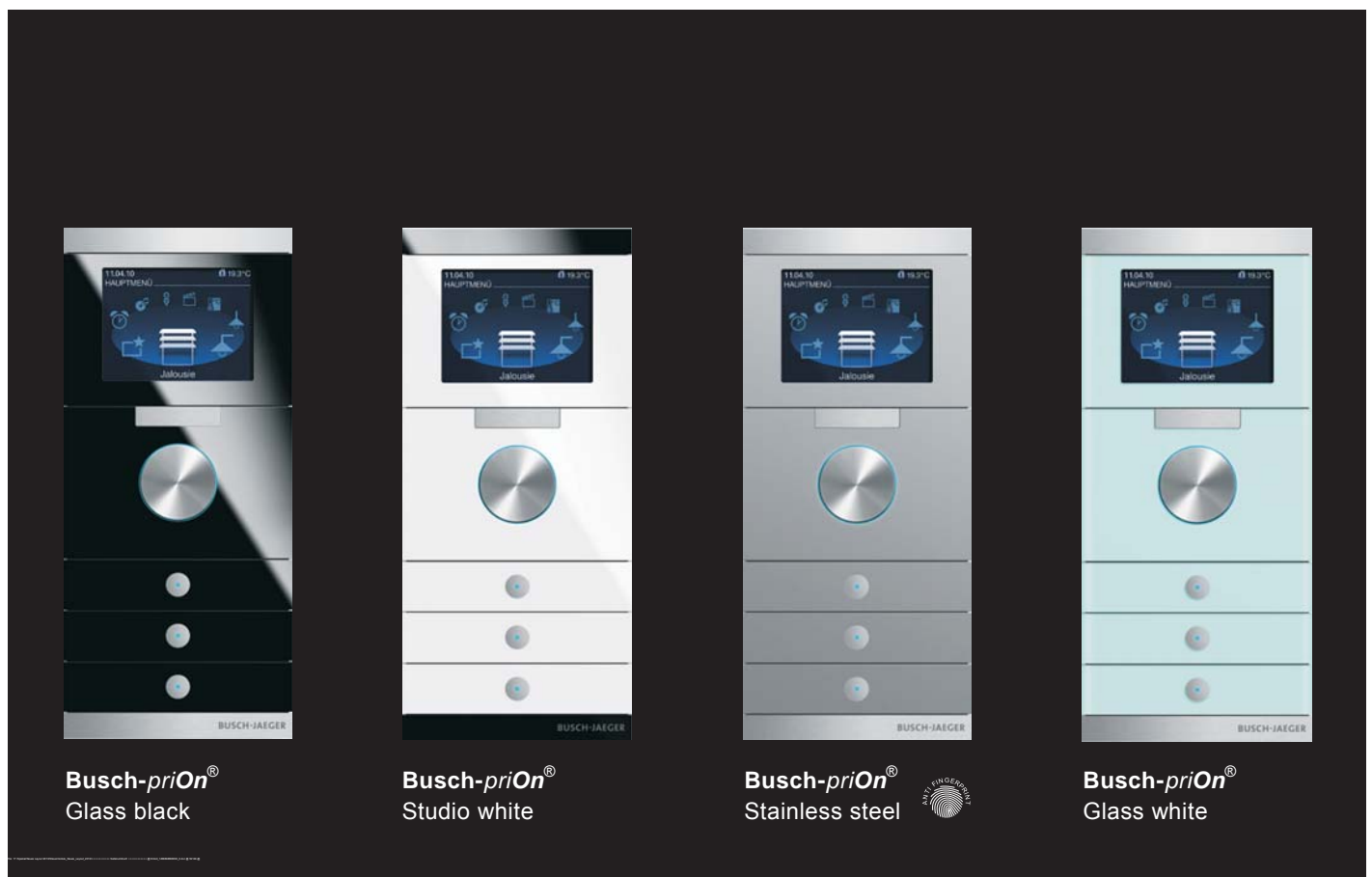
Room thermostat

Room thermostat with display
Standard view

Operating state   Operating mode

Actual or setpoint temperature

The display of the room thermostat shows either the current room temperature or the setpoint for the temperature, depending on the parameterization.
The current operating state is shown in the left area of the display and the current operating mode in the right area.

Set values

Heating setpoint   Cooling setpoint

○ **Temperature -**	○ **Temperature +**
● **Next setpoint**	● **Previous setpoint**

○ **Comfort/Standby**	○ **FanCoil-Steps**
● **On/Off**	

○ **Short press**   ● **Long press**

In the setting level, which is accessed by pressing the additional key once, the setpoints for heating and/or cooling can be adjusted.
The corresponding setpoints are located to the right of each respective symbol for heating or cooling.
The value brightly highlighted can be changed.
The adjustment is made with the upper rocker of the control element. A short press of the left side lowers the setpoint, a short press of the right side raises the setpoint. With a long press of the button the selection jumps to the next setpoint. This one can now also be adjusted with a short press of the button.
After an adjustable time, the display returns to the standard view.

Operating modes

Standby: Standby mode lowers the temperature below the value of comfort mode. This saves energy and does not cool down the room even during an extended absence.

Comfort: Comfort mode regulates the temperature to suit the occupants while present. It can be called up time-controlled or via a telegram.

Dew point: If an appropriate telegram is received from a dew point sensor, the room thermostat will display the corresponding symbol and cease cooling and merely protect against the heat.

Alarm: The alarm can be freely parameterized. For example, it can occur when an external temperature sensor no longer sends values.

Night setback: The temperature can be reduced during the night. This saves energy and makes the night's rest comfortable. The heating starts again automatically the next morning to reach a comfortable temperature for rising.

Frost protection: If parameterized, frost protection will ensure that the temperature does not drop below the desired value. It is the lowest setpoint.

Heat protection: If parameterized, heat protection will ensure that the temperature does not exceed the desired value. It is the highest setpoint.

Condensate: The operation of a fan coil may cause condensate water, which is collected in a container. If the fan coil sends out a telegram when the container is full, the symbol for condensate mode is displayed. The room thermostat immediately switches into heat protection mode.

Planner support for RTC

Operating modes

The room thermostat has four operating modes:

• Frost protection mode (for heating): The room temperature control is inactive; heating is only carried out when the temperature in the room drops to the point where the heating system could sustain damage through freezing.
  Heat protection mode (for cooling): The room temperature control is inactive; cooling is only carried out when the temperature has risen to the point where the heat in the room becomes unbearable.
• Comfort mode (for heating and cooling): The setpoint for the room temperature is set to a value that makes the temperature of the room comfortable during "normal use".
• Standby mode (for heating): The room temperature is reduced to the point where heating costs are saved (e.g. during temporary absence), but can be quickly raised to comfort temperature again.
  Standby mode (for cooling): The room temperature is only raised to the point where energy costs are saved (e.g. during temporary absence), but can be quickly increased to comfort temperature again.
• Night mode (for heating and cooling): Rooms are not used for longer periods during the night hours; the room temperature is set a comfortable night-time value and can be quickly raised again to the comfort setpoint in the morning.

A switchover between these operating modes can take place either by means of a switching telegram (parameter "Operating mode switchover": "1 bit (3x)") or with 1-byte value telegrams (parameter "Operating mode switchover": "1 byte (2x)").

Operating mode switchover, 1 bit

Frost/heat protection has the highest priority; i.e., switchover to a different mode cannot take place in this case. The frost/heat protection must first be deactivated; by closing an open window, for example. Night mode has the next highest priority, followed by comfort mode. If none of these three operating modes are active, the room thermostat is in standby mode.

Operating mode switchover, 1 byte

Two 1-byte communication objects are made available with operation mode switchover via 1 byte.

The two 1-byte communication objects have different behaviours for receipt of telegram. One object evaluates received telegrams as "normal". This means, for example, if a comfort telegram is received, the room thermostat switches to comfort mode. If a night telegram is received, the room thermostat switches to night mode. This object is controlled, for example, by time switches.

The second object ("Operating mode switchover OMO") can "overwrite" the first. This means, for example, if a frost/heat protection telegram is received, the room thermostat switches to frost or heat protection mode. If frost or heat protection is reset after receipt of a new telegram, the room thermostat activates the mode that is pending on the "normal" object. As a result, it is capable of memorising operating modes. This object is controlled, for example, by binary inputs that record information from window contacts.

The following conditions apply for both 1-byte communication objects:

0 = Auto (only for "Operating mode switchover OMO")
1 = Comfort
2 = Standby
3 = Night
4 = Frost/Heat protection
5 – 255 = not allowed

Temperature measurement

The room thermostat with display can record the temperature via an internal sensor. Additionally, values can be received from an external sensor or an external temperature sensor via communication objects. The incoming values can be monitored and, if necessary, adjusted. The functions are explained in greater detail in the following.

Internal temperature sensor

The device has an integrated temperature sensor. The measured value enters the control as actual value. The value can also be shown on the display.

In addition, the measured temperature can be transferred to the bus via the 2-byte communication object "Send actual value - temperature sensor", to be shown on the display, for example. Sending takes place in dependence of parameters "Send actual value for change greater than" and "Send actual value cyclically". By default, both parameters are deactivated. This means that at least one setting must be activated if the actual temperature is to be sent.

The setting "Send actual value for change greater than" has the advantage of being able to transmit the smallest change in the measured temperature, adjustable from 0.1 k to 1.0 K, to the bus. The disadvantage is, for example, that at a setting of 0.1 K and a lot of room thermostats within an installation, the load on the bus increases.

The parameter "Send actual value cyclically" has the advantage that the current actual value is sent out continuously, even when the measured value does not change. The disadvantage is that rapid changes may not be registered because the cycle time selected is too large. It should also not be small because of the extreme load the bus is subjected to.

External temperature sensor

In open-plan offices it can be difficult to control the temperature with only a single thermostat. That is why it would be advantageous to divide the room into zones with an additional room thermostat.

To integrate the temperature value of the additional temperature sensor into the temperature control, the parameter "Room temperature measurement" must be set on "Internal and external". The the temperature measured inside and outside can then be additionally weighted. The setting for weighting depend on the local circumstances. If the room thermostat and the additional measuring sensor are positioned equal distances from the heater, in the case of panel heaters, a 50% / 50% setting should provide good control results.

Monitoring

The "Temperature measurement monitoring" parameter specifies whether the external temperature sensor and the outside temperature are to be monitored. This means that the room thermostat has to receive at least one telegram with the current temperature on the associated communication object within an adjustable time ("Monitoring time of external temperature" and "Monitoring time of outside temperature").

If no telegram is received during monitoring time, the room thermostat assumes that the measuring sensor for the outside temperature or external temperature is defective or no longer connected to the bus.

The room thermostat will then terminate its control and send a predefined control value ("Control value during temperature measurement error") so that the room to be controlled does not overheat or cool down. This control value is sent out until the room thermostat again receives a temperature telegram via the bus and reactivates the control.

Adjustment

If the measured temperature is distorted, such as by the inherent heat of the bus coupler, an "Offset room temperature measurement" can be set.

If additional external temperature recording has been activated and the measured value becomes distorted through the influence of cold or heat, here, too, an offset can be entered.

Controller

The room thermostat can be used exclusively for heating, exclusively for cooling or for heating and cooling.

If the room thermostat is to heat or cool, the switchover from heating to cooling or cooling to heating can occur automatically by means of the room thermostat. The controller detects automatically whether a control value for heating or cooling is to be sent out. If the automatic switchover is not required, the switchover between heating and cooling can take place by means of an external, central control via the 1-bit object "Switchover heating/cooling". In this setup, the heat and cooling icons are continuously displayed in the respective mode. The object is enabled via parameter "Switchover between heating/cooling".

The control value for heating and/or cooling can be sent out on a common communication object "Heating/cooling control value" or on two individual communication objects "Heating control value" and "Cooling control value". If a common object is used, it may be necessary to inform the actuator whether the control value is for heating or cooling. For this, a 1-bit communication object "Switchover heating/cooling" can be enabled via parameter "Switchover between heating and cooling" with setting "Automatic and sending". For activation of heating operating mode a "1" is sent to the bus, for activation of cooling mode a "0".

A common communication object for heating and cooling is required to activate two two-pipe systems, i.e., the same pipeline is used for heating and cooling. Two single communication objects are used for four-pipe systems. Heating and cooling each have their own pipeline system.

Parameter "Number of output channels" specifies whether an object ("1 channel (two-pipe system) for heating and cooling") or two objects ("2 channels (four-pipe system) for heating and cooling") are to be displayed.

Separate control types can be configured each for heating and cooling. One of the following control types can be selected:
• 2-point
• PWM
• Continuous
• Fan coil

The individual control types are described in greater detail in the following.

2-point controller

A 2-point controller has two output states that alternate in dependence of the actual value. If the actual value is above the parameterised setpoint, control value "0" is sent on the bus. If the actual value is below the parameterised setpoint, control value "1" is sent.

A 2-point controller should be used when the control value is to alternate only between the two states ON and OFF, such as an electrothermal valve that is connected to a switch actuator, for example. A 2-point controller can quickly correct control variations in case of large changes in the control variable, but never comes to rest.

To avoid rapid oscillations of the output states, the 2-point controllers always have a built-in hysteresis that varies around the setpoint. The hysteresis can have different size parameters. For example, if the setpoint during heating mode is 21 °C and the hysteresis is 1.0 K, the controller switches on when the value falls below 20.5 °C and switches off again when exceeding 21.5 °C. The "Hyteresis" parameter to be set, on the one hand responds to how quickly the heating can heat the room or how quickly the air-conditioning cools the room, and on the other hand to the desired temperature of the people in the room. The hysteresis should not be set too small, otherwise the switching actuator will constantly open and close. The hysteresis should also not be set too large, otherwise the temperature fluctuations in the room will be too large.

Continuous controller

A continuous controller has a continuously changing control value which can accept values between 0 and 100%. For the KNX this control value signal is converted to a 1-byte value, which means that control value 0% corresponds to value "0" and control value 100% to value "255".

Continuous controllers with a 1-byte control value, for example, can be used to activate electromotive actuating drives. They translate the value received directly into the valve position via an installed motor. This results in optimum control.

The 1-byte control value of a continuous controller can also be sent to KNX heating actuators which convert the 1-byte signal into a PWM size. This allows electrothermal valves to be activated. Here it is practical to limit the dynamic range since electrothermal valves require time to open and close. This takes place via parameters "Minimum control value" or "Maximum control value". If, for example, a maximum control value of 80% is specified, the control will always automatically send the value 255 when the control value of 204 has been exceeded.

To protect the bus from unnecessary loads the change of the control value that is permitted to be sent to the bus can be set. The setting is in percent. The control value sent, unless it has changed, is specified by means of a cycle time. The cycle time selected should not be too small (e.g. every 10 min.).

PWM controller

The PWM controller has the same continuous control as the continuous controller. The difference is that with a PWM controller the 1-byte control value (0...255) is converted into an On/OFF switching relationship (0 and 1). If, for example, a control value of 70% is to be issued, at a pre-set cycle time of 10 minutes the switch-on time will be 7 minutes and the switch-off time 3 minutes.

This transfers the advantages of the continuous control (control at the desired setpoint, no overshooting) to drives which are designed only for On/Off switching signals, such as electrothermal drives.

To optimise the controlling characteristics of the heating/cooling system, the "PWM control value cycle time" can be set. To set a practical cycle time, the type of heating or cooling as well as the actuating drive used should be taken into consideration. The following recommendations can be used:

- Electrothermal actuating drive
  To fully open an electrothermal control valve takes approximately 2-3 minutes. That is why a cycle time of less than 15 minutes is not practical.
- Floor heating
  The time constant of floor heating is rather large. That is why a cycle time of 20 minutes is sufficient.
- Hot water heating
  Her electrothermal drives are generally used. A cycle time of 15 minutes will produce excellent control results.
- Electro-convector heating
  Cycle times of between 10 and 15 minutes are recommended, depending on the electric heating system and the spatial circumstances.

Fan coil

With the selection of fan coil for "Control types" the control value output takes place in the same way as described under Continuous control.

With 'fan coil' there is the additional option of activating fan stages via a 1-byte or three 1-bit communication objects.

The added connection of the fan stages heats or cools the room correspondingly faster.

Which fan stage is to be active at which control value is specified on a separate tab "Fan coil heating" or "Fan coil cooling". Here it should be ensured that threshold value stage 1 must always be smaller than threshold value stage 2, which in turn must be smaller than threshold value stage 3.

Control parameter for PWM controller and continuous controller (Fan coil)

For continuous control behaviour and for a switching PWM controller, the preset control parameters can be used via the installation type of the heating or cooling system. If different control parameters are required, they should be set individually via user parameterization. User parameterization should only be used by persons with adequate experience in control technology.

The setting "User parameterization" can be used to set the "Proportional range (Xp)" and the "Readjust time (Tn". The proportional range lies below and above the preset setpoint and determines the regulating speed. The readjust time amounts to three times the delay time. The delay time is determined by the reversing tangent of the heating curve of the room. In general, the more inactive the overall system, the larger the parameterization values should be.

Two-stage heating / cooling

In specific instances such as when using underfloor heating, it may be necessary to install a quick additional stage for the heat control in order to warm up the room rapidly. When the room thermostat is preset to "Additional heating stage active", it has a second heating system with switching control that regulates with the 1-byte values 0% and 100%.

The parameters "Distance of the additional stage" and "Hysteresis (one-sided)" enable you to specify when the additional stage switches on and off. For instance, if the setpoint for the additional stage is 18 °C and the hysteresis is 0.5 K (one-sided), the controller switches on at 18 °C and off again at 18.5 °C.

The settings for the additional heating stage apply equally to the additional cooling stage, the only difference being that in the case of cooling, when a set temperature has been exceeded, an additional cooling stage is switched on to cool the room faster.

Since several actuating drives close (opened de-energised) at a 1-bit value of "1" or a 1-byte value of "255" and open at "0", the mode of the control value can be changed via "Invert control value".

Set values

The room thermostat can operate with dependent or individual set values. Both versions are explained in greater detail in the following.

Dependent setpoints

In case of dependent setpoints there are two basic setpoints, one for heating ("Heating setpoint comfort operation" and one for cooling ("Cooling setpoint comfort operation").

The settings "...lowering standby/night mode" or "...raising standby/night mode". This means, for example, when 21 °C has been set for "Heating setpoint comfort mode" and 2 K was specified for "Lower heating setpoint standby", the heating setpoint in standby mode is lowered by 2 K to 19 °C. If 4 K has been specified for "Lower heating setpoint standby", the setpoint for "Heating setpoint for night mode" is 17 °C.

The dependence of the setpoints are also maintained after a manual setpoint shift. For example, when the user has effected a setpoint shift of 1 K upward to 22 °C for the parameterized temperature "Heating setpoint comfort mode", this value will be lowered by 2 K to 20 °C when comfort mode is activated. When night mode is called up, the value will be lowered by 4 K, resulting in a setpoint of 18 °C.

The user can manually change the parameterized setpoints via the two buttons "Raise temperature" or "Lower temperature". The change between "Heating setpoint comfort mode" and Cooling setpoint comfort mode" is made via a long press (approx. 1 sec.) of button "Raise temperature" to heating setpoint and on button "Lower temperature" to cooling setpoint.

The two specified setpoints for heating and cooling can also be changed as often as desired via the bus without the ETS. Here a 2-byte temperature value must be sent to the communication object "Base setpoint - control". Depending on whether heating or cooling is currently active, the value is stored as "Heating setpoint comfort mode" or "Cooling setpoint comfort mode". The values received are stored in the memory of the device and are retained in case of bus power failure and subsequent return of bus voltage. This makes it possible to send new base setpoints to the device via a visualization when the use of a room changes, for example.

New parameterization is not required. In case of a manual adjustment and dependent setpoints the reference base setpoint is taken into consideration. This is used to specify whether the base setpoint refers to the comfort temperature for heating, cooling or the mid-range temperature between heating and cooling.

"Setpoint heating" is the default setting. In regions where the cooling function is more important, it is recommended that you change this parameter to "Setpoint cooling". This makes it easier to set the room thermostat and raise the cooling setpoint (standby temperature cooling and night setback cooling).

Individual setpoints

When individual setpoints are used, individual setpoints are defined for each operating mode ("Heating setpoint comfort mode", Heating setpoint standby", "Heating setpoint night mode", "Cooling setpoint standby" and "Cooling setpoint night mode".

Different to the dependent setpoints, the individual setpoints are also maintained after a manual setpoint shift. For example, when the user has effected a setpoint shift of the parameterized temperature "Heating setpoint comfort mode" upward or downward, the parameterized value "Heating setpoint standby" will always be called up when standby mode is activated. This means that only the fixed setpoints that are stored will be called up for the individual operating modes.

The user can manually change the parameterized setpoints via the two buttons "Raise temperature" or "Lower temperature". The change between "Heating setpoint comfort mode" and "Cooling setpoint comfort mode" is made via a long press (approx. 1 sec.) of button "Raise temperature" to heating setpoint and on button "Lower temperature" to cooling setpoint.

The specified setpoints can be changed as often as desired via the bus also without the ETS. For this, a 2-byte temperature value must be sent to the corresponding communication object "Setpoint heating comfort", "Setpoint heating standby", Setpoint heating night mode", "Setpoint frost protection", "Setpoint cooling comfort", "Setpoint cooling standby", "Setpoint cooling night mode" or "Setpoint heat protection". The values received are stored in the memory of the device and are retained in case of bus power failure and subsequent return of bus voltage. This makes it possible to send new setpoints to the device via a visualization when the use of a room changes, for example. New parameterization is not required.

Minimum distance

The adjustable parameter "Minimum distance between heating and cooling" is active both for the dependent and the individual setpoints.

The minimum distance is always between "Heating setpoint comfort mode" and "Cooling setpoint comfort mode". It serves as a buffer zone to prevent the the two setpoints from interfering with each other.

Example:

Individual setpoints has been selected. The "Heating setpoint comfort mode" is 21 °C and the "Cooling setpoint comfort mode" is set on 26 °C. The dead zone between heating and cooling is 3 K. If a heating setpoint is now shifted upwards, the dead zone also shifts upwards. If the shift exceeds a temperature of 23 °C, the "Cooling setpoint comfort mode" will also shift upwards so that a minimum distance of 3 K is always guaranteed between heating and cooling.

If a cooling setpoint is shifted downwards, the dead zone also shifts downwards. If the shift exceeds a temperature of 24 °C, the "Heating setpoint comfort mode" will also shift downwards so that a minimum distance is also guaranteed in this case.

Fan coil, general

The ventilation convectors, also called fan convectors or fan coil units, are used for decentralized heating and cooling. They are installed in the room and supplied via a central heating and cooling system. There are two-pipe and four-pipe systems. There are multi-stage ventilators within a fan coil unit that enable fast adjustment to the room temperature to be made according to individual requirements. The fan coil room thermostat with display can activate up to three fan stages either manually or automatically.

The fan stages can be activated in three ways:

• via 1-bit values,

  i.e., a 1-bit communication object "Fan coil stage ... switching" is made available for each fan stage. This required for "normal switch actuators. ((When using KNX switch actuators and fan coil units, the connecting instructions for the fan coil unit are to be observed).

• via 1-byte object as numerical value 0-3,

  i.e. there is a 1-byte communication object "Fan stage manual 1 byte" which is connected with a corresponding communication object of a fan coil actuator. Here the value   0 = OFF   1 = stage 1   2 = stage 2   3 = stage 3

• via 1-byte object as constant value 0-100%,

  i.e. there is a 1-byte communication object "Fan stage manual 1 byte" which is connected with a corresponding communication object of a fan coil actuator. During manual stage switchover the stage threshold values that are set on tab heating or cooling are sent out. In heating mode the threshold values for heating, in cooling mode the threshold values for cooling. To ensure that the fan coil unit switches the fan stages, the parameters of the associated fan coil actuator must be set accordingly.

Via parameter "Evaluate fan stage status byte" a 1-byte communication object "Fan coil operating state", which is connected with a corresponding object of a fan coil actuator, can be enabled. This allows the fan coil room thermostat evaluate which fan stage is actually active on the fan coil actuator. The display corresponds to the value of the communication object (0 = OFF, 1 = stage 1, 2 = stage 2, 3 = stage 3).

The parameter "Evaluate operation status byte" activates a 1-bit communication object "Receive during operation - actuator monitoring". Cyclical telegrams from the fan coil actuator can be received and evaluated on this object. This allows the room thermostat to check whether the fan coil actuator is still operating and can be activated. If the fan coil actuator has a problem and can no longer send cyclical telegrams, the room thermostat will indicate this on the display with the "Error" symbol. If the error on the fan coil actuator has been rectified and cyclical telegrams can be received, the "Error" on the display is removed and the room thermostat will again function as "Normal".

The cycle time setting "In operation" in the fan coil actuator should be selected at least twice as large as the monitoring time in the room thermostat ("Sending cycle time of actuator in sec."). A practical cycle time for the actuator is approximately 60 seconds with a monitoring time of 120 seconds for the room thermostat.

To prevent an excessive noise level in hotel rooms during the silent period in the night, a "Stage limitation for night mode" can be set. This means that during night mode only the fan stage that has been set is automatically switched to. All fan stages can be activated again when changing to a different operating mode.

Parameter "Stage limitation for night mode" can be used to set a limit to "Stage 2" or "Stage 1" or the ventilation can be completely deactivated.

Compensation

The fan coil room thermostat with display has the two compensation types, summer and winter compensation. Each is explained in greater detail in the following.

Summer compensation

To save energy and to maintain a reasonable temperature difference when entering an air-conditioned building, the room temperature should be adjusted in relation to the external temperature (summer compensation according to DIN 1946). The room temperature is raised by adjusting the "Cooling setpoint comfort mode".

Raising the room temperature does not, however, mean that you heat up the room. Rather the adjustment is intended to allow the room temperature without cooling to increase to a specified value. This prevents the cooling system from further reducing the room temperature to 24 °C with an external temperature of 35 °C.

However, the activation of summer compensation makes an external temperature sensor necessary that sends its measured value to the KNX for evaluation by the room thermostat with display.

The following parameters are available for summer compensation:

• "Summer compensation lower outside temperature value"
• "Summer compensation upper outside temperature value"
• "Summer compensation lower setpoint offset"
• "Summer compensation upper setpoint offset"

The value of the lower and upper temperature is used to specify from and to which temperature value a setpoint correction is to be made.

The lower and upper setpoint offset is used to specify by how many Kelvin the setpoint specified in the parameters or by the user via a manual shift is to be adjusted during summer compensation.

Typical values for the 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.

Example:

In the lower diagram 25 °C has been parameterized for "Cooling setpoint comfort". When the outside temperature rises, the parameterized setpoint is raised starting from an outside temperature of 20 °C flowing from 25 °C to 29 °C. The 29 °C are reached at an outside temperature of 32 °C. After this the setpoint is no longer raised even though the outside temperature rises.

Note:

When compensation is active, CO is shown on the display of the room thermostat.

Winter compensation

To improve comfort and to keep the temperature difference when entering a room with large window areas in comfortable limits, an increase of the room temperature, as a function of the outside temperature, should be performed during the winter (winter compensation). The room temperature is raised by adjusting the "Heating setpoint comfort mode".

However, similar to summer compensation, winter compensation makes an external temperature sensor necessary that sends its measured value to the KNX for evaluation by the room thermostat with display.

The following parameters are available for winter compensation:
• "Winter compensation lower outside temperature value"
• "Winter compensation upper outside temperature value"
• "Winter compensation lower setpoint offset"
• "Winter compensation upper setpoint offset"

The value of the lower and upper temperature is used to specify from and to which temperature value a setpoint correction is to be made.

The lower and upper setpoint offset is used to specify by how many Kelvin the setpoint specified in the parameters or by the user via a manual shift is to be adjusted during winter compensation.

Typical values for the winter compensation are:
• 0 °C: lower outside temperature value
• 10 °C: upper outside temperature value
• 4 K: lower setpoint offset
• 0 K: upper setpoint offset

That means that a flowing setpoint increase from 0 to 4 K occurs if the outside temperature falls from 10 °C to 0 °C.

Example:

In the lower diagram 21 °C has been parameterized for "Heating setpoint comfort". When the outside temperature falls, the parameterized setpoint is raised starting from an outside temperature of 10 °C flowing from 21 °C to 25 °C. The 25 °C are reached at an outside temperature of 0 °C. After this the setpoint is no longer raised even though the outside temperature continuous to fall.

Note:

When compensation is active, CO is shown on the display.

Description of application

Switching, rocker total

With the "Switch, rocker total" application, an operation of the right or left side of the rocker sends out a switch telegram. The "Switch, rocker total" application differentiates here between whether the rocker is operated on the left or right side.

Switching objects, rocker total

No.	Object name	Data type	Flags
0	Switching	1 Bit EIS1 / DPT 1.001	C, W, T, U

Switching, rocker left/right

With the application "Switching, rocker left/right" a switch telegram is sent when the rocker is actuated and/or released. "Rocker left/right" does not differentiate whether the rocker is actuated on the right or the left side. In each case, the application makes a separate set of parameters and communication objects available for the right and left side of the rocker. The application enables a switching function to be implemented with one side of the rocker and to assign an additional "button-oriented" function to the other side of the rocker.

Switching objects, rocker left/right

No.	Object name	Data type	Flags
0	Switching	1 Bit EIS1 / DPT 1.001	C, W, T, U

Dimming, rocker total

With the "Dimming, rocker total" application, a rocker has communication objects for switching and for dimming. A distinction is made between short and long button contact.
The "Dimming, rocker total" application differentiates between whether the rocker is operated on the left or right side. The "Principle of operation of the rocker for …" parameter allows adjustment of whether the left or right side switches on or off or whether it is dimmed brighter or darker.

Dimming objects, rocker total

No.	Object name	Data type	Flags
0	Switching	1 Bit EIS2 / DPT 1.001	C, W, T, U
1	Relative dimming	4 Bit EIS2 / DPT 3.007	C, T

Dimming, rocker left/right

With the "Dimming, rocker left/right" application, a rocker switch has communication objects for switching and for dimming. A distinction is made between short (switching) and long (dimming) button contact.

The "Dimming, rocker left/right" application does not differentiate between whether the rocker is operated 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 rocker.

The application makes it possible to dim a light via one side of the rocker and to assign an additional "button-orientated" function to the other side.

Dimming objects, rocker left/right

No.	Object name	Data type	Flags
0	Switching	1 Bit EIS2 / DPT 1.001	C, W, T, U
1	Relative dimming	4 Bit EIS2 / DPT 3.007	C, T

Blind, rocker total

Via the application "Blind, rocker total", blind movement and/or slat adjustment commands can be sent to connected shutting actuators with a short or long contact of the rocker. A short button contact always triggers a slat adjustment or stop command and a long button contact always triggers a move command.

The control always remembers the last action performed on the side of the rocker switch that is assigned with the "Blind, rocker total" application. If a blind was lowered and halted at half height via a short button contact, then a renewed long button contact will raise the blind.

Blind objects, rocker total

No.	Object name	Data type	Flags
0	Adjusting(1 Bit)	1 Bit EIS7 / DPT 1.008	C, T
0	Adjusting (1 Byte)	1 Byte EIS6 / DPT 5.001	C, T
1	Move (1 Bit)	1 Bit EIS7 / DPT 1.007	C, T
1	Move(1 Byte)	1 Byte EIS6 / DPT 5.001	C, T

Blind, rocker left/right

Via the application "Blind, rocker left/right", blind movement and/or slat adjustment commands can be sent to connected shutting actuators with short or long actuation of the rocker. A short button contact always triggers a move command and a long button contact always triggers a slat adjustment or stop command.

The application "Blind, rocker left/right" makes a separate set of parameters and communication objects available in each case for the right or left side of the rocker. This facilitates control of a Venetian blind with one side of the rocker and assigning an additional "Rocker, left/right" function to the other side of the rocker.

The control always remembers the last action performed on the side of the rocker that is assigned with the "Blind, rocker left/right" application. If a blind was lowered and halted at half height via a long button contact, then a renewed short button contact will raise the blind.

Blind objects, rocker left/right

No.	Object name	Data type	Flags
0	Adjusting (1 Bit)	1 Bit EIS7 / DPT 1.007	C, W, T, U
0	Adjusting(1 Byte)	1 Byte EIS6 / DPT 5.001	C, W, T, U
1	Moving(1 Bit)	1 Bit EIS7 / DPT 1.008	C, W, T, U
1	Moving(1 Byte)	1 Byte EIS6 / DPT 5.001	C, W, T, U

Value sender, rocker total

With the "Value sender, rocker total" application, a telegram with the predefined value is sent out at an actuation of the right or left side of the rocker.

The "Value sender, rocker total" application differentiates here between whether the rocker is actuated on the left or right side.

Value sender objects, rocker total

No.	Object name	Data type	Flags
0	Switching value(1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T, U
0	Switching value(1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T, U
0	Switching value(1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T, U
0	Switching value(2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T, U
0	Switching value(2 Byte Signed)	2 Byte EIS10 / DPT 7.001	C, W, T, U
0	Switching value (2 Byte Unsigned)	2 Byte EIS10 / DPT 8.001	C, W, T, U
0	Switching value (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T, U
0	Switching value (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T, U
0	Switching value (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T, U

Value sender, rocker left/right

With the "Value sender, rocker left/right" application, a telegram with a predefined value is sent out at an actuation or release of the rocker.

The "Value sender, rocker left/right" application does not differentiate between whether the rocker is actuated on the left or right side. In each case, the application makes a separate set of parameters and communication objects available for the right and left side of the rocker.

The application enables realising a switching function via one rocker side, while the other rocker side can be assigned with an additional "button-orientated" function.

Value sender objects, rocker left/right

No.	Object name	Data type	Flags
0	Switching (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T, U
0	Switching (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T, U
0	Switching (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T, U
0	Switching (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T, U
0	Switching (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T, U
0	Switching (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T, U
0	Switching (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T, U
0	Switching (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T, U
0	Switching (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T, U

Value sender, 2 objects, rocker left/right

With the "Value sender, 2 objects, rocker left/right" application, two telegrams with predefined values from two different communication objects can be sent out by actuation and/or upon release of the rocker.

The application "Value sender, 2 objects, rocker left/right" makes a separate set of parameters and communication objects available in each case for the right or left side of the rocker.

For example, the application facilitates the sending out of a switching function and a floating point value with the actuation of one rocker side and assigning an additional "button orientated" function to the other side of the rocker.

Value sender objects, 2 objects, rocker left/right

No.	Object name	Data type	Flags
0	Switching (rising flank) (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T, U
0	Switching (rising flank) (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T, U
0	Switching (rising flank) (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T, U
0	Switching (rising flank) (2 Byte Float)	2 Byte EIS5 / DPT 1.xxx	C, W, T, U
0	Switching (rising flank) (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T, U
0	Switching (rising flank) (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T, U
0	Switching (rising flank) (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T, U
0	Switching (rising flank) (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T, U
0	Switching (rising flank) (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T, U
1	Switching (falling flank) (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T, U
1	Switching (falling flank) (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T, U
1	Switching (falling flank) (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T, U
1	Switching (falling flank) (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T, U
1	Switching (falling flank) (2 Byte Signed)	2 Byte EIS10 / DPT 7.001	C, W, T, U
1	Switching (falling flank) (2 Byte Unsigned)	2 Byte EIS10 / DPT 8.001	C, W, T, U
1	Switching (falling flank) (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T, U
1	Switching (falling flank) (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T, U
1	Switching (falling flank) (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T, U

Value dimming sensor, rocker total

With the application "Value dimming sensor, rocker total", it is possible to send 1-byte telegrams by actuating the rocker. Each actuation of the left or right side of the rocker will increase or reduce a 1-byte value (percent or values 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.

Value dimming sensor objects, rocker total

No.	Object name	Data type	Flags
0	Value	1 Byte / EIS6/14 / DPT 5.001 / DPT 5.010	C, W, T, U

Light scene extension unit with memory function

Via the application "Light scene extension unit with memory function", a predefined light scene number is called 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 assigned an additional "button orientated" function.

The user has the option to trigger a light scene memory command with a long button contact.

Light scene extension unit objects with memory function

No.	Function	Object name	Data type	Flags
0	Switching		1 Byte EIS1 / DPT 1.001	C, W, T, U

Step switch, rocker total

The application "Step switch, rocker total" facilitates step-type switching. This means that the user can trigger different switching processes with each new operation of the left or right side of the rocker.

Example:

First operation (right rocker side) switches lamp 1 on.

Second operation (right rocker side) switches lamp 1 off and lamp 2 on.

Third operation (right rocker side) switches lamp 2 off and lamp 3 on.

Fourth operation (left rocker side) switches lamp 3 off and lamp 2 on.

Fifth operation (left rocker side) switches lamp 2 off and lamp 1 on.

etc.

The application differentiates between whether the left or right side of the rocker was operated. Depending on the setting, one lower or one higher step can be switched to.

Up to five switching steps can be activated.

Step switch objects, rocker total

No.	Object name	Data type	Flags
0	Switching step 1	1 Bit EIS1 / DPT 1.001	C, W, T
1	Switching step 2	1 Bit EIS1 / DPT 1.001	C, W, T
2	Switching step 3	1 Bit EIS1 / DPT 1.001	C, W, T
3	Switching step 4	1 Bit EIS1 / DPT 1.001	C, W, T
4	Switching step 5	1 Bit EIS1 / DPT 1.001	C, W, T

Step switch, rocker left/right

The application "Step switch, rocker left/right" facilitates step-type switching. This means that the user can trigger different switching processes with each new operation of the rocker switch.

Example:

First operation switches lamp 1 on.

Second operation switches lamp 1 off and lamp 2 on.

Third operation switches lamp 2 off and lamp 3 on.

Fourth operation switches lamp 3 off and lamp 1 on.

etc.

Up to five switching steps can be activated.

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

The application enables realising switching functions via one rocker side while the other rocker side can be assigned with an additional "button orientated" function.

Step switch objects, rocker left/right

No.	Object name	Data type	Flags
0	Switching step 1	1 Bit EIS1 / DPT 1.001	C, W, T
1	Switching step 2	1 Bit EIS1 / DPT 1.001	C, W, T
2	Switching step 3	1 Bit EIS1 / DPT 1.001	C, W, T
3	Switching step 4	1 Bit EIS1 / DPT 1.001	C, W, T
4	Switching step 5	1 Bit EIS1 / DPT 1.001	C, W, T

Multiple operation, rocker left/right

With the "Multiple operation, rocker left/right" application, a differentiation can be made between a single, double, triple, quadruple or quintuple operation of the rocker. Different values can be sent out for every operation: single, double, triple, quadruple, or quintuple.

The application "Multiple operation, rocker left/right" makes a separate set of parameters and communication objects available in each case for the right or left side of the rocker. It is therefore possible to realise a multiple operation via one side of the rocker and assigning a "button-orientated" function to the other side of the rocker.

Multiple operation objects, rocker left/right

No.	Object name	Data type	Flags
0	Switching 1, multiple operation (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
0	Switching 1, multiple operation (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T
0	Switching 1, multiple operation (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T
0	Switching 1, multiple operation (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T
0	Switching 1, multiple operation (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T
0	Switching 1, multiple operation (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T
0	Switching 1, multiple operation (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T
0	Switching 1, multiple operation (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T
0	Switching 1, multiple operation (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T

Multiple operation objects, rocker left/right, continued

No.	Object name	Data type	Flags
1	Switching 2, multiple operation (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
1	Switching 2, multiple operation (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T
1	Switching 2, multiple operation (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T
1	Switching 2, multiple operation (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T
1	Switching 2, multiple operation (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T
1	Switching 2, multiple operation (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T
1	Switching 2, multiple operation (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T
1	Switching 2, multiple operation (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T
1	Switching 2, multiple operation (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T
2	Switching 3, multiple operation (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
2	Switching 3, multiple operation (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T
2	Switching 3, multiple operation (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T
2	Switching 3, multiple operation (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T
2	Switching 3, multiple operation (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T
2	Switching 3, multiple operation (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T
2	Switching 3, multiple operation (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T
2	Switching 3, multiple operation (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T
2	Switching 3, multiple operation (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T
3	Switching 4, multiple operation (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
3	Switching 4, multiple operation (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T
3	Switching 4, multiple operation (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T
3	Switching 4, multiple operation (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T
3	Switching 4, multiple operation (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T
3	Switching 4, multiple operation (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T
3	Switching 4, multiple operation (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T
3	Switching 4, multiple operation (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T
3	Switching 4, multiple operation (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T
4	Switching 5, multiple operation (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
4	Switching 5, multiple operation (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T
4	Switching 5, multiple operation (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T
4	Switching 5, multiple operation (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T
4	Switching 5, multiple operation (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W, T
4	Switching 5, multiple operation (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T
4	Switching 5, multiple operation (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W, T
4	Switching 5, multiple operation (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W, T
4	Switching 5, multiple operation (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W, T

Short/long operation, rocker left/right

Via the application "Short/long operation, rocker left/right", different values can be sent out with a short and/or long actuation of the rocker switch.

The "Short/long operation, rocker left/right" application does not differentiate between whether the rocker is actuated on the left or right side. In each case, the application makes a separate set of parameters and communication objects available for the right and left side of the rocker.

The application facilitates making two separate functions available on one side of the rocker that can be called up via a short or long button contact and assigning the other side of the rocker switch with an additional "button-orientated" function.

Short/long operation objects, rocker left/right

No.	Object name	Data type	Flags
0	Adjusting(1 Bit)	1 Bit EIS7 / DPT 1.007	C, W, T, U
0	Adjusting(1 Byte)	1 Byte EIS6 / DPT 5.001	C, W, T, U
1	Moving (1 Bit)	1 Bit EIS7 / DPT 1.008	C, W, T, U
1	Moving (1 Byte)	1 Byte EIS6 / DPT 5.001	C, W, T, U

Setting RTC operation mode

With the "Setting the RTC operation mode" application, an operation mode switchover for connected room temperature controllers can be carried out via an actuation of a rocker side.

Depending on the setting of the "Object type for output" parameter, the application offers either three 1-bit communication objects "Operation mode comfort", "Operation mode night", and "Operation mode frost" or a 1-byte communication object "Operation mode".

The selection "1-bit" is used for the control of room temperature controllers that have 1-bit communication objects for operation mode switchover. The "1-byte" selection is used for the control of room temperature controllers that have a 1-byte communication object for operation mode switchover to KNX. In this case, the values mean

0 = Auto

1 = Comfort

2 = Standby

3 = Night

4 = Frost / Heat protection

The function can be temporarily blocked via a 1-bit "Enable" communication object.

Setting RTC operation mode objects

No.	Object name	Data type	Flags
0	Enable	1 Bit EIS1 / DPT 1.001	C, W, U
1	Operation mode Comfort(1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
2	Operation mode Night(1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
3	Operation mode Frost(1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
4	Operation mode (1 Byte)	1 Byte / DPT 20.102	C, T

Media control, CD player

A CD player can be remotely controlled via the bus using the "Media control, CD player" application.

The symbols for "On/Off", "CD selection", "Player control" and "Volume" are shown first on the display. Via the push-button/rotary control element, the user can access a submenu ("CD selection", "Player control" and "Volume") or can switch directly on or off via a push-button operation.

In the submenu "Player control" the symbols for Start, Stop, Forward etc. are shown on the display. By turning the push-button/rotary control element, the user can select the desired function (focus) and trigger it with a push-button operation. The "CD selection" submenu functions in a similar way.

If the volume is to be regulated, a special volume symbol is shown on the display which signals the user that: a turn to the right increases the volume and a turn to the left reduces the volume. A feedback signal from the connected actuator can not be shown here.

Depending on the function, telegrams to the CD player control are sent out on the communication objects for "CD on/off", "CD selection", "CD play", "CD stop", "CD pause", "CD previous track", "CD next track", "CD volume".

In addition, the function can be temporarily blocked via an additional 1-bit "Enable" communication object.

Hint:

The function is practical only if a corresponding additional unit, such as the media box made by Coldwey, for CD player activation is used as receiver of the sent out telegrams.

Media control objects, CD player

No.	Object name	Data type	Flags
0	Enable	1 Bit EIS1 / DPT 1.001	C, W, U
1	CD On, Off	1 Bit EIS1 / DPT 1.001	C, W, T, U
2	CD Selection	1 Bit EIS1 / DPT 1.001	C, T
3	CD Play	1 Bit EIS1 / DPT 1.001	C, T
4	CD Stop	1 Bit EIS1 / DPT 1.001	C, T
5	CD Pause	1 Bit EIS1 / DPT 1.001	C, T
6	CD Previous track	1 Bit EIS1 / DPT 1.001	C, T
7	CD Next track	1 Bit EIS1 / DPT 1.001	C, T
8	CD Volume	4 Bit EIS2 / DPT 3.007	C, T

Media control, radio

A radio can be remotely controlled via the bus using the "Media control, radio" application.

The symbols for "On/Off", "Radio station selection" and "Volume" are shown first on the display. Via the push-button/rotary control element, the user can access a submenu ("Radio station selection" and "Volume") or can switch directly on or off via a push-button operation.

The stations that can be selected are listed in the "Radio station selection" submenu. By turning the push-button/rotary control element, the user can select the desired station (focus) and call it up via a push-button operation.

If the volume is to be regulated, a special volume symbol is shown on the display which signals the user that: a turn to the right increases the volume and a turn to the left reduces the volume. A feedback signal from the connected actuator can not be shown here.

Depending on the function, telegrams for radio control are sent out on the communication objects for "Radio On/Off", "Station selection" and "Radio volume".

In addition, the function can be temporarily blocked via an additional 1-bit "Enable" communication object.

Hint:

The function is practical only if a corresponding actuator (audio actuator) for radio activation is used as receiver for the sent out telegrams.

Media control objects, radio

No.	Object name	Data type	Flags
0	Enable	1 Bit EIS1 / DPT 1.001	C, W, U
0	Radio On, Off	1 Bit EIS1 / DPT 1.001	C, W, T, U
0	Station selection	1 Bit EIS14 / DPT 5.010	C, T
0	Radio volume	4 Bit EIS2 / DPT 3.007	C, T

Media control, video player

A CD player can be remotely controlled via the bus using the "Media control CD player" application.

The symbols for "On/Off", "Player control" and "Volume" are shown first on the display. Via the push-button/rotary control element, the user can access a submenu ("Player control" and "Volume") or can switch directly on or off via a push-button operation.

In the submenu "Player control" the symbols for Start, Stop, Forward etc. are shown on the display. By turning the push-button/rotary control element, the user can select the desired function (focus) and trigger it with a push-button operation.

If the volume is to be regulated, a special volume symbol is shown on the display which signals the user that: a turn to the right increases the volume and a turn to the left reduces the volume.

A feedback signal from the connected actuator can not be shown here.

Depending on the function, telegrams to the video player control are sent out for "Video on/off", "Video selection", "Video play", "Video stop", "Video pause", "Video rewind", "Video fast-forward", "Video volume". In addition, the function can be temporarily blocked via an additional 1-bit "Enable" communication object.

Hint:

The function is practical only when a corresponding actuator (video actuator) for video player activation is used as receiver for the sent out telegrams.

Media control objects, video player

No.	Object name	Data type	Flags
0	Enable	1 Bit EIS1 / DPT 1.001	C, T, U
1	Video On, Off	1 Bit EIS1 / DPT 1.001	C, W, T, U
2	Video Play	1 Bit EIS1 / DPT 1.001	C, T
3	Video Stop	1 Bit EIS1 / DPT 1.001	C, T
4	Video Pause	1 Bit EIS1 / DPT 1.001	C, T
5	Video Forward (Video Rewind)	1 Bit EIS1 / DPT 1.001	C, T
6	Video Rewind (Video Forward)	1 Bit EIS1 / DPT 1.001	C, T
7	Video Volume	4 Bit EIS2 / DPT 3.007	C, T

Short-time timer

Via the alarm or timer function there is the option of triggering an acoustic signal at a specific time or after expiration of an entered time.

The "short-time timer" application displays a timer function. There is the option here of triggering an acoustic signal via the internal speaker after expiration of an entered time. The time (up to 12 h 59 min) is set by the user via the push-button/rotary control element. After expiration of the set time, a signal tone is triggered on the unit which can be confirmed via the push-button/rotary control element.

The set "Value for timer start" (ON or OFF) is sent out via a 1-bit "Timer status" communication object at timer start. The set "Value for timer expiration" (ON or OFF) is sent out at timer expiration.

Short-time timer objects

No.	Object name	Data type	Flags
0	Adjusting (1 Bit)	1 Bit EIS7 / DPT 1.007	C, W, T, U
0	Adjusting (1 Byte)	1 Byte EIS6 / DPT 5.001	C, W, T, U
1	Moving (1 Bit)	1 Bit EIS7 / DPT 1.008	C, W, T, U
1	Moving (1 Byte)	1 Byte EIS6 / DPT 5.001	C, W, T, U

Weekly timer

With the "week timer" it is possible to call up defined switching times that are stored in the unit. Up to four different programs can be called up and edited by the user on the display via the push-button / rotary control element.

For the activation of different actuators, the size of the "Value" communication objects can be separately set for every individual program under the "Object type" parameter.

Up to four time blocks can be specified for each program. This means that four switching times (control times) to those predefined values are sent out on the associated communication object "Value".

For specifying the individual switching times the application uses the system time of the device. The current time can be synchronized in the device settings via the 3-byte "Time" communication object (see unit settings).

Weekly timer objects

No.	Object name	Data type	Flags
0	Absence	1 Bit EIS1 / DPT 1.001	C, W, T, U
1…4	Value 1 [2…4] (1 bit switching)	1 Bit EIS1 / DPT 1.001	C, T
1…4	Value 1 [2…4] (1 bit moving)	1 Bit EIS7 / DPT 1.008	C, T
1…4	Value 1 [2…4] (1 byte light scene number)	1 Byte / DPT 18.001	C, T
1…4	Value 1 [2…4] (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
1…4	Value 1 [2…4] (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
1…4	Value 1 [2…4] (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, T
1…4	Value 1 [2…4] (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T

Alarm clock

Alarm times (alarm clock times) can be defined with the "Alarm-clock" application. The times are set by the user with the push-button/rotary control element. When the set time is reached, a signal tone is triggered on the device which can be confirmed via the push-button/rotary control element.
When the alarm time has been reached, additional functions can be integrated into the alarm call function via a communication object. In addition, there is the option of sending out an advanced telegram, i.e. a telegram which is triggered before reaching the alarm time. For the activation of different actuators, the size of the "Switching" and "Advanced switching" communication objects is adjustable under the "Object type" parameter.

Alarm clock objects

No.	Object name	Data type	Flags
0	Acknowledgement	1 Bit EIS1 / DPT 1.001	C, W, U
1	Snooze	1 Bit EIS1 / DPT 1.001	C, W, U
2	Switching (1-bit switching)	1 Bit EIS1 / DPT 1.001	C, T
2	Switching (1-bit moving)	1 Bit EIS7 / DPT 1.008	C, T
2	Switching(1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
2	Switching (scene call-up)	1 Byte / DPT 18.001	C, T
2	Switching(1 Byte 0..255)	1 Byte EIS14 / DPT 1.010	C, T
2	Switching(2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T
2	Switching (relative temperature)	2 Byte EIS5 / DPT 9.001	C, T
2	Switching (absolute temperature)	2 Byte EIS5 / DPT 9.001	C, T
3	Switching, advanced (1-bit switching)	1 Bit EIS1 / DPT 1.001	C, T
3	Switching, advanced (1-bit moving)	1 Bit EIS7 / DPT 1.008	C, T
3	Switching, advanced(1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
3	Switching, advanced (scene call-up)	1 Byte / DPT 18.001	C, T
3	Switching, advanced(1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
3	Switching, advanced(2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T
3	Switching, advanced (relative temperature)	2 Byte EIS5 / DPT 9.001	C, T
3	Switching, advanced (absolute temperature)	2 Byte EIS5 / DPT 9.001	C, T

Messages

Messages can be shown on the display and acoustically signaled over the internal loudspeaker. These can be predefined system messages such as "Storage medium was removed" or freely definable messages. A maximum of ten messages (message texts) can be created. The displayed message text is restricted to 48 characters.

Every message is assigned a priority (warning level) which determines the display of the message window. Information and alarm messages are indicated by a green bar. Warnings have a red bar and alarm messages appear completely red.

One or several active messages are shown in the display as soon as the user calls up the circuit menu. The circuit menu is only shown after all pending messages have been confirmed with "OK". The order in which the messages are issued is adjustable.

Should a message become active while a user is operating the device, this will be shown immediately. When the primary function is active, pending messages in the status line are shown by a blinking symbol. Depending on the message priority, a different symbol is used here. If several messages are active, the message symbol with the highest priority is always shown.

Message objects

No.	Object name	Data type	Flags
0	Message	1 Bit EIS1 / DPT 1.001	C, W, U
1	Acknowledgement	1 Bit EIS1 / DPT 1.001	C, W, T

Title text

The text/value display should be provided with a descriptive text that makes sense so that the user can recognise which text is displayed. For example, "Outside temperature", "Wind speed", "Bedroom window open", etc.

The descriptive text is shown in the display during scrolling and appears in the top left if the function is selected (focused).

Title text objects

No.	Function	Object name	Data type	Flags
0	Text / Value		1 Bit EIS1 / DPT 1.001	C, W, U
0	Text / Value		1 Byte EIS6 / DPT 5.001	C, W, U
0	Text / Value		1 Byte EIS14 / DPT 5.010	C, W, U
0	Text / Value		1 Byte EIS14 / DPT 6.010	C, W, U
0	Text / Value		2 Byte EIS5 / DPT 9.xxx	C, W, U
0	Text / Value		2 Byte EIS10 / DPT 8.018	C, W, U
0	Text / Value		2 Byte EIS10 / DPT 7.001	C, W, U
0	Text / Value		1 Bit EIS9 / DPT 14.xxx	C, W, U
0	Text / Value		1 Bit EIS6 / DPT 5.001	C, W, U
0	Text / Value		1 Byte EIS14 / DPT 5.010	C, W, U
0	Text / Value		1 Byte EIS14 / DPT 6.010	C, W, U
0	Text / Value		2 Byte EIS5 / DPT 9.xxx	C, W, U
0	Text / Value		2 Byte EIS10 / DPT 8.018	C, W, U
0	Text / Value		2 Byte EIS10 / DPT 7.001	C, W, U
0	Text / Value		1 Byte EIS9 / DPT 14.xxx	C, W, U

Unit blockage

The operation of the display from the circuit menu, or the call-up of individual functions, can be protected against unauthorised access by means of a PIN. Entering the correct pin allows the device to be operated.
If a function is protected by a PIN, a lock symbol is shown on the display in front of the function description.
Hint:
Only one PIN can be assigned to each unit. If a wrong PIN is entered, there is no limit to the number of times the entry can be repeated.

RTC settings

Default settings for the internal room temperature controller can be set with the "RTC settings" application. The room temperature controller can be used for "Heating", "Cooling" as well as for "Heating and Cooling". There is also the option of controlling fan coil actuators.

Sequence actuator settings

With the "Sequence actuator settings" application and the press of the push-button/rotary control element it is possible to consecutively send out multiple telegrams with different values in a predefined sequence via the same object.
The representation of a sequence on the display is based on the representation of a scene. In contrast to the "Scene", the "Sequence actuator settings" application has only one communication object on which up to twelve individual values are consecutively sent out in twelve firmly set times. The times can be freely set from 1 s to 12 h. The "Sequence actuator settings" application lends itself to controlling showrooms for example.
If sequences are configured, they are listed together with scenes under menu item "Scenes" and can be started from there. Values and delay times are edited under the "Scenes" menu item.
Via the "Quick run" function, the brightness values can be started up at an accelerated rate. The delay time then amounts to a constant 3 s from value to value.

Sequence actuator settings objects

No.	Object name	Data type	Flags
0	Enable	1 Bit EIS1 / DPT 1.001	C, W, T
1	Sequence value (1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
1	Sequence value (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
1	Sequence value (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
1	Sequence value (1-byte light scene number)	1 Byte / DPT 18.001	C, T
1	Sequence value (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, T
1	Sequence value (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T
2	Sequence start-stop	1 Bit EIS1 / DPT 1.001	C, W, U
3	Sequence status	1 Bit EIS1 / DPT 1.001	C, T

Shutting actuator

With the "Shutting actuator" application the shutting actuator is activated (Flush-type switch actuator 2-gang).
It has two 1-bit communication objects "Move" and "Adjust". In addition, the Venetian blind can be moved to a defined position via the 1-byte communication objects "Position" and "Slats position".
The behaviour can be adjusted so that no undefined state arises during a bus voltage recovery.
There is also the option of additionally activating a 1-bit communication object "Status response". The shutting actuator can send out its current state over this.

Shutting actuator objects

No.	Object name	Data type	Flags
0	Move	1 Bit EIS7 / DPT 1.008	C, W
1	Adjust	1 Bit EIS7 / DPT 1.007	C, W
1	Stop	1 Bit / DPT 1.017	C, W
2	Position	1 Byte EIS5 / DPT 5.001	C, W
3	Slats position	1 Byte EIS5 / DPT 5.001	C, W
4	Wind alarm	1 Bit / DPT 1.005	C, W
5	Rain alarm	1 Bit / DPT 1.005	C, W
6	Frost alarm	1 Bit / DPT 1.005	C, W
7	Move status	1 Bit EIS7 / DPT 1.008	C, R, T
8	Position state	1 Byte EIS5 / DPT 5.001	C, R, T
9	Slats position status	1 Byte EIS5 / DPT 5.001	C, R, T

Switch actuator application

The flush-type switch actuator is activated with the "Switch actuator application" application.
For this the application has a 1-bit communication object "Switch object". Depending on the setting of the "Relay characteristics" parameter, the relay contact is opened or closed after receipt of an ON or OFF telegram.
The behaviour can be adjusted so that no undefined state arises after a bus voltage failure and subsequent return of voltage.
There is also the option of activating an additional 1-bit communication object "Status response". The switching actuator can send out its current state over this. Whether an ON or an OFF telegram is triggered during a closed or an opened relay contact depends on the setting of the "Relay characteristics" and "Invert status response" parameters.

Switch actuator application objects

No.	Object name	Data type	Flags
0	Switch object	1 Bit EIS1 / DPT 1.001	C, W
1	Status response signal	1 Bit EIS1 / DPT 1.001	C, T

Movement detector

The movement detector application can trigger telegrams on the bus when a movement is detected in the detection zone. Telegrams can also be sent on the bus when telegrams are received on the 1-bit communication object "External pushbutton input". This means that a unit can be activated by additional KNX devices as if a movement was detected. The time for sending out a telegram depends especially on the operating mode that has been set.

The movement detector can operate in the following modes: "Signaling", "Automatic time control", "Semi-automatic" or "Automatic".

In the "Signaling" mode the movement detector is in the position to send telegrams cyclically on the "Start movement" 1-bit communication object.

In the "Automatic time control" mode the movement detector must be activated manually via the receipt of an ON telegram on the "External pushbutton input" object. The device switches off after the specified light-on time beginning from the most recent detection or manually.

In the "Semi-automatic" mode the movement detector switches on automatically when detecting a movement. It switches off at the receipt of an OFF telegram on the "External pushbutton input" object. The movement detector switches off automatically after 6 hours.

In the "Automatic" mode the movement detector switches on automatically when detecting a movement. It switches off after the specified light-on time beginning from the most recent detection or through the receipt of an OFF telegram on the "External pushbutton input" object. When switching off manually the detection of movement is suppressed for the parameterised pause time via the internal sensor.

The movement detector can be activated permanently via the "Switchover of external pushbutton input" 1-bit communication object. The function can, for example, be used during cleaning actions to cause all the movement detectors to activate themselves even when no movement was detected.

If a movement detector works in an operating mode with light-on time, this can be adjusted during operation via a separate communication object. This would allow different light-on times to be used for mornings and for evenings.

The behaviour can be adjusted so that no undefined state arises after a bus voltage failure and subsequent return of bus voltage.

The movement detector can be blocked via an enable object.

The movement detector can switch brightness-dependent or brightness-independent. The setting parameters can be used to adjust the threshold value of the light sensor. The brightness threshold can also be adjusted via communication objects via the bus.

Motion sensor

No.	Object name	Data type	Flags
0	Enable	1 Bit EIS1 / DPT 1.001	C, W, U
1	Light-on time	2 Byte / DPT 7.005	C, W, U
2	Extension unit input	1 Bit EIS1 / DPT 1.001	C, W, U
3	Actuator status input	1 Bit EIS1 / DPT 1.001	C, W, U
4	Independent detection of brightness	1 Bit EIS1 / DPT 1.001	C, W, U
5	External brightness	2 Byte EIS 5 / DPT 9.004	C, W, U
6	External brightness threshold	2 Byte EIS 5 / DPT 9.004	C, W, U
7	Internal brightness threshold	1 Byte EIS 5 / DPT 9.004	C, W, U
8	LED output	1 Bit EIS 1 / DPT 1.001	C, W, U
9	Motion switching	1 Bit EIS 1 / DPT 1.001	C, T
9	Motion switching	1 Byte EIS 5 / DPT 5.001	C, T
9	Motion switching	1 Byte EIS 6 / DPT 5.010	C, T
10	Motion starting	1 Byte EIS 1 / DPT 1.001	C, T
11	Switchover of external pushbutton input	1 Bit EIS 1 / DPT 1.001	C, W, U
13	External pushbutton input	1 Bit EIS 1 / DPT 1.001	C, W, U

LED function

With the "LED function" application, the LED of the rocker can be used for orientation lighting, for status indication or for function display. The LED can light up in different colours. The LED can also flash for alarm display and/or scene storage display.

LED function objects

No.	Object name	Data type	Flags
0	Status (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
0	Status (1 Byte 0..100 %)	1 Bit EIS6 / DPT 5.001	C, W, U
1	Day / Night mode (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
2	Proximity (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
3	Alarm (DPT_Alarm)	1 Bit / DPT_Alarm	C, W, U
4	Scene storage (DPT_Scene_Control)	1 Byte / DPT 18.001	C, W, U

Alarm function

If the alarm function is switched active, the LED can be made to flash (1 Hz) during the status or function display via a 1-bit "Alarm" communication object.
The LED will flash if an ON telegram is received on a 1-bit "Alarm" communication object. 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, for example, be used to display a wind alarm to the user to let the user know that no blind operation is possible at that time. An additional application would be the signalling of an open door when the user would like to lower a roller blind.
Hint:
If the LED is currently serving as an orientation light, it will not flash. This also applies if it is switched to orientation lighting during flashing, i.e. the LED stops flashing immediately.

Light scene memory function

If the "Light scene memory function" is switched active, the LED can be made to flash (3 Hz) via a 1-bit communication object "Scene storage" during the status or function display.
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 specified via the status function or function display.
Hint:
If the LED is currently serving as an orientation light, it will not blink. This also applies if orientation illumination is switched to during flashing.

Delay

Telegrams can be received via the "Input" object using the "Delay" application. The telegrams received are sent out on the "Output" object with a set delay time.

The object types for "Input" and "Output" can be collectively parameterised for different applications.

Delay objects

No.	Object name	Data type	Flags
0	Input (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W
0	Input (1 Bit)	1 Bit EIS7 / DPT 1.008	C, W
0	Input (1 Bit)	1 Bit EIS7 / DPT 1.007	C, W
0	Input (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W
0	Input (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W
0	Input (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W
0	Input (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W
0	Input (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W
0	Input (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W
0	Input (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W
0	Input (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W
1	Output (1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
1	Output (1 Bit)	1 Bit EIS7 / DPT 1.008	C, T
1	Output (1 Bit)	1 Bit EIS7 / DPT 1.007	C, T
1	Output (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
1	Output (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
1	Output (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, T
1	Output (2 Byte Signed)	2 Byte EIS10 / DPT 7.001	C, T
1	Output (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T
1	Output (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, T
1	Output (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, T
1	Output (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, T
2	Delay time (2 Byte)	2 Byte EIS10 / DPT 7.001	C, R, W

Staircase lighting

With the "Staircase lighting" application, switching telegrams or value telegrams can be provided with a light-on time.

Depending on the parameterisation, 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 received via the "Input" object, the light-on time is started 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.

Staircase lighting objects

No.	Object name	Data type	Flags
0	Input (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W
0	Input (1 Byte)	1 Bit EIS14 / DPT 5.010	C, W
0	Input_Output (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
1	Light-on time (2 Byte)	2 Byte EIS10 / DPT 7.001	C, R, W
2	Switch-off pre-warning	2 Byte EIS10 / DPT 7.001	C, R, W
3	Output (1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
3	Output (1 Byte)	1 Bit EIS14 / DPT 5.010	C, T

Light scene actuator

With the "Light scene actuator" application, it is possible to call up scenes that are stored in the device via the receipt of a scene number on the 1-byte communication object "Scene call-up". A maximum of eight scenes with up to eight actuator objects can be created.

For triggering different actuators, the size of the actuator groups communication objects can be set under the "Actuator group type" parameter.

The user has the option of saving the scenes himself. A corresponding save telegram must be received for this (see the description of the individual parameters).

Light scene actuator objects

No.	Object name	Data type	Flags
0	Light scene call-up (1 Byte)	1 Byte / DPT18.001	C, W, U
1…10	Actuator group A [B…J] (1-bit switching)	1 Bit EIS1 / DPT 1.001	C, W, T, U
1…10	Actuator group A [B…J] (1-bit Venetian blind)	1 Bit EIS7 / DPT 1.008	C, W, T, U
1…10	Actuator group A [B…J] (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T, U
1…10	Actuator group A [B…J] (1-byte light scene number)	1 Byte / DPT 18.001	C, W, T, U
1…10	Actuator group A [B…J] (Temperature value absolute)	2 Byte EIS5 / DPT 9.001	C, W, T, U
10…19	Enable scene 1 [Scene 2 … Scene 10]	1 Bit EIS1 / DPT 1.001	C, W, T

Sequence

With the "Sequence " application it is possible to send out multiple telegrams with different values in a predefined sequence consecutively over the same object.

In contrast to the scene, the "Sequence" application has only one communication object on which up to twelve individual values are consecutively sent in twelve firmly set times. The times can be freely set from 1 s to 12 h. The "Sequence" application lends itself to controlling showrooms for example.

The function can be temporarily blocked via an enable object.

Sequence objects

No.	Object name	Data type	Flags
0	Sequence value (1-bit switching)	1 Bit EIS1 / DPT 1.001	C, W, T, U
0	Sequence value (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W, T, U
0	Sequence value (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W, T, U
0	Sequence value (1-byte light scene number)	1 Byte / DPT 18.001	C, W, T, U
0	Sequence value (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W, T, U
0	Sequence value (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W, T, U
1	Sequence start	1 Bit EIS1 / DPT 1.001	C, W
2	Sequence status	1 Bit EIS1 / DPT 1.001	C, T
4	Enable	1 Bit EIS1 / DPT 1.001	C, W

Preset

The "Preset" application makes an input and output communication object available. At the receipt of a switching telegram on the 1-bit input object, a telegram is immediately sent out on the 1-byte output object. A preset percent value or, alternatively, a light scene number can be sent out.

Preset objects

No.	Object name	Data type	Flags
0	Input (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W
0	Output (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
0	Output (1-byte light scene number)	1 Byte / DPT 18.001	C, T

Cyclic telegram

Via the "Cyclic telegram" 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 parameterised 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.

Cyclic telegram objects

No.	Object name	Data type	Flags
0	Input (1-bit switching)	1 Bit EIS1 / DPT 1.001	C, W
0	Input (1-bit alarm)	1 Bit EIS1 / DPT 1.001	C, W
0	Input (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W
0	Input (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W
0	Input (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W
0	Input (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W
0	Input (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W
0	Input (2-byte temperature)	2 Byte EIS5 / DPT 9.001	C, W
0	Input (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W
0	Input (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W
0	Input (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W
1	Output (1-bit switching)	1 Bit EIS1 / DPT 1.001	C, T
1	Output (1-bit alarm)	1 Bit EIS1 / DPT 1.001	C, T
1	Output (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
1	Output (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
1	Output (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, T
1	Output (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, T
1	Output (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T
1	Output (2-byte temperature)	2 Byte EIS5 / DPT 9.001	C, T
1	Output (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, T
1	Output (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, T
1	Output (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, T
2	Enable	1 Bit EIS1 / DPT 1.001	C, W

Flashing

In order to trigger a flashing sequence on the output object, a telegram must be received on the input object beforehand. The "Flashing" parameter specifies whether the flashing sequence is started with an ON or an OFF telegram on the input object. Alternatively, the flashing sequence can be also be started with a "Change of state", i.e. if the input signal switches from "0" to "1" or from "1" to "0".

Flashing objects

No.	Object name	Data type	Flags
0	Input	1 Bit EIS1 / DPT 1.001	C, W
1	Output	1 Bit EIS1 / DPT 1.001	C, T

Logic

Logic objects

No.	Object name	Data type	Flags
0	Output (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, T
0	Output (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, T
1	Input 1 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
1	Input 1 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
2	Input 2 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
2	Input 2 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
3	Input 3 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
3	Input 3 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
4	Input 4 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
4	Input 4 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
5	Input 5 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
5	Input 5 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
6	Input 6 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
6	Input 6 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
7	Input 7 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
7	Input 7 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
8	Input 8 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
8	Input 8 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
9	Input 9 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
9	Input 9 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U
10	Input 10 (1 Bit)	1 Bit EIS1 / DPT 1.001	C, W, U
10	Input 10 (1 Byte)	1 Byte EIS14 / DPT 5.010	C, W, U

Gate

The "Gate" application allows specific signals to be filtered 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 assigned 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 specify 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 filtered out" or the signal "ON is filtered out" or the signal "OFF is filtered 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.

Gate objects

No.	Object name	Data type	Flags
0	Input	-	C, W, T
1	Output	-	C, W, T
2	Control input	1 Bit EIS1 / DPT 1.001	C, W

Min/Max value transducer

Up to eight input values can be compared 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.

Min/Max value transducer objects

No.	Object name	Data type	Flags
0	Output (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
0	Output (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
0	Output (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, T
0	Output (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, T
0	Output (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, T
0	Output (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, T
0	Output (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, T
0	Output (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, T
1…10	Input 1 [2…10] (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W
1…10	Input 1 [2…10] (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W
1…10	Input 1 [2…10] (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W
1…10	Input 1 [2…10] (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W
1…10	Input 1 (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W
1…10	Input 1 [2…10] (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W
1…10	Input 1 [2…10] (4 Byte Signed)	4 Byte EIS11 / DPT 13.001	C, W
1…10	Input 1 [2…10] (4 Byte Unsigned)	4 Byte EIS11 / DPT 12.001	C, W

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 adjusted for different applications.

The function can be temporarily blocked via an enable object.

If the value of the lower threshold lies above the value for the upper threshold, the function is not executed.

Threshold value / hysteresis objects

No.	Object name	Data type	Flags
0	Input (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, W
0	Input (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, W
0	Input (2 Byte Float)	2 Byte EIS5 / DPT 9.xxx	C, W
0	Input (2 Byte Signed)	2 Byte EIS10 / DPT 8.001	C, W
0	Input (2 Byte Unsigned)	2 Byte EIS10 / DPT 7.001	C, W
0	Input (4 Byte Float)	4 Byte EIS9 / DPT 14.xxx	C, W
0	Input (4 Byte Signed)	4 Byte EIS11 / DPT 12.001	C, W
0	Input (4 Byte Unsigned)	4 Byte EIS11 / DPT 13.001	C, W
1	Output (1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
1	Output (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
1	Output (1 Byte 0..255)	1 Byte EIS14 / DPT 5.010	C, T
2	Enable	1 Bit EIS1 / DPT 1.001	C, W

PWM inverter

With the "PWM inverter" application, a 1-byte input signal can be converted to a 1-bit signal or a 1-byte signal via an equivalent pulse-width modulation. This function is required, for instance, if a room temperature controller issues a constant control value that controls a switching heating actuator (for electrothermal actuating drives).

The function of the 1-byte sized activation is required if the room temperature controller can only send out constant control values or a constant control value is required for other functions (such as central supply line temperature control).

There is the option of activating a force-position. The force-position is used for certain events such as the opening of a window or for moving a heating actuator that is to be activated to a specific position for the dew point alarm.

If "Alert" is activated, the additional communication object "Fault" is available. A fault will then occur if the "Input" object has received no further telegram within a certain period of time. Possible reasons for this could be, for example, that the associated room temperature controller fails or that during a cross-line function the telegrams no longer pass the coupler. In this case an ON telegram is sent out on the "Fault" communication object and the "Input" object assumes the "Value for fault".

An additional "Enable" object provides the option of temporarily blocking the function.

PWM transducer objects

No.	Object name	Data type	Flags
0	Input (1 Byte)	1 Bit EIS1 / DPT 1.001	C, W
1	Output (1 Bit)	1 Bit EIS1 / DPT 1.001	C, T
1	Output (1 Byte 0..100 %)	1 Byte EIS6 / DPT 5.001	C, T
2	Enable	1 Bit EIS1 / DPT 1.001	C, W
3	Fault	1 Bit EIS1 / DPT 1.001	C, T
4	Force-position	1 Bit EIS1 / DPT 1.001	C, W

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 differentiated:

- "Input priority" has value "3": the value that is present on "Switch input" has no meaning. The "Output" is switched to positively driven and has the value "1".

– "Input priority" has the value "2". The value that is present on "Switch input" has no meaning. The "Output" is switched off positively driven and has the value "0".

– "Input priority" has the value "1" or "0". The "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 saved, even if the current state on the "Output" object does not immediately change through this. If the positive drive is terminated, a telegram transmission on the "Output" occurs according to the current value of the "Switch input" object.

Priority objects

No.	Object name	Data type	Flags
0	Switch input	1 Bit EIS1 / DPT 1.001	C, W
1	Priority input	2 Bit EIS8 / DPT 2.001	C, W
2	Output	1 Bit EIS1 / DPT 1.001	C, T

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