ABB i-bus® KNX
Room Master Premium RM/S 2.1
Product Manual

Power and productivity
for a better world™

Contents

1 General

The Room Master Premium RM/S 2.1 provides intelligent engineering technology for hotel rooms and apartments.

Modern buildings require intelligent building engineering technology for safe and efficient operation. Many buildings world-wide already utilise the full potential of networked electrical installations.

Hotels, hospitals, senior citizen and student residential homes, assisted living accommodation and much, much more: the Room Master covers new possibilities for buildings in the residential and hotel sectors.

The Room Master has been developed for all rooms of this type. It covers all requirements of the electrical installation of this application and offers the following functions in compact form:

- Switch lighting
- Control heating/cooling
- Shading (using blinds or curtains)
- Switching of electrical sockets and loads

In addition to these basic functions, further automation functions can be implemented by a combination with a presence detector. The communication of the devices via the KNX bus also enables control functions as well as sending of emergency signals from the rooms to a control centre.

The integration into a hotel management system enables the efficient management and provision of rooms. For example, when a guest checks out, the room is automatically set to standby mode.

Note
The device is in the ready to operate state on delivery. The pre-configuration allows immediate use of the Room Master Premium after it is connected.

1.1 Using the product manual

This manual provides you with detailed technical information relating to the function, installation and programming of the ABB i-bus® KNX VAA/S x.230.2.1. The application of the device is explained using examples.

This manual is divided into the following sections:

Chapter 1	General
Chapter 2	Device technology
Chapter 3	Commissioning
Chapter 4	Planning and application
Chapter 5	Device technology
Chapter A	Appendix

1.1.1 Structure of the product manual

All parameters are described in chapter 3.

The default settings listed there do not correspond with the pre-configured version, which can be downloaded on our website *at www.abb.com/knx*.

In chapter 5, you will find all of the pre-configured settings in tabular form as well as more detailed explanations concerning the function of the room states. The pre-configuration complies with the default delivery state. These can be re-established in the application by using the *Standard* button.

1.1.2 Notes

Notes and safety instructions are represented as follows in this manual:

Note
Tips for usage and operation

Examples
Application examples, installation examples, programming examples

Important
These safety instructions are used as soon as there is danger of a malfunction without risk of damage or injury.

Caution
These safety instructions are used as soon as there is danger of a malfunction without risk of damage or injury.

⚠ **Danger**
These safety instructions are used if there is a danger for life and limb with inappropriate use.

⚠ ⚡ **Danger**
These safety instructions are used if there is a danger to life with inappropriate use.

1.2 Room Master: Areas of application

1.2.1 Hotel

The Room Master Premium offers all functions which are required in a modern hotel room. During operation, a range of advantages are achieved in comparison to a conventional installation:

- Comfortable and simple operation of the room functions by the guests
- Temperature control dependent on the season, external temperature and occupancy
- Transmission of messages to the reception, e.g. clean the room, emergency alarm
- Fast localization of faults in the rooms and simplified room maintenance

The advantages of the Room Master are obvious not just during operation, but also for planning:

- World-wide use
- Compact design: can be installed in a simple distribution board together with circuit-breakers, see Configuration of a distribution board with Room Master Premium, page 264.
- A standard solution for many projects.

1.2.2 Hospitals

When used in hospitals and buildings with a similar purpose, the Room Master features many functions which support the efficient running of a modern operation:

- Simple operation of the room functions by the patients, e.g. automatic control of the room climate
- Day/night service
- Indication of the ward round
- Remote control of the room and display of the room state in the nurses station
- Fast localization of faults in the rooms and simplified room maintenance

1.2.3 Residential homes

The Room Master enables comfort and security in residential homes and supports senior citizens in their daily routine:

- Simple operation of the room functions
- Automatic control of the room climate
- Automatic transmission of messages to the control station, e.g. emergency signals
- Fast localisation of faults in the rooms
- Indication of room states in the control station
- Day/night service

1.2.4 Apartments

Apartments gain in both their appeal and the quality of life they offer with the Room Master – decisive factors for sale and rental:

- Automatic switching of different lighting arrangements in the room
- Automatic control of heating and cooling
- Shading using shutters or curtains
- Comfortable and simple operation of the room functions

1.3 Product and functional overview

The Room Master Premium RM/S is used as a single room solution specially for hotel rooms. The RM/S is used to control the lighting, the heating and the air-conditioning as well as the blinds. The input signals are detected via binary inputs or directly via the sensors connected to the KNX.

Hotel management systems can directly access the RM/S via the ABB i-bus® and activate controls in the room. Accordingly, it is possible to quickly adapt the hotel room to individual customers' and guests' requirements.

The Room Master is a modular installation device with a module width of 12 space units in Pro *M* Design for installation in the distribution board. The connection to the ABB i-bus® is established using the front side bus connection terminal. The Room Master Premium does not require an auxiliary supply. The assignment of the physical addresses as well as the parameterization is carried out with Engineering Tool Software ETS.

The RM/S 2.1 controls a single-phase fan with up to three fan speeds via a step or changeover control. This ensures that no two fan speeds can be switched on simultaneously with a changeover control. An additional programmable switch-over delay is provided for this purpose. Three-phase drives are not supported.

Electromotor or electro-thermal actuator drives for HEATING and COOLING as well as multi-speed fans can be connected directly to the Room Master. The outputs of the actuator drives (valves) are short-circuit protected by self-restoring fuses.

A changeover contact is available for control of a blind or a curtain. A separate floating contact is available for the connection of an auxiliary electrical heating system. Nine outputs are provided for direct connection of lighting circuits. This include:

- Lamps on the left/right of the bed
- Bathroom and entrance lighting
- Two room illuminations
- Indicator lamps before the room door for *Do not disturb*, *Room service* and *Room occupied*

Four other contacts can also be manually operated directly on the Room Master; they are used for supply of power to:

- the power outlets in the room,
- a socket for switching a floor/table lamp,
- a connection for the bathroom fan and
- a connection for switching an auxiliary heating system.

Eighteen binary inputs are available. These are used to report room information to the Room Master Premium, e.g. switch light ON/OFF:

- in the room entrance area,
- in the bathroom,
- the lamps assigned to the beds,
- the floor/table lamp,
- move the blind UP/DOWN,
- signalling contacts for window contact and dew point monitoring,
- switching of auxiliary heating,
- door contact, key card switch,
- transmission of an emergency signal,
- door bell and
- activate *Do not disturb*, *Room service* and *Room occupied*

The scanning voltage for the binary inputs is provided by the device. The binary inputs are divided into six groups of three inputs each.

Overview of the number and allocation of the inputs and outputs:

Inputs	**RM/S 2.1**
Binary via contact scanning	18

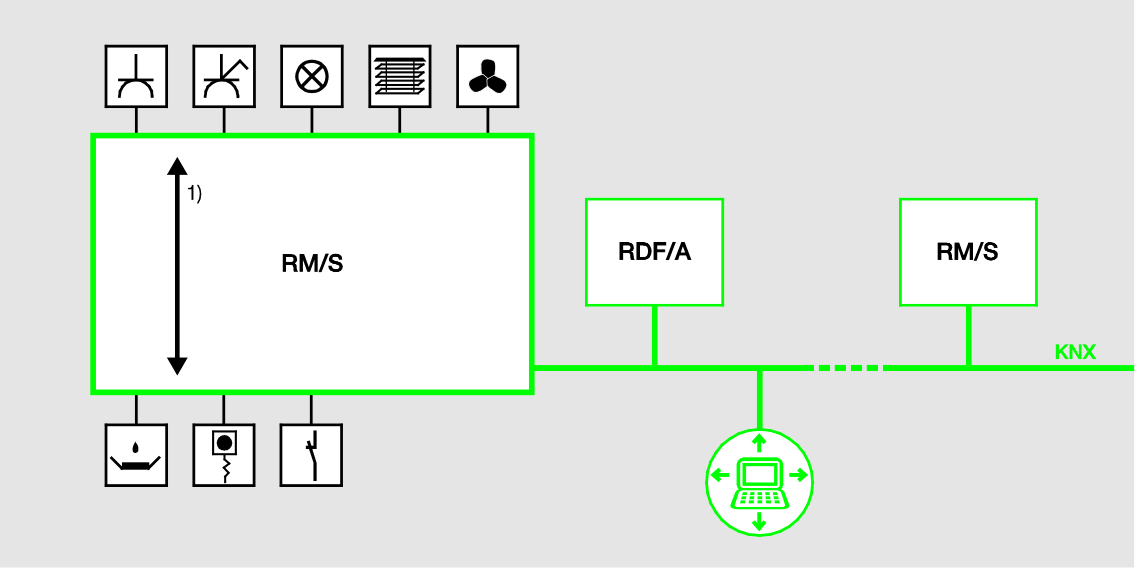
Outputs	**RM/S 2.1**
Switching contact 20 A (16 AX)	3
Switching contact 16 A (10 AX)	1
Switching contact 6 A	12
Electronic 0.5 A	4
Changeover contact 6 A (blind)	1

1.4 Function of the room states

With the innovative concept of the Room Master RM/S 2.1 it is possible to call the entire Room Scenarios with just one group address. The call of a Room Scenario can be undertaken both internally, e.g. via a binary input as well as externally, e.g. via a group address from reception. The recalled room state sets the outputs via KNX scenes. These can also be internally or externally called.

After recall of a Room Scenario, all functions in the room, e.g. illumination, room supply, blinds, heating or ventilation, are adapted accordingly to the programming.

The Room Master features internal device interconnections between the inputs and outputs. No group addresses are required for internal communication. This prevents an unnecessary bus load.

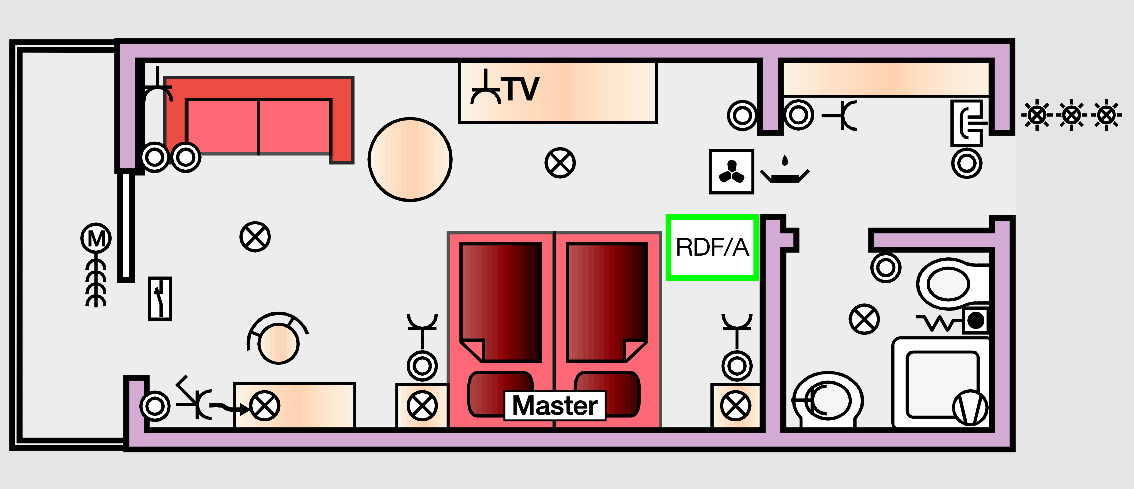


The standard functions of the Room Master are comprised of eight preconfigured room states. All standard functions are activated immediately after the Room Master is connected:

- The room/apartment can be contacted directly by the RM/S via the outputs or via the bus.
- The RM/S can be contacted directly via the binary inputs or via the bus.

Note
The device is in a preconfigured state. During initial commissioning it must be noted that most of the binary inputs are internally inhibited. Only the binary inputs *Key card, Emergency, Window contact and Drip tray* are functional. **For further information see: Block binary inputs, page 266** The inhibited inputs can be enabled as follows: • by a telegram with the value 5 to the communication object no. 2 or • via the direct connection of the key card switch with the binary input p by introducing the key card.

All pre-configuration information can be found in chapter 5. To improve comprehension, the individual room states will also be represented graphically. For this purpose, the following floor plan of a hotel room/apartment is used.



In the following table, you can see an overview of the preconfigured inputs and outputs and their connection.

Input		Connection	Output	
a	Master	Room Scenario 7/8		
b	Bedside left	Direct	**E (6 A)**	Bedside left
c	Bedside right	Direct	**F (6 A)**	Bedside right
d	Main room 1	Direct	**G (6 A)**	Main room 1
e	Main room 2	Direct	**H (6 A)**	Main room 2
f	Hall	Direct	**I (6 A)**	Hall
f	Hall	On long operation	**T (6 A)**	Room service LED switches OFF
g	Bathroom	Direct	**J (6 A)**	Bathroom
h	Blower bathroom	Direct	**C (20 A/16 AX C-Load)**	Blower bathroom: Staircase lighting: 300 s
i	Emergency call	Room Scenario 4		
j	Auxiliary electrical heater	Direct	**D (16 A/10 AX)**	Auxiliary electrical heater
k	Drip tray	Via bus: CO* to RDF/A		
l	Floor/desk light	Direct	**B (20 A/16 AX C-Load)**	Floor/desk light socket
m	Open blind	Direct	**K**	Blind
n	Close blind	Direct		
o	Window contact	Via bus: CO* to RDF/A		
p	Key card	Room Scenario 5/6		
q	Do not disturb	Direct with short operation	**S (6 A)**	Do not disturb LED switches ON
q	Do not disturb	Direct On long operation	**S (6 A)**	Do not disturb LED switches OFF
r	Room service	Direct with short operation	**T (6 A)**	Room service LED switches ON
r	Room service	Direct On long operation	**T (6 A)**	Room service LED switches OFF
		Via Room Scenarios	**A (20 A/16 AX C-Load)**	Socket switched
		via RDF/A	**L, M, N – O, P, Q, R**	Fan 1, 2, 3 – Valve 1…4
		Via Room Scenarios	**U**	Room occupied

*CO = communication objects

🟦 Special Room Scenarios

Further KNX devices can be integrated in the pre-configured standard functions. The room states can also be adapted, and eight further room states can also be set up. A total of 16 room states can be configured.

The 16 adjustable Room Scenarios are subdivided into groups of two, e.g. insert key card and remove key card or check in and check out.

A Room Scenario, triggered by an external 1 byte telegram or internally via the binary inputs, can trigger up to seven communication objects. These communication objects control:

- the actual Room Master, e.g. internal switching of the outputs,
- external KNX devices in the room, e.g. RDF/A, and
- external KNX devices in the building, e.g. reception.

1.4.1 Triggering of a KNX scene in the Room Master

The triggering of a single KNX scene in the Room Master offers many advantages:

- Simple integration of further sensors and actuations in the room,
- Usage of a single room group address, providing a clear demarcation to other rooms,
- Flexible configuration of further functions,
- No unnecessary bus load through internal device connections.

2 Device Technology

RM/S 2.1

2CDC 071 079 F0008

The Room Master Premium is a modular installation device (MDRC) in Pro *M* design. It is intended for installation in the distribution board on 35 mm mounting rails. The assignment of the physical addresses as well as the parameterization is carried out with the ETS and the current application program.

The RM/S is powered via the ABB i-bus® and does not require and additional auxiliary voltage supply.

The RM/S 2.1 is operational after connection of the bus voltage.

2.1 Technical data

Supply	Bus voltage	21…32 V DC
	Current consumption, bus	Maximum 24 mA (Fan-In 2)
	Leakage loss, bus	Maximum 500 mW
	Leakage loss, device	Maximum 7.65 W*
*The maximum power consumption of the device results from the following specifications:	KNX bus connection	0.25 W
	Relay 20 A	3.0 W
	Relay 16 A	1.0 W
	Relay 6 A	2.4 W
	Electronic outputs 0.5 A	1.0 W
Connections	KNX	via bus connection terminals 0.8 mm Ø, single core
	Load circuits	Screw terminal with universal head (PZ 1) 0.2…4 mm² stranded, 2 x (0.2…2.5 mm²) 0.2…6 mm² single core, 2 x (0.2…4 mm²)
	Ferrules without/with plastic sleeves	without: 0.25…2.5 mm² with: 0.25…4 mm²
	TWIN ferrules	0.5…2.5 mm² Contact pin length min. 10 mm
	Tightening torque	Maximum 0.6 Nm
	Fans/valves/inputs	Screw terminal, slot head 0.2…2.5 mm² stranded 0.2…4 mm² solid core
	Tightening torque	Maximum 0.6 Nm
Operating and display elements	Button/LED ⊸ ●	For assignment of the physical address
Enclosure	IP 20	to EN 60 529
Safety class	II	to EN 61 140
Insulation category	Overvoltage category	III to EN 60 664-1
	Pollution degree	2 to EN 60 664-1
KNX safety extra low voltage	SELV 24 V DC	

Temperature range	Operation Transport Storage	-5 °C…+45 °C -25 °C…+70 °C -25 °C…+55 °C
Ambient conditions	Maximum air humidity	93 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device, Pro *M*
	Dimensions	90 x 216 x 64.5 mm (H x W x D)
	Mounting width in space units	12 modules at 18 mm
	Mounting depth	64.5 mm
Installation	On 35 mm mounting rail	to EN 60 715
Mounting position	As required	
Weight	0.7 kg	
Housing/colour	Plastic housing, grey	
Approvals	KNX to EN 50 090-1, -2	Certificate
CE mark	In accordance with the EMC guideline and low voltage guideline	

Important

The maximum permissible current of a KNX line may not be exceeded.
During planning and installation ensure that the KNX line is correctly dimensioned.
The device features a maximum current consumption of 24 mA (Fan-In 2).

2.1.1 Electronic outputs

Rated values	Number	4, non-isolated, short-circuit proofed
	U_n rated voltage	24…230 V AC (50/60 Hz)
	I_n rated current (per output pair)	0.5 A
	Continuous current	0.5 A resistive load at T_u up to 20 °C 0.3 A resistive load at T_u up to 60 °C
	Inrush current	Maximum 1,6 A, 10 s at T_u up to 60 °C
		T_u = ambient temperature

2.1.2 Binary inputs

Rated values	Number	18[1)]
	U_n scanning voltage	32 V, pulsed
	I_n scanning current	0.1 mA
	Scanning current I_n at switch on	Maximum 355 mA
	Permissible cable length	≤ 100 m one-way, at cross-section 1.5 mm²

[1)] All binary inputs are internally connected to the same potential.

2.1.3 Rated current output 6 A

Rated values	Number	13 contacts
	U_n rated voltage	250/440 V AC (50/60 Hz)
	I_n rated current (per output)	6 A
Switching currents	AC3* operation (cos φ = 0.45) To EN 60 947-4-1	6 A/230 V
	AC1* operation (cos φ = 0.8) To EN 60 947-4-1	6 A/230 V
	Fluorescent lighting load to DIN EN 60 669-1	6 A/250 V (35 µF)[2)]
	Minimum switching performance	20 mA /5 V 10 mA /12 V 7 mA /24 V
	DC current switching capacity (resistive load)	6 A /24 V=
Service life	Mechanical endurance	> 10^7
	Electronic endurance to IEC 60 947-4-1	
	AC1* (240 V/cos φ = 0.8)	> 10^5
	AC3* (240 V/cos φ = 0.45)	> 1.5 x 10^4
	AC5a* (240 V/cos φ = 0.45)	> 1.5 x 10^4
Switching times[1)]	Maximum relay position change per output and minute if only one relay is switched.	2,683

[1)] The specifications apply only after the bus voltage has been applied to the device for at least 10 seconds. Typical delay of the relay is approx. 20 ms.

[2)] The maximum inrush-current peak may not be exceeded.

*** What do the terms AC1, AC3 and AC5a mean?**

In Intelligent Installation Systems, different switching capacity and performance specifications, which are dependent on the special application, have become established in industrial and residential systems. These performance specifications are rooted in the respective national and international standards. The tests are defined so that typical applications, e.g. motor loads (industrial) or fluorescent lamps (residential) are simulated.

The specifications AC1 and AC3 are switching performance specifications which have become established in the industrial field.

Typical application:

AC1 –	Non-inductive or slightly inductive loads, resistive furnaces (relates to switching of ohmic/resistive loads)
AC3 –	Squirrel-cage motors: Starting, switching off motors during running (relates to (inductive) motor load)
AC5a –	Switching of electric discharge lamps

These switching performances are defined in the standard EN 60947-4-1 *Contactors and motor-starters - Electromechanical contactors and motor-starters*. The standard describes starters and/or contactors that previously were preferably used in industrial applications.

2.1.4 Output lamp load 6 A

Lamps	Incandescent lamp load	1200 W
Fluorescent lamps T5/T8	Uncorrected	800 W
	Parallel compensated	300 W
	DUO circuit	350 W
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1000 W
	Halogen lamps 230 V	1000 W
Dulux lamp	Uncorrected	800 W
	Parallel compensated	800 W
Mercury-vapour lamp	Uncorrected	1000 W
	Parallel compensated	800 W
Switching performance (switching contact)	Maximum peak inrush-current I_p (150 µs)	200 A
	Maximum peak inrush-current I_p (250 µs)	160 A
	Maximum peak inrush-current I_p (600 µs)	100 A
Number of electronic ballasts (T5/T8, single element)[1]	18 W (ABB EVG 1 x 18 CF)	10
	24 W (ABB EVG-T5 1 x 24 CY)	10
	36 W (ABB EVG 1 x 36 CF)	7
	58 W (ABB EVG 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3

[1] For multiple element lamps or other types, the number of electronic ballasts must be determined using the peak inrush current of the electronic ballasts.

2.1.5 Rated current output 16 A

Rated values	Number	1
	U_n rated voltage	250/440 V AC (50/60 Hz)
	I_n rated current	16 A
Switching currents	AC3* operation (cos φ = 0.45) To EN 60 947-4-1	8 A/230 V
	AC1* operation (cos φ = 0.8) To EN 60 947-4-1	16 A/230 V
	Fluorescent lighting load AX to EN 60 669-1	16 A/250 V (70 µF)[2]
	Minimum switching performance	100 mA/12 V 100 mA/24 V
	DC current switching capacity (resistive load)	16 A/24 V =
Service life	Mechanical service life	> 3 x 10^6
	Electrical endurance to IEC 60 947-4-1	
	AC1* (240 V/cos φ = 0.8)	> 10^5
Switching times[1]	Maximum relay position change per output and minute if only one relay is switched.	313

[1] The specifications apply only after the bus voltage has been applied to the device for at least 10 seconds. Typical delay of the relay is approx. 20 ms.

[2] The maximum inrush-current peak may not be exceeded.

*** What do the terms AC1, AC3 and AC5a mean?**

In Intelligent Installation Systems, different switching capacity and performance specifications, which are dependent on the special application, have become established in industrial and residential systems. These performance specifications are rooted in the respective national and international standards. The tests are defined so that typical applications, e.g. motor loads (industrial) or fluorescent lamps (residential) are simulated.

The specifications AC1 and AC3 are switching performance specifications which have become established in the industrial field.

Typical application:

AC1 – Non-inductive or slightly inductive loads, resistive furnaces (relates to switching of ohmic/resistive loads)

AC3 – Squirrel-cage motors: Starting, switching off motors during running (relates to (inductive) motor load)

AC5a – Switching of electric discharge lamps

These switching performances are defined in the standard EN 60947-4-1 *Contactors and motor-starters - Electromechanical contactors and motor-starters*. The standard describes starter and/or contactors that previously were preferably used in industrial applications.

2.1.6 Output lamp load 16 A

Lamps	Incandescent lamp load	2500 W
Fluorescent lamps T5/T8	Uncorrected	2500 W
	Parallel compensated	1500 W
	DUO circuit	1500 W
Low-voltage halogen lamps	Inductive transformer	1200 W
	Electronic transformer	1500 W
	Halogen lamps 230 V	2500 W
Dulux lamp	Uncorrected	1100 W
	Parallel compensated	1100 W
Mercury-vapour lamp	Uncorrected	2000 W
	Parallel compensated	2000 W
Switching performance (switching contact)	Maximum peak inrush-current I_p (150 µs)	400 A
	Maximum peak inrush-current I_p (250 µs)	320 A
	Maximum peak inrush-current I_p (600 µs)	200 A
Number of electronic ballasts (T5/T8, single element)[1)]	18 W (ABB EVG 1 x 18 CF)	23
	24 W (ABB EVG-T5 1 x 24 CY)	23
	36 W (ABB EVG 1 x 36 CF)	14
	58 W (ABB EVG 1 x 58 CF)	11
	80 W (Helvar EL 1 x 80 SC)	10

[1)] For multiple element lamps or other types, the number of electronic ballasts must be determined using the peak inrush current of the electronic ballasts.

2.1.7 Rated current output 20 A

Rated values	Number	3
	U_n rated voltage	250/440 V AC (50/60 Hz)
	I_n rated current	20 A
Switching currents	AC3* operation (cos φ = 0.45) To EN 60 947-4-1	16 A/230 V
	AC1* operation (cos φ = 0.8) To EN 60 947-4-1	20 A/230 V
	Fluorescent lighting load AX to EN 60 669-1	20 A/250 V (140 µF)[2)]
	Minimum switching performance	100 mA/12 V 100 mA/24 V
	DC current switching capacity (resistive load)	20 A/24 V=
Service life	Mechanical service life	> 10^6
	Electrical endurance to IEC 60 947-4-1	
	AC1* (240 V/cos φ = 0.8)	> 10^5
	AC3* (240 V/cos φ = 0.45)	> 3 x 10^4
	AC5a (240 V/cos φ = 0.45)	> 3 x 10^4
Switching times[1)]	Maximum relay position change per output and minute if only one relay is switched.	93

[1)] The specifications apply only after the bus voltage has been applied to the device for at least 10 seconds. Typical delay of the relay is approx. 20 ms.

[2)] The maximum inrush-current peak may not be exceeded.

*** What do the terms AC1, AC3 and AC5a mean?**

In Intelligent Installation Systems, different switching capacity and performance specifications, which are dependent on the special application, have become established in industrial and residential systems. These performance specifications are rooted in the respective national and international standards. The tests are defined so that typical applications, e.g. motor loads (industrial) or fluorescent lamps (residential) are simulated.

The specifications AC1 and AC3 are switching performance specifications which have become established in the industrial field.

Typical application:

AC1 –	Non-inductive or slightly inductive loads, resistive furnaces (relates to switching of ohmic/resistive loads)
AC3 –	Squirrel-cage motors: Starting, switching off motors during running (relates to (inductive) motor load)
AC5a –	Switching of electric discharge lamps

These switching performances are defined in the standard EN 60947-4-1 *Contactors and motor-starters - Electromechanical contactors and motor-starters*. The standard describes starter and/or contactors that previously were preferably used in industrial applications.

2.1.8 Output lamp load 20 A

Lamps	Incandescent lamp load	3680 W
Fluorescent lamps T5/T8	Uncorrected Parallel compensated DUO circuit	3680 W 2500 W 3680 W
Low-voltage halogen lamps	Inductive transformer Electronic transformer Halogen lamps 230 V	2000 W 2500 W 3680 W
Dulux lamp	Uncorrected Parallel compensated	3680 W 3000 W
Mercury-vapour lamp	Uncorrected Parallel compensated	3680 W 3680 W
Switching performance (switching contact)	Maximum peak inrush-current I_p (150 µs) Maximum peak inrush-current I_p (250 µs) Maximum peak inrush-current I_p (600 µs)	600 A 480 A 300 A
Number of electronic ballasts (T5/T8, single element)[1]	18 W (ABB EVG 1 x 18 CF) 24 W (ABB EVG-T5 1 x 24 CY) 36 W (ABB EVG 1 x 36 CF) 58 W (ABB EVG 1 x 58 CF) 80 W (Helvar EL 1 x 80 SC)	26[2] 26[2] 22 12[2] 10[2]

[1] For multiple element lamps or other types, the number of electronic ballasts must be determined using the peak inrush current of the electronic ballasts.

[2] Limited by protection with B16 automatic circuit-breakers.

Device type	Application program	Max. number of Communication objects	Max. number of group addresses	Max. number of associations
RM/S 2.1	Room Master, Premium/…*	255	255	255

* … = current version number of the application program. **Please observe the software information on our homepage for this purpose.**

Note

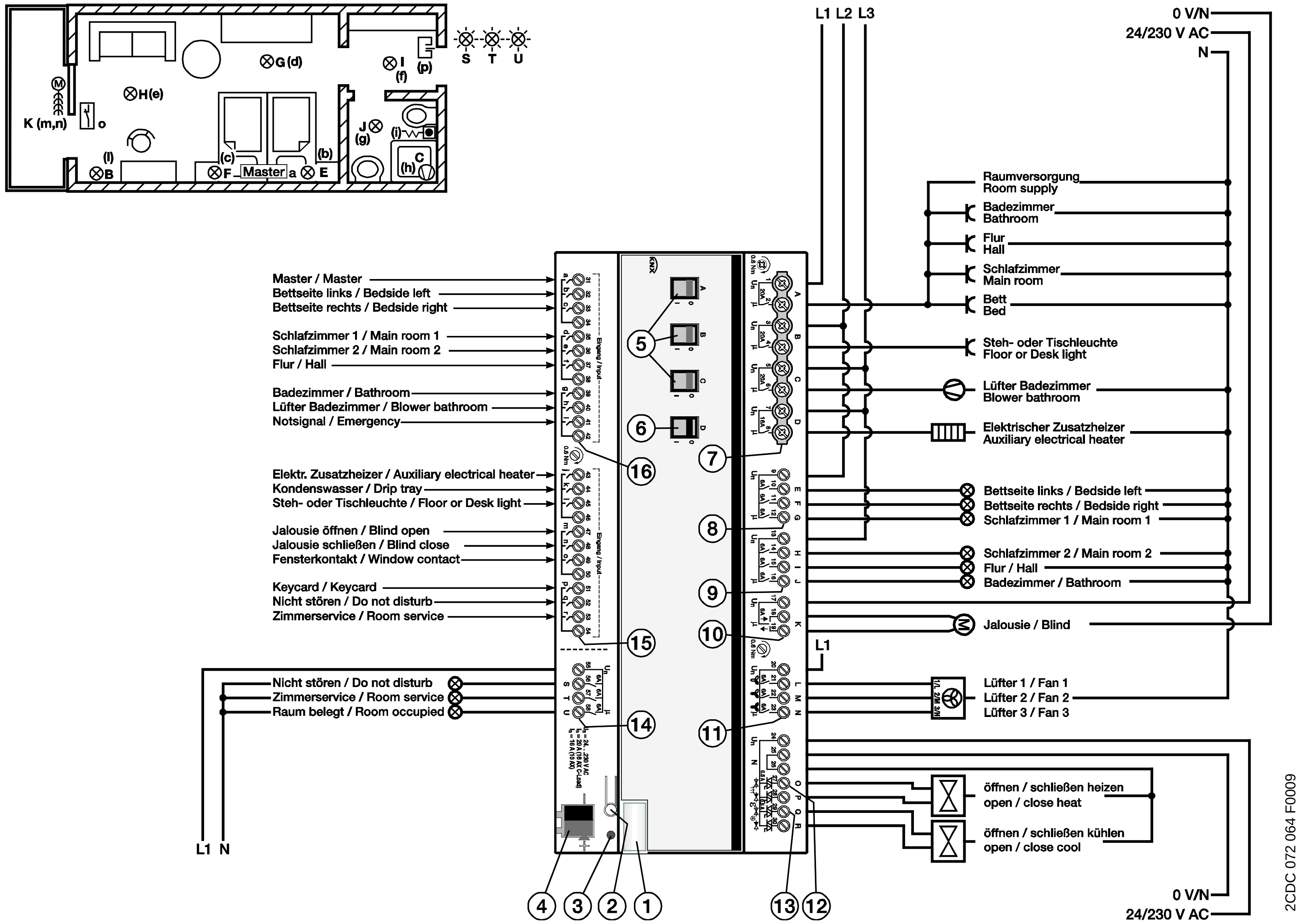
The ETS and the current version of the device application program are required for programming.

The current version of the application program is available for download on the internet as *www.abb.com/knx*. After import it is available in the ETS under *ABB/ ABB/Room automation/Room Master/Premium*.

The device does not support the locking function of a KNX device in the ETS. If you inhibit access to all devices of the project with a *BCU code*, it has no effect on this device. Data can still be read and programmed.

2.2 Connection schematics

Hotel room example



RM/S 2.1 with electromotor valve drives

1 Label carrier

2 Button *Programming*

3 LED *Programming* ● (red)

4 Bus connection terminal

5 Switch position display and manual operation, output (A, B, C) 20 A (16 AX)

6 Switch position display and manual operation, output (D) 16 A (10 AX)

7 Load circuits, with 2 terminals each

8 Outputs, 3 contacts, 1 screw terminal for phase connection (E, F, G)

9 Outputs, 3 contacts, 1 screw terminal for phase connection (H, I, J)

10 Blind (K)

11 Fan (L, M, N)

12 Valve HEATING (O, P)

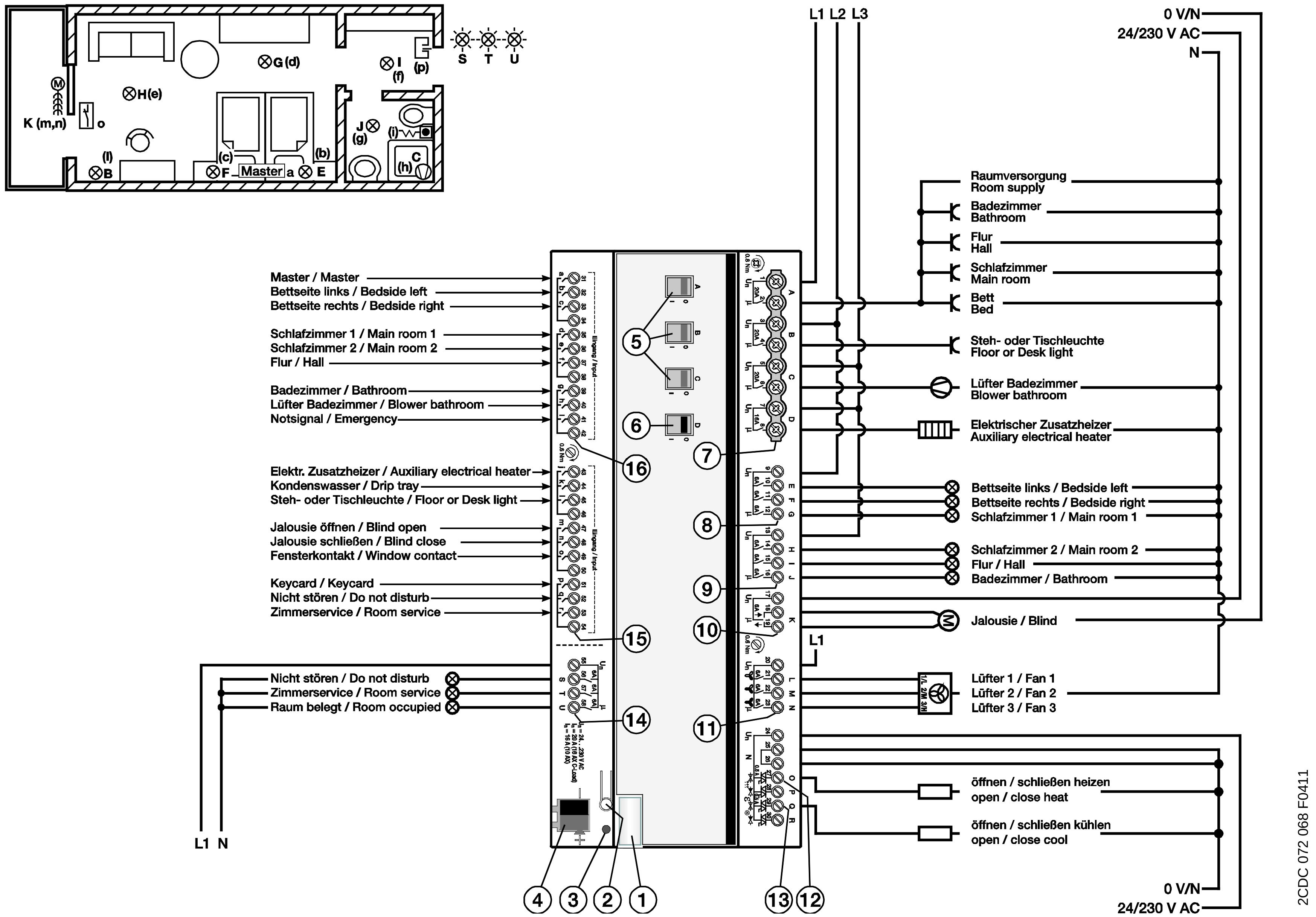
13 Valve COOLING (Q, R)

14 Outputs, 3 contacts, 1 screw terminal for phase connection (S, T, U)

15 Binary inputs (j, k, l, m, n, o, p, q, r)

16 Binary inputs (a, b, c, d, e, f, g, h, i)

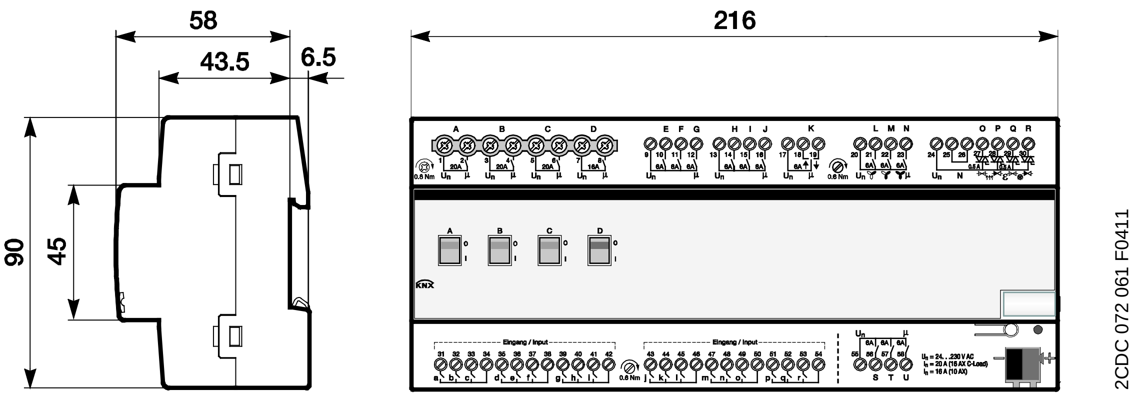
Hotel room example



RM/S 2.1 with electromotor valve drives

1 Label carrier
2 Button *Programming*
3 LED *Programming* ● (red)
4 Bus connection terminal
5 Switch position display and manual operation, output (A, B, C) 20 A (16 AX)
6 Switch position display and manual operation, output (D) 16 A (10 AX)
7 Load circuits, with 2 terminals each
8 Outputs, 3 contacts, 1 screw terminal for phase connection (E, F, G)
9 Outputs, 3 contacts, 1 screw terminal for phase connection (H, I, J)
10 Blind (K)
11 Fan (L, M, N)
12 Valve HEATING (O, P)
13 Valve COOLING (Q, R)
14 Outputs, 3 contacts, 1 screw terminal for phase connection (S, T, U)
15 Binary inputs (j, k, l, m, n, o, p, q, r)
16 Binary inputs (a, b, c, d, e, f, g, h, i)

2.3 Dimension drawing



2.4 Assembly and installation

The RM/S 2.1 is a modular installation device for quick installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.

The mounting position can be selected as required.

The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal. The terminal assignment is located on the housing.

The device is ready for operation after connection to the bus voltage.

Accessibility of the devices for the purpose of operation, testing, visual inspection, maintenance and repair must be provided compliant to DIN VDE 0100-520.

Commissioning requirements

In order to commission the device, a PC with ETS as well as an interface to the ABB i-bus®, e.g. via a KNX interface, is required.

The device is ready for operation after connection to the bus voltage. No additional auxiliary voltage is required.

Important
The maximum permissible current of a KNX line may not be exceeded. During planning and installation ensure that the KNX line is correctly dimensioned. The device features a maximum current consumption of 24 mA (Fan-In 2).

The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications for your country should be observed when planning and setting up electrical installations and security systems for intrusion and fire detection.

- Protect the device from damp, dirt and damage during transport, storage and operation.
- Only operate the device within the specified technical data limits!
- The device should only be operated in an enclosed housing (distribution board)!
- The voltage supply to the device must be switched off, before mounting work is performed.

⚠ ⚠ **Danger**
In order to avoid dangerous touch voltages, which originate through feedback from differing phase conductors, all-pole disconnection must be observed when extending or modifying the electrical connections.

Supplied state

The device is supplied with the physical address 15.15.255. The application program is preloaded. It is therefore only necessary to load group addresses and parameters during commissioning.

However, the complete application program can be reloaded if required. A longer downtime may result if the application program is changed or after a discharge.

Assignment of the physical address

The assignment and programming of the physical address is carried out in the ETS.

The device features a button ⊸ for assignment of the physical device address. The red LED ● lights up, after the button has been pushed. It switches off as soon as the ETS has assigned the physical address or the button ⊸ is pressed again.

Download response

Depending on the PC which is used, the progress bar for the download may take up to one and a half minutes, before it appears, due to the complexity of the device.

Cleaning

If devices become dirty, they can be cleaned using a dry cloth or a cloth dampened with a soapy solution. Corrosive agents or solutions should never be used.

Maintenance

The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs, e.g. during transport and/or storage.

3 Commissioning

3.1 Overview

The parameterization of the Room Master is implemented with the application program *Room Master Premium/2* and the Engineering Tool Software ETS. Using the application program, a comprehensive and flexible range of functions are available. The standard settings allow simple commissioning. The functions can be extended if required.

The following functions are available:

Power outlets (sockets)	For power supply to individual power outlet circuits and other loads.
Switching sockets	For supply of a switching socket, e.g. on a table or a floor lamp.
Fan in the bathroom	For control of a bathroom fan.
Auxiliary electrical heater	For control of auxiliary electrical heating, e.g. in the winter summer transition phase.
Lighting	For supply of nine lighting circuits, e.g. bed left/right, room, bathroom, hall, entrance area.
Fan	A 3 speed fan is controlled alternately with a two-way connection or with speed switching.
Valve HEATING/COOLING	One valve for HEATING and one valve for COOLING are controlled. The control of the valves can be implemented as PWM (constant) control or as 3-point control (opening and closing). The valve outputs are short circuit protected.
Binary input	18 binary inputs are available, e.g. Light ON/OFF switching in the entrance area of the room, in the bathroom, the lamps on each side of the beds, the floor lamp/table lamp, blind UP/DOWN, signalling contacts for window contact and dew point monitoring, switching of the auxiliary heating, door contact, card reader, sending of an emergency signal, door bells, activation of Do not disturb, Room service and Room occupied/vacant. The binary inputs are divided into six groups of three inputs each.

The 6 A outputs are available for Fan Coil applications.

Caution

Improper switching will cause destruction of the fan motors.

The technical data of the fan must be observed, e.g. speed or switching function.

For further information see: Parameter window L, M, N: Fan (3 x 6 A) multi-level, page 113.

The Room Master Premium features relays in each output which are mechanically independent of the other outputs. Switching noises cannot be avoided due to the mechanical nature of the design.

The Room Master Premium is installed centrally in an electrical distribution board. Generally, the Room Master Premium is used in conjunction with a room temperature controller (thermostat) for an individual room temperature control system. The thermostat sends a control variable which is used to control the fan speeds via the Room Master Premium.

Fan Coil controls

- Fan with three fan speeds
- With changeover or step control
- 2 pipe system HEATING and COOLING
- 2 pipe system HEATING or COOLING
- 3 pipe system
- 4 pipe system

For further information see: Planning and application, page 207

Configuration design types

A Fan Coil unit can be configured as a compact device or a modular installation device:

- *Compact devices:* These are supplied with enclosures and are available as self-contained units for wall or ceiling mounting.
- *Modular installation devices:* These have no enclosures and are mounted in the wall, in the ceiling or in the floor. The air is blown into the room through a grill.

Air supply

Fan Coil units are available as recirculation or as mixed air devices.

- *Recirculation devices:* The room air is directed past heat exchangers by the fans.
- *Mixed air devices:* The room air is mixed with fresh air. The mixing ratio between re-circulated and fresh air can usually be adjusted.

3.1.1 Functions of the inputs

The following table provides an overview of the functions, which are possible using the inputs with the Room Master Premium RM/S 2.1 and the application program *Room Master Premium/2*:

Functions of the inputs	a…f	g…l	m…r
Switch Sensor/Fault monitoring input	■	■	■
Switch/dim sensor	■	■	■
Blind sensor	■	■	■
Value/Forced operation	■	■	■

3.1.2 Functions of the outputs

The following table provides an overview of the functions, which are possible using the outputs with the Room Master Premium RM/S 2.1 and the application program *Room Master Premium/2*:

Functions of the outputs	**A…D**	**E…J**	**L, M, N**	**S, T, U**
Time				
Staircase lighting	■	■	■	■
ON/OFF delay	■	■	■	■
Flashing		■	■	■
Scene				
Assignment of the output to scenes	■	■	■	■
Logic				
AND/OR/XOR or GATE	■	■		■
Forced operation				
1 bit or 2 bit	■	■	■	■

Note

The outputs L, M and N can be programmed as outputs and as fans. The descriptions of the setting options can be found in the parameter window *L, M, N: Fan (3 x 6 A) multi-level*, page 113.

3.2 Parameters

The parameterization of the Room Master is implemented using the Engineering Tool Software ETS. The application program is available in the ETS at *ABB/Room automation/Room Master/Premium*.

The following chapter describes the parameters of the RM/S 2.1 using the parameter windows. The parameter window features a dynamic structure, so that further parameters may be enabled depending on the parameterization and the function of the outputs.

The default values of the parameters are underlined, e.g.:

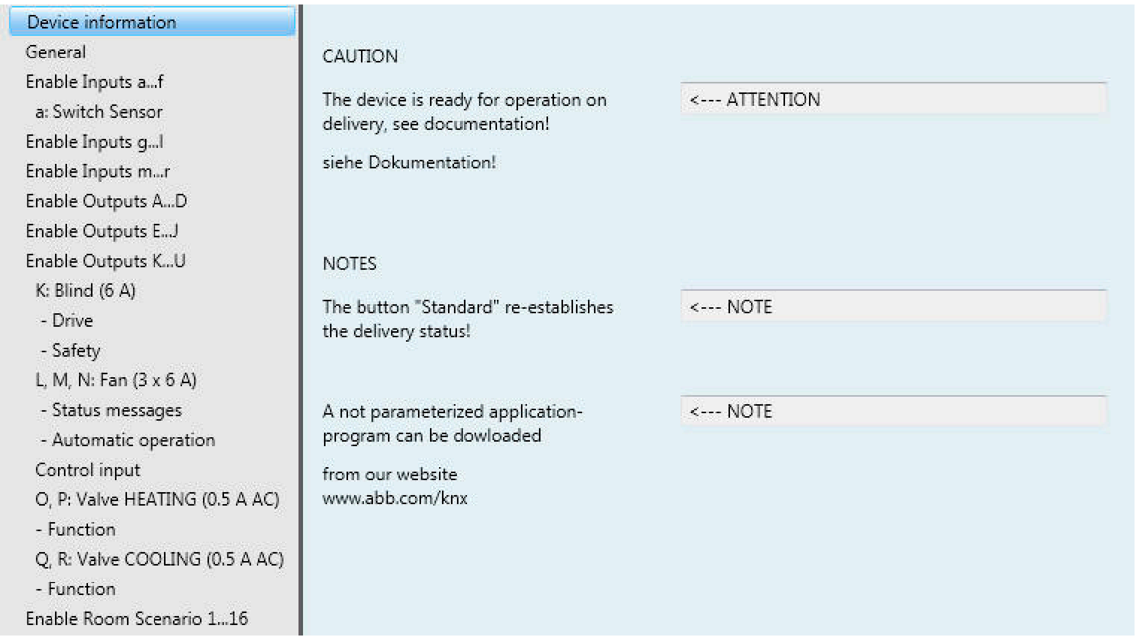
Options:	yes
	<u>no</u>

Note
In this chapter, the parameters are explained using the default settings. An overview of the preconfigured settings in conjunction with the room states can be found in the chapter Preconfiguration, page 265.

Note
The device features several inputs/outputs. As the functions are identical for all inputs/outputs, they will only be explained using input/output A as an example.

3.2.1 Parameter window *Device information*

This parameter window contains important information about the RM/S and the respective application program.



CAUTION

The device is ready for operation on delivery, see documentation!

<--- ATTENTION

siehe Dokumentation!

NOTES

The button "Standard" re-establishes the delivery status!

<--- NOTE

A not parameterized application-program can be dowloaded

<--- NOTE

from our website www.abb.com/knx

CAUTION

The device is ready for operation on delivery, see documentation!

<--- ATTENTION

NOTES

The button "Standard" re-establishes the delivery status!

<--- NOTE

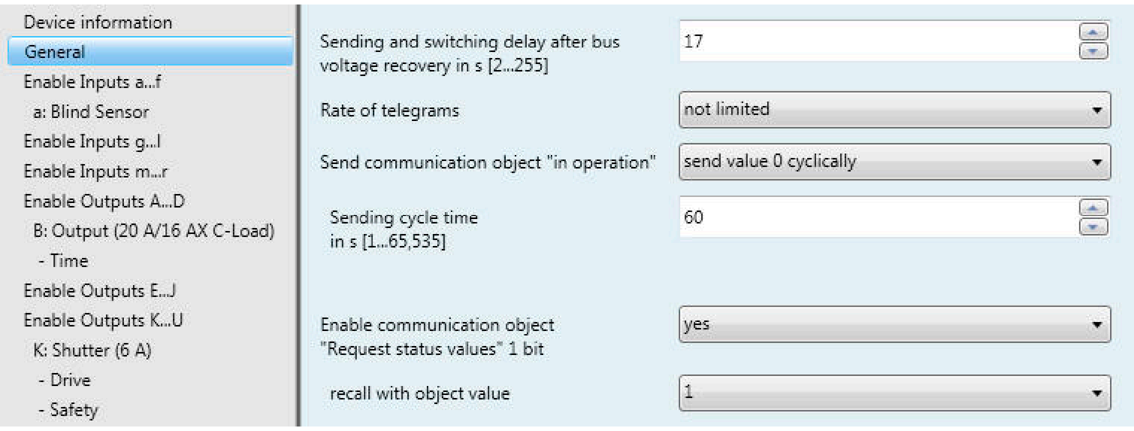
A not parameterized application program can be downloaded

from our website www.abb.com/knx

<--- NOTE

3.2.2 Parameter window *General*

In this parameter window, higher level parameters can be set.



Sending and switching delay after bus voltage recovery in s [2...255]: 17

Rate of telegrams: not limited

Send communication object "in operation": send value 0 cyclically

Sending cycle time in s [1...65,535]: 60

Enable communication object "Request status values" 1 bit: yes

recall with object value: 1

Sending and switching delay after bus voltage recovery in s [2…255]

Options: 2…255

Telegrams are only received during the sending and switching delay. The telegrams are not processed however, and the outputs remain unchanged. No telegrams are sent on the bus.

After the sending and switching delay, telegrams are sent and the state of the outputs is set to correspond to the parameterization or the communication object values.
If communication objects are read during the sending and switching delay, e.g. by a visualisation system, these read requests are stored, and a response is sent, after the sending and switching delay has been completed.
An initialization time of about two seconds is included in the delay time. The initialisation time is the time that the processor requires to be ready to function.

How does the device behave with bus voltage recovery?

After bus voltage recovery, the device always waits for the sending delay time to elapse before sending telegrams on the bus.

Note
The set switching delay does not act on the electronic outputs (valve HEATING/COOLING)!

Rate of telegrams

Options: <u>not limited</u>
1/2/3/5/10/20 telegram(s)/second
0.05/0.1/0.2/0.3/0.5 seconds/telegram

Using this parameter, the bus load generated by the device can be limited.

- *1/2/3/5/10/20 telegrams/second:* X telegrams per second are sent.
- *0.05/0.1/0.2/0.3/0.5 seconds/telegram:* A telegram is sent every x seconds.

Send communication object "in operation"

Options: <u>no</u>
send value 0 cyclically
send value 1 cyclically

The communication object *in operation* indicates the correct function of the device on the bus.
This cyclic telegram can be monitored by an external device.

Note
After bus voltage recovery, the communication object sends its value after the set sending and switching delay.

- *send value 0(1) cyclically:* The following parameter appears:

  Sending cycle time
  in s [1…65,535]

  Options: 1…<u>60</u>…65,535

  Here a time interval is set, which the communication object *in operation* uses to cyclically send a telegram.

Enable communication object
"Request status values" 1 bit

Options: <u>no</u>
yes

yes: A 1 bit communication object *Request status values* is enabled.

Via this communication object, all status messages can be requested, provided that they have been parameterized with the option after a change or request.

With the option yes, the following parameters appear:

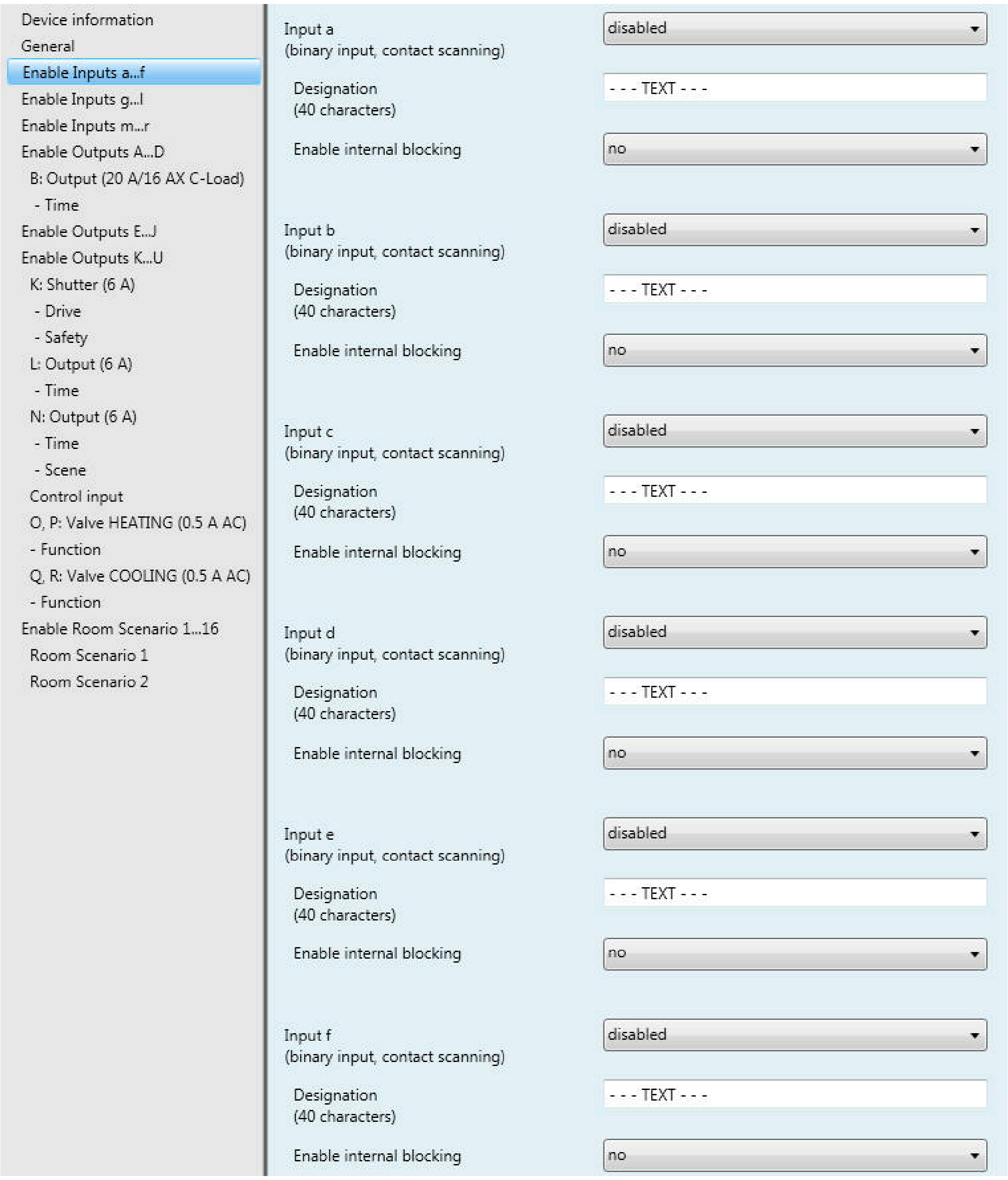
recall with object value

Options: <u>0</u>
1
0 or 1

- *0:* Sending status messages is requested with the value 0.
- *1:* Sending status messages is requested with the value 1.
- *0 or 1:* Sending of the status messages is requested with the values 0 or 1.

3.2.3 Parameter window *Enable Inputs a…f*

In this parameter window, all the settings for enabling and designation of the inputs a…f are undertaken.



Input a (binary input, contact scanning): disabled
Designation (40 characters): - - - TEXT - - -
Enable internal blocking: no

Input b (binary input, contact scanning): disabled
Designation (40 characters): - - - TEXT - - -
Enable internal blocking: no

Input c (binary input, contact scanning): disabled
Designation (40 characters): - - - TEXT - - -
Enable internal blocking: no

Input d (binary input, contact scanning): disabled
Designation (40 characters): - - - TEXT - - -
Enable internal blocking: no

Input e (binary input, contact scanning): disabled
Designation (40 characters): - - - TEXT - - -
Enable internal blocking: no

Input f (binary input, contact scanning): disabled
Designation (40 characters): - - - TEXT - - -
Enable internal blocking: no

Note

In the following, the setting possibilities of Inputs a…f are explained using input a as an example. The setting possibilities are identical for all inputs.

Input a
(binary input, contact scanning)

Option:	disabled Switch Sensor/Fault monitoring input Switch/dim sensor Blind sensor Value/Forced operation

The operating mode of the input is set with this parameter. The respective parameter window *a: xxx* also becomes visible with the selection of an operating mode.

Designation

Options: - - - TEXT - - -

With this parameter, it is possible to enter a text of up to 40 characters in length for identification in the ETS.

Note
The text which is entered is used to provide help, in order to obtain an overview of the inputs when they are fully assigned and to indicate the function assigned to the input. The text is purely for informative purposes and has no further function.

Enable internal blocking

Options:	no yes

This parameter defines whether a binary input can or cannot be internally inhibited. If an internal block is called, the binary input is physically disabled. Pressing a connected button/switch as well as incoming telegrams on communication object Event 0/1 started are ignored.

This parameterization option enables the establishment of a blocking mask for all 18 binary inputs. This blocking mask may also be called at every room state. It is thus possible to inhibit or enable the binary inputs using this mask when this room state is called.

- *no:* The input cannot be inhibited internally nor via the communication object *Block*.
- *yes:* The input can be blocked internally.

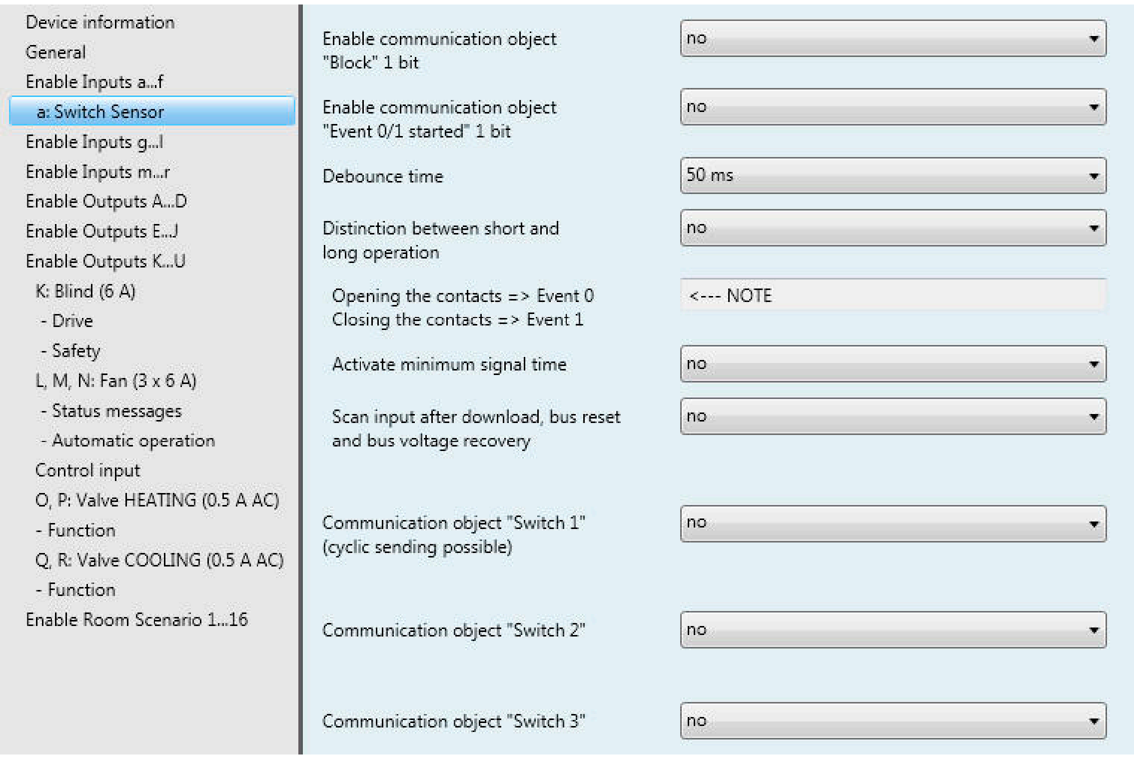
Inputs b…f

The device features several inputs. However, as the functions for all inputs are identical, only the functions of input a will be described.

3.2.3.1 Parameter window a: *Switch Sensor*

This parameter window is visible if in Parameter window Enable Inputs a…f, page 34, in parameter *Input a (binary input, contact scanning)*, the option *Switch sensor/Fault monitoring* has been selected.

Note
The device features several inputs. However, as the functions for all inputs are identical, only the functions of input a will be described.



Enable communication object "Block" 1 bit	no
Enable communication object "Event 0/1 started" 1 bit	no
Debounce time	50 ms
Distinction between short and long operation	no
Opening the contacts => Event 0 Closing the contacts => Event 1	<--- NOTE
Activate minimum signal time	no
Scan input after download, bus reset and bus voltage recovery	no
Communication object "Switch 1" (cyclic sending possible)	no
Communication object "Switch 2"	no
Communication object "Switch 3"	no

Enable communication object "Block" 1 bit

Options: <u>no</u>
yes

- *yes:* The 1 bit Block communication object *Block* is enabled. This can be used to block the input .

Notes
If the input is disabled and the option *Cyclic sending* is set, the last state is still sent regardless of the block. The option *Block* still blocks the physical input, sending continues internally. Should the internal disable with a binary input not be permitted in the parameter window *Enable Inputs a…f*, page 34, this communication object has no effect on the respective binary input. **For further information see: Block binary inputs, page 268**

Enable communication object "Event 0/1 started" 1 bit

Options: no
yes

- *yes:* The 1 bit communication object *Event 0/1* started communication object is enabled. As a result, the same events, such as those of the push button/switch connected to the binary input, can also be triggered by the receipt of a telegram on the communication object *Event 0/1 started*.

Debounce time

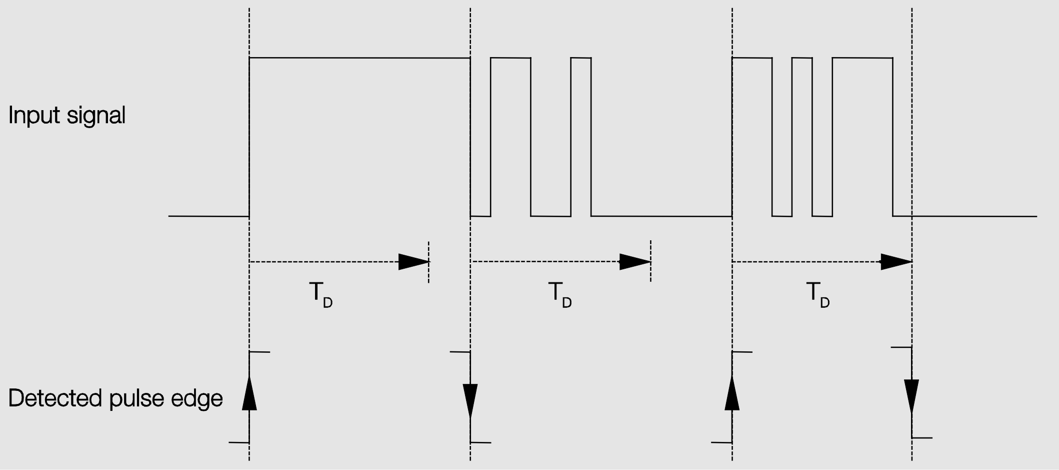
Options: 10/20/30/50/70/100/150 ms

Debouncing prevents unwanted multiple operations of the input, e.g. due to bouncing of the contact.

What is the debounce time?

If an edge is detected at an input, the input will react immediately to this edge, e.g. by sending a telegram. At the same time, the duration of the debounce time T_D starts. The signal on the input is not evaluated within the debounce time duration.

Example: Debounce time of the input signal for a detected edge:



After detection of an edge on the input, further edges are ignored for the debounce time T_D.

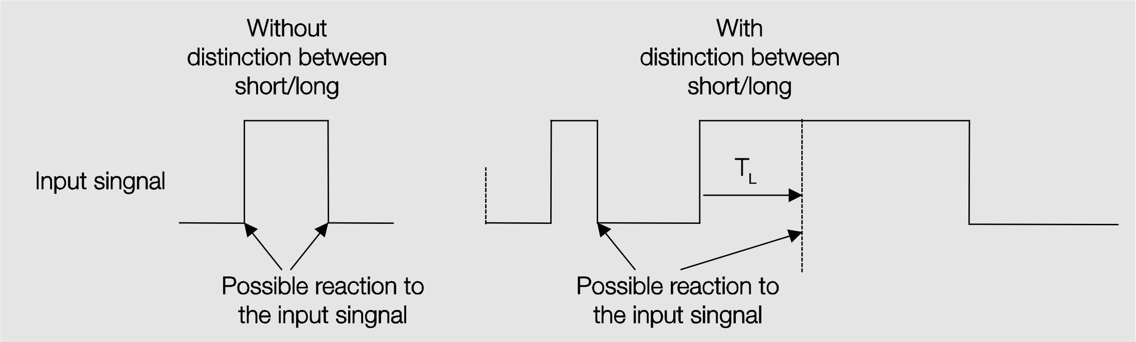
Distinction between short and long operation

Options: no
yes

Using this parameter, you set if the input differentiates between short and long operation.

- *yes:* After opening/closing of the contact, it must first of all be ascertained if a short or long operation has occurred here. Only thereafter will a possible reaction be triggered.

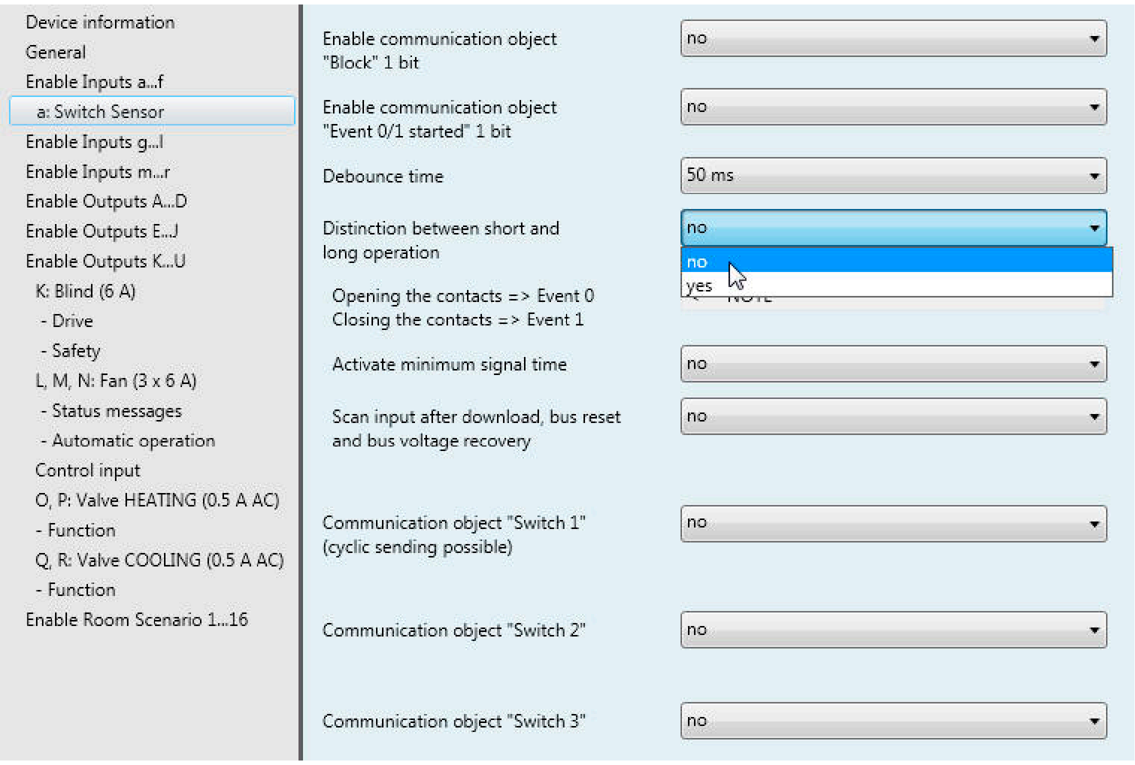
The following drawing shows the function in detail:



T_L is the time duration from where a long operation is detected.

3.2.3.1.1 Parameter *Distinction between short and long operation – no*

If the option no is selected with the parameter *Distinction between long and short operation*, the following parameters appear in the Parameter window a: Switch Sensor, page 36:



Enable communication object "Block" 1 bit: no

Enable communication object "Event 0/1 started" 1 bit: no

Debounce time: 50 ms

Distinction between short and long operation: no

Opening the contacts => Event 0
Closing the contacts => Event 1

Activate minimum signal time: no

Scan input after download, bus reset and bus voltage recovery: no

Communication object "Switch 1" (cyclic sending possible): no

Communication object "Switch 2": no

Communication object "Switch 3": no

Opening the contacts => Event 0
Closing the contacts => Event 1

<--- NOTE

Activate minimum signal time

Options: no
yes

- *yes:* The following parameters appear:

  On closing the contact
  in value x 0.1 s [0…65,535]

  Options: 1…10…65,535

  On opening the contact
  in value x 0.1 s [0…65,535]

  Options: 1…10…65,535

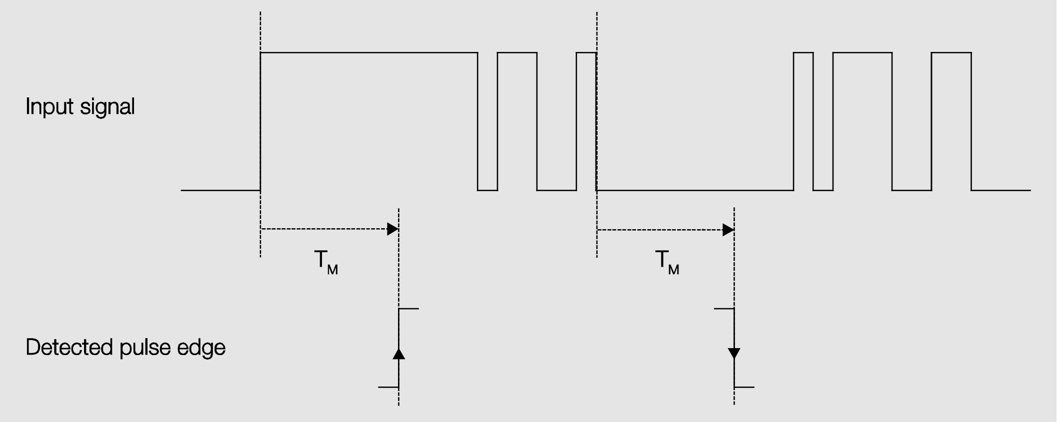
What is the minimum signal time?

In contrast to the debounce time, a telegram is only sent after the minimum signal duration has elapsed.

The individual functions are:

If an edge is detected on the input, the minimum signal duration will commence. No telegram is sent on the bus at this time. The signal on the input is observed within the minimum signal duration. If a further edge appears at the input during the minimum signal duration, it will be interpreted as a new operation, and the minimum signal duration restarts. If no further edges occur after the start of the minimum signal duration, a telegram is sent on the bus, after the minimum signal duration has timed out.

Example: Minimum signal duration of the input signal for a detected edge:



In only two cases, no further edge changes occur within the minimum signal duration T_M after a change of edge. For this reason, only both of these are detected as valid.

Scan input after download, bus reset and bus voltage recovery

Options:	<u>no</u> yes

- *no:* The object value is not scanned after a download, bus reset and bus voltage recovery.
- *yes:* The object value is scanned after a download, bus reset and bus voltage recovery: The following parameter appears.

Inactive wait state after bus voltage recovery in s [0…30,000]

Options: <u>0</u>…30,000

Here the waiting time after a bus voltage recovery is set. After the waiting time has elapsed the state on the input terminals is scanned. The input reacts as if the state on the input terminals has just changed.

Note
The inactive waiting time does <u>not</u> add to the actual, adjustable send delay time. This can be set separately.

Communication object "Switch 1" (cyclic sending possible)

Options: <u>no</u>
yes

- *yes:* The communication object *Switch* 1 appears. The following parameters appear:

Reaction with event 0

Options: ON
<u>OFF</u>
TOGGLE
no reaction
terminate cyclic sending

Reaction with event 1

Options: ON
<u>OFF</u>
TOGGLE
no reaction
terminate cyclic sending

The behaviour of the communication object is determined here. If the option yes has been selected with the parameter *Distinction between short and long operation*, the reaction occurs with a short or long operation. With the option no it occurs with each edge change.

Important
If the option *terminate cyclic sending* is set, it is important to note that this is only effective if the option yes has only been selected in the following parameter *Cyclic sending*.

Internal connection

Options: no
Output A (20 A/16 AX C-Load)
Output B (20 A/16 AX C-Load)
Output C (20 A/16 AX C-Load)
Output D (16 A/10 AX)
Output E (6 A)
Output F (6 A)
Output G (6 A)
Output H (6 A)
Output I (6 A)
Output J (6 A)
Output L (6 A)
Output M (6 A)
Output N (6 A)
Output S (6 A)
Output T (6 A)
Output U (6 A)
Room Scenario 1/2
Room Scenario 3/4
Room Scenario 5/6
Room Scenario 7/8
Room Scenario 9/10
Room Scenario 11/12
Room Scenario 13/14
Room Scenario 15/16

With this parameter, a direct connection of the binary input with an output or with a Room Scenario can be established. With this connection, no assignment of the group address is necessary.

- *Output x:* The communication object *Switch* of the output is updated together with the communication object *Switch 1* of the binary input.

Caution

If an internal connection with an output is selected, and at the same time the reaction to an event is parameterized with TOGGLE, the communication object *Switch 1* of the binary input is updated with the inverted value of the communication object *Status Switch* of the output.

Ensure that the communication object *Status Switch* of the output is enabled. The settings *normally closed contact/normally open contact* and *Invert status* should be parameterized, so that a TOGGLE function is possible.

Note

The outputs L, M and N as well as pure outputs can be programmed as outputs and as fans. For this reason, an internal connection of the input with these outputs is not possible.

The binary input can also not be linked with the output K: *Blind*. This internal connection is only available with the selection *Blind sensor* for this binary input.

- Room Scenario *x/y:* If the communication object *Switch 1* is updated with the value 0, a Room Scenario (RS) with an odd number is triggered, i.e. RS 1/3/5/7/9/11/13 or 15. If the communication object *Switch 1* is updated with the value 1, a Room Scenario (RS) with an even number is triggered, i.e. RS 2/4/6/8/10/12/14 or 16.

Cyclic sending

Options: <u>no</u>
yes

What is cyclic sending?

Cyclic sending enables the communication object Switch to send automatically at a fixed interval. If cyclic sending is only carried out for a specific object value (ON or OFF), this condition refers to the value of the communication object. It is therefore possible in principle to start cyclic sending by sending a value to the communication object *Switch*. As this behaviour is unwanted, the flags *Write* and *Update* of the communication object are deleted in the preliminary setting, so that they cannot be changed via the bus. If this functionality is required irrespectively, these flags should be set accordingly. When the Switch communication object changes and after bus recovery (after the send delay time has elapsed), the communication object value is sent immediately on the bus, and the transmission cycle time restarts.

- *yes:* The following parameters appear:

**Telegram repeated every …
in s [1…65,535]**

Options: 1…<u>60</u>…65,535

The send cycle time describes the time used between two cyclically sent telegrams.

on object value

Options: 1
0
<u>0 or 1</u>

- *1:* The communication object value is sent cyclically with 1.
- *0:* The communication object value is sent cyclically with 0.
- *0 or 1:* The communication object values 0 and 1 are sent cyclically.

Communication object "Switch 2"

Communication object "Switch 3"

Options: <u>no</u>
yes

- *yes:* The communication object *Switch X* becomes visible. The following parameters appear:

Reaction with event 0

Options: ON
OFF
TOGGLE
no reaction

Reaction with event 1

Options: ON
OFF
TOGGLE
no reaction

The behaviour of the communication object is determined here. If the option yes has been selected with the parameter *Distinction between short and long operation*, the reaction occurs with a short or long operation. With the option *no*, it occurs with each edge change.

Internal connection

Options: no
Output A (20 A/16 AX C-Load)
Output B (20 A/16 AX C-Load)
Output C (20 A/16 AX C-Load)
Output D (16 A/10 AX)
Output E (6 A)
Output F (6 A)
Output G (6 A)
Output H (6 A)
Output I (6 A)
Output J (6 A)
Output L (6 A)
Output M (6 A)
Output N (6 A)
Output S (6 A)
Output T (6 A)
Output U (6 A)
Room Scenario 1/2
Room Scenario 3/4
Room Scenario 5/6
Room Scenario 7/8
Room Scenario 9/10
Room Scenario 11/12
Room Scenario 13/14
Room Scenario 15/16

With this parameter, a direct connection of the binary input with an output or with a Room Scenario can be established. With this connection, no assignment of the group address is necessary.

- *Output x:* The communication object Switch of the output is updated together with the communication object *Switch 2/3* of the binary input.

Caution

If an internal connection with an output is selected, and at the same time the reaction to an event is parameterized with TOGGLE, the communication object *Switch 2/3* of the binary input is updated with the inverted value of the communication object *Status Switch* of the output.

Ensure that the communication object *Status Switch* of the output is enabled. The settings *normally closed contact/normally open contact* and *Invert status* should be parameterized, so that a TOGGLE function is possible.

Note

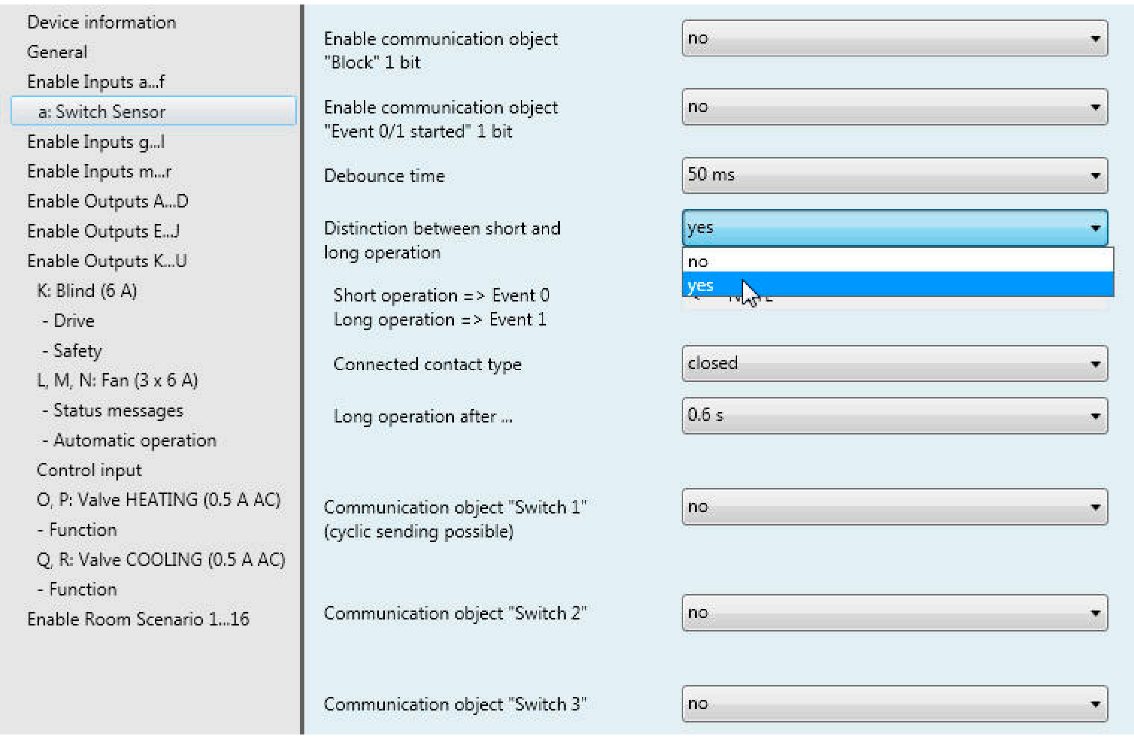
The outputs L, M and N as well as pure outputs can be programmed as outputs and as fans. For this reason, an internal connection of the input with these outputs is not possible.

The binary input can also not be linked with the output *K: Blind*. This internal connection is only available with the selection Blind sensor for this binary input.

Room Scenario x/y: If the communication object *Switch 2/3* is updated with the value 0, a Room Scenario (RS) with an odd number is triggered, i.e. RS 1/3/5/7/9/11/13 or 15.
If the communication object Switch 2/3 is updated with the value 1, a Room Scenario (RS) with an even number is triggered, i.e. RS 2/4/6/8/10/12/14 or 16.

3.2.3.1.2 Parameter *Distinction between short and long operation – yes*

If with parameter *Distinction between short and long operation* the option *yes* has been selected, the following parameters in Parameter window a: Switch Sensor, page 36, are visible.



Enable communication object "Block" 1 bit	no
Enable communication object "Event 0/1 started" 1 bit	no
Debounce time	50 ms
Distinction between short and long operation	yes
Short operation => Event 0 Long operation => Event 1	
Connected contact type	closed
Long operation after ...	0.6 s
Communication object "Switch 1" (cyclic sending possible)	no
Communication object "Switch 2"	no
Communication object "Switch 3"	no

Short operation => Event 0
Long operation => Event 1
<−−− NOTE

Connected contact type

Options: closed
opened

- *closed:* The input is closed with actuation.
- *opened:* The input is opened with actuation.

If a normally open contact is connected to the input, the option *closed* should be selected; on a normally closed contact the option *open* should be selected.

Long operation after …

Options: 0.3/0.4/0.5/0.6/0.8 s
1/1.2/1.5 s
2/3/4/5/6/7/8/9/10 s

Here the time period T_L after which an actuation is considered a “long” operation, is defined.

Note

The remaining parameter descriptions can be found in the parameter *Distinction between short and long operation – no,* on page 39.

3.2.3.1.3 Special function Fault monitoring input

Note
For the operating mode *Fault monitoring input*, the options must be adapted in comparison to the standard settings. The options for *Fault monitoring mode* are listed separately in the following. In this chapter, only the parameters, which are relevant for optimum *Fault monitoring input* performance are listed. All descriptions of the parameter should be taken from Parameter window a: Switch Sensor page 36.

Debounce time

Options: 10/20/30/<u>50</u>/70/100/150 ms

Fault monitoring option: 50 ms

Distinction between short and long operation

Options: <u>no</u>
yes

Fault monitoring option: no

Activate minimum signal time

Options: <u>no</u>
yes

Fault monitoring option: yes

On closing the contact in value x 0.1 s [1…65,535]

Options: 1…<u>10</u>…65,535

Fault monitoring option: 2

On opening the contact in value x 0.1 s [1…65,535]

Options: 1…<u>10</u>…65,535

Fault monitoring option: 2

Note
Depending on the system type, a minimum signal duration of two seconds should be set. With the evaluation, for example, of coupling switches, generator switches or incoming circuit-breakers from switchgear systems, a smaller minimum signal duration of 100 ms for example, may be necessary. It is essential to co-ordinate the switching times with the operator! Smaller signal/switch times may be required depending on the system.

Scan input after download, bus reset and bus voltage recovery

Options:	<u>no</u> yes

Fault monitoring option: no

Inactive wait state after bus voltage recovery in s [0…30,000]

Options:	0…30,000
Fault monitoring option:	0

Communication object "Switch 1" (cyclic sending possible)

Options:	no <u>yes</u>

Fault monitoring option: yes

Reaction with event 0

Options:	<u>ON</u> OFF TOGGLE no reaction End cyclic sending

Fault monitoring option: partly adjustable

Reaction with event 1

Options:	<u>ON</u> OFF TOGGLE no reaction End cyclic sending

Fault monitoring option: partly adjustable

Internal connection

Options:	<u>no</u> Output x:) Room Scenario x/y

Fault monitoring option: no

Cyclic sending

Options:	<u>no</u> yes

Fault monitoring option: yes

Telegram repeated every in s [1…65,535]

Options:	1…<u>60</u>…65,535

Fault monitoring option: 30

On object value

Options:	<u>0</u> 1 0 or 1

Fault monitoring option: 0 or 1

Communication object "Switch 2"

Communication object "Switch 3"

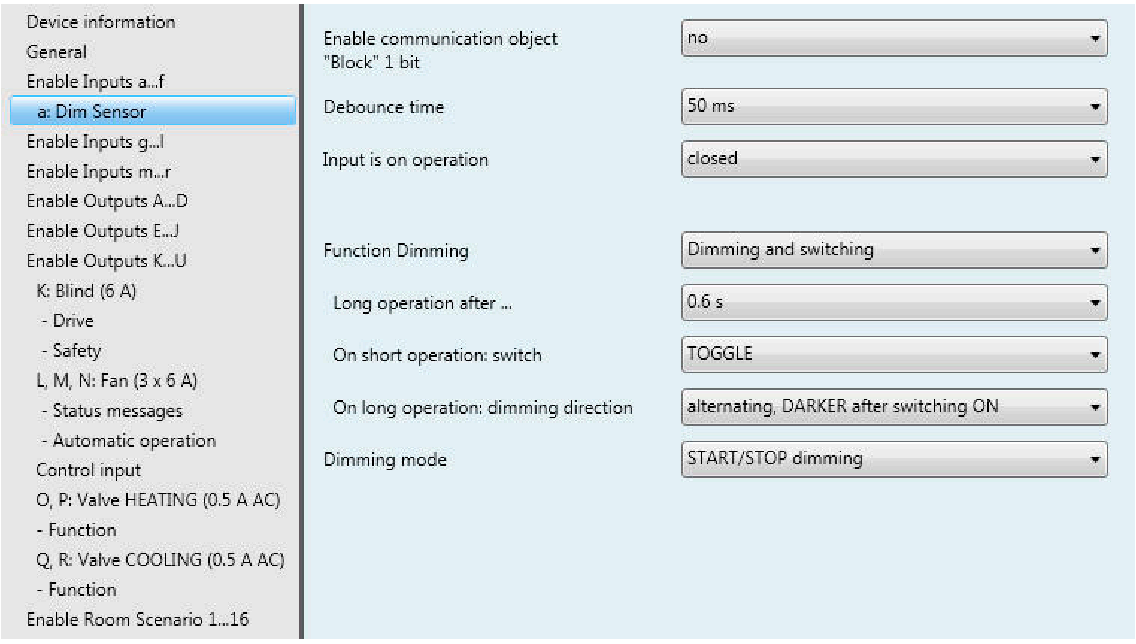
Options:	<u>no</u> yes

Fault monitoring option: no

Note
Fault messages are generally passed onto the main bus. With 500 fault messages, the option 30 s means that every 60 ms a telegram is sent on the main line. For this reason it is essential to ensure that the send delay time is set, so that no telegram is lost if the bus voltage fails.

3.2.3.2 Parameter window *a: Dim Sensor*

The operating mode allows the operation of dimmable lighting. This parameter window is visible if in Parameter window Enable Inputs a…f, page 34, in parameter *Input a (binary input , contact scanning)*, the option *Switch/Dim Sensor* has been selected.



Enable communication object "Block" 1 bit	no
Debounce time	50 ms
Input is on operation	closed
Function Dimming	Dimming and switching
Long operation after ...	0.6 s
On short operation: switch	TOGGLE
On long operation: dimming direction	alternating, DARKER after switching ON
Dimming mode	START/STOP dimming

Enable communication object "Block" 1 bit

Options: no
yes

- *yes:* The 1 bit Block communication object *Block* is enabled. This can be used to block the input.

Note
If the input is disabled and the option *Cyclic sending* is set, the last state is still sent regardless of the block. The option *Block* still blocks the physical input, sending continues internally.

Debounce time

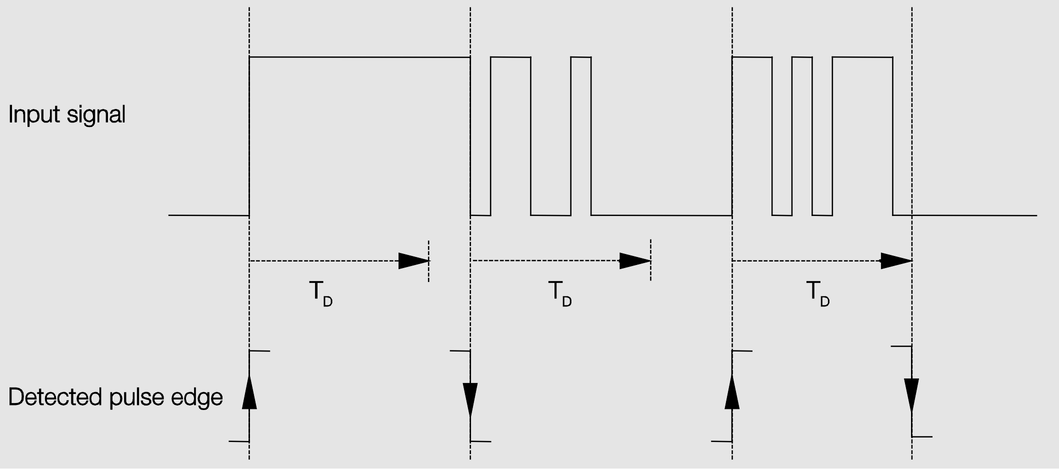
Options: 10/20/30/50/70/100/150 ms

Debouncing prevents unwanted multiple operations of the input, e.g. due to bouncing of the contact.

What is the debounce time?

If an edge is detected at an input, the input will react immediately to this edge, e.g. by sending a telegram. At the same time, the duration of the debounce time T_D starts. The signal on the input is not evaluated within the debounce time duration.

The following example clarifies this:



After detection of an edge on the input, further edges are ignored for the debounce time T_D.

Input is on operation

Options: closed
opened

Here you set if the contact on the input is a normally closed contact or a normally opened contact.

Function Dimming

Options: Dimming and switching
Only dimming

With this parameter you define if the lighting can only be dimmed *(Only dimming)* or if additional switching is also permitted *(Dimming and switching)*. In this case, a long button push dims and a short button push switches.

How does 1 button dimming function?

Switch and dim functions can be controlled completely using a single push button. With each long operation alternate BRIGHTER or DARKER dimming occurs, or with short operation alternate switch on or off occurs.

If the communication object *Switch* = 0, a BRIGHTER telegram is sent at all times. In order to evaluate the switch feedback of the actuator, the Write flag of the communication object *Switch* is set.

The following table shows the function in detail:

Communication object value *Switch*	**Value of the last dimming telegram**	**Reaction of the dimming actuation (sends dimming telegram)**
OFF	DARKER	BRIGHTER
OFF	BRIGHTER	BRIGHTER
ON	DARKER	BRIGHTER
ON	BRIGHTER	DARKER

The advantage of the *Only dimming* function is that no distinction is made between short and long actuation. The dim telegram is initiated immediately after actuation in this way. It is not necessary to wait for a long operation.

How does 2 button dimming function?

If 2 button dimming is required, the functions of the individual buttons should be set with the parameters *Reaction on short operation or Reaction on long operation*, e.g. ON or BRIGHTER.

The user thus has the choice of the buttons to be combined with one another, e.g. to dim a lighting group or the function that the individual buttons should perform in this case.

Furthermore, two inputs are required for 2 button dimming, e.g. *Input a* with short operation with switch ON and long operation for BRIGHTER dimming. *Input b* with short operation for switch OFF and long operation for DARKER dimming.

If the option *Dimming and switching* is selected with the parameter *Function Dimming*, the parameters *Long operation after…, On short operation: Switch* and *On long operation: Dimming direction* in parameter window *a: Dim sensor* are visible:

Long operation after…

Options: 0.3/0.4/0.5/<u>0.6</u>/0.8/1/1.2/1.5/2/3/4/5/6/7/8/9/10 s

Here the time period T_L after which an actuation is considered a “long” operation, is defined.

On short operation: switch

Options: ON
OFF
TOGGLE
no reaction

This parameter defines if the communication object *Telegram switch TOGGLEs* with short operation (typical: 1 button dimming) or only switches *OFF* or *ON* (typically: 2 button dimming).

- *TOGGLE:* A short operation changes the value of the communication object *Telegram switch*.
- *ON:* With short operation the value 1 is sent.
- *OFF:* With short operation the value 0 is sent.

On long operation: dimming direction

Options: BRIGHTER
DARKER
alternating
alternating, BRIGHTER after switching ON
alternating, DARKER after switching ON

With this parameter, you set what the communication object *Dimming* should send on the bus with a long operation. A long operation changes the value of the communication object *Dimming telegram*. With 1 button dimming, the parameter *alternating* should be set here. In this case, the dimming telegram, which is diametrically opposed to the last dimming telegram, is sent.

- *BRIGHTER:* The communication object sends a BRIGHTER telegram.
- *DARKER:* The communication object sends a DARKER telegram.
- *alternating:* The communication object alternately sends a BRIGHTER and a DARKER telegram.
- *alternating, BRIGHTER after switching ON:* The communication object at the first time sends a BRIGHTER telegram after an ON telegram; thereafter it alternately sends BRIGHTER and DARKER telegrams.
- *alternating, DARKER after switching ON:* The communication object at the first time sends a DARKER telegram after an ON telegram, thereafter it alternately sends BRIGHTER and DARKER telegrams.

Note
If the option *Only dimming* is selected in the *Function Dimming*, only the parameter *On operation: dimming direction* is visible.

Dimming mode

Options: START/STOP dimming
Dimming steps

- *START/STOP dimming:* The dimming process starts with a telegram BRIGHTER or DARKER and ends with a STOP telegram.

4 bit dimming telegram:

Decimal	Hexadecimal	Binary	Dim telegram
0	0	0000	STOP
1	1	0001	100 % DARKER
8	8	1000	STOP
9	9	1001	100 % BRIGHTER

For further information see: Input 4 bit dimming telegram, page 321

- *Dimming steps:* Dimming telegrams are sent cyclically during a long operation. Cyclic sending is terminated after the end of actuation.

Both of the next parameters only appear if in the parameter *Dimming mode* the option *Dimming steps* has been set.

Brightness change on every sent telegram

Options: 100/50/25/12.5/6.25/3.13/1.56 %

Using this parameter, you set the brightness change in percent which is cyclically sent with every dim telegram.

Sending cycle time: Telegram is repeated every …

Options: 0.3/0.4/0.5/0.6/0.8/1/1.2/1.5/2/3/4/5/6/7/8/9/10 s

The dimming telegram is sent cyclically during a long operation. The cycle time for sending corresponds with the time interval between two telegrams during cyclical sending.

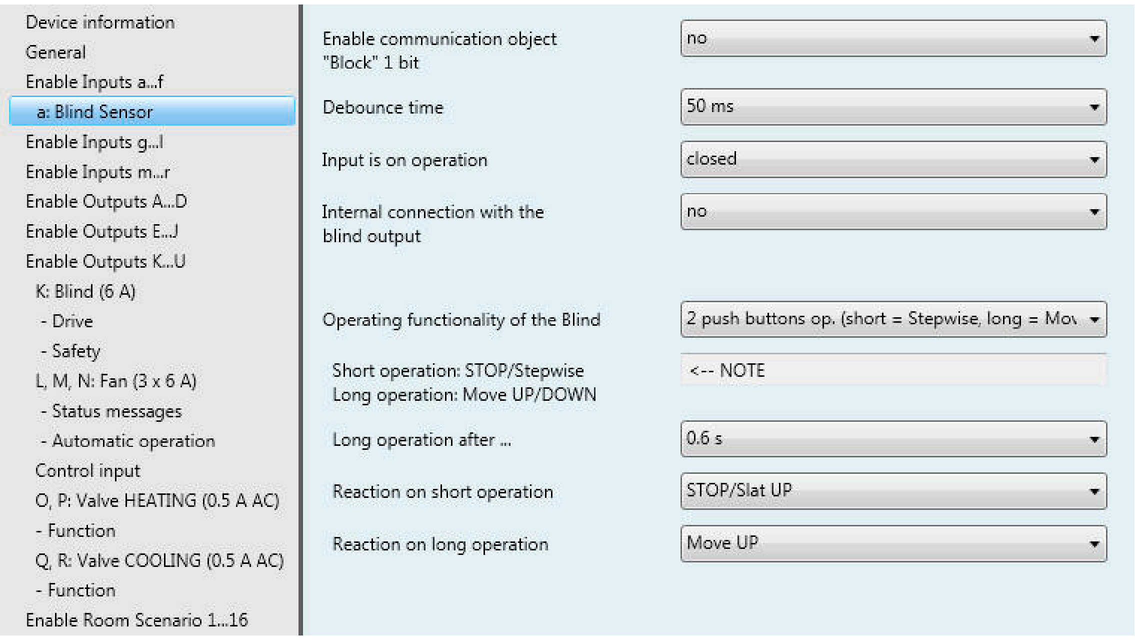
Caution

With dimming steps ensure that the set Sending cycle time is matched on the dimming actuator in order to enable a smooth dimming process.

3.2.3.3 Parameter window *a: Blind sensor*

The operating mode allows the operation of blinds and shutters with buttons or switches.

This parameter window is visible if in Parameter window Enable Inputs a…f, page 34, in parameter *Input a (binary input, contact scanning)*, the option *Blind sensor* has been selected.



Enable communication object "Block" 1 bit	no
Debounce time	50 ms
Input is on operation	closed
Internal connection with the blind output	no
Operating functionality of the Blind	2 push buttons op. (short = Stepwise, long = Mov
Short operation: STOP/Stepwise Long operation: Move UP/DOWN	<-- NOTE
Long operation after ...	0.6 s
Reaction on short operation	STOP/Slat UP
Reaction on long operation	Move UP

Enable communication object "Block" 1 bit

Options: no
yes

- *yes:* The 1 bit communication object *Block* is enabled. This can be used to block the input.

Note
If the input is disabled and the option *Cyclic sending* is set, the last state is still sent regardless of the block. The option *Block* still blocks the physical input, sending continues internally.

Debounce time

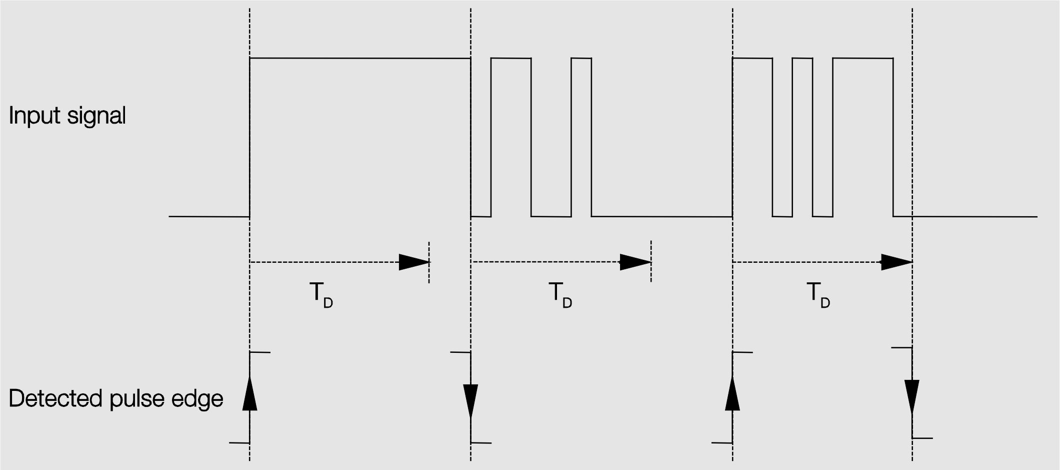
Options: 10/20/30/50/70/100/150 ms

Debouncing prevents unwanted multiple operations of the input, e.g. due to bouncing of the contact.

What is the debounce time?

If an edge is detected at an input, the input will react immediately to this edge, e.g. by sending a telegram. At the same time, the duration of the debounce time T_D starts. The signal on the input is not evaluated within the debounce time duration.

The following example clarifies this:



After detection of an edge on the input, further edges are ignored for the debounce time T_D.

Input is on operation

Options: closed
opened

Here you set if the contact on the input is a normally closed contact or a normally opened contact.

Internal connection with the blind output

Options: no
yes

- *yes:* The binary input is linked directly with the output K: Blind. The communication object *Input x: Blind Sensor Blind UP/DOWN* (x = a…r) acts internally directly on the communication object *Blind output K UP/DOWN*. The communication object *Input x: Blind Sensor STOP/Slat adjustment* (x = a…r) acts internally directly on the communication object *Blind output K Slat Adjustment/ STOP UP/DOWN*.

This internal connection of the binary input with the output K guarantees, e.g. push buttons for the operation of the blind can be programmed and installed. In this way, maximum operation flexibility for the blind is possible.

Operating functionality of the blind

Options: 1 push buttons (short = stepwise, long = Move)
1 push button op. (short = Move, long = Stepwise)
1 push button (Move only - STOP)
1 switch operation (Move only)
2 push buttons (short = stepwise, long = Move)
2 switches (Move only)
2 push buttons (Move only)
2 push buttons (only Slat)

The following list provides an overview of the different blind operating modes:

1 push buttons (short = stepwise, long = Move)	
Short operation	STOP/Stepwise Opposite direction to the last movement telegram* To return to slat adjustment, the blind must be moved UP or DOWN briefly.
Long operation	*Move UP* or *Move DOWN*
1 push button op. (short = Move, long = Stepwise)	
Short operation	*Move UP* or *Move DOWN*
Long operation	STOP/stepwise (Cyclic sending); Opposite direction to the last movement telegram
1 push button (Move only - STOP)	
On operation	The following telegrams are sent in sequence: …► *Move UP* ► *STOP/Stepwise* ► *Move DOWN* ► *STOP/Stepwise* ► … *
1 switch operation (Move only)	
On operation	*Move UP* or *Move DOWN*
End of operation	STOP/Stepwise*
2 push buttons (short = stepwise, long = Move)	
Short operation	*STOP/Slat UP/DOWN* (programmable)
Long operation	*Move UP* or *Move DOWN* (programmable)
2 switches (Move only)	
On operation	*Move UP* or *Move DOWN* (programmable)
End of operation	*STOP/Slat UP/DOWN* (programmable)
2 push buttons (Move only)	
On operation	*Move UP* or *Move DOWN* (programmable)
2 push buttons (only Slat)	
On operation	*STOP/Slat UP or DOWN* (programmable)

* If the actuator indicates the limit position, in 1 button operation the communication object *Blind UP/DOWN*. If the actuator signals the upper limit position (see communication object *Upper limit position* or *Lower limit position*), the direction of movement is defined. In 1 push button/switch operation the last direction of movement is determined via the last update of the communication object *Blind UP/DOWN*.

Depending on the selection made in the parameter *Operating functionality of the blind*, different parameters will appear.

All parameters are described in the following.

Long operation after…

Options: 0.3/0.4/0.5/0.6/0.8/1/1.2/1.5/2/3/4/5/6/7/8/9/10 s

Here the time period T_L after which an actuation is considered a “long” operation is defined.

Telegram "Slat" is repeated every

Options: 0.3/0.4/0.5/0.6/0.8/1/1.2/1.5/2/3/4/5/6/7/8/9/10 s

The time duration, at which the telegram *Slat* is repeated, is defined here.

Reaction on short operation

Options: STOP/Slat UP
STOP/Slat DOWN

Reaction on long operation

Options: Move UP
Move DOWN

It can be set whether the input triggers telegrams for movement upwards (UP) or downwards (DOWN).

Reaction on operation

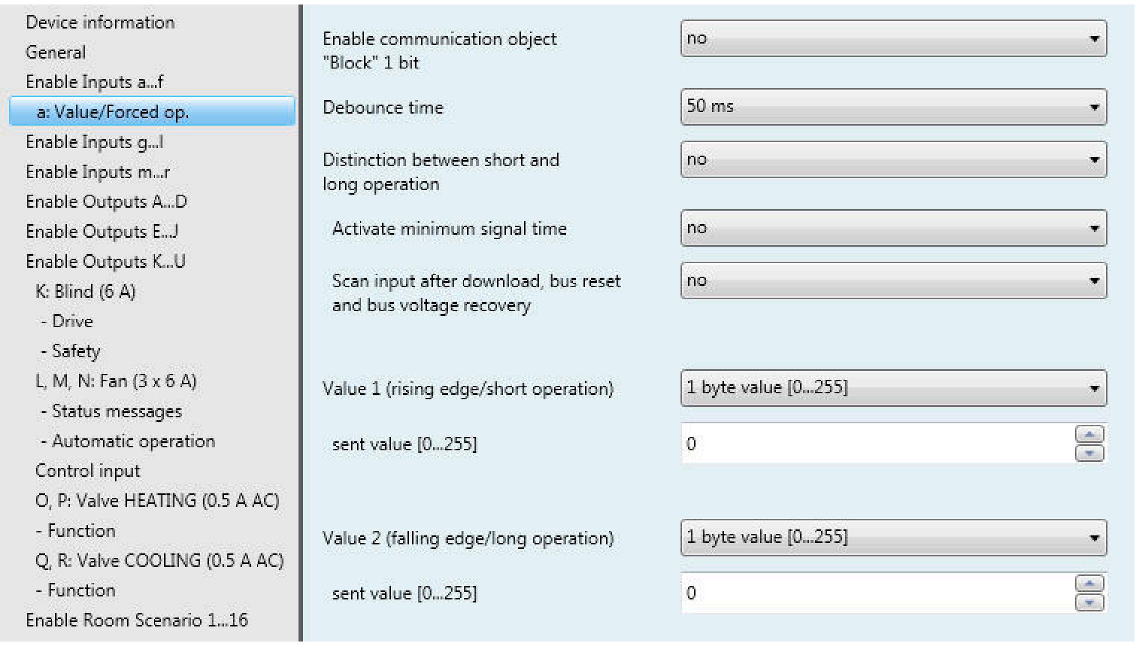
Options: Move UP
Move DOWN

It can be set whether the input triggers telegrams for movement upwards (*UP*) or downwards (*DOWN*).

3.2.3.4 Parameter window *a: Value/Forced operation*

This operating mode allows the sending of values of any data types.

This parameter window is visible if in Parameter window Enable Inputs a…f, page 34, in parameter *Input a (binary input , contact scanning)*, the option *Value/Forced operation* has been selected.



Enable communication object "Block" 1 bit: no
Debounce time: 50 ms
Distinction between short and long operation: no
Activate minimum signal time: no
Scan input after download, bus reset and bus voltage recovery: no
Value 1 (rising edge/short operation): 1 byte value [0...255]
sent value [0...255]: 0
Value 2 (falling edge/long operation): 1 byte value [0...255]
sent value [0...255]: 0

Enable communication object "Block" 1 bit

Options: no (default)
yes

- *yes:* The 1 bit Block communication object *Block* is enabled. This can be used to block the input.

Note
If the input is disabled and the option *Cyclic sending* is set, the last state is still sent regardless of the block. The option *Block* still blocks the physical input, sending continues internally.

Debounce time

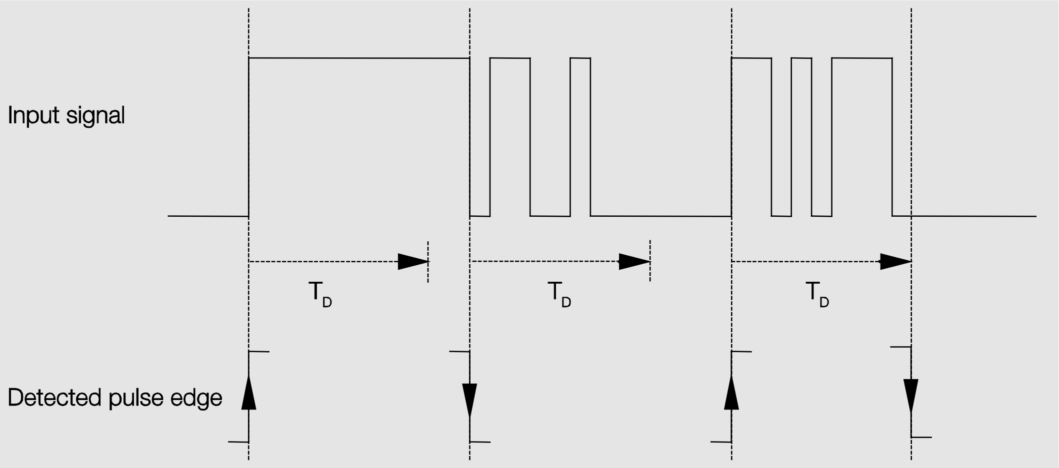
Options: 10/20/30/50/70/100/150 ms (default: 50)

Debouncing prevents unwanted multiple operations of the input, e.g. due to bouncing of the contact.

What is the debounce time?

If an edge is detected at an input, the input will react immediately to this edge, e.g. by sending a telegram. At the same time, the duration of the debounce time T_D starts. The signal on the input is not evaluated within the debounce time duration.

The following example clarifies this:



After detection of an edge on the input, further edges are ignored for the debounce time T_D.

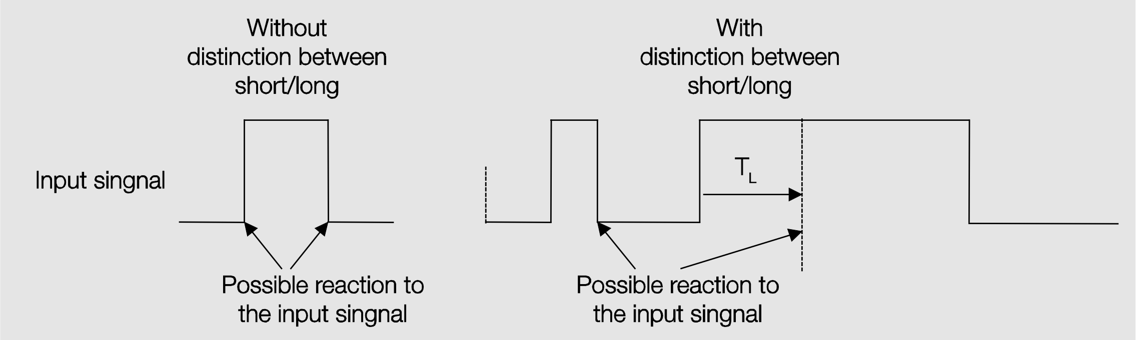
Distinction between short and long operation

Options: no
yes

Using this parameter, you set if the input differentiates between short and long operation. With the option *yes*, after opening/closing of the contact it must first of all be ascertained if a short or long operation has occurred here. Only thereafter will a possible reaction be triggered.

Note
With Distinction between short and long operation, two communication objects are visible for each input. One communication object only transmits during short operation, the other communication object only during a long operation.

The following drawing shows the function in detail:

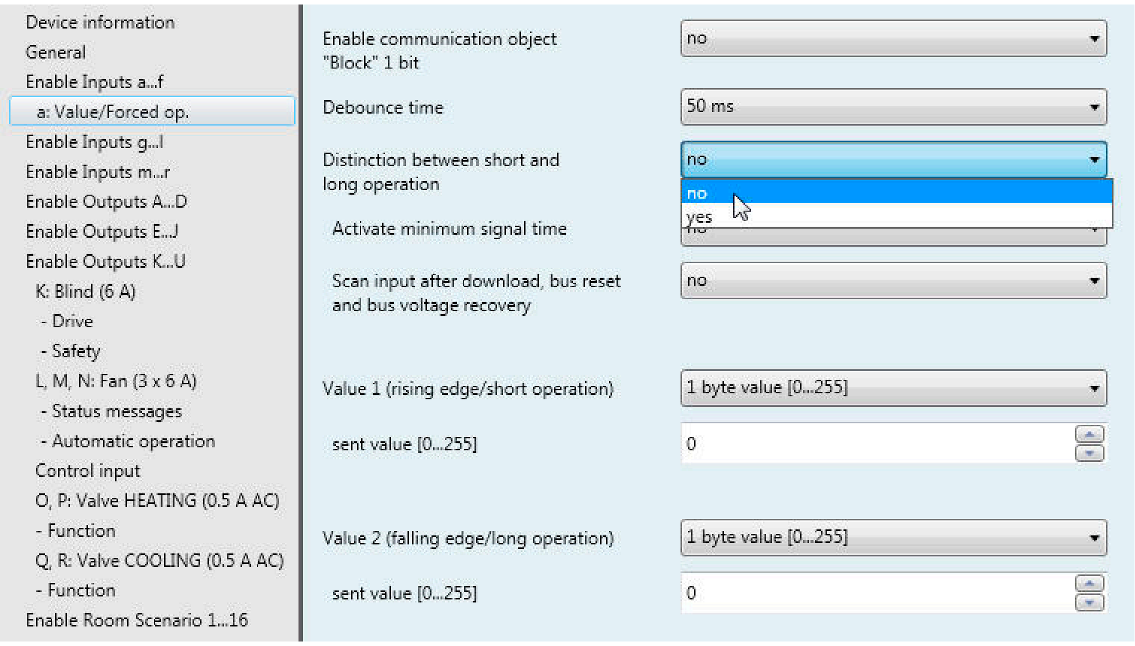


T_L is the time duration from where a long operation is detected.

If the option *no* is selected with the parameter *Distinction between short and long operation*, the following parameters appear:

3.2.3.4.1 Parameter *Distinction between short and long operation – no*

If the option *no* is selected with the parameter *difference between long and short operation*, the following parameters appear in the parameter window Parameter window a: Value/Forced operation, page 59:



Enable communication object "Block" 1 bit	no
Debounce time	50 ms
Distinction between short and long operation	no
Activate minimum signal time	no
Scan input after download, bus reset and bus voltage recovery	no
Value 1 (rising edge/short operation)	1 byte value [0...255]
sent value [0...255]	0
Value 2 (falling edge/long operation)	1 byte value [0...255]
sent value [0...255]	0

Activate minimum signal time

Options: <u>no</u>
yes

- *yes:* The following parameters appear:

  for rising edge
  in value x 0.1 s [1…65,535]

  Options: 1…<u>10</u>…65,535

Note
A rising edge corresponds to a “normally opened contact function”.

  for falling edge
  in value x 0.1 s [1…65,535]

  Options: 1…<u>10</u>…65,535

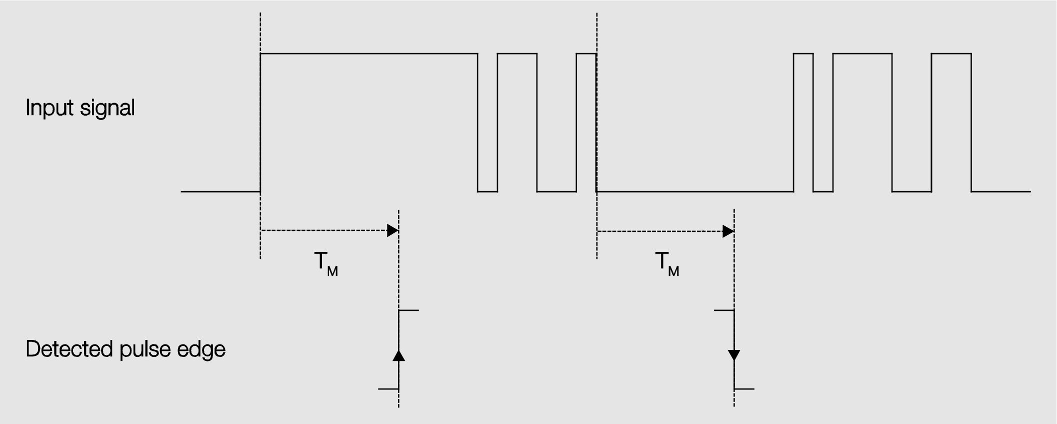
Note
A falling edge corresponds to a normally closed contact function.

What is the minimum signal time?

In contrast to the debounce time, a telegram is only sent after the minimum signal duration has elapsed. The individual functions are:

If an edge is detected on the input, the minimum signal duration will commence. No telegram is sent on the bus at this time. The signal on the input is observed within the minimum signal duration. If a further edge appears at the input during the minimum signal duration, it will be interpreted as a new operation, and the minimum signal duration restarts. If no further edges occur after the start of the minimum signal duration, a telegram is sent on the bus, after the minimum signal duration has timed out.

Example: Minimum signal duration of the input signal for a detected edge:



In only two cases, no further edge changes occur within the minimum signal duration T_M after a change of edge. For this reason, only both of these are detected as valid.

Scan input after download, bus reset and bus voltage recovery

Options:	no yes

- *no:* The object value is not scanned after a download, bus reset and bus voltage recovery.
- *yes:* The object value is scanned after a download, bus reset and bus voltage recovery. The following parameter appears:

Inactive wait state after bus voltage recovery in s [0…30,000]

Options: 0…30,000

Here the waiting time after a bus voltage recovery is set. After the waiting time has elapsed the state on the input terminals is scanned. The input reacts as if the state on the input terminals has just changed.

Note
The inactive waiting time does not add to the actual, adjustable send delay time. This can be set separately.

Value 1 (rising edge/short operation)

Options:
no sending
1 bit value [0/1]
2 Bit value [Forced operation]
1 byte value [-128…127]
1 byte value [0…255]
1 byte value [8 bit scene]
2 byte value [-32,768…32,767]
2 byte value [0…65,565]
2-byte value [floating point]
3 byte value [time of day, weekday]
4 byte value [-2,147,483,648…2,147,483,647]
4 byte value [0…4,294,967,295]

This parameter serves for defining the data type which is sent when the contact is actuated.

Depending on the selection made in parameter *Value 1 (rising edge / short operation)*, different parameters appear. All parameters are described in the following:

sent value [X]

Options:
ON/OFF/TOGGLE
0/1
-128…0…127
0…255
-32. 768…0…32. 767
0…65,535
-100…20…100
-2,147,483,648…0…2,147,483,647
0…4,294,967,295

This parameter defines the value which is sent on actuation. The value range is dependent on the set data type of the value X.

sent value

Options:
ON, activate Forced operation
OFF, activate Forced operation
Disable Forced operation

This parameter defines the value which is sent on actuation.

In the following table, the Forced operation function is explained:

Bit 1	Bit 0	Access	Description
0	0	Free	The switch communication object of the actuator is enabled by the binary input. The assigned sensor can control the actuator via the switch object. The binary input does not control the actuator. Bit 0 of the value of the forced operation communication object is not evaluated. The forced operation communication object sends a telegram with the group addresses of the forced operation communication object and the status of the switch communication object with every state change of the switch communication object.
0	1	Free	
1	0	Off	The switch communication object of the actuator is disabled by the binary input. The assigned sensor cannot control the actuator via the switch communication object. The binary input controls the actuator via the forced operation communication object. The actuator is switched off. Bit 0 of the value of the forced operation communication object is evaluated.
1	1	On	The switch communication object of the actuator is disabled by the binary input. The assigned sensor cannot control the actuator via the switch communication object. The binary input controls the actuator via the forced operation communication object. The actuator is switched ON.

8 bit scene

Options: 1…64

This parameter defines the scene number which is sent on actuation.

Store/Call scene

Options: call
save

This parameter defines whether the scene is to be recalled or stored.

Hour [0…23]

Options: 0…23

Minute [0…59]

Options: 0…59

Seconds [0…59]

Options: 0…59

With these parameters, the hours, minutes and seconds are set which are to be send when actuated.

Weekday

Options: <u>0 = no day</u>
1 = Monday
2 = Tuesday
3 = Wednesday
4 = Thursday
5 = Friday
6 = Saturday
7 = Sunday

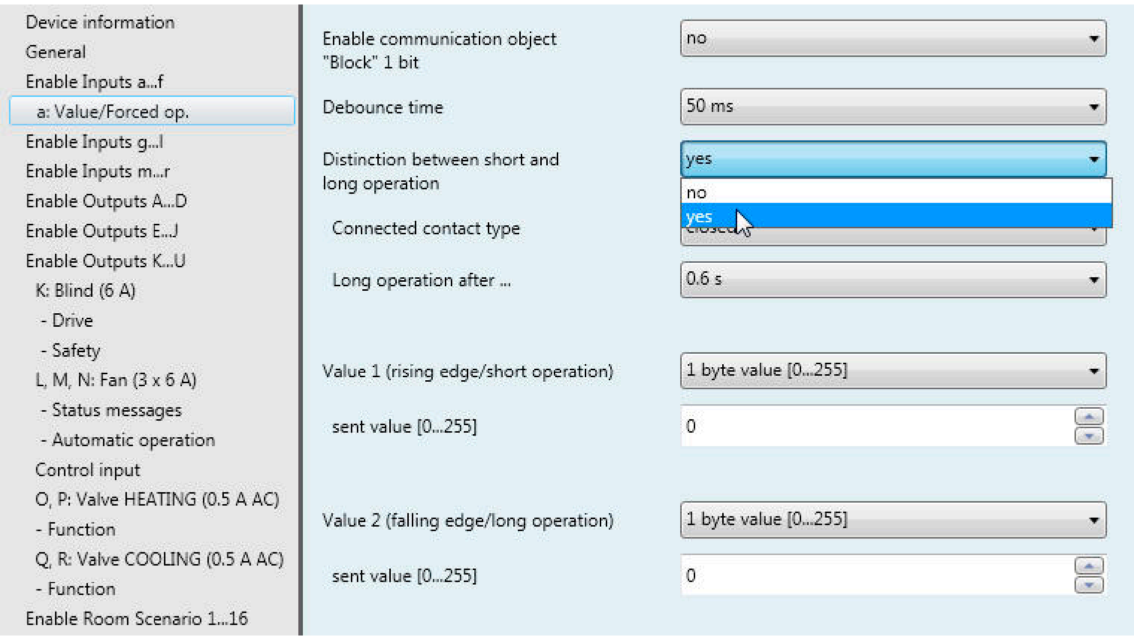
Using these parameters, the weekday that is sent on actuation are set.

Value 2 (falling edge/long operation)

Note
The parameter descriptions of the parameter *Value 2 (with a rising edge and with short operation)* correspond with those of parameters *Value 1 (with a rising edge and with short operation)*.

3.2.3.4.2 Parameter *Distinction between short and long operation – yes*

If the option *yes* is selected with the parameter *Distinction between short and long operation*, the following parameters appear:



Enable communication object "Block" 1 bit	no
Debounce time	50 ms
Distinction between short and long operation	yes no yes
Connected contact type	closed
Long operation after ...	0.6 s
Value 1 (rising edge/short operation)	1 byte value [0...255]
sent value [0...255]	0
Value 2 (falling edge/long operation)	1 byte value [0...255]
sent value [0...255]	0

Connected contact type

Options: closed
opened

- *closed:* The input is closed with actuation.
- *opened:* The input is opened with actuation.

Long operation after …

Options: 0.3/0.4/0.5/0.6/0.8 s
1/1.2/1.5 s
2/3/4/5/6/7/8/9/10 s

Here the time period T_L after which an actuation is considered a “long” operation, is defined.

Note

The remaining parameter descriptions can be found in the Parameter Distinction between short and long operation – no, on page 61.

3.2.4 Parameter window *Enable Inputs g…l Enable Inputs m…r*

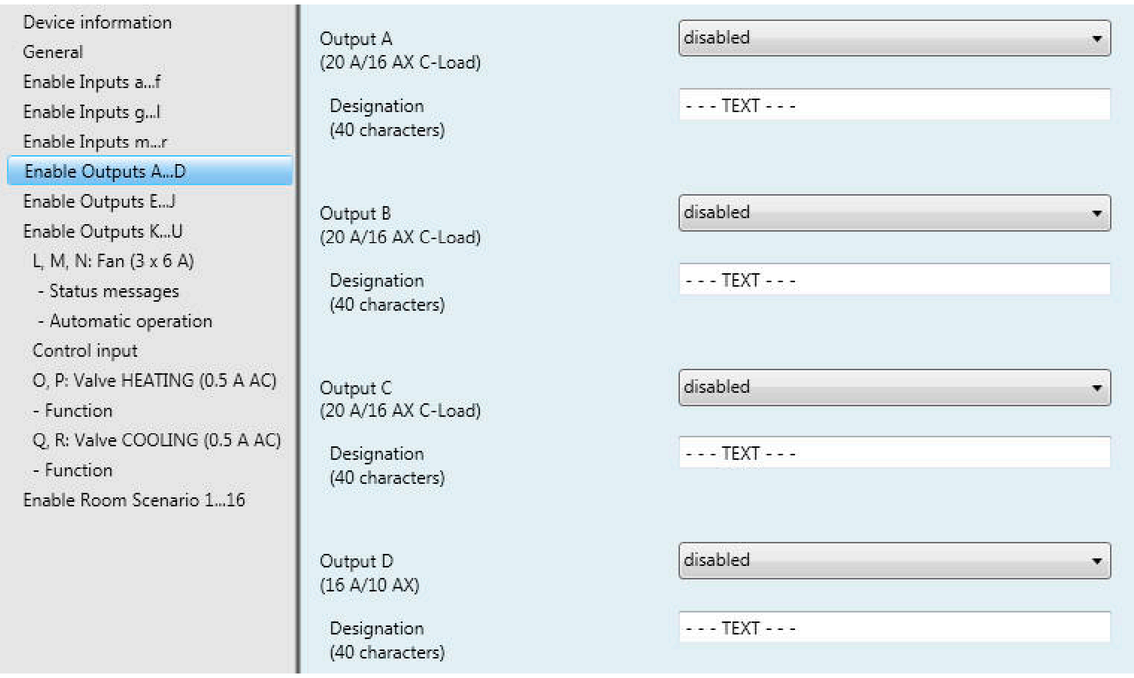
The inputs g…l and m…r do not differ from input a.

The descriptions of the parameter setting possibilities and the adjustable communication objects for the inputs g-l and m-r should be taken from the descriptions of the parameter window Parameter window Enable Inputs a…f, page 34, and Parameter window a: Switch Sensor, page 36.

3.2.5 Parameter window *Enable Outputs A…D*

In this parameter window, Outputs A…D can be enabled.

Note
In the following, the setting possibilities of Outputs A…D are explained using output A as an example. The setting possibilities for outputs A…D are identical.



Output A (20 A/16 AX C-Load): disabled
Designation (40 characters): - - - TEXT - - -
Output B (20 A/16 AX C-Load): disabled
Designation (40 characters): - - - TEXT - - -
Output C (20 A/16 AX C-Load): disabled
Designation (40 characters): - - - TEXT - - -
Output D (16 A/10 AX): disabled
Designation (40 characters): - - - TEXT - - -

Output A
(20 A/16 AX C-Load)

Options: disabled
enable

- *disabled:* Output A (20A/16AX) is blocked/invisible, no communication objects are visible.
- *enable:* The parameter window *A: Output (20 A/16 AX)* appears. Dependent communication objects become visible.

Designation
(40 characters)

Options: - - - TEXT - - -

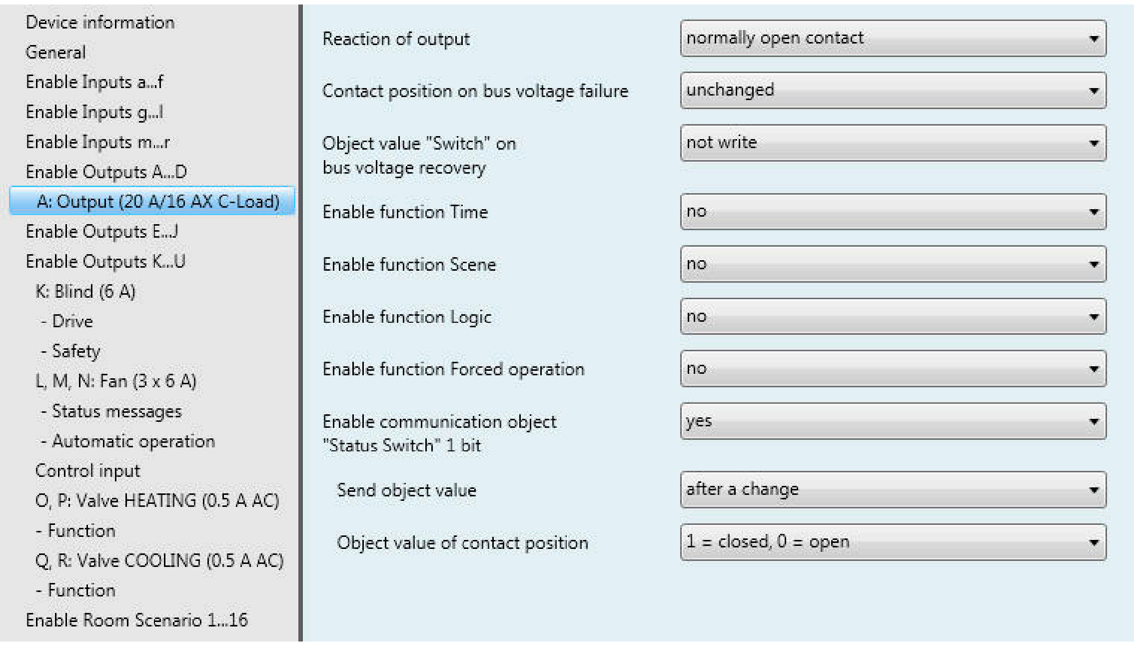
With this parameter, it is possible to enter a text of up to 40 characters in length for identification in the ETS.

Note
The text which is entered is used to provide help, in order to obtain an overview of the inputs when they are fully assigned and to indicate the function assigned to the input. The text is purely for informative purposes and has no further function.

3.2.5.1 Parameter window *A: Output (20 A/16 AX C-Load)*

In this parameter window, all settings for the output A are undertaken. The explanations also apply for the Outputs B…D.

This parameter window is visible if in [Parameter window Enable Outputs A…D](#), page 67, the *Output A (20 A/ 16 AX C-Load)* has been enabled.



Reaction of output	normally open contact
Contact position on bus voltage failure	unchanged
Object value "Switch" on bus voltage recovery	not write
Enable function Time	no
Enable function Scene	no
Enable function Logic	no
Enable function Forced operation	no
Enable communication object "Status Switch" 1 bit	yes
Send object value	after a change
Object value of contact position	1 = closed, 0 = open

Reaction of output

Options: <u>normally open contact</u>
normally closed contact

It can be set in this parameter whether the output operates as a *Normally closed contact* or *Normally open contact*.

- *Normally open contact:* An ON telegram (1) closes the contact, and an OFF telegram (0) opens the contact.
- *Normally closed contact:* An ON telegram (1) opens the contact, and an OFF telegram (0) closes the contact.

Contact position on bus voltage failure

Options: opened
closed
<u>unchanged</u>

The output can adopt a defined state on bus voltage failure (BVF) using this parameter.

- *opened:* The contact is opened with bus voltage failure.
- *closed:* The contact is closed with bus voltage failure.
- *unchanged:* No change of the contact position.

Note
The reaction on bus voltage failure, recovery and download is to be monitored.

Object value "Switch" on bus voltage recovery

Options: not write
write with 0
write with 1

With this parameter, the output can be influenced by the value of the communication object *Switch* on bus voltage recovery.

The communication object *Switch* can be written with either a 0 or 1 when the bus voltage recovers. The contact position is redefined and set in dependence on the set device parameterization.

- *not write:* The communication object assumes the value 0. This value remains as it is until modified via the bus. The contact position is only re-evaluated at this time.

Note
The reaction on bus voltage failure, recovery and download is to be monitored. The Room Master draws the energy for switching the contact from the bus. After bus voltage is applied, sufficient energy is only available after about ten seconds in order to switch all contacts simultaneously. Depending on the set transmission and switching delay after recovery of bus voltage set in the parameter window *General*, the individual outputs will only assume the desired contact position after this time. If a shorter time is set, the RM/S will only switch the first contact when sufficient energy is stored in the Room Master, in order to ensure that enough energy is available to immediately bring all outputs safely to the required position with a renewed bus voltage failure.

Enable function Time

Options: no
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Time* appears.

After the function *Time* has been enabled, the parameter window - *Time* is enabled. Further settings can be made here, e.g. on and off delays with staircase lighting.

Note
A more exact description of the function can be found at Communication objects output A, page 198, No. 136.

Enable function Scene

Options: no (default, underlined)

yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Scene* appears.

After the function *Scene* has been enabled, the parameter window - *Scene* is enabled. Here you can undertake further settings, e.g. allocation of the output to a scene or standard value.

Enable function Logic

Options: no

yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Logic* appears.

After the function *Connection/Logic* has been enabled, the parameter window - *Logic* is enabled. Here further settings can be undertaken, e.g. connection and linking of the connection.

Enable function Forced operation

Options: no

yes

This parameter enables the function *Forced operation*.

A communication object forced operation is available for every output.

The forced operation (a 1 bit or 2 bit communication object per output) sets the output in a defined state, where – as long as the forced operation is active – it can only be changed via the communication object forced operation.

The switch state after the end of forced operation can be set using the parameter *Contact position with end of the forced operation*.

- *yes:* The following parameters appear:

  Type of object "Forced operation"

  Options: 1 bit

  2 bit

  Using the 2 bit communication object, the output state is defined directly via the communication object value. The control of the output via the communication object *Switch* is blocked as long as the output is forcibly switched ON or OFF.

  The following parameters appear when *1 bit* is selected:

Contact position on Forced operation

Options: ON
OFF
unchanged

- *ON:* Contact position of the output during Forced operation.
- *OFF:* Contact position of the output during Forced operation.
- *unchanged:* Contact position of the output during Forced operation.

The options *unchanged*, *ON* and *OFF* related to the 1 bit forced operation object and determine the switching state of the output during forced operation. The forced operation relates to the 1 bit forced operation communication object of output X that is available to every output.

Contact position with end of the Forced operation

Options: ON
OFF
unchanged
calculate present contact position

This parameter determines the contact position of the relay after the end of Forced operation.

- *ON:* The output is switched ON after Forced operation has ended
- *OFF:* The output is switched OFF after Forced operation has ended
- *unchanged:* The contact position is retained during Forced operation or Safety priority. The contact position only changes when a new calculated switch value is received.

calculate present contact position: After forced operation has ended, the value (switch value) is recalculated, the switch position is recalculated and immediately initiated, i.e. the output continues to operate normally in the background during forced operation.

The following parameters appear when *2 bit* is selected:

Contact position with end of the Forced operation

Options: ON
OFF
unchanged
<u>calculate present contact position</u>

This parameter determines the contact position of the relay after the end of forced operation.

- *ON:* The output is switched ON after forced operation has ended
- *OFF:* The output is switched OFF after forced operation has ended
- *unchanged:* The contact position is retained during forced operation or safety priority. The contact position only changes when a new calculated switch value is received.

calculate present contact position: After forced operation has ended, the value (switch value) is recalculated, the switch position is recalculated and immediately initiated, i.e. the output continues to operate normally in the background during forced operation.

The telegram value which is sent via the 2 bit communication object determines the switch position as follows:

Value	Bit 1	Bit 0	State	Description
0	0	0	Free	If the communication object *Forced operation* receives a telegram with the value 0 (binary 00) or 1 (binary 01), the output is enabled and can be actuated via different communication objects.
1	0	1	Free	
2	1	0	Forced OFF	If the communication object *Forced operation* receives a telegram with the value 2 (binary 10), the output of the Room Master is forced OFF and remains disabled until forced operation is again deactivated. Actuation via another communication object is not possible as long as the forced operation is activated. The state of the output at the end of forced operation can be programmed.
3	1	1	Forced ON	If the communication object *Forced operation* receives a telegram with the value 3 (binary 11), the output of the Room Master is forced ON and remains disabled until forced operation is again deactivated. Actuation via another communication object is not possible as long as the forced operation is activated.

Enable communication object "Status Switch" 1 bit

Options: <u>no</u>
yes

Caution

If an internal connection with an output is selected, and at the same time the reaction to an event is parameterized with TOGGLE, the communication object *Switch 1* of the binary input is updated with the inverted value of the communication object *Status Switch* of the output.

Ensure that the communication object *Status Switch* of the output is enabled. The settings *normally closed contact/normally open contact* and *Invert status* should be parameterized, so that a TOGGLE function is possible.

- *yes:* The following parameters appear:

  Send object value

  Options: no, update only
  after a change
  after request
  <u>after a change or request</u>

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

  Object value of contact position

  Options: <u>1 = closed, 0 = open</u>
  0 = closed, 1 = open

  With this parameter, the communication object value of the switch status (*Status switch*) is defined.

  - *1 = closed, 0 = open:* A closed contact is represented by communication object value 1 and an open contact is represented by the value 0.
  - *0 = closed, 1 = open:* A closed contact is represented by communication object value 0 and an open contact is represented by the value 1.

  Note

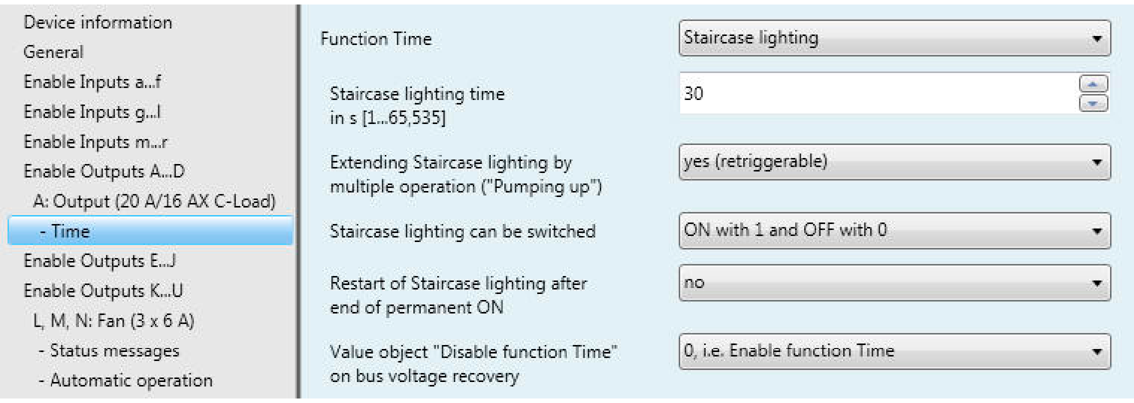
  The contact position and thus the switch status can result from a series of priorities and links.

3.2.5.1.1 Parameter window *A: Output - Time*

In this parameter window, all settings for the function *Time* are undertaken: *Staircase lighting* and *Switching ON and OFF delay*.

Note
The outputs A…D do not feature function *Flashing*. **For function Flashing refer to:** *Parameter window E: Output - Time, Flashing*, **page 88**

This parameter window is visible if in Parameter window A: Output (20 A/16 AX C-Load), page 68, the parameter *Enable function Time* has been enabled.



Function Time: Staircase lighting
Staircase lighting time in s [1...65,535]: 30
Extending Staircase lighting by multiple operation ("Pumping up"): yes (retriggerable)
Staircase lighting can be switched: ON with 1 and OFF with 0
Restart of Staircase lighting after end of permanent ON: no
Value object "Disable function Time" on bus voltage recovery: 0, i.e. Enable function Time

Explanations concerning the time functions and the timing sequences can be found at *Planning and application*, page 207. Please also note that the *Function chart*, page 215, originates from the switch and sequence priorities.

Function time

Options: Staircase lighting
Switching ON and OFF delay

This parameter defines the type of function *Time* for each output.

- *Staircase lighting:* The value, with which the staircase lighting is switched on and off, can be parameterized. The staircase lighting time is started when the function is activated. It is switched off immediately after the staircase lighting time has been completed.
- *ON/OFF delay:* The output can be switched on or off with a delay via this function.

Note
The function *Staircase lighting* can be recalled via the communication object *Switch, Logical connection x* (x = 1, 2) or recalled with a light scene recall.

The following parameter appears with the selection *Staircase lighting*:

Staircase lighting time in s [1…65,535]

Options: 1…30…65,535

The staircase lighting defines how long the contact is closed – provided that the contact is programmed as a normally open contact – and how long the light remains on after an ON telegram. The input is made in seconds.

Extending staircase lighting by multiple operation ("Pumping up")

Options: no (not retriggerable)
yes (retriggerable)
up to max. 2x staircase lighting time
up to max. 3x staircase lighting time
up to max. 4x staircase lighting time
up to max. 5x staircase lighting time

If a further ON telegram is received during the staircase lighting time sequence, the remaining staircase lighting time can be extended by a further period. This is possible by repeated operation of the button ("Pumping up") until the maximum programmed number of retriggering operations is reached. The maximum time can be set to 1, 2, 3, 4 or 5-fold time of the staircase lighting time.

The staircase lighting time is extended by "Pumping up" to the maximum time. If some of the time has already timed out, the staircase lighting time can again be extended to the maximum time by "pumping up". The parameterized maximum time may not however be exceeded.

- *no:* The receipt of an ON telegram is ignored. The staircase lighting time continues without modification to completion.
- *yes (retriggerable):* The staircase lighting time is reset each time by a renewed ON telegram and starts to count again. This process can be repeated as often as desired using this selection.
- *Up to max. 2/3/4/5 x staircase lighting time:* The staircase lighting time is extended by the 2/3/4/5-fold staircase lighting time with a renewed ON telegram.

Staircase lighting can be switched

Options: ON with 1 and OFF with 0
ON with 1 no action with 0
ON with 0 or 1, switch OFF not possible

This parameter defines the telegram value used for switching the staircase lighting on and off prematurely.

- *ON with 0 or 1, switch OFF not possible:* The function *Staircase lighting* is switched on independently of the value of the incoming telegram. Premature switch off is not possible.

Restart of Staircase lighting after end of permanent ON

Options:	no yes

- *no:* The lighting switches off if *Permanent ON* is ended.
- *yes:* The lighting remains on and the Staircase lighting time restarts.

The function of continuously ON is controlled via the communication object value *Permanent ON*. If the communication object receives a telegram with the value 1, the output is switched ON regardless of the value of the communication object *Switch* and remains switched on until the communication object *Permanent ON* has the value 0.

Value object "Disable function Time" on bus voltage recovery

Options:	unchanged 1, i.e. Disable function Time 0, i.e. Enable function Time

This parameter defines how the parameter function *Time* should behave after bus voltage recovery. With a telegram to the communication object *Disable function time*, the function *Time* can be disabled.

- *unchanged:* The function *Time* can continue unchanged.

Note
The state *Function Time* is stored with bus voltage failure and continues unchanged after bus voltage recovery.

- *1, i.e. Disable function time:* The function *Time* is disabled by a telegram with the value 1.

Note
They can only be enabled via the communication object *Disable function time*.

- *0, i.e. Enable function Time:* The function *Time* is enabled by a telegram with the value 0.

Note
If the staircase lighting is disabled when the function *Time* is operational, the light will stay at ON until it is switched to OFF manually.

How does the staircase lighting behave with bus voltage failure?

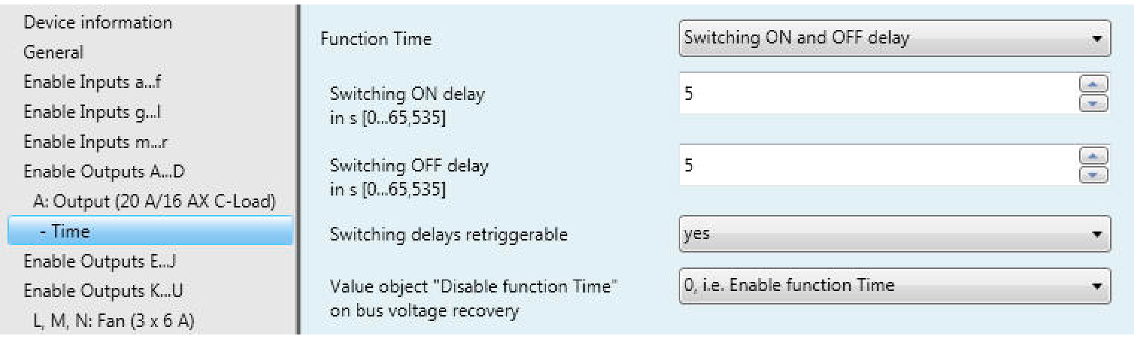
The behaviour at bus voltage failure is determined by the parameter *Reaction on bus voltage failure* in the parameter window *A: Output (20 A/16 AX C-Load)*.

How does the staircase lighting behave with bus voltage recovery?

The behaviour at bus voltage recovery is defined by two conditions.

1. By the communication object *Disable function time*. If the staircase lighting is blocked after bus voltage recovery, the staircase lighting can only be switched on or off via the communication object *Switch*.
2. By the parameterization of the communication object *Switch*. Whether the light is switched on or off with bus voltage recovery depends on the programming of the communication object *Switch*.

Bei Auswahl *Ein- und Ausschaltverzögerung* erscheinen folgende Parameter:



Function Time: Switching ON and OFF delay

Switching ON delay in s [0...65,535]: 5

Switching OFF delay in s [0...65,535]: 5

Switching delays retriggerable: yes

Value object "Disable function Time" on bus voltage recovery: 0, i.e. Enable function Time

Explanations relating to the on and off delay can be found under *Switching ON and OFF delay*, page 239. You will also find a timing diagram as well as explanations on the effect of various ON and OFF telegrams in combination with the switching ON and OFF delay.

Switching ON delay
in s [0…65,535]
Options: 0…5…65,535

Here you set the time by which an ON telegram is delayed after switch on.

Switch OFF delay
in s [0…65,535]

Options: 0…5…65,535

Here you set the time by which switch OFF is delayed after a switch OFF telegram.

Switching delays retriggerable

Options: no
yes

- *no:* The switching delay time cannot be retriggered..
- *yes:* The switching delay time can be retriggered..

Value object "Disable function time"
on bus voltage recovery

Options: unchanged
1, i.e., Disable function time
0, i.e., Enable function time

This parameter defines how the time function parameter should behave after bus voltage recovery. With a telegram to the communication object Disable function time the function time can be disabled.

- *unchanged:* After bus voltage recovery, the function time reacts in the same way as before bus voltage failure.
- *1, i.e. Disable function time:* The function time is disabled by a telegram with the value 1.
- *0, i.e. Enable function time:* The function time is enabled by a telegram with the value 0.

How does the staircase lighting behave with bus voltage failure?

The behaviour at bus voltage failure is determined by the parameter *Reaction on bus voltage failure* in the parameter window *A: Output (20 A/16 AX C-Load)*.

How does the staircase lighting behave with bus voltage recovery?

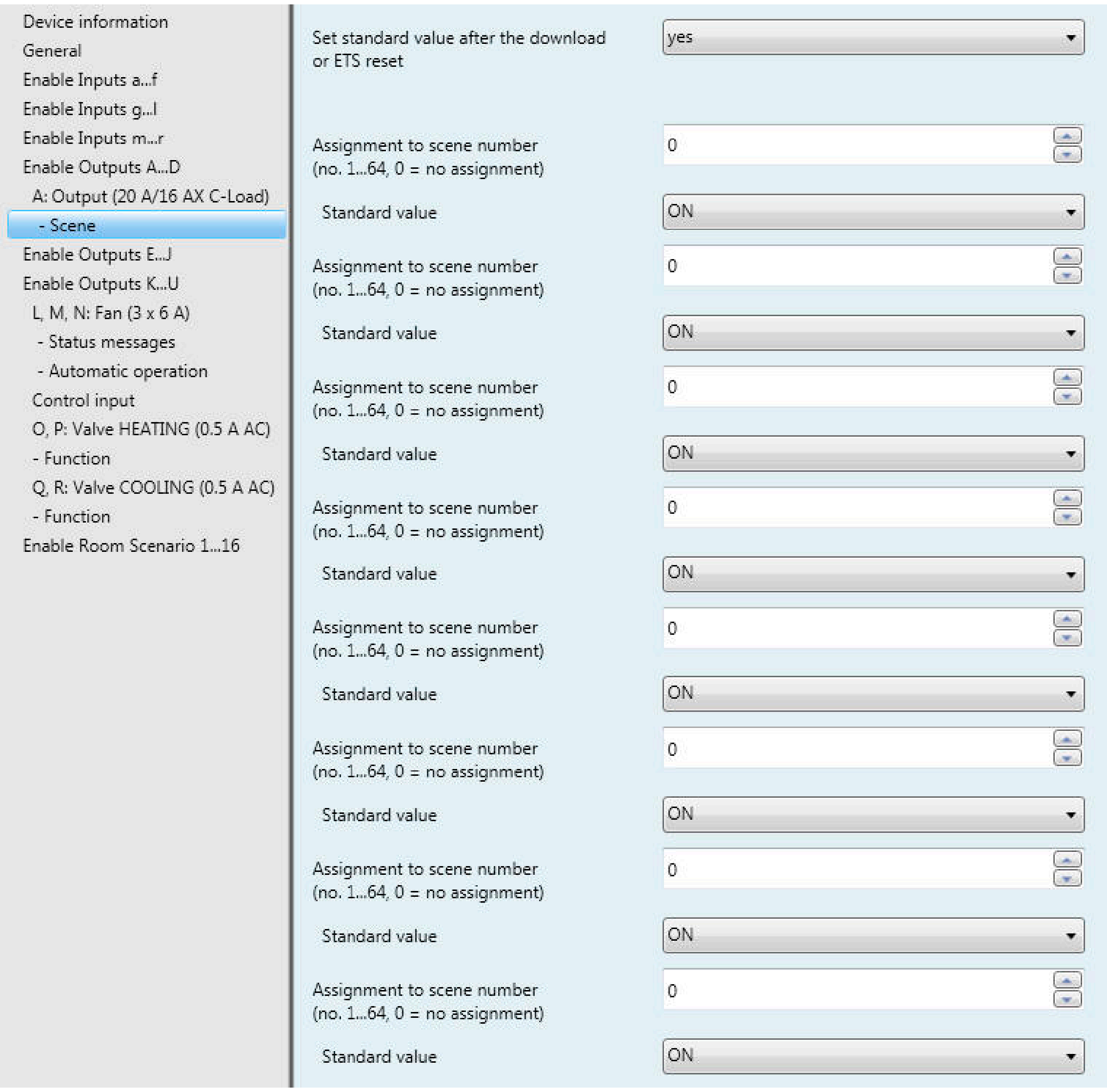
The behaviour at bus voltage recovery is defined by two conditions.

1. By the communication object *Disable function time*. If the staircase lighting is blocked after bus voltage recovery, the staircase lighting can only be switched on or off via the communication object *Switch*.
2. By the parameterization of the communication object *Switch*. Whether the light is switched on or off with bus voltage recovery depends on the programming of the communication object *Switch*.

3.2.5.1.2 Parameter window *A: Output - Scene*

In this parameter window, all settings for the function *Scene* are undertaken.

This parameter window is visible if in Parameter window A: Output (20 A/16 AX C-Load), page 68, the parameter *Enable function Scene* has been enabled.



Set standard value after the download or ETS reset	yes
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Standard value	ON

How is a scene set?

Via the communication object *Scene*

- Sets the value for standard values.
- The scene can be recalled.
- The scene can be changed.
- The scene can be saved.

An example:

Scene recall:

- Send value 0…63 for the scene (no. 1…64) to the communication object *Scene*.

Scene change and save:

- Scene no. 24 is assigned to the output with the value ON.
- Scene no. 24 should be assigned to the output with the value OFF:
    - Set the output to OFF with a switch telegram.
    - Send value 151 (128 + 23) for storage of scene number 24 to the communication object *Scene*.

General values for scene storage:

- 128 + (0…63) for the scene (No. 1…64)
    - The stored scene values are retained until there is a device reset.

Note
After a device reset, the parameterized values can be reactivated. **For further information see: Reset via bus, page 258**

Set standard value after the download or ETS reset

Options: no
yes

- *no:* The standard values are not set after a download or ETS reset.
- *yes:* The standard values are set after a download or ETS reset.

Assignment to scene number [no. 1…64, 0 = no assignment]

Options: 0…64

Using the function *Scene*, up to 64 scenes are managed using just a single group address. With this group address, all slaves integrated into a scene are linked via a 1 byte communication object. The following information is contained in a telegram:

- Number of the scene (1…64) as well as
- Telegram: Call scene or store scene.

The output can be integrated in up to eight scenes. So for example, the scene can be switched on in the morning and switched off in the evening, or the output can be integrated into light scenes.

If a telegram is received on the communication object *Scene*, the sent scene number is allocated for all outputs which carry out the stored scene position, or the current position is stored as the new scene position.

Standard value

Options: ON
OFF

Here you set the state that the output has when the scene is recalled.

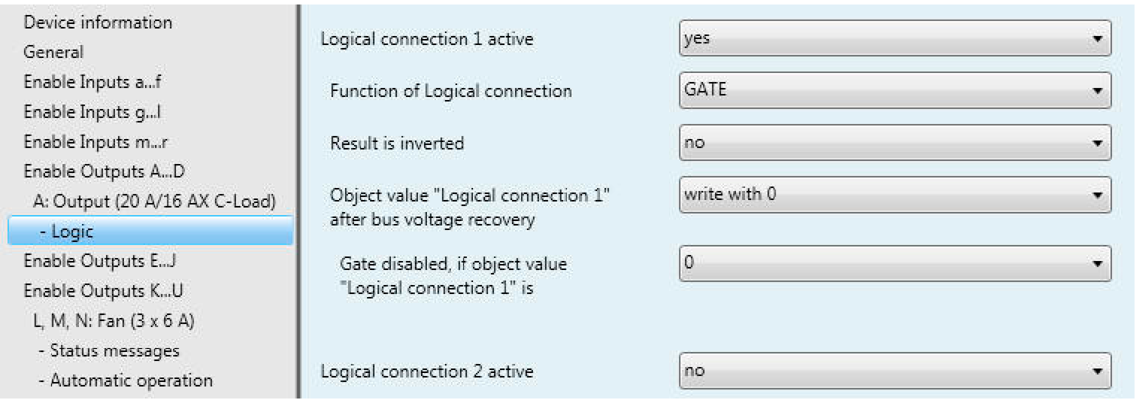
Note
When a scene is recalled: • the function *Time* is restarted. • the logical connections are re-evaluated.

For further information see: Communication objects Output A, page 198, Function Scene, page 221 and Code table scene (8 bit), page 320.

3.2.5.1.3 Parameter window *A: Output - Logic*

In this parameter window, all settings for the function *Enable function Logic* are undertaken.

This parameter window is visible if in Parameter window A: Output (20 A/16 AX C-Load), page 68, the parameter *Enable function Logic* has been enabled.



Logical connection 1 active: yes
Function of Logical connection: GATE
Result is inverted: no
Object value "Logical connection 1" after bus voltage recovery: write with 0
Gate disabled, if object value "Logical connection 1" is: 0
Logical connection 2 active: no

The function *Enable function Logic* provides up to two logic objects for each output, which can be logically linked with the communication object *Switch*.

The logic is always re-calculated when a communication object value is received. Hereby, the communication object *Logical connection 1* is first of all evaluated with the communication object *Switch*. The result is then logically linked with the communication object *Logical connection 2*.

Explanations for the logical function can be found at *Connection/Logic*, page 219. Please also observe the *Function chart*, page 215, from which the priorities can be seen.

Logical connection 1 active

Options: no
yes

With these parameters, the communication object *Logical connection 1* is enabled.

- *yes:* The following parameters appear:

  Function of logical connection

  Options: AND
  OR
  XOR
  GATE

  The logical function of the communication object *Logical connection 1* is defined with the switch telegram. All three standard operations (AND, OR, XOR) are possible. Furthermore, the GATE operation can be used to inhibit switch commands.

  For further information see: Connection/Logic, page 219

  Result is inverted

  Options: no
  yes

  - *yes:* The result of the logical connection can be inverted.
  - *no:* There is no inversion.

Object value "Logical connection 1" after bus voltage recovery

Options: not write
write with 0
write with 1

This parameter defines the value allocated to the communication object *Logical connection 1* with bus voltage recovery.

- *not write:* after bus voltage recovery, the value 0 remains in the communication object *Switch*. This value remains as it is until the communication object is modified via the bus. The contact position is only re-evaluated and set at this time. The correct status of the contact position is displayed via the communication object *Status switch* independently of the value of the communication object *Switch*. A precondition however is that no manual switching actions have occurred on the outputs A, B, C or D.

Note
The values of the communication objects *Logical connection 1/2* are stored at bus voltage failure. The values are set again after a bus voltage recovery. If values are not assigned for communication objects *Logical connection 1/2*, they will be deactivated. With a reset via the bus, the values of the communication objects *Logical connection 1/2* remain unchanged.

A further parameter appears if GATE is selected with the parameter *Function of logical connection*:

Gate disabled, if object value "Logical connection 1" is.

Options: 1
0

This parameter defines the value at which the communication object *Logical connection 1* disables the GATE.

Disabling of the gate means that the telegrams received on the communication object *Switch* are ignored. As long as the GATE is activated, the value that was sent last to the input of the GATE remains on the output. After a gate is blocked, the value that was on the output before the block remains on the output of the gate.

After the gate is enabled, this value will be retained until a new value is received.

For further information see: Function chart, page 215

The GATE is disabled after bus voltage failure and remains deactivated after bus voltage recovery.

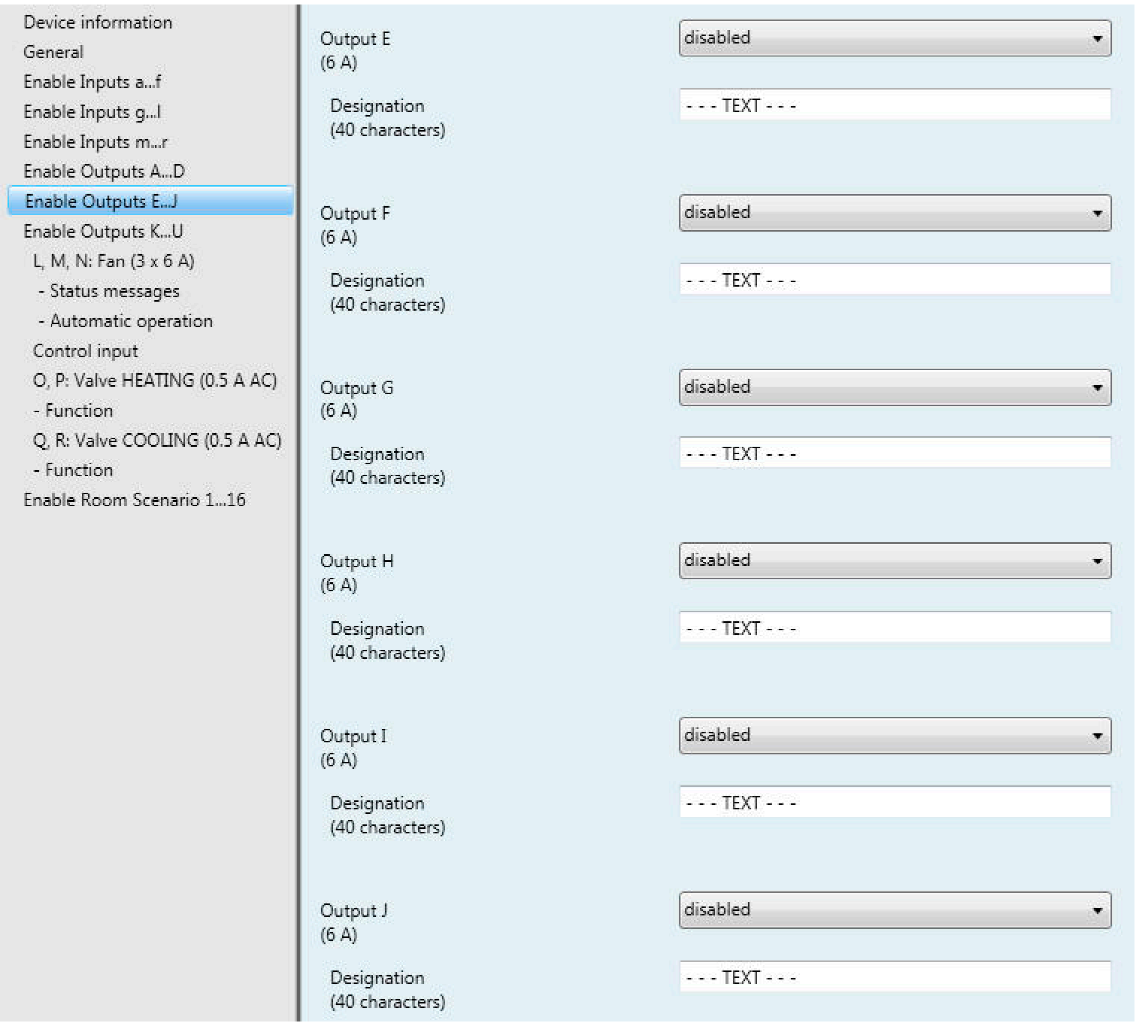
Logical connection 2 active

The same programming options exist as those for parameter *Logical connection 1 active*.

3.2.6 Parameter window *Enable Outputs E…J*

In this parameter window, additional *Outputs E…J (6 A)* can be enabled.

Note
In the following, the setting possibilities of *Outputs E…J* are explained using output E as an example. The setting possibilities for outputs E…J are identical.



Output E (6 A)	disabled
Designation (40 characters)	- - - TEXT - - -
Output F (6 A)	disabled
Designation (40 characters)	- - - TEXT - - -
Output G (6 A)	disabled
Designation (40 characters)	- - - TEXT - - -
Output H (6 A)	disabled
Designation (40 characters)	- - - TEXT - - -
Output I (6 A)	disabled
Designation (40 characters)	- - - TEXT - - -
Output J (6 A)	disabled
Designation (40 characters)	- - - TEXT - - -

Output E
(6 A)

Options: <u>disabled</u>
enable

- *disabled:* Output E (6 A/16AX) is blocked/invisible, no communication objects are visible.
- *enable:* The parameter window *E: Output (6 A)* appears. Dependent communication objects become visible.

Designation
(40 characters)

Options: - - - TEXT - - -

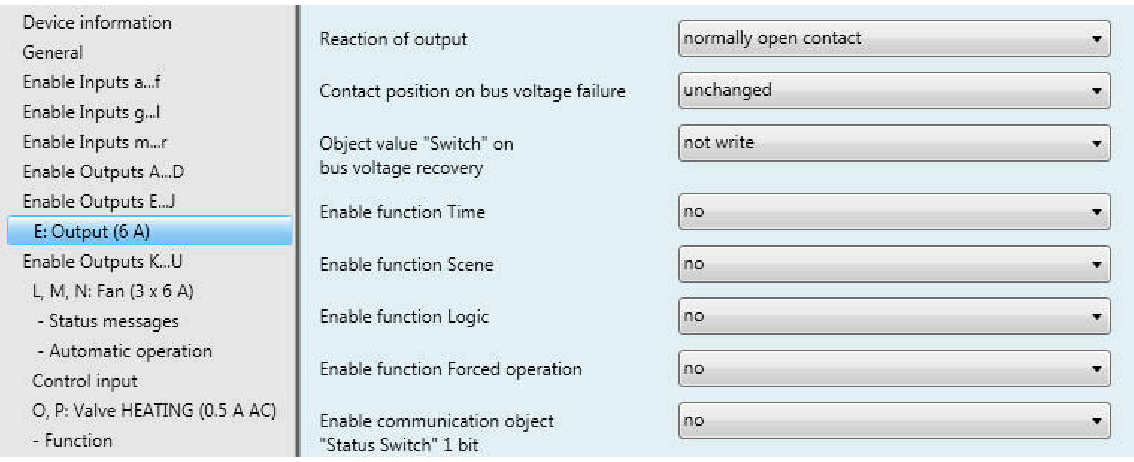
With this parameter, it is possible to enter a text of up to 40 characters in length for identification in the ETS.

Note
The text which is entered is used to provide help, in order to obtain an overview of the inputs when they are fully assigned and to indicate the function assigned to the input. The text is purely for informative purposes and has no further function.

3.2.6.1 Parameter window *E: Output (6 A)*

In this parameter window, all settings are undertaken for parameter window *E: Output (6 A)*. The explanations also apply for the *Outputs F…J*.

This parameter window is visible if in parameter window Parameter window Enable Outputs E…J, page 85, the output *E: Output (6 A)* has been enabled.



Reaction of output: normally open contact
Contact position on bus voltage failure: unchanged
Object value "Switch" on bus voltage recovery: not write
Enable function Time: no
Enable function Scene: no
Enable function Logic: no
Enable function Forced operation: no
Enable communication object "Status Switch" 1 bit: no

The descriptions of the parameter setting options and the adjustable communication objects for the *Outputs E…J* do not differ from the *Output A*.

However, the function *Time* with the *Outputs E…J* has a further adjustment option: *Flashing*. The function *Flashing* is described using *Output E* as an example. The function *Time* must be enabled for this purpose.

Enable function Time

Options: no (default, underlined)
yes

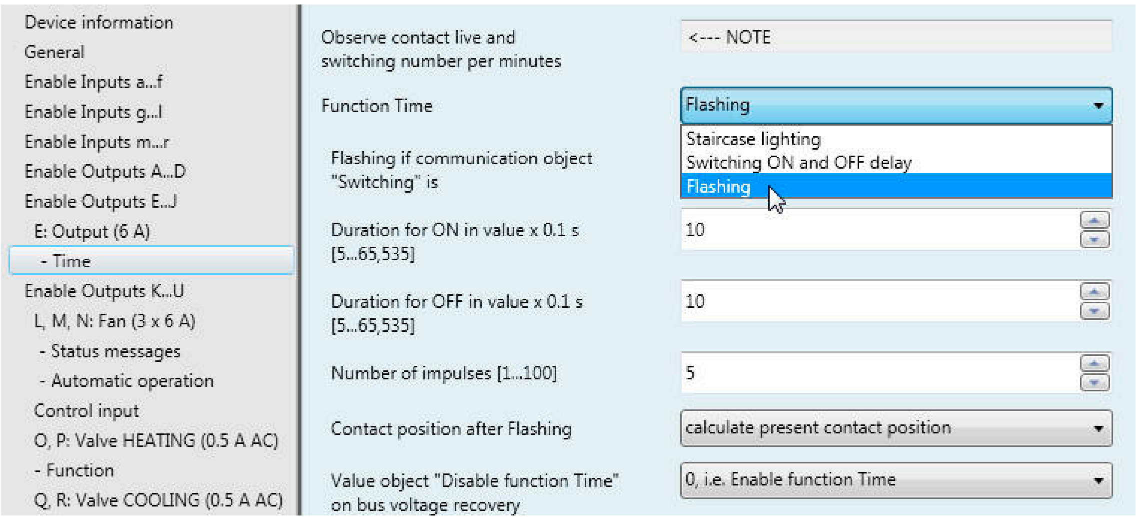
- *yes:* The parameter window - *Time* appears.
- *no:* The parameter window remains disabled and invisible.

After the function *Time* has been enabled, the communication object *Permanent ON* is enabled. The output is switched ON via this communication object. It remains switched ON until a telegram with the value 0 is received by the communication object *Permanent ON*. The functions continue to operate in the background during the Permanent ON phase. The contact position at the end of the Permanent ON phase results from the functions operating in the background.

Note
All other descriptions of the parameter can be found in Parameter window A: Output (20 A/16 AX C-Load), page 68.

3.2.6.1.1 Parameter window *E: Output - Time, Flashing*

In this parameter window, all settings for the function *Time* are undertaken: *Staircase lighting, switching ON and OFF delay* and *Flashing*. This parameter window is visible if in Parameter window E: Output (6 A), page 87, the parameter *Enable function Time* has been enabled.



Observe contact live and switching number per minutes: <--- NOTE

Function Time: Flashing

Flashing if communication object "Switching" is

Duration for ON in value x 0.1 s [5...65,535]: 10

Duration for OFF in value x 0.1 s [5...65,535]: 10

Number of impulses [1...100]: 5

Contact position after Flashing: calculate present contact position

Value object "Disable function Time" on bus voltage recovery: 0, i.e. Enable function Time

Observe contact life and switching number per minutes

Note
Refer to the contact life and switching operations per minute, see Technical data, page 15.

Function time

Options:	<u>Staircase lighting</u> Switching ON and OFF delay Flashing

This parameter defines the type of function *Time* for each output.

- *Staircase lighting:* The staircase lighting is switched via an ON telegram of the communication object *Switch* of output A. The value of the communication object *Switch* can be programmed. The staircase lighting time commences at switch on. It is switched off immediately after the staircase lighting time has been completed.

Note
The function *Staircase lighting* can be recalled via the communication object *Switch, Logical connection x* (x = 1, 2) or recalled with a light scene recall.

- *switching ON and OFF delay:* The output can be switched on or off with a delay via this function.

- *Flashing:* The output starts to flash as soon as the parameterized value is received in the communication object *Switch*. The flashing period can be adjusted via the parameterized time duration for ON or OFF. At the start of the flashing period the output is switched on with a normally open contact and off with a normally closed contact. When a new value is received on the communication object *Switch*, the flashing period will recommence. The relay state after flashing can be programmed. Flashing can be inverted when the output is used as a normally closed contact. The communication object *Status* switch indicates the current relay state during flashing.

The following parameter appears with the selection *Flashing*:

Flashing if communication object "Switching" is

Options:	ON (1) OFF (0) ON (1) or OFF (0)

Here you set the value of the communication object *Switch* at which the output flashes. Flashing is not retriggerable.

- *ON (1):* Flashing starts when a telegram with the value 1 is received on the communication object *Switch*. A telegram with the value 0 ends flashing.
- *OFF (0):* Flashing starts when a telegram with the value 0 is received on the communication object *Switch*. A telegram with the value 1 ends flashing.
- *ON (1) or OFF (0):* A telegram with the value 1 or 0 triggers flashing. Suspension of flashing is not possible in this case.

Duration for ON in value x 0.1 s [5…65,535]

Options: 5…10…65,535

This parameter defines how long the output is switched ON during a flashing period.

Duration for OFF in value x 0.1 s [5…65,535]

Options: 5…10…65,535

This parameter defines how long the output is switched off during a flashing period.

Number of impulses [1…100]

Options: 1…5…100

This parameter defines the maximum number of pulses. This is useful to avoid unnecessary wear of the contacts caused by flashing.

Contact position after Flashing

Options: ON
OFF
calculate present contact position

This parameter defines the state that the parameter should assume after flashing.

- *ON:* The output is switched on after flashing.
- *OFF:* The output is switched off after flashing.
- *calculate present contact position:* The output assumes the switching state which it had before flashing commenced.

For further information see: Function chart, page 215

Value object "Disable function Time" on bus voltage recovery

Options: unchanged
1, i.e. Disable function time
0, i.e. Enable function Time

This parameter defines how the time function parameter should behave after bus voltage recovery. With a telegram to the communication object *Disable function time*, the function *Time* can be disabled.

- *Unchanged:* After bus voltage recovery, the function *Time* reacts in the same way as before bus voltage failure.
- *1, i.e. Disable function time:* The function *Time* is disabled by a telegram with the value 1.
- *0, i.e. Enable function Time:* The function *Time* is enabled by a telegram with the value 0.

How does the staircase lighting behave with bus voltage failure?

The behaviour at bus voltage failure is determined by the parameter *Reaction on bus voltage failure* in the parameter window *A: Output (20 A/16 AX C-Load)*.

How does the staircase lighting behave with bus voltage recovery?

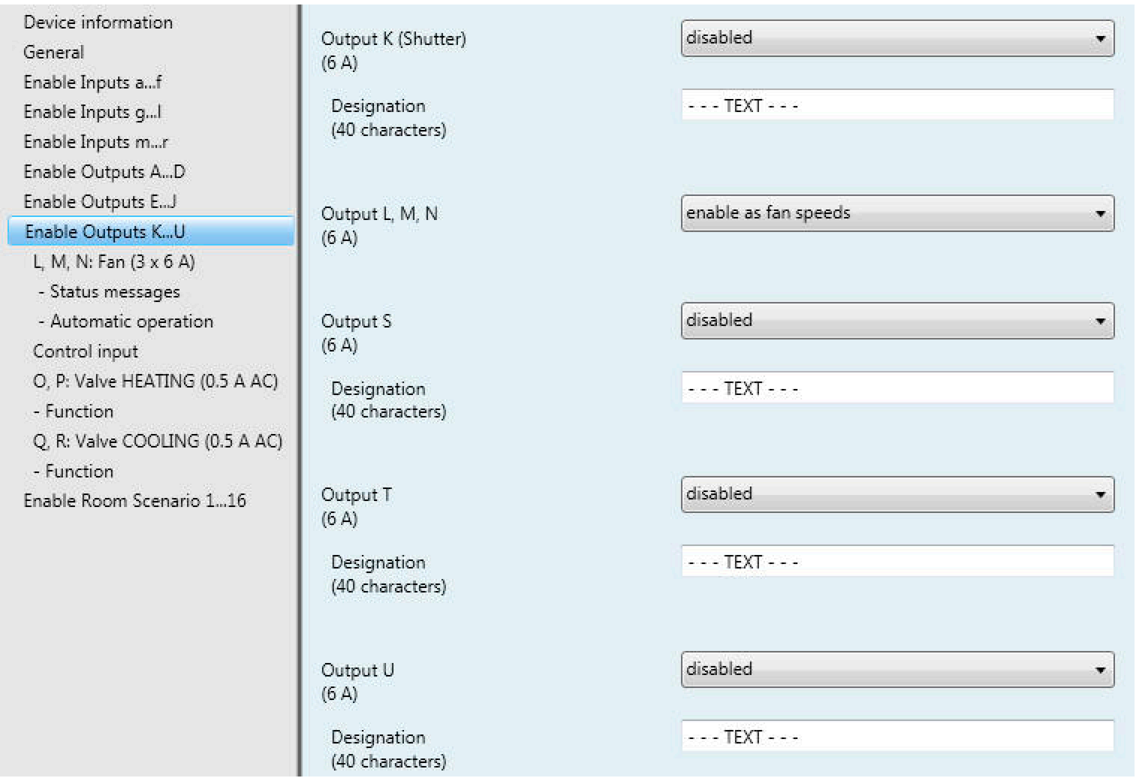
The behaviour at bus voltage recovery is defined by two conditions.

A. By the communication object *Disable function time*. If the staircase lighting is blocked after bus voltage recovery, the staircase lighting can only be switched on or off via the communication object *Switch*.

B. By the parameterization of the communication object *Switch*. Whether the light is switched on or off with bus voltage recovery depends on the programming of the communication object *Switch*.

3.2.7 Parameter window *Enable Outputs K…U*

In this parameter window, additional Outputs K…U (6 A) can be enabled.



Output K (Shutter) (6 A): disabled
Designation (40 characters): - - - TEXT - - -
Output L, M, N (6 A): enable as fan speeds
Output S (6 A): disabled
Designation (40 characters): - - - TEXT - - -
Output T (6 A): disabled
Designation (40 characters): - - - TEXT - - -
Output U (6 A): disabled
Designation (40 characters): - - - TEXT - - -

Output K (Shutter)
(6 A)

Options: <u>disabled</u>
Blind
Shutter

- *disabled:* The *Output K (Shutter) (6 A)* is blocked/invisible, no communication objects are visible.
- *Blind:* The parameter window *K: Blind (6 A)* appears. Dependent communication objects become visible.
- *Roller shutter:* The parameter window *K: Roller shutter (6 A)* appears. Dependent communication objects become visible.

Designation
(40 characters)

Options: - - -TEXT- - -

With this parameter, it is possible to enter a text of up to 40 characters in length for identification in the ETS.

Note
The text which is entered is used to provide help, in order to obtain an overview of the inputs when they are fully assigned and to indicate the function assigned to the input. The text is purely for informative purposes and has no further function.

Output L, M, N

Options: enable as outputs
enable as fan speeds

The outputs L, M and N can be programmed as outputs and as fans.

- *enable as outputs:* The outputs L, M and N can be programmed as individual parameters and can be enabled individually.

Note
The outputs L, M, N have no *Enable function Logic* function.

All other parameters and their setting possibilities for the outputs L, M, N do not differentiate from those of *Output A*, see Parameter window A: Output (20 A/16 AX C-Load) , page 68.

- *enable as fan speeds:* The parameter window *L, M, N: Fan (3 x 6 A*) appears.

Outputs S, T, U

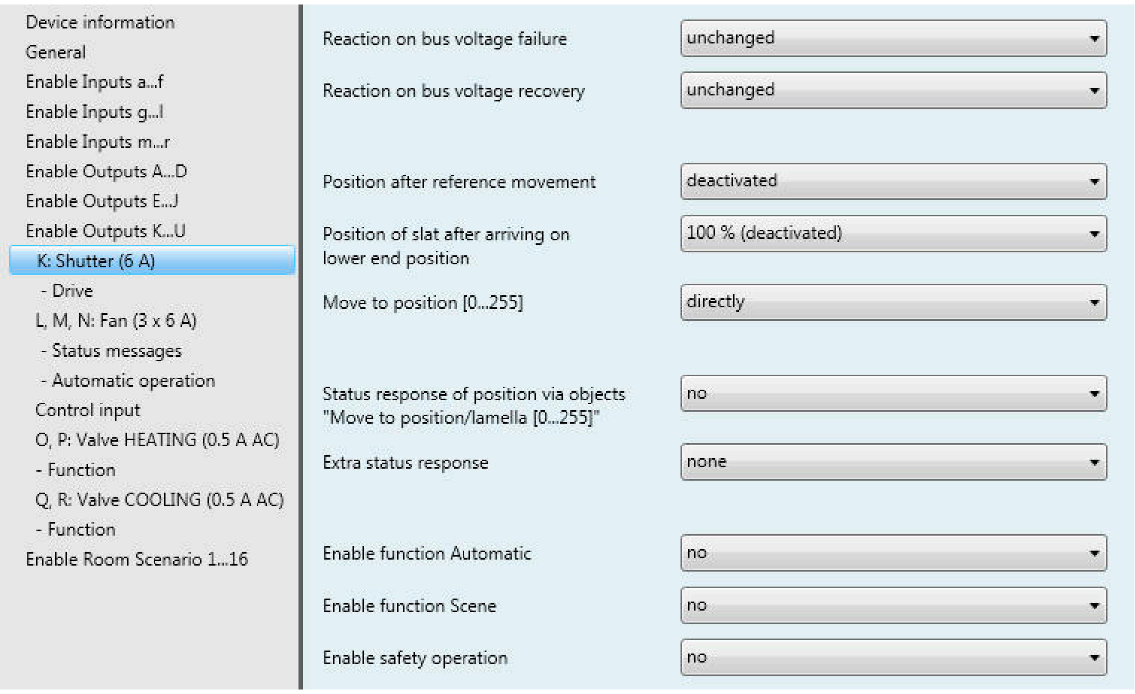
The descriptions of the parameter setting options and the adjustable communication objects for the Outputs S, T, U do not differ from the *Output A*.

However, the function *Time* with the Outputs S, T, U has a further adjustment option: *Flashing*.

Note
The function *Flashing* is described as an example in Parameter window E: Output - Time, Flashing, page 88. All other descriptions of the parameter can be found in Parameter window A: Output (20 A/16 AX C-Load), page 68.

3.2.7.1 Parameter window *K: Shutter (6 A)*

In this parameter window, all settings for the Output *K: Blinds (6 A)* are undertaken. This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, the parameter *Output K (Shutter) (6 A)* has been selected with the option *Blind*.



Reaction on bus voltage failure: unchanged
Reaction on bus voltage recovery: unchanged
Position after reference movement: deactivated
Position of slat after arriving on lower end position: 100 % (deactivated)
Move to position [0...255]: directly
Status response of position via objects "Move to position/lamella [0...255]": no
Extra status response: none
Enable function Automatic: no
Enable function Scene: no
Enable safety operation: no

Reaction on bus voltage failure

Options: <u>unchanged</u>
UP
DOWN
STOP

The output can adopt a defined state on bus voltage failure (BVF) using this parameter.

- *unchanged:* The relay position of the outputs remains unchanged. A movement process is thus performed to completion.
- *UP/DOWN/STOP:* A fixed relay contact position is set.

Note
If the relay has been switched immediately before a bus voltage failure, it may not be possible to implement the options *UP* and *DOWN*. The energy stored in the Room Master may not be sufficient for this purpose.

Reaction on bus voltage recovery

Options:	unchanged UP DOWN STOP

This parameter defines how the output should respond with bus voltage recovery.

- *unchanged:* The current state is retained.
- *UP/DOWN/STOP:* A fixed relay contact position is set.

Position after reference movement

Options:	deactivated no reaction move to saved position

This parameter enables the communication object *Reference movement* and defines how the Room Master responds after a reference movement.

For further information see: Communication objects Output K: Blinds and shutters, page 201

- *deactivated:* The communication object *Reference movement* is not visible. No referencing can be performed.
- *no reaction:* The blind remains either up or down in the reference position after the reference movement.
- *move to saved position:* The blind is retracted to the position, in which it was before the reference movement was performed. If the function *Automatic* was activated for the blind before the reference movement, then the function *Automatic* is re-activated again automatically after the saved position is reached.

Note
If during a reference movement a direct or automatic movement of position telegram is received, the reference movement is performed first, and the received target position is approached afterwards.

For further information see: Determination of the current position, page 225

Position after reference movement

Options:	100 % (deactivated) 90 % … 10 % 0 %

After the blinds are moved to the end positions, the slats are normally closed. The slat positions can be set via this parameter as the Room Master is set after the lower end position is reached.

The parameter relates to the reaction of the blind, if the motion has been triggered via the communication object *Blinds/Shutters UP/DOWN* move or by the function *Automatic*.

Move to position [0…255]

Options: directly
indirectly via up
indirectly via down
indirectly via shortest way

- *directly:* The blind moves with a position telegram from the current position directly to the new target position.
- *indirectly via up/indirectly via down:* The blind will initially move fully up or down after a movement telegram is received and then move to the target position.
- *indirectly via shortest way:* The blind will initially move fully up or down after a position telegram is received, depending on which path is the shortest. Thereafter the blind moves to the target position.

Status response of position via object "Move to position/slat [0…255]"

Options: no
yes

This parameter defines if the communication object *Move to position/Lamella [0…255]* sends a status response.

- *yes:* The following parameter appears:

  Send object value

  Options: no, update only
  after a change
  after request
  after a change or request

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

Extra status response

Options: none
end positions
Status byte

An additional status response can be enabled with this parameter.

- *none:* There is no feedback.
- *end positions:* The communication objects *Status of lower position* and *Status of upper position* are enabled. These indicate that the blinds are in the upper or lower position (measured based on total movement time).
- *Status byte:* The communication object *Status byte* is enabled. This contains further information in coded form.

Enable function Automatic

Options: no
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Automatic* appears.

By enabling the function *Automatic*, the parameter window - *Automatic* is enabled where further settings can be made.

Enable function Scene

Options: no
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Scene* appears.

By enabling the function *Scene* the parameter window - *Scene* is enabled where further settings can be made, e.g. the assignment of the output to a scene.

Enable Safety operation

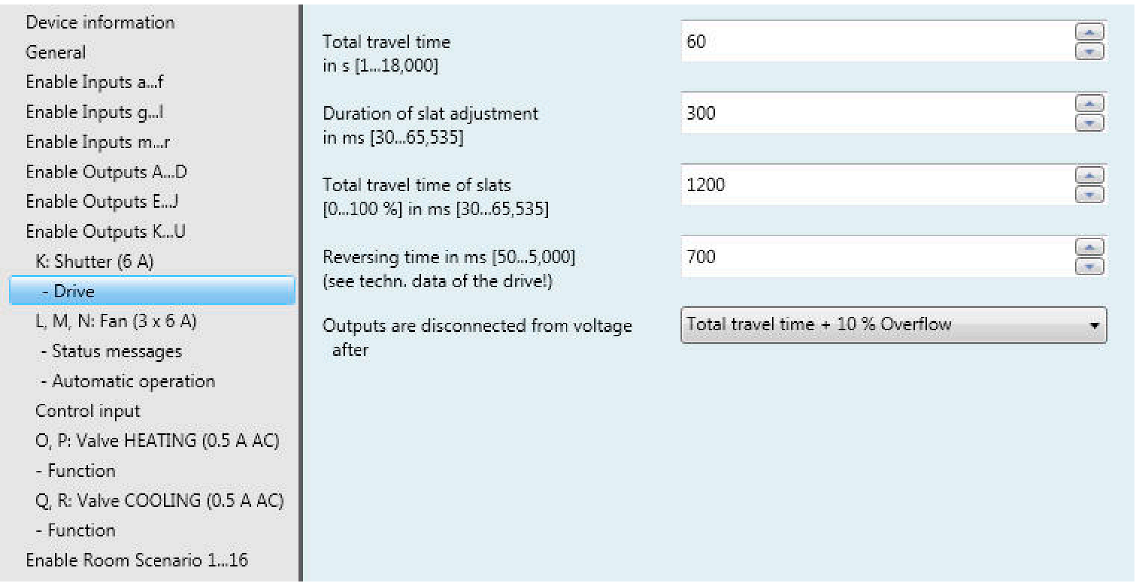
Options: no
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Safety* appears.

By enabling the function *Safety*, the parameter window - *Safety* is enabled, where further settings can be made.

3.2.7.1.1 Parameter window *K: Shutter (6 A) - Drive*

In this parameter window, all settings for the blind drive are undertaken. This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Output K (Shutter) (6 A)* has been selected with the option *Blind*.



Total travel time in s [1...18,000]: 60

Duration of slat adjustment in ms [30...65,535]: 300

Total travel time of slats [0...100 %] in ms [30...65,535]: 1200

Reversing time in ms [50...5,000] (see techn. data of the drive!): 700

Outputs are disconnected from voltage after: Total travel time + 10 % Overflow

Total travel time
in s [1…18,000]

Options: 1…<u>60</u>…18,000

This parameter defines the total travel time from the upper end position to the lower end position.

Duration of slat adjustment
in ms [30…65.535]

Options: 30…<u>300</u>…65,535

This parameter determines the switch on duration with the slat adjustment, i.e. the time for which a slat is rotated after it receives a *STOP/slat adjustment* telegram.

Total travel time of slat
[0…100 %] in ms [30…65,535]

Options: 30…<u>1200</u>…65,535

This parameter defines the total movement time during slat adjustment, i.e. the time required to rotate the slats from one end position to the other end position.

Note

On larger slats, there is a mechanical dead zone time involved until the blind reacts. For this reason, the total movement time will be extended by this reaction time.

Reversing time in ms [50...5,000]
(see techn. data of the drive!)

Options: 50…<u>700</u>…5,000

This parameter defines the duration of the minimum reversing time between two directions of motion.

Outputs are disconnected from voltage after

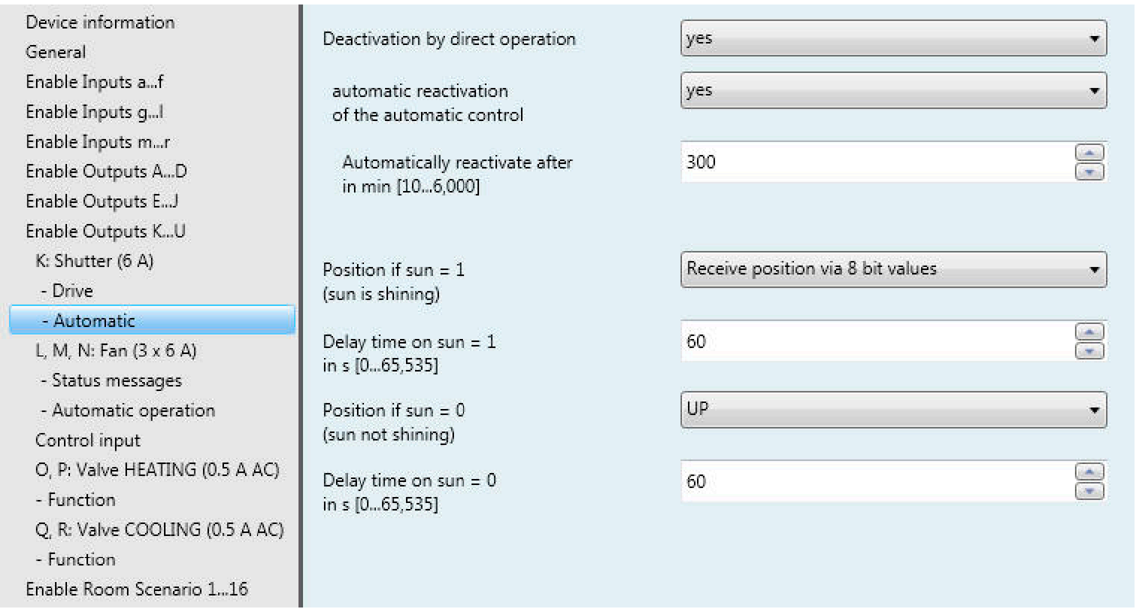
Options:	End position + no overflow End position + 2 % overflow End position + 5 % overflow End position + 10 % overflow End position + 20 % overflow Total travel time + 10 % Overflow

- *End position…:* The application program calculates the movement time required from the current position to the end position. After the end position has been reached (as the very top or bottom), the blind drive will switch off independently. A so-called “overflow” can be set to ensure that the Room Master safely reaches the end position. Thus the voltage still remains applied for a short time to move the drive to a defined end position in a controlled manner .
- *Total travel time + 10 % Overflow:* The blind drive is always activated for the set total movement time + 10 % independently of the current position of the blind.

For further information see: Travel times, page 223

3.2.7.1.2 Parameter window *K: Shutter (6 A) - Automatic*

In this parameter window, the settings for the function *Automatic* are undertaken. This parameter window is visible if in Parameter window K: Shutter (6 *A)*, page 93, the parameter *Enable function automatic* has been enabled.



Deactivation by direct operation: yes

automatic reactivation of the automatic control: yes

Automatically reactivate after in min [10...6,000]: 300

Position if sun = 1 (sun is shining): Receive position via 8 bit values

Delay time on sun = 1 in s [0...65,535]: 60

Position if sun = 0 (sun not shining): UP

Delay time on sun = 0 in s [0...65,535]: 60

The function *Automatic* enables a simple automatic sun screen and automatic sun screening against dazzle in conjunction with the blind control module.

For further information see: Automatic sun protection, page 227 and communication objects Output K: Blinds and shutters, page 201

Deactivation by direct operation

Options: no
yes

This parameter defines how the function *Automatic* is deactivated. The function *Automatic* can be deactivated via the communication object *Activation of aut. control* and *via direct operation*.

Note
The position of the blind or the shutter is saved at bus voltage failure if the function *Automatic* is activated. The blind or shutter remain in the same position. At bus voltage recovery, the position is retained and the value of the communication object is undefined. The value is only updated after a renewed motion telegram. If the communication object *Automatic ON/OFF* has not been assigned to a group address, the function *Automatic* is deactivated at a download.

- *yes:* The following parameter appears:

  Automatic reactivation of the automatic control

  Options: no
  yes

  If automatic control has been deactivated via a telegram to the direct communication objects, it can be automatically reactivated after the parameterized time has timed out. This function is also particularly suitable if no additional button is available for the activation or deactivation of automatic control.

  - *yes:* The following parameter appears:

Automatically reactivate after in min [10…6,000]

Options: 10…300…6,000

Using this parameter, the duration for the automatic reactivation of the automatic control is defined. If automatic control is interrupted during the parameterized time by a direct communication object, the parameterized time for automatic reactivation of automatic control recommences to count from 0 (retriggering)..

Note
A change of the parameter value will only become active after the next deactivation of automatic control.

Position if sun = 1 (sun is shining)

Options: no reaction
UP
DOWN
STOP
Receive position via 8 bit values

This parameter defines the reaction with sun = 1 (sun is shining) in the automatic sun screen operation.

- *no reaction:* The current movement action is completed.
- *UP:* The blind moves UP.
- *DOWN:* The blind moves DOWN.
- *STOP:* The output is electrically disconnected, i.e. a moving blind is stopped.
- *Receive position via 8 bit values:* The blind moves to position by receiving an 8 bit value. For this purpose, the communication objects *Sun: Move to position [0…255]* and *Sun: adjust slats [0…255]* are available.

Delay time on sun = 1 in s [0…65,535]

Options: 0…60…65,535

This parameter defines the delay with activation of the *Position if sun = 1*.

Via these parameters, for example, you can prevent that the blind moves UP and DOWN, if the sun is only overcast for a short period of time.

Position if sun = 0
(sun not shining)

Options: no reaction
UP
DOWN
STOP
Receive position via 8 bit values

For setting the behaviour with sun = 0 (sun not shining) in the automatic sun screen operation.

- *no reaction:* The current movement action is completed.
- *UP:* The blind moves UP.
- *DOWN:* The blind moves DOWN.
- *STOP:* The output is electrically disconnected, i.e. a moving blind is stopped.
- *Receive position via 8 bit values:* The blind moves to position by receiving an 8 bit value. For this purpose, the communication objects *Sun: Move to position [0…255]* and *Sun: adjust slats [0…255]* are available.

Delay time on sun = 0
in s [0…65,535]

Options: 0…60…65,535

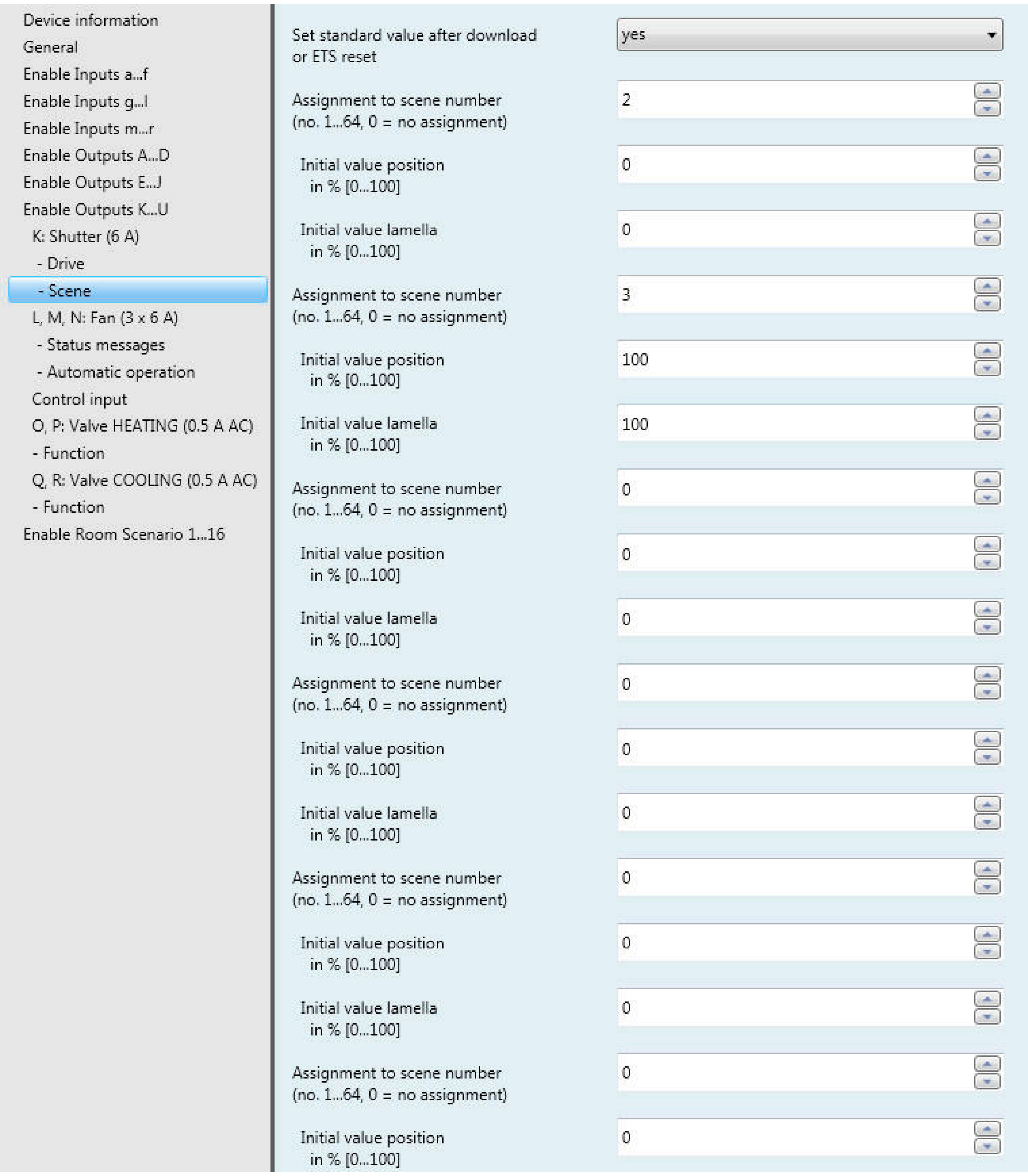
This parameter defines the delay with activation of the *Position if sun = 0*.

Via these parameters, for example, you can prevent that the blind moves UP and DOWN, if the sun is only overcast for a short period of time.

3.2.7.1.3 Parameter window *K: Shutter (6 A) - Scene*

In this parameter window, all settings for the function *Scene* are undertaken.

This parameter window is visible if in Parameter window K: Shutter (6 A), page 93, the parameter *Enable function Scene* has been enabled.



Set standard value after download or ETS reset	yes
Assignment to scene number (no. 1...64, 0 = no assignment)	2
Initial value position in % [0...100]	0
Initial value lamella in % [0...100]	0
Assignment to scene number (no. 1...64, 0 = no assignment)	3
Initial value position in % [0...100]	100
Initial value lamella in % [0...100]	100
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Initial value position in % [0...100]	0
Initial value lamella in % [0...100]	0
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Initial value position in % [0...100]	0
Initial value lamella in % [0...100]	0
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Initial value position in % [0...100]	0
Initial value lamella in % [0...100]	0
Assignment to scene number (no. 1...64, 0 = no assignment)	0
Initial value position in % [0...100]	0

How is a scene set?

Via the communication object *Scene*

- The scene can be recalled.
- The scene can be changed.
- The scene can be saved.

An example:

Scene recall:

- Send value 0-63 for the scene (no. 1-64) to the communication object *Scene*.

Scene change and save:

- Scene no. 24 is assigned to the output with the value move UP.
- Scene no. 24 should be assigned to the output with the value move DOWN.
    - Set the output to move DOWN with a switch telegram.
    - Send value 151 (128 + 23) for storage of scene number 24 to the communication object *Scene*.

General values for scene storage:

- 128 + (0…-63) for the scene (No. 1…64)
    - The stored scene values are retained until there is a device reset.

Note
The stored scene values are retained with a bus voltage failure. After a device reset the parameterized scene values can be reactivated. **For further information see: Reset via bus, page 258**

Set standard value after the download or ETS reset

Options: no
yes

- *no:* The standard values are not set after a download or ETS reset.
- *yes:* The standard values are set after a download or ETS reset.

Assignment to scene number [no. 1…64, 0 = no assignment]

Options: 0…64

The scene values are undefined by default and must therefore be learned once via the bus.

Using the scene function up to 64 scenes are managed using just a single group address. With this group address, all slaves integrated into a scene are linked via a 1 byte communication object. The following information is contained in a telegram:

- Number of the scene (1…64) as well as
- Telegram: Call scene or store scene.

The blind can be integrated in up to eight scenes. So for example, the blind can be switched UP via a scene in the morning and switched DOWN in the evening, or the blind can be integrated into light scenes.

If a telegram is received on the communication object *Scene*, the sent scene number is allocated for all outputs which move to the stored scene position or the current position is stored as the new scene position.

For further information see: Communication objects Output K: Blinds and shutters, page 201, Function scene, page 221 and Code table scene (8 bit), page 320

Initial value position in % [0…100]

Options: 0…100

This parameter defines the position in percent, to which the blind should be moved when the scene is called.

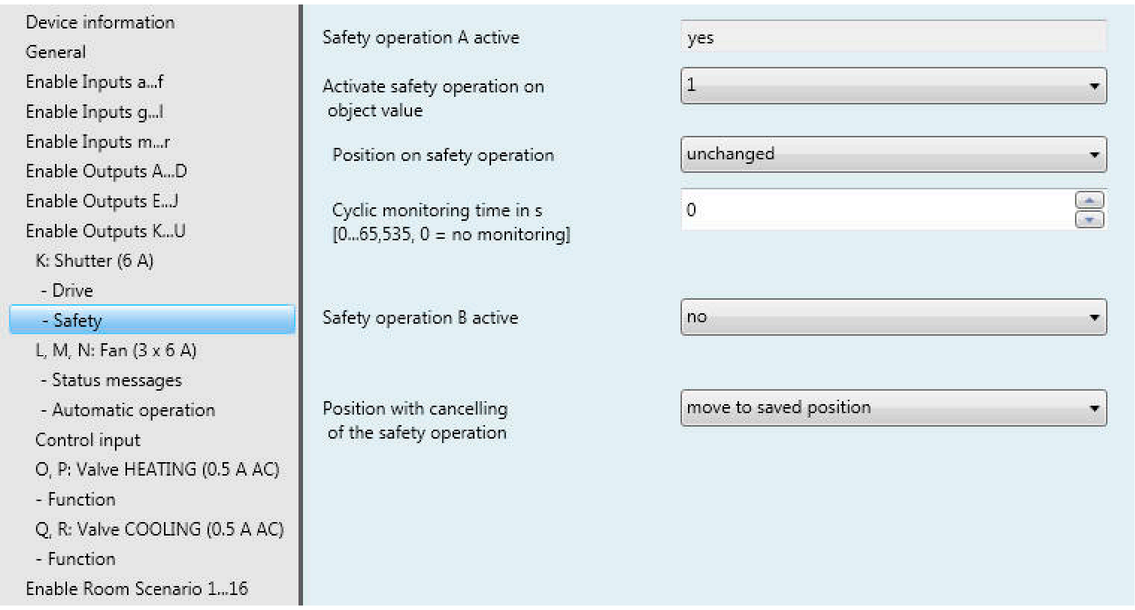
Initial value slat in % [0…100]

Options: 0…100

This parameter defines the slat position in percent, to which the blind should be moved when the scene is called.

3.2.7.1.4 Parameter window *K: Shutter (6 A) - Safety*

In this parameter window, all settings for the function *Safety* are undertaken. This parameter window is visible if in Parameter window K: Shutter (6 A), page 93, the parameter *Enable function safety* has been enabled.



Safety operation A active: yes
Activate safety operation on object value: 1
Position on safety operation: unchanged
Cyclic monitoring time in s [0...65,535, 0 = no monitoring]: 0
Safety operation B active: no
Position with cancelling of the safety operation: move to saved position

Safety operation A active

This parameter is defined with *yes*.

Activate safety operation on object value

Options:	1
	0

- *1:* The safety operation is triggered with the value 1.
- *0:* The safety operation is triggered with the value 0.

Position on safety operation

Options:	unchanged
	UP
	DOWN
	STOP

This parameter defines the reaction to the triggering of safety operation.

- *Unchanged:* The blinds remain unchanged in their positions and/or the current movement action is completed.
- *UP:* The blind moves UP.
- *DOWN:* The blind moves DOWN.
- *STOP:* The output is electrically disconnected, i.e. a moving blind is stopped.

Cyclic monitoring time in s
[0…65,535, 0 = no monitoring]

Options: 0…65,535

The parameter defines the intervals at which, the safety operation is monitored. The safety operation is not monitored with the setting 0. If the communication object *Safety operation A* does not receive a telegram after the set monitoring time, the safety is activated.

Note
The safety operation is reset if an ETS reset has occurred.

Important
On bus voltage recovery, the safety operation remains active until the enable is sent again.

Safety operation B active

Options: no
yes

This parameter defines how the safety operation B is activated.

Note
The setting options for safety operation B do not differ from those of safety operation A, see above.

Position with cancelling
of the safety operation.

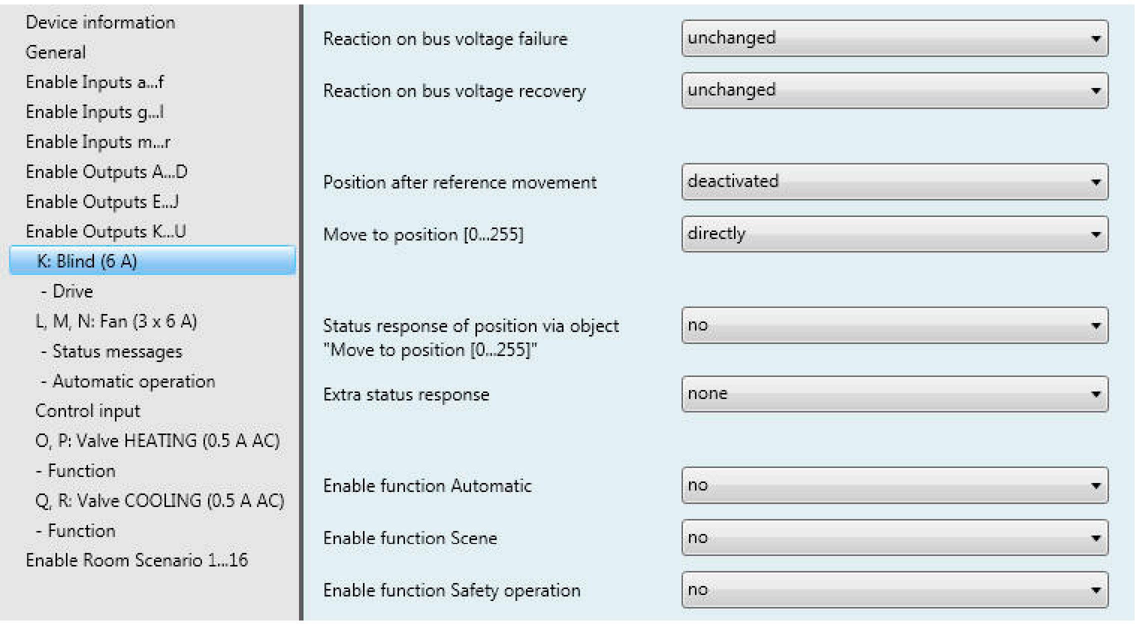
Options: unchanged
UP
DOWN
STOP
move to saved position

This parameter defines the position, to which the shutter/blind moves after safety operation is cancelled.

- *Unchanged:* The blind remains unchanged in its position and/or the current movement action is completed.
- *UP:* The blind moves UP.
- *DOWN:* The blind moves DOWN.
- *STOP:* The output is electrically disconnected, i.e. a moving blind is stopped.
- *move to saved position:* The blind is moved to its preset position.

3.2.7.2 Parameter window *K: Blind (6 A)*

In this parameter window, all settings for the Output *K: Shutter (6 A)* are undertaken. This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, the parameter *Output K (Shutter) (6 A)* has been selected with the option *Shutter*.



Reaction on bus voltage failure: unchanged
Reaction on bus voltage recovery: unchanged
Position after reference movement: deactivated
Move to position [0...255]: directly
Status response of position via object "Move to position [0...255]": no
Extra status response: none
Enable function Automatic: no
Enable function Scene: no
Enable function Safety operation: no

Reaction on bus voltage failure

Options:	unchanged UP DOWN STOP

The output can adopt a defined state on bus voltage failure (BVF) using this parameter.

- *unchanged:* The relay position of the outputs remains unchanged. A movement process is thus performed to completion.
- *UP/DOWN/STOP:* A fixed relay contact position is set.

Note

If the relay has been switched immediately before a bus voltage failure, it may not be possible to implement the options *UP* and *DOWN*.
The energy stored in the Room Master is not sufficient for this purpose.

Reaction on bus voltage recovery

Options: unchanged
UP
DOWN
STOP

This parameter defines how the output should respond with bus voltage recovery.

- *unchanged:* The current state is retained.
- *UP/DOWN/STOP:* A fixed relay contact position is set.

Position after reference movement

Options: deactivated
no reaction
move to saved position

This parameter enables the communication object *Reference movement* and defines how the Room Master responds after a reference movement.

- *deactivated:* The communication object *Reference movement* is not visible. No referencing can be performed.
- *no reaction:* The shutter remains either up or down in the reference position after the reference movement.
- *move to saved position:* The shutter is retracted to the position, in which it was before the reference movement was performed. If the function *Automatic* was activated for the shutters before the reference movement, the function *Automatic* is reactivated after the stored position is reached.

Note

If during a reference movement a direct or automatic movement of position telegram is received, the reference movement is performed first and the received target position is approached afterwards.

For further information see: Determination of the current position, page 225

Move to position [0…255]

Options: directly
indirectly via up
indirectly via down
indirectly via shortest way

- *directly:* The shutter moves with a position telegram from the current position directly to the new target position.
- *indirectly via up/indirectly via down:* The shutter will initially move fully up or down, after a movement telegram is received, and then move to the target position.
- *indirectly via shortest way:* The shutter will initially move fully up or down, after a movement telegram is received, depending on which path is the shortest. Thereafter the shutter moves to the target position.

Status response of position via objects "Move to position/lamella [0…255]"

Options: <u>no</u>
yes

This parameter defines if the communication object *Move to position [0…255]* sends a status response.

- *yes:* The following parameter appears:

  Send object value

  Options: no, update only
  <u>after a change</u>
  after request
  after a change or request

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

Extra status response

Options: <u>none</u>
end positions
Status byte

An additional status response can be enabled with this parameter.

- *none:* There is no feedback.
- *end positions:* The communication objects *Status of lower position* and *Status of upper position* are enabled; these indicate that the shutter/blind are in the upper or lower position (measured based on total movement time).
- *Status byte:* The communication object *Status byte* which contains further information in coded format is enabled.

Enable function Automatic

Options: <u>no</u>
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Automatic* appears.

By enabling the function *Automatic*, the parameter window - *Automatic* is enabled where further settings can be made.

Enable function Scene

Options: <u>no</u>
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Scene* appears.

By enabling the function *Scene* the parameter window - *Scene* is enabled where further settings can be made, e.g. the assignment of the output to a scene.

Enable safety operation

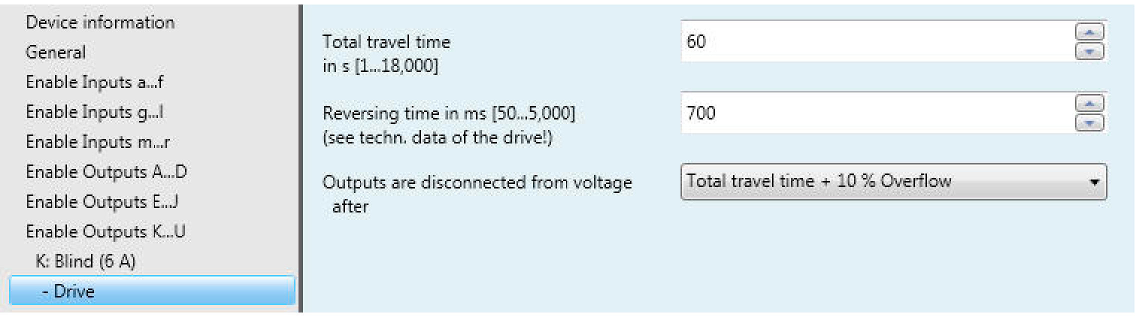
Options: <u>no</u>
yes

- *no:* The parameter window remains disabled and invisible.
- *yes:* The parameter window - *Safety* appears.

By enabling the function *Safety*, the parameter window - *Safety* is enabled, where further settings can be made.

3.2.7.2.1 Parameter window *K: Blind (6A) - Drive*

In this parameter window, the settings for the shutter drive are undertaken. This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Output K (Shutter) (6 A)* has been selected with the option *Shutter*.



Total travel time in s [1...18,000]: 60

Reversing time in ms [50...5,000] (see techn. data of the drive!): 700

Outputs are disconnected from voltage after: Total travel time + 10 % Overflow

Total travel time
in s [1…18,000]

Options: 1…60…18,000

This parameter defines the total travel time from the upper end position to the lower end position.

Reversing time in ms [50...5,000]
(see techn. data of the drive!)

Options: 50…700…5,000

This parameter defines the duration of the minimum reversing time between two directions of motion.

Outputs are disconnected from voltage after

Options:
End position + no overflow
End position + 2 % overflow
End position + 5 % overflow
End position + 10 % overflow
End position + 20 % overflow
Total travel time + 10 % Overflow

- *End position:* The application program calculates the movement time required from the current position to the end position. After the end position has been reached (as the very top or bottom), the blind drive will switch off independently. A so-called “overflow” can be set to ensure that the Room Master safely reaches the end position. Thus the voltage still remains applied for a short time to move the drive to a defined end position in a controlled manner .
- *Total travel time + 10 % Overflow:* The blind drive is always activated for the set total movement time + 10 % independently of the current position of the blind.

For further information see: Travel times, page 223

3.2.7.2.2 Parameter window *K: Blind (6A) - Automatic*

The function *Automatic* shutters does not differ from the function *Automatic* blinds.

The descriptions of the parameter setting options and the adjustable communication objects can be found in the Parameter window K: Shutter (6 A) - Automatic, page 99. Total travel time + 10 % Overflow: The blind drive is always activated for the set total movement time + 10 % independently of the current position of the blind.

For further information see: Travel times, page 223

3.2.7.2.3 Parameter window *K: Blind (6A) - Scene*

The function *Scene* Blinds does not differ from the function *Scene* shutters.

The descriptions of the parameter setting options and the adjustable communication objects can be found in the Parameter window K: Shutter (6 A) - Scene, page 102.

3.2.7.2.4 Parameter window *K: Blind (6A) - Safety*

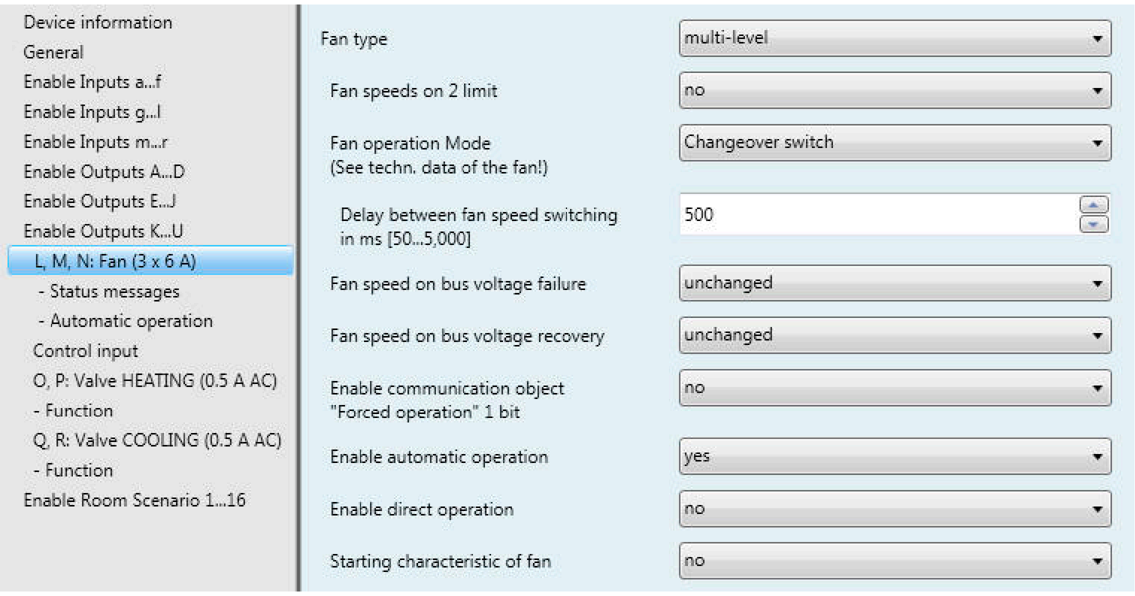
The function *Safety* Blind does not differ from the function *Safety* blinds.

The descriptions of the parameter setting options and the adjustable communication objects can be found in the Parameter window K: Shutter (6 A) - Safety, page 105.

3.2.7.3 Parameter window *L, M, N: Fan (3 x 6 A) multi-level*

In this parameter window, all settings for the *Multi-level fan* are undertaken.

This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Outputs L, M, N* the option *enable as fan speeds* has been selected.



Fan type	multi-level
Fan speeds on 2 limit	no
Fan operation Mode (See techn. data of the fan!)	Changeover switch
Delay between fan speed switching in ms [50...5,000]	500
Fan speed on bus voltage failure	unchanged
Fan speed on bus voltage recovery	unchanged
Enable communication object "Forced operation" 1 bit	no
Enable automatic operation	yes
Enable direct operation	no
Starting characteristic of fan	no

Fan type

Option: multi-level
one-level

This parameter defines the fan type which is to be controlled.

- *multi-level:* A fan with up to three speeds is controlled.
- *one-level:* A fan with one speed should be controlled.

Fan speeds on 2 limit

Option: no
yes

The fan speeds can be limited to two here. The following settings are the same as those for a three speed fan, but are only limited to two speeds.

- *no:* A three speed fan is controlled.
- *yes:* A two speed fan is controlled via fan speeds 1 and 2. Fan speed 3 is non-functional.

Fan operation Mode
(See techn. data of the fan!)

Option: Changeover switch
Step switch

The control of the fan is set with this parameter. The mode of fan control should be taken from the technical data of the fan.

How does a two-way changeover circuit function?

Only the corresponding output of the assigned fan speed is switched on with the parameterization as a changeover switch.

The delay time between the stage switch over and a minimum dwell time in a valve stage are programmable. The minimum dwell time in a fan speed is only active in automatic mode.

How does speed switching function?

With step switch control, no erratic and sudden switch on of the fan is possible. The individual fan speeds are activated consecutively (outputs switched on) until the required fan speed is achieved.

The parameterized delay time between two fan speeds has the effect that the current fan speed must be switched on for at least this time before the next valve speed is switched on. The parameterized minimum dwell time in a fan speed has the same effect as a changeover switch, i.e. it is only active in automatic mode and is added to the switchover delay.

- *Changeover switch:* The following parameter appears:

Delay between fan speed switching
in ms [50…5,000]

Option: 50…500…5,000

A switchover delay can be programmed with this parameter. This time is a fan specific factor and it is always taken into consideration.

Fan speed on bus voltage failure

Option: unchanged
OFF

Fan speed on bus voltage recovery

Options: <u>unchanged</u>
OFF
1
2
3

- *unchanged:* The fan speeds of the fan remain unchanged.
- *OFF:* The fan is switched off.
- *1, 2 or 3:* The fan switches to fan speed 1, 2 or 3.

Caution

The RM/S is supplied ex-works with a default setting (factory default). This ensures that the fan setting is switched off when the bus voltage is applied to the relay for the first time. Thus, damage to the device due to unintentional switch on during transport, e.g. due to vibration, is avoided.

It is advisable to apply a bus voltage before connecting the fan in order to achieve a defined switch state of the fan. This eliminates the possibility of the destruction of the fan due to an incorrect contact setting.

Enable communication object
"Forced operation" 1 bit

Options: <u>no</u>
yes

Through forced operation for example, a recirculation: valve OFF and fan ON can be implemented.

- *yes:* A *1 bit Forced operation* communication object is enabled. The following parameters appear:

  Forced operation on object value

  Options: <u>1</u>
  0

  - *1:* Forced operation is activated by a telegram with value 1.
  - *0:* Forced operation is activated by a telegram with value 0.

  Note

  During forced operation the settings set in *Automatic operation* are ignored. Automatic operation is updated after forced operation has been rescinded.

  Important

  Forced operation remains active until:

  - the complementary set values are sent.
  - the assignment is changed.
  - the fan type is changed.

  The Forced operation is not deactivated by a download of the application program, in which the fan type and the respective group addresses are retained.

  The Forced operation is reset if an ETS reset has occurred.

Limitation on forced operation

Options: 3, 2, 1, OFF
Unchanged
OFF
1
1, OFF
2
2, 1
2, 1, OFF
3
3, 2
3, 2, 1

This parameter sets which fan speed is set with active forced operation or which may not be exceeded or undershot.

- *3, 2, 1, OFF:* Everything is possible.
- *Unchanged:* The state is retained.
- *OFF:* Off.
- *1:* limited to speed 1.*
- *1, OFF* limited to speed 1 and off.
- *2:* limited to speed 2.*
- *2, 1:* limited to speed 2 and 1.
- *2, 1, OFF:* limited to speed 2, 1 and off.
- *3:* limited to speed 3.*
- *3, 2:* limited to speed 3 and 2.
- *3, 2, 1:* limited to speed 3, 2 and 1.

*** The control value is ignored.**

Enable automatic operation

Options: no
yes

- *yes:* The *Automatic operation* is enabled. Furthermore, the Parameter window - Automatic operation, page 122, appears.

Enable direct operation

Options: no
yes

- *yes: Direct operation* is enabled. Furthermore Parameter window - Direct operation, page 129 appears.

Starting characteristic of fan

Options: <u>no</u>
yes

This parameter enables the fan to start from the OFF state with a defined fan speed. This fan stage is immediately applied.

In order to guarantee a safe start of the fan motor, it can be useful to start the fan motor first with a higher fan speed. Thus a higher torque for the start up phase of the fan is achieved.

Note
A step switch normally means however that the previous fan stages are usually switched on consecutively. With the changeover switch the fan speed is directly switched on.

The delay between the switchover of two fan speeds (contact change) is considered.

The dwell times in a fan speed, which are considered in automatic mode, are inactive and will only be considered after the start up phase.

The start-up behaviour is a technical characteristic of the fan. For this reason, this behaviour has a higher priority than an active limitation or forced operation.

With the option *yes* in the parameter *Starting characteristic of fan*, the two additional parameters appear:

Switch on over fan speed

Options: 1/2/<u>3</u>

Here you set which fan stage the fan uses to start from the OFF state.

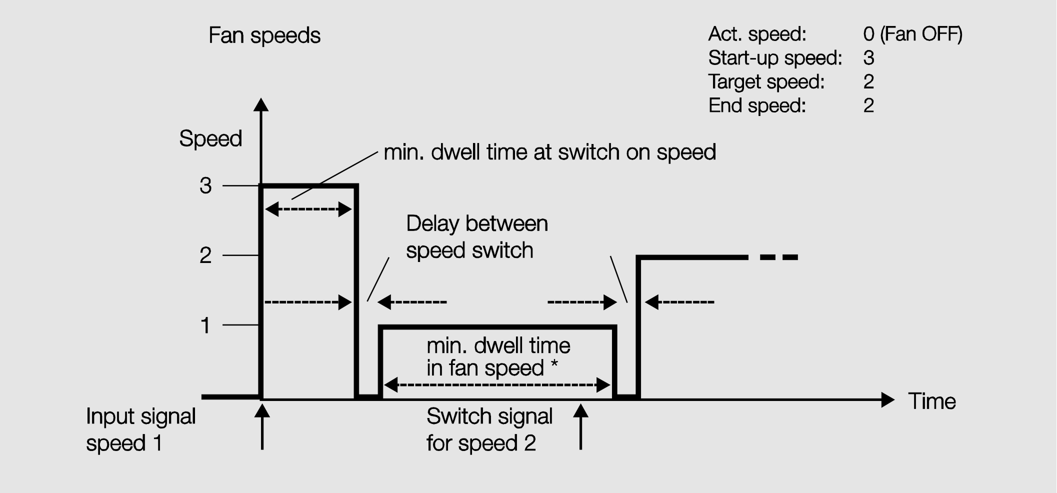
Minimum dwell period in switch on in s [1…65,535]

Options: 1…<u>5</u>…65,535

This parameter defines the minimum dwell time for one of the switch on speeds.

Example: Starting characteristic of a three speed fan

The illustration shows the response in automatic operation with the option *Switch on over fan speed 3*, if the fan receives the telegram from the OFF state to set *Speed 1*.



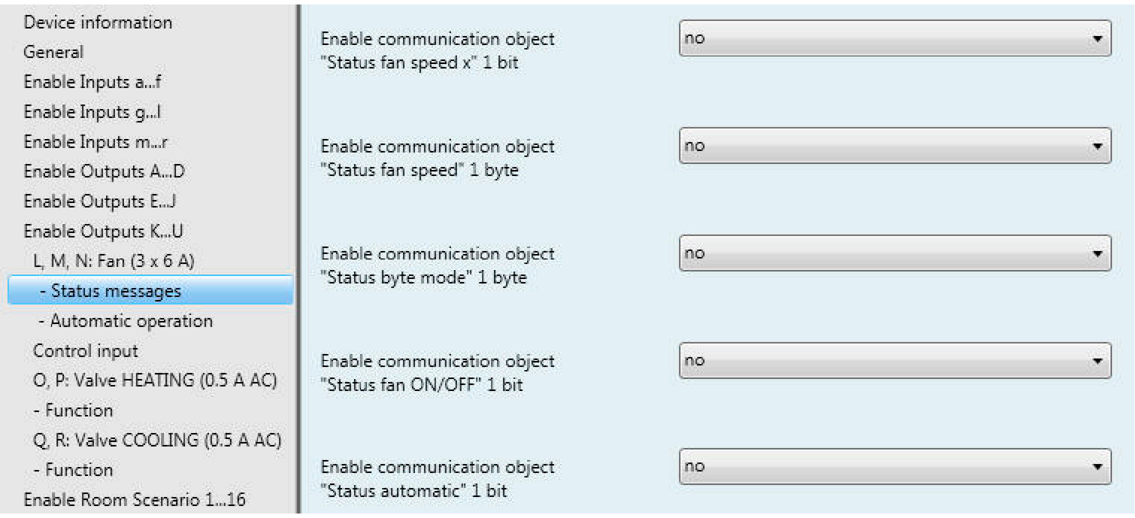
*** The parameter *Minimum dwell period in fan speed in s [0…65,535]* in the parameter window *Automatic operation* is only active and programmable, if the option *yes* has been selected in the *Enable automatic operation* parameter. In the parameter window *Fan*, you can find the parameter *Enable automatic operation*.**

Important
The Forced operation remains valid and is considered. The parameterized minimum dwell time in the fan speed for automatic mode is ignored during manual operation. Accordingly, an immediate reaction to the manual operation is detected. The delay time with speed switch over remains active to protect the fan.

3.2.7.3.1 Parameter window- *Status messages*

In this parameter window, the Status messages are defined.

This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Outputs L, M, N* the option *enable as fan speeds* has been selected.



Enable communication object "Status fan speed x" 1 bit: no

Enable communication object "Status fan speed" 1 byte: no

Enable communication object "Status byte mode" 1 byte: no

Enable communication object "Status fan ON/OFF" 1 bit: no

Enable communication object "Status automatic" 1 bit: no

Enable communication object
"Status fan speed x" 1 bit

Options: <u>no</u>
yes

The setting of a fan speed is displayed via these communication objects. You can parameterize if the status of a current fan speed or a required fan speed are displayed.

- *yes:* Three 1 bit communication objects, *Status fan speed x*, x = 1 to 3 are enabled. The following parameters appear:

  Meaning

  Options: <u>current fan speed</u>
  required fan speed

  This parameter defines whether the status of the *current fan speed* or the *required fan speed* is displayed.

    What is the current fan speed?

    The *current fan speed* is the speed at which the fan is actually operating.

What is the required fan speed?

The *required fan speed* is the fan speed which has to be achieved, e.g. when the transition and dwell times are completed.

Note
The limitations are included in this observation, i.e. if a limitation allows only fan speed 2, the fan is operating at fan speed 2, and, for example, a telegram to switch up is received, the *required fan speed* remains at 2, as fan speed 3 cannot be achieved due to the limitation.

Send object values

Options: no, update only
after a change
after request
after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

Enable communication object "Status fan speed" 1 byte

Options: no
yes

This status byte defines the figure value of the fan speed.

This display can be differentiated with the selection of *current fan speed* from the *required fan speed*. Initially, the switchover times, dwell times and the start-up phase must be completed before the required fan speed is achieved.

- *yes:* The communication object *Status fan speed* is enabled.

What is the current fan speed?

The *current fan speed* is the speed at which the fan is actually operating.

What is the required fan speed?

The *required fan speed* is the fan speed which has to be achieved, e.g. when the transition and dwell times are completed.

With option *yes*, the following parameters appear:

Meaning

Options: current fan speed
required fan speed

This parameter defines whether the status of the *current fan speed* or the *required fan speed* is displayed.

Note
The limitations are included in this observation, i.e. if a limitation allows only fan speed 2, the fan is operating at fan speed 2, and, for example, a telegram to switch up is received, the *required fan speed* remains at 2, as fan speed 3 cannot be achieved due to the limitation.

Send object value

Options: no, update only
after a change
after request
after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

Enable communication object "Status byte mode" 1 byte

Options: no
yes

From this status byte, the states HEATING, COOLING, automatic, forced operation and the four limitations are indicated directly via a 1 bit coding.

For further information see: Status byte fan, forced/operation, page 318

- *yes:* The communication object *Status byte* mode is enabled. The following parameter appears:

  Send object values

  Options: no, update only
  after a change
  after request
  after a change or request

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

Enable communication object "Status fan ON/OFF" 1 bit'

Options: no
yes

The communication object *Status fan* can be enabled with this parameter.

Some fans initially need an ON telegram before they are set to a fan speed from the OFF state. This ON telegram has effect on a main switch which has to be switched on. This demand can be implemented with any switch output which is controlled via the *Status fan* communication object. The corresponding switch communication object of the switch actuator should be connected with the *Status fan* communication object.

With option yes the following parameters appear:

Send object value

Options:	no, update only after a change after request after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

The following parameter only becomes visible if the option *yes* has been selected in the *Enable automatic operation* parameter in the *Fan* parameter window.

Enable communication object "Status automatic" 1 bit

Options:	no yes

The communication object *Status automatic* is enabled with this parameter.

Telegram value
1 = Room Master is in automatic operation.
0 = Automatic operation is switched off.

- *yes:* The following parameter appears:

Send object value

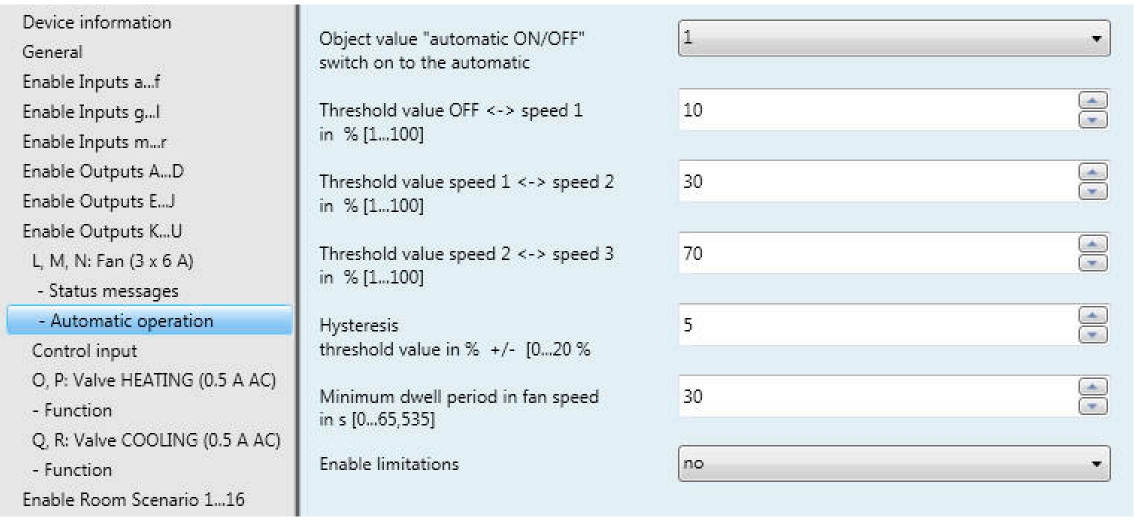
Options:	no, update only after a change after request after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

3.2.7.3.2 Parameter window - *Automatic operation*

This parameter window is visible if in parameter window *L, M, N: Fan (3 x 6 A)* the option *yes* has been selected in the *Enable automatic operation* parameter.

In this parameter window, the threshold values for switchover of the fan speed are defined. Furthermore, the limitations can also be enabled.



Object value "automatic ON/OFF" switch on to the automatic: 1

Threshold value OFF <-> speed 1 in % [1...100]: 10

Threshold value speed 1 <-> speed 2 in % [1...100]: 30

Threshold value speed 2 <-> speed 3 in % [1...100]: 70

Hysteresis threshold value in % +/- [0...20 %: 5

Minimum dwell period in fan speed in s [0...65,535]: 30

Enable limitations: no

Important
The Room Master evaluates the threshold values in ascending order, i.e. first of all the threshold value for *OFF -> Fan speed 1* is checked followed by *Fan speed 1 -> Fan speed 12* etc. The correct method of function is only assured if the threshold value for *Off -> Fan speed 1* is less than the threshold value *Fan speed 1 -> Fan speed 2*, and this is less than *Fan speed 2 -> Fan speed 3* etc.

**Object value "automatic ON/OFF"
switch on to the automatic**

Options: <u>1</u>
0

This parameter defines how to react to a telegram.

- *1:* Automatic is activated by a telegram with value 1.
- *0:* Automatic is activated by a telegram with value 0.

**Threshold value OFF <-> speed 1
in % [1...100]**

Options: 1…10…100

Here the threshold value, at which switch on of fan speed 1 occurs, is set. If the value in the control value communication object is greater than the parameterized threshold value, fan speed 1 is switched on. If the value is less, it is switched off.

**Threshold value speed 1 <-> speed 2
in % [1...100]**

Options: 1…30…100

Here the threshold value, at which switch over to fan speed 2 occurs, is set. If the value in the control value communication object is greater than the parameterized threshold value, switch over to fan speed 2 occurs.

**Threshold value speed 2 <-> speed 3
in % [1...100]**

Options: 1…70…100

Here the threshold value, at which switch over to fan speed 3 occurs, is set. If the value in the communication object *Control value HEATING* or *Control value COOLING* is greater than the parameterized threshold value, switch over to fan speed 3 occurs.

**Hysteresis
threshold value in % +/- [0…20 %]**

Options: 0…5…20

Here a hysteresis, at which switchover to the next fan speed occurs, is set. The hysteresis applies for all three threshold values.

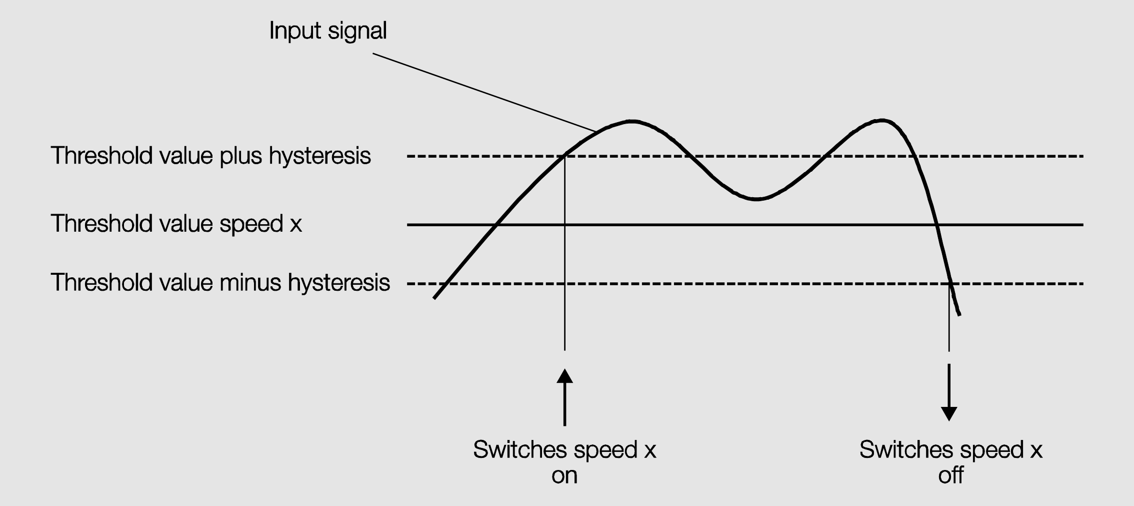
The setting 0 causes immediate switching without hysteresis.

The entered percentage value is directly added to or subtracted from the percentage value of the *Fan speed x threshold value x*. The result is a new upper or lower threshold value.

Switch threshold top (switch on) = threshold value + hysteresis

Switch threshold bottom (switch off) = threshold value - hysteresis

Example: Three speed fan, hysteresis with fan control



Using hysteresis, a continuous switching between the fan speeds around the threshold value with deviating input signals can be avoided.

Important
How does the fan react if the switch thresholds overlap by the use of hysteresis? 1) The hysteresis defines from which point the set speed transition occurs. 2) If the speed transition occurs, the new speed is determined using the control value and the set switch thresholds. The hysteresis is not considered. A control variable with the value 0 always results in speed 0. An example: Parameterized: Threshold value OFF <-> speed 1 = 10 % Threshold value 1 <-> speed 2 = 20 % Threshold value 2 <-> speed 3 = 30 % Hysteresis 15 % Behaviour when ascending from speed 0: • Speed 0 transition at 25 % (≥ 10 % + hysteresis). • The new speed is 2 (25 % is between 20 and 30 %). • Accordingly, speed 1 is omitted. Behaviour when descending from speed 3: • Speed 3 transition at 14 % (< 30 % – hysteresis). • The new speed is 1 (15 % is between 10 and 20 %). • Accordingly, speed 2 is omitted.

Minimum dwell period in fan speed in s [0...65,535]

Options: 0…30…65,535

This parameter defines the dwell time for a fan speed of the fan until it switches to the next higher or lower fan speed. The input is made in seconds.

A setting of 0 means non-delayed switching. The minimum switch times of the relay can be found in the Technical data, on page 15.

The dwell time in a fan stage is only considered in automatic mode.

Enable limitations

Options: no
yes

- *yes:* The following parameters appear:

  At the same time 4 communication objects for limitation of the fan speed are enabled:

  - *Limitation 1*, e.g. for frost/heat protection
  - *Limitation 2*, e.g. for comfort operation
  - *Limitation 3*, e.g. for night shutdown
  - *Limitation 4*, e.g. for standby operation

  Speed ranges (limitations) are defined for the fan with the function *Speed limitation* which may not be exceeded or undershot.

  Four limitations are available. They can be used, for example, for the control of various operating modes, e.g. frost/heat protection, comfort, night shut down and standby. In normal cases, the thermostat takes these operating modes into account in its control variable for the actuator.

Important
The parameterized starting behaviour, which is a technical characteristic of the fan, has a higher priority than a limitation or forced operation, i.e. if a limitation is activated in fan speed 2 and a start-up behaviour is parameterized via fan speed 3, the following behaviour will result: The fan is in the OFF state and receives a control signal for fan speed 1. Initially the fan operates at fan speed 3 (start-up speed) and then proceeds to fan speed 2 that is defined by the limitation. The actual required fan speed 1 will not be achieved due to the limitation.

The sequence of the displayed parameters corresponds with their priorities, i.e. the parameter with the highest priority has limitation 1 followed by limitation 2, 3 and 4.

Note
The fault operation, e.g. as with a malfunction of the thermostat has a lower priority than the fan limitation, i.e. by a limitation of the fan speed during a thermostat malfunction, only the upper or the lower limit of the fan limitation can be set at best.

When automatic mode is exited, e.g. by a manual action, the limitations 1 to 4 are inactive.

The set limitations are reactivated after automatic operation is reactivated.

The following points apply for limitations:

- The fan speed and valve position can be parameterized independently.
- The limitation need not necessarily apply to one fan speed only. It can also encompass another range of the fan speeds, i.e. only certain fan speeds can be set if the limitation is active. In this way, a limited control is also possible.
- The limitation is activated if a telegram with the value 1 is received on the limitation communication object. The limitation is deactivated if a telegram with the value 0 is received on the limitation communication object. A manual action ends automatic mode.
- If a limitation is activated, the Room Master switches to the parameterized fan speed regardless of the control value. If during the activation of the limitation another fan stage or a fan stage outside the range of the “limitation range” is set, the required fan stage or the limit fan stage of the range is set.
- After switch off of the limitations, the fan speed and the communication objects for valve control are recalculated and executed. This means that during limitation the Room Master operates normally in the background, the outputs are not changed, and implementation only occurs after the end of limitation.

There are the same parameters for each of the individual four limitations used to limit the fan speeds.

Important
The priority is according to the listed sequence. The highest priority is assigned to limitation 1, e.g. Frost/Heat protection; the lowest priority is assigned to limitation 4, e.g. standby operation.

Fan speed with limitation 1
Fan speed with limitation 2
Fan speed with limitation 3
Fan speed with limitation 4

Options:	<u>3, 2, 1, OFF</u> Unchanged OFF 1 1, OFF 2 2, 1 2, 1, OFF 3 3, 2 3, 2, 1

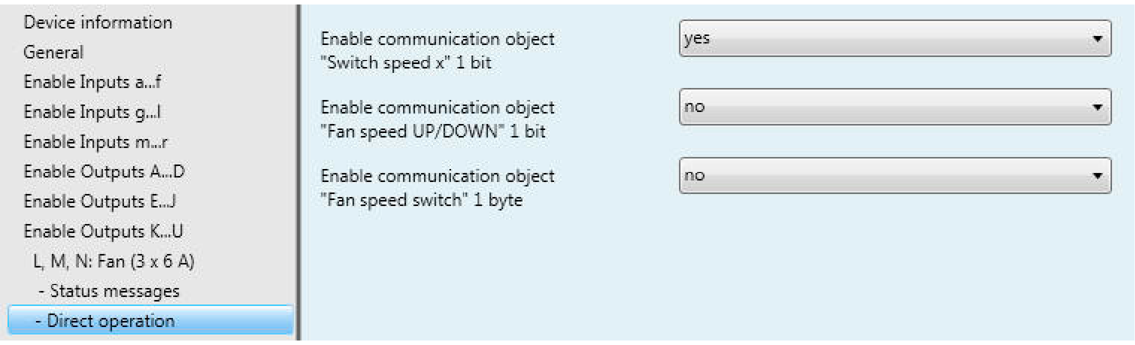
With this parameter, you set which fan speed is set with active limitation or which speed is not exceeded or undershot.

- *3, 2, 1, OFF:* Everything is possible.
- *Unchanged:* The state is retained.
- *OFF:* Off.
- *1:* limited to speed 1.*
- *1, OFF* limited to speed 1 and off.
- *2:* limited to speed 2.*
- *2, 1:* limited to speed 2 and 1.
- *2, 1, OFF:* limited to speed 2, 1 and off.
- *3:* limited to speed 3.*
- *3, 2:* limited to speed 3 and 2.
- *3, 2, 1:* limited to speed 3, 2 and 1.

* The control value is ignored.

3.2.7.3.3 Parameter window - *Direct operation*

This parameter window is visible if in parameter window *L, M, N: Fan (3 x 6 A)* the option *yes* has been selected in the *Enable direct operation* parameter.



Enable communication object "Switch speed x" 1 bit: yes

Enable communication object "Fan speed UP/DOWN" 1 bit: no

Enable communication object "Fan speed switch" 1 byte: no

Enable communication object
"Switch speed x" 1 bit

Options: no
<u>yes</u>

- *yes:* Three 1 bit communication objects *Speed 1, Speed 2* and *Speed 3* are enabled.

The Room Master receives a setting telegram via these communication objects.

Telegram value 1 = Fan speed x is switched on
0 = Fan speed x is switched on

If several ON/OFF telegrams are received consecutively in a short period of time at various communication objects *Fan speed 1-3*, the value last received by the fan control is the decisive value. An OFF telegram to one of the three communication objects, *Fan speed 1-3*, switches off the fan completely.

Important
The forced operation remains valid and is considered. The parameterized minimum dwell time in the fan speed for automatic mode is ignored during manual operation. Accordingly, an immediate reaction to the manual operation is detected. The delay time with speed switch over remains active to protect the fan.

Enable communication object
"Fan speed UP/DOWN" 1 bit

Options:	no yes

- *yes:* A communication object 1 bit *Fan speed UP/DOWN* is enabled.

Telegram value	1 = a fan speed is switched UP 0 = a fan speed is switched DOWN

If the maximum fan speed is achieved and a further telegram with the value 1 is received the fans speed will remain as it is.

Important
The forced operation remains valid and is considered. The parameterized minimum dwell time in the fan speed for automatic mode is ignored during manual operation. Accordingly, an immediate reaction to the manual operation is detected. The delay time with speed switch over remains active to protect the fan.

With multiple manual UP or DOWN switching, the target speed will be increased or reduced by a speed step. This is possible until the maximum or minimum possible speed is achieved. Further UP or DOWN telegrams are ignored and not executed. Each new switching telegram initiates a new calculation of the target speed. This means that the target speed can be changed by switching telegrams until the target speed is achieved.

Enable communication object
"Fan speed switch" 1 byte

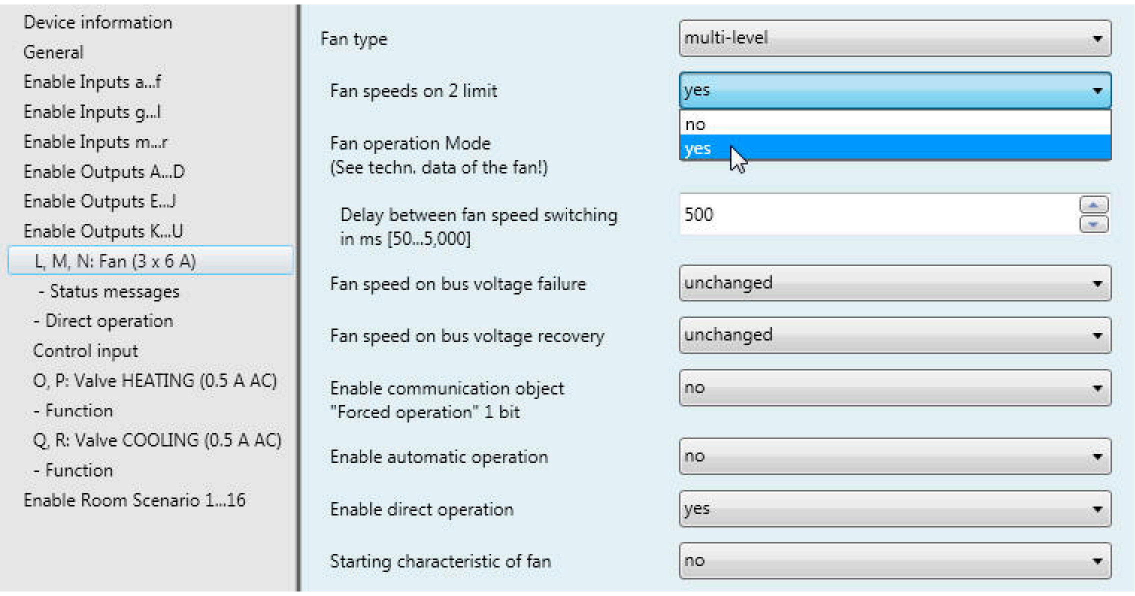
Options:	no yes

- *yes:* A 1 byte communication object *Switch speed* is enabled.

3.2.7.4 Parameter window *L, M, N: Fan (3 x 6 A) two speed*

In this parameter window, all settings for the *Two-level fan* are undertaken.

This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Outputs L, M, N* the option *enable as fan speeds* has been selected.



Fan type	multi-level
Fan speeds on 2 limit	yes
Fan operation Mode (See techn. data of the fan!)	
Delay between fan speed switching in ms [50...5,000]	500
Fan speed on bus voltage failure	unchanged
Fan speed on bus voltage recovery	unchanged
Enable communication object "Forced operation" 1 bit	no
Enable automatic operation	no
Enable direct operation	yes
Starting characteristic of fan	no

If a fan with two fan speeds is to be controlled via the RM/S, the following parameters must be set:

- Select the option *multi-level* in the parameter type *Fan type* in the parameter window *Fan*.
- The parameter *Fan speed on 2 limit* must be selected with *yes*.

Now a two speed fan is controlled via fan speeds 1 and 2.

Fan speed 3 with all its parameters and options is now non-functional.

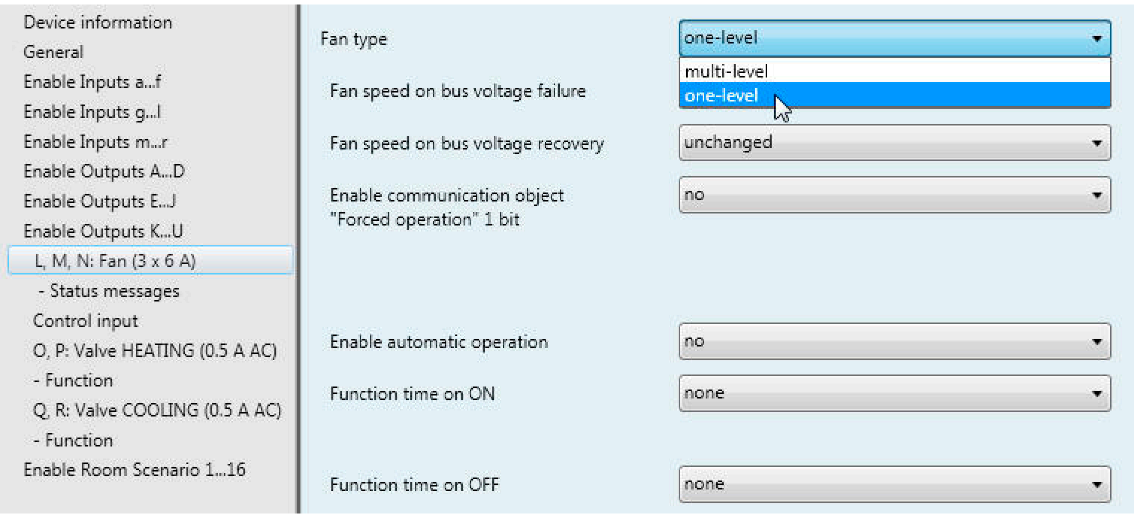
Note

Further parameters and their settings can be found in Parameter window L, M, N: Fan (3 x 6 A) multi-level, page 113.

3.2.7.5 Parameter window *L, M, N: Fan (3 x 6 A) one-level*

In this parameter window, all settings for the *one-level fan* are undertaken.

This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Outputs L, M, N* the option *enable as fan speeds* has been selected.



Fan type: one-level

Fan speed on bus voltage failure

Fan speed on bus voltage recovery: unchanged

Enable communication object "Forced operation" 1 bit: no

Enable automatic operation: no

Function time on ON: none

Function time on OFF: none

Fan type

Option: <u>multi-level</u>
one-level

The fan type to be controlled is set with this parameter.

If a fan with up to three speeds is to be controlled, the option *multi-level* must be selected.

If a fan with one speed is to be controlled, the option *one-level* must be selected.

Fan speed on bus voltage failure

Option: <u>unchanged</u>
OFF
ON

The behaviour of the fan on bus voltage failure is defined here.

Fan speed on bus voltage recovery

Options: unchanged
OFF
ON

The behaviour of the fan on bus voltage recovery is defined here.

- *unchanged:* The fan speed of the fan remains unchanged.
- *OFF:* The fan is switched off.
- *ON:* The fan is switched on.

Caution

The RM/S is supplied ex-works with a default setting (factory default). This ensures that the fan setting is switched off when the bus voltage is applied to the relay for the first time. Thus, damage to the device due to unintentional switch on during transport, e.g. due to vibration, is avoided.

It is advisable to apply a bus voltage before connecting the fan in order to achieve a defined switch state of the fan. This eliminates the possibility of the destruction of the fan due to an incorrect contact setting.

Enable communication object "Forced operation" 1 bit

Options: no
yes

- *yes:* A *1 bit Forced operation* communication object is enabled. The following parameters appear at the same time:

  Forced operation on object value

  Options: 1
  0

  - *1:* Forced operation is activated by a telegram with value 1.
  - *0:* Forced operation is activated by a telegram with value 0.

  Behaviour with forced operation

  Options: unchanged
  OFF
  ON

  This parameter defines how the fan should respond with forced operation.

Enable automatic operation

Options: no
yes

- *yes:* Automatic mode is enabled; an additional parameter window *Automatic operation* appears.

Function time on ON

Options: none
switching delay
minimum time

The function *Time* at fan ON is defined here.

- *none:* No function *Time* is executed.
- *switching delay:* The fan is switched on using this delay.
- *minimum time:* The fan remains ON for at least this time.

With option *switching delay*, the following parameters appear:

Time in s [1…65,535 x 0.1]

Options: 1…20…65,535

The fan is switched on using this delay.

With option *minimum time*, the following parameters appear:

Time in s [1…65,535]

Options: 1…20…65,535

The fan remains ON for at least this time.

Function time on OFF

Options: none
switching delay
minimum time

The function *Time* at fan OFF is defined here.

- *none:* No function *Time* is executed.
- *switching delay:* The fan is switched off using this delay.
- *minimum time:* The fan remains OFF for at least this time.

With option *switching delay*, the following parameters appear:

Time in s [1…65,535 x 0.1]

Options: 1…20…65,535

The fan is switched off using this delay.

With option *minimum time*, the following parameters appear:

Time in s [1…65,535]

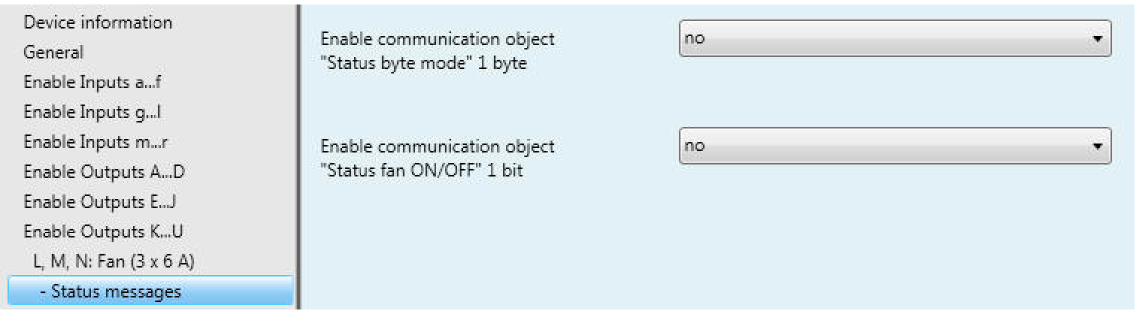
Options: 1…20…65,535

The fan remains OFF for at least this time.

3.2.7.5.1 Parameter window- *Status messages*

In this parameter window, the *Status messages* are defined.

This parameter is visible if in parameter window Parameter window Enable Outputs K…U, page 91, with parameter *Outputs L, M, N* the option *enable as fan speeds* has been selected.



Enable communication object "Status byte mode" 1 byte: no

Enable communication object "Status fan ON/OFF" 1 bit: no

Enable communication object
"Status byte mode" 1 byte

Options: no
yes

From this status byte, the states HEATING, COOLING, automatic, forced operation and the four limitations are indicated directly via a 1 bit coding.

For further information see: Status byte fan, forced/operation, page 121

- *yes:* The communication object *Status byte* mode is enabled. The following parameter appears:

  Send object value

  Options: no, update only
  after a change
  after request
  after a change or request

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

Enable communication object
"Status fan ON/OFF" 1 bit'

Options: <u>no</u>
yes

The communication object *Status fan* can be enabled with this parameter.

Some fans initially require an ON telegram before they are set to a fan speed from the OFF state. This ON telegram has effect on a main switch which has to be switched on. This demand can be implemented with any switch output that is controlled via the *Status fan* communication object. The corresponding switch communication object of the switch actuator should be connected with the *Status fan* communication object.

With the option *yes*, the following parameters appear:

Send object value

Options: no, update only
<u>after a change</u>
after request
after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

The following parameter only appears if in parameter window *L, M, N: Fan (3 x 6 A)*, the parameter *Enable automatic operation* has been selected with the option *yes*:

Enable communication object
"Status automatic" 1 bit

Options: <u>no</u>
yes

The communication object *Status automatic* is enabled with this parameter.

Telegram value 1 = automatic operation active
0 = automatic operation inactive

- *yes:* The following parameter appears:

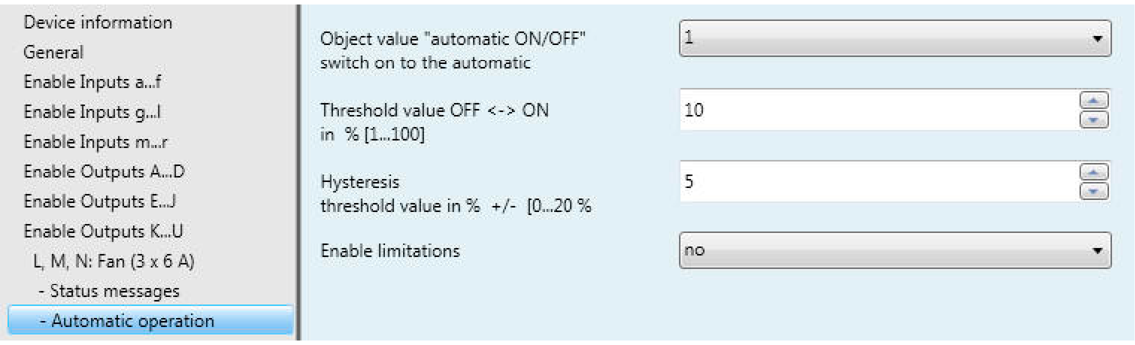
Send object value

Options: no, update only
<u>after a change</u>
after request
after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

3.2.7.5.2 Parameter window - *Automatic operation*

This parameter window is visible if in parameter window *L, M, N: Fan (3 x 6 A)* the option *yes* has been selected with parameter *Enable automatic operation*.



Object value "automatic ON/OFF" switch on to the automatic: 1

Threshold value OFF <-> ON in % [1...100]: 10

Hysteresis threshold value in % +/- [0...20 %: 5

Enable limitations: no

In this parameter window, the threshold values for switchover of the fan speed are defined. Furthermore, the limitations can also be enabled.

The corresponding valve control communication object receives the value 1 if a fan speed is set. If a fan speed is not set, the communication object will receive the value 0.

**Object value "automatic ON/OFF"
switch on to the automatic**

Options: 1
0

This parameter defines how to react to a telegram.

- *1:* Automatic is activated by a telegram with value 1.
- *0:* Automatic is activated by a telegram with value 0.

**Threshold value OFF -> ON
in % [1...100]**

Options: 1…10…100

Here the threshold value, at which switch on occurs, is defined. If the value in the control value communication object is greater than or equal to the parameterized threshold value, it is switched on. If the value is less, then it is switched off.

Hysteresis
threshold value in % +/- [0…20 %]

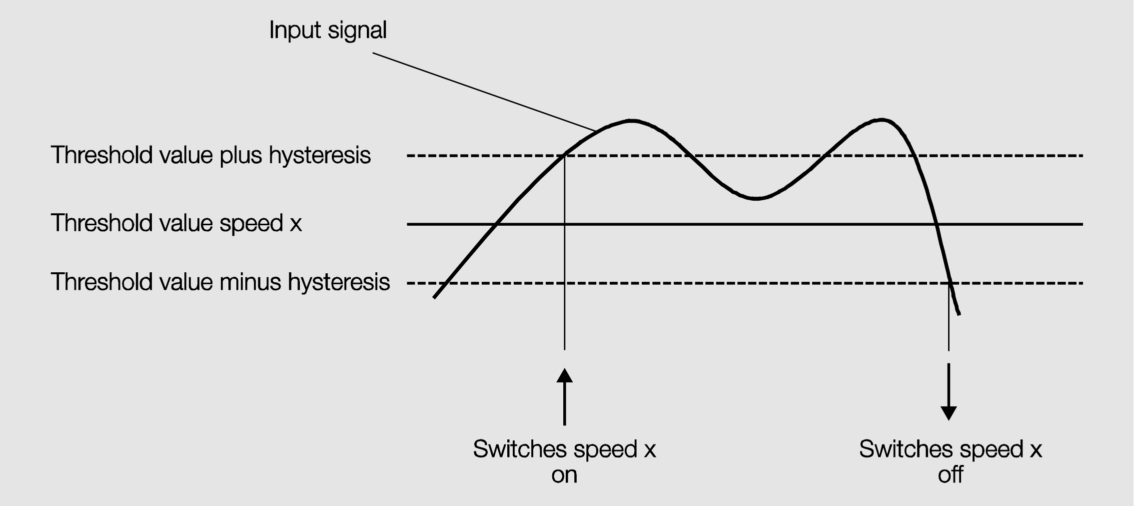
Options: 0…5…20

Here a hysteresis, at which switchover to the next fan speed occurs, is set. The hysteresis applies for all three threshold values.

The setting 0 causes immediate switching without hysteresis.

The entered percentage value is directly added to or subtracted from the percentage value of the *Fan speed x threshold value x*. The result is a new upper or lower threshold value.

Example, a three speed fan, hysteresis with fan control



Using hysteresis, a continuous switching between the fan speeds around the threshold value with deviating input signals can be avoided.

Enable limitations

Option: no
yes

- *yes:* The following parameters appear:

At the same time 4 communication objects for limitation of the fan speed are enabled:

- *Limitation 1*, e.g. for frost/heat protection
- *Limitation 2*, e.g. for comfort operation
- *Limitation 3*, e.g. for night shutdown
- *Limitation 4*, e.g. for standby operation

Speed ranges (limitations) are defined for the fan with the speed limitation function which may not be exceeded or undershot.

Four limitations are available. These can be used for example for the control of various operating modes such as frost/heat protection, night shut down and standby. In normal cases the thermostat takes these operating modes into account in its control variable for the Room Master.

Important
The parameterized starting behaviour, which is a technical characteristic of the fan, has a higher priority than a limitation or forced operation, i.e. if a limitation is activated in fan speed 2 and a start-up behaviour is parameterized via fan speed 3, the following behaviour will result: The fan is in the OFF state and receives a control signal for fan speed 1. Initially the fan operates at fan speed 3 (start-up speed) and then proceeds to fan speed 2 that is defined by the limitation. The actual required fan speed 1 will not be achieved due to the limitation.

The sequence of the displayed parameters corresponds with their priorities, i.e. the parameter with the highest priority has limitation 1 followed by limitation 2, 3 and 4.

Note
The fault operation, e.g. with a malfunction of the thermostat, has a lower priority than the fan limitation, i.e. by a limitation of the fan speed during a thermostat malfunction, only the upper or the lower limit of the fan limitation can be set at best.

When automatic mode is exited, e.g. by a manual action, the limitations 1…4 remain.

The following points apply for limitations:

- The fan speed and valve position can be parameterized independently.
- The limitation need not necessarily apply to one fan speed only. It can also encompass another range of the fan speeds, i.e. only certain fan speeds can be set if the limitation is active. In this way, a limited control is also possible.
- The limitation is activated if a telegram with the value 1 is received on the limitation communication object. The limitation is deactivated if a telegram with the value 0 is received on the limitation communication object. A manual action ends automatic mode.
- If a limitation is activated, the Room Master switches to the parameterized fan speed regardless of the control value. If during the activation of the limitation another fan stage or a fan stage outside the range of the “limitation range” is set, the required fan stage or the limit fan stage of the range is set.
- After switch off of the limitations, the fan speed and the communication objects for valve control are recalculated and executed. This means that during limitation the actuator operates normally in the background, the outputs are not changed and implementation only occurs after the end of limitation.

There are the same parameters for each of the individual four limitations used to limit the fan speeds. The priority is according to the listed sequence. The highest priority is assigned to limitation 1, e.g. Frost/Heat protection; the lowest priority is assigned to limitation 4, e.g. standby operation.

Fan speed with limitation 1
Fan speed with limitation 3

Options: inactive
unchanged
OFF
ON

With this parameter, you set which fan speed is set with active limitation, or which speed is not exceeded or undershot.

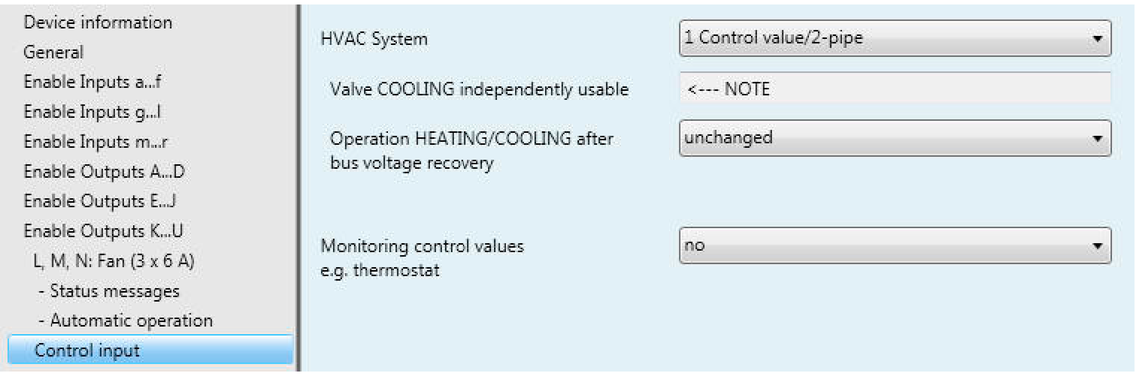
Fan speed with limitation 2
Fan speed with limitation 4

Options: inactive
unchanged
OFF
ON

With this parameter, you set which fan speed is set with active limitation, or which speed is not exceeded or undershot.

3.2.8 Parameter window *Control input*

In this parameter window, all settings for the *Control input* are undertaken.



HVAC System: 1 Control value/2-pipe
Valve COOLING independently usable: <--- NOTE
Operation HEATING/COOLING after bus voltage recovery: unchanged
Monitoring control values e.g. thermostat: no

HVAC-System

Options:
1 Control value/2-pipe
1 Control value/4-pipe, with switching object
2 Control values/2-pipe
2 Control values/2-pipe, with switching object
2 Control values/4-pipe

This parameter defines the pipe system which is used with the Room Master. The individual functions are described in the following chapters.

Important

If a valve is deactivated due to a conversion of the HVAC system, the valve will be fully closed. A correction curve that may be set will be ignored!

Monitoring control values e.g. thermostat

Options: no
yes

- *yes:* The communication object *Fault control value* is enabled. Hereby for example, a thermostat can be cyclically monitored. The following parameters appear:

Note
During a fault (emergency operation) when the control signal from the thermostat is no longer received, the Room Master autonomously performs a Pulse width modulation – Calculation, page 255, and (Pulse width modulation (PWM), page 253). For this purpose, the Room Master uses the programmable PWM cycle time.

Monitoring time in s [30…65,535]

Options: 30…120…65,535

With this parameter, the time used to monitor all telegrams on the input/setting values of the RM/S is set: Communication objects *Control value HEATING, Control value COOLING* or *Control value HEATING/COOLING*.

If a setting variable is not received within the parameterized time, a communication malfunction has occurred and emergency operation is activated.

Important
It must be assured that the monitoring time is set to at least factor 3 larger than the set sending time of the thermostat.

The reaction of the RM/S to a setting value not received can be defined in the following parameters.

Send object value (Object "Control value fault" 1 bit)

Options: no, update only
after a change
after request
after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

Control value after control fault in % [0…100]

Options: 0…30…100

This control value in percent can be set with a control value fault should the control fail (emergency operation).

3.2.8.1 HVAC system – 1 Control value/2 pipe

If option *1 Control value/2 pipe* is selected, additional parameters appear:

Valve COOLING independently usable

This parameter serves as a note or remark.

Valve COOLING

The cooling valve can be used additionally and independently via the communication object *Control value COOLING (extra!)*. The valve COOLING is not monitored in the process.

Valve HEATING

Via communication object *Control value HEATING/COOLING*, the valve HEATING and the fan are controlled.

For further information see: Configuration of a HVAC system with Fan Coil units, page 235.

Operation HEATING/COOLING after bus voltage recovery

Options: unchanged
HEATING
COOLING

Using this parameter, the reaction after bus voltage recovery is set.

- *unchanged:* After bus voltage recovery, the state which existed before bus voltage failure is set.
- *HEATING:* After bus voltage recovery, the *HEATING* state is set.
- *COOLING:* After bus voltage recovery, the *COOLING* state is set.

3.2.8.2 HVAC-System – 1 Control value/4 pipe, with switching object

If option *1 Control values/4 pipe, with switching object* is selected, additional parameters appear:

Toggle via separate object

This parameter serves as a note or remark.

Valve HEATING/COOLING

Using communication object *Control value HEATING/COOLING*, the valves HEATING/COOLING and the fans are controlled.

Toggle between HEATING and COOLING is implemented via the separate communication object *Toggle HEATING/COOLING*.

The corresponding inactive/non-actuated valve is thus automatically closed when toggled.

For further information see: Configuration of a HVAC system with Fan Coil units, page 235.

Operation HEATING/COOLING after bus voltage recovery

Options: unchanged
HEATING
COOLING

Using this parameter, the reaction after bus voltage recovery is set.

- *unchanged:* After bus voltage recovery, the state which existed before bus voltage failure is set.
- *HEATING:* After bus voltage recovery, the *HEATING* state is set.
- *COOLING:* After bus voltage recovery, the *COOLING* state is set.

Object value for HEATING of the object “Toggle HEATING/COOLING”

Options: 1
0

With this parameter, you set the communication object value used to toggle between HEATING and COOLING.

- *1:* As soon as a telegram with the value 1 is received, HEATING is activated and COOLING is deactivated.
- *0:* As soon as a telegram with the value 0 is received, HEATING is activated and COOLING is deactivated.

3.2.8.3 HVAC system – 2 Control values/2 pipe

If option *2 Control value/2 pipe* is selected, additional parameters appear:

Toggle via automatically
Valve COOLING not usable

This parameter serves as a note or remark.

Valve HEATING/Valve COOLING

Toggling between HEATING and COOLING is implemented by updating the control values. The HEATING/COOLING status is then set accordingly.

Note

The switch over between HEATING/COOLING should occur exclusively with the respective thermostat. Here only HEATING or COOLING are active, dependent on the last active control value received.

- If a control with a value > 0 is received, the fan and the corresponding valve are controlled.
- The other valve is closed.
- If a control value with a value = 0 is received, this is ignored if the other control value > 0.

Caution

With a 2 pipe HVAC system both the *Control value HEATING* as well as the *Control value COOLING* act on the HEATING valve (electronic outputs O, P). Please note that the last control value received always controls the HEATING valve.

For 2 pipe systems, only the communication objects for the HEATING valve are relevant.

The communication objects in conjunction with the COOLING valve, e.g. status, forced operation or valve purge are not effective.

For further information see: Configuration of a HVAC system with Fan Coil units, page 235.

Operation HEATING/COOLING after
bus voltage recovery

Options: unchanged
HEATING
COOLING

Using this parameter, the reaction after bus voltage recovery is set.

- *unchanged:* After bus voltage recovery, the state which existed before bus voltage failure is set.
- *HEATING:* After bus voltage recovery, the *HEATING* state is set.
- *COOLING:* After bus voltage recovery, the *COOLING* state is set.

3.2.8.4 HVAC-System – 2 Control values/2 pipe, with switching object

If option *2 Control values/2 pipe, with switching object* is selected, additional parameters appear:

Toggle via separate object
Valve COOLING cannot be used

This parameter serves as a note or remark.

Valve HEATING/Valve COOLING

The valve is controlled via the communication object *Control value HEATING*.

Toggle between HEATING and COOLING is implemented via the separate communication object *Toggle HEATING/COOLING*.

Caution

With a 2 pipe HVAC system, both the *Control value HEATING* as well as the *Control value COOLING* act on the HEATING valve (electronic outputs O, P). Please note that always the last control value received and the switching object control the HEATING valve.

For 2 pipe systems, only the communication objects for the HEATING valve are relevant.

The communication objects in conjunction with the COOLING valve, e.g. status, forced operation or valve purge are not effective.

For further information see: Configuration of a HVAC system with Fan Coil units, page 235.

Operation HEATING/COOLING after
bus voltage recovery

Options: unchanged
HEATING
COOLING

Using this parameter, the reaction after bus voltage recovery is set.

- *unchanged:* After bus voltage recovery, the state which existed before bus voltage failure is set.
- *HEATING:* After bus voltage recovery, the *HEATING* state is set.
- *COOLING:* After bus voltage recovery, the *COOLING* state is set.

Object value for HEATING of the object
“Toggle HEATING/COOLING”

Options: *1*
0

With this parameter, you set the communication object value used to toggle between HEATING and COOLING.

- *1:* As soon as a telegram with the value 1 is received, HEATING is activated and COOLING is deactivated.
- *0:* As soon as a telegram with the value 0 is received, HEATING is activated and COOLING is deactivated.

3.2.8.5 HVAC system – 2 Control values/4 pipe

If option *2 Control values/4 pipe* is selected, additional parameters appear:

Toggle via automatically

This parameter serves as a note or remark.

Valve HEATING/Valve COOLING

The HEATING valve is controlled via the communication object *Control value HEATING*.

The COOLING valve is controlled via the communication object *Control value COOLING*.

Toggling between HEATING and COOLING is implemented by updating the control values. The HEATING/COOLING status is then set accordingly.

Note

The switch over between HEATING/COOLING should occur exclusively with the respective thermostat. Here only HEATING or COOLING are active, dependent on the last active control value received.

- If a control with a value > 0 is received, the fan and the corresponding valve are controlled.
- The other valve is closed.
- If a control value with a value = 0 is received, this is ignored if the other control value > 0.

For further information see: Configuration of a HVAC system with Fan Coil units, page 235.

Operation HEATING/COOLING after bus voltage recovery

Options: unchanged
HEATING
COOLING

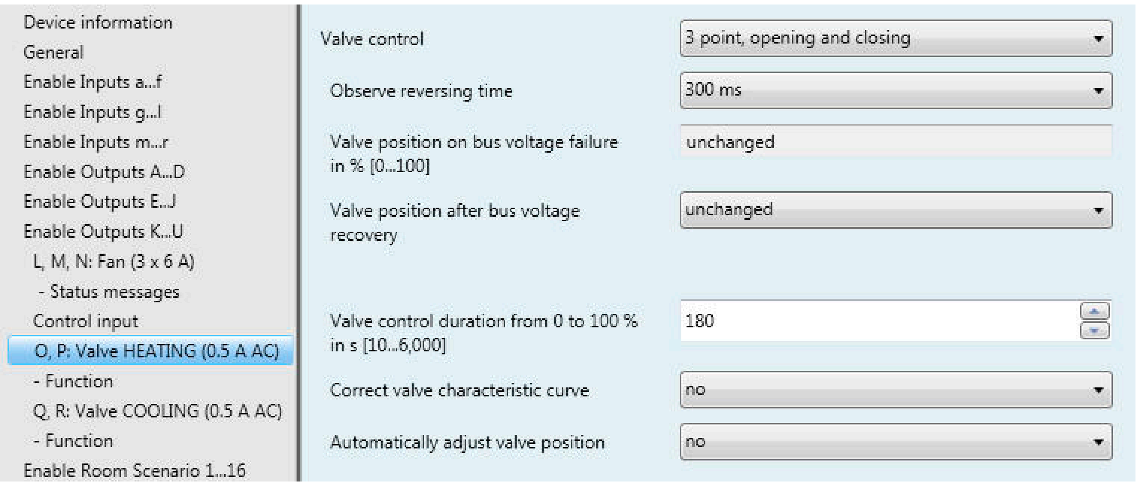
Using this parameter, the reaction after bus voltage recovery is set.

- *unchanged:* After bus voltage recovery, the state which existed before bus voltage failure is set.
- *HEATING:* After bus voltage recovery, the *HEATING* state is set.
- *COOLING:* After bus voltage recovery, the *COOLING* state is set.

3.2.9 Parameter window *O, P: Valve HEATING (0.5 A AC) – 3 point, opening and closing*

In this parameter window, all settings for the *Valve HEATING* are undertaken.

This parameter is visible if in parameter *Valve control*, the option *3 point, opening and closing* has been selected.



Valve control: 3 point, opening and closing

Observe reversing time: 300 ms

Valve position on bus voltage failure in % [0...100]: unchanged

Valve position after bus voltage recovery: unchanged

Valve control duration from 0 to 100 % in s [10...6,000]: 180

Correct valve characteristic curve: no

Automatically adjust valve position: no

Valve control

Options: Continuous, PWM
3 point, opening and closing

With this parameter, the properties of the connected valve are set (Pulse width modulation (PWM), page 253).

Observe reversing time

Options: no
100/300/500/700/1,000 ms

A reversing time pause is set via this parameter.

The time should be taken from the technical data of the valve.

Valve position on bus voltage failure in % [0…100]

Note: unchanged

The valve remains unchanged at its position with a bus voltage failure.

Valve position after bus voltage recovery

Option: unchanged
select

Using this parameter, the position of the valves after bus voltage recovery can be set.

- *select:* The following parameter appears:

  Valve position in % [0…100]

  Option: 0…100

  Using this parameter, the position of the valves after bus voltage recovery can be set as a percentage.

Valve control duration from 0 to 100 % in s [10...6,000]

Option: 10…180…6,000

With this parameter, a time is set in seconds that the connected valve requires to move from position 0 % (valve closed) to position 100 % (valve fully open).

Note
The time should be taken from the technical specification data of the valve.

Correct valve characteristic curve

Option: no
yes

If the option *yes* is set, the Parameter window - Curve, page 158 appears, in which the valve curve is set.

Automatically adjust valve position

Option: no
yes

- *no:* Nothing happens.
- *yes:* The following parameter appears.

Note
A manual triggering of the adjustment is not possible!

Adjust with control value 0 %

Any action with control value 0 % is executed as an adjustment, i.e.:

- The valve is fully closed, regardless of the curve.
- The closing position is exceeded by 5 % of the total time, max. one minute.
- This function cannot be interrupted!
- Thereafter, the current valve position is approached, and the adjustment counter is set to zero.

The following applies with automatic adjustment

- The adjustment counter is incremented by 1 every time the valve stops.
- If the parameterized limit of the adjustment counter is exceeded in the closing direction, the adjustment starts.
- If higher priorities are activated at the time of automatic adjustment, the adjustment will be performed later.
- The adjustment is interrupted by higher priority events.
- The valve is fully closed, regardless of the curve.
- The closing position is exceeded by 5 % of the total time, max. one minute. This function cannot be interrupted! Thereafter, the current valve position is approached, and the adjustment counter is set to zero.

Note
A valve adjustment has occurred if a control of the drive has actually been undertaken. If priorities and curves prevent this, the adjustment counter will not change.

Reference movement

A referencing or homing run can be understood as a complete closing of the valve.

Referencing is undertaken after:

- Every reset of the bus.
- A change of version.
- Every reset of an un-parameterized device.
- A download with modified adjustment time.

The following should be considered:

- Referencing cannot be interrupted.
- The closing position is exceeded by 5 % of the total time, max. one minute.
- After the reference movement, the current valve position is moved to and the adjustment counter is set to zero.

For further information see: Priorities with, …, page 261

Number of valve controls up to adjustment [1...65,535]

Option: 1…100…65,535

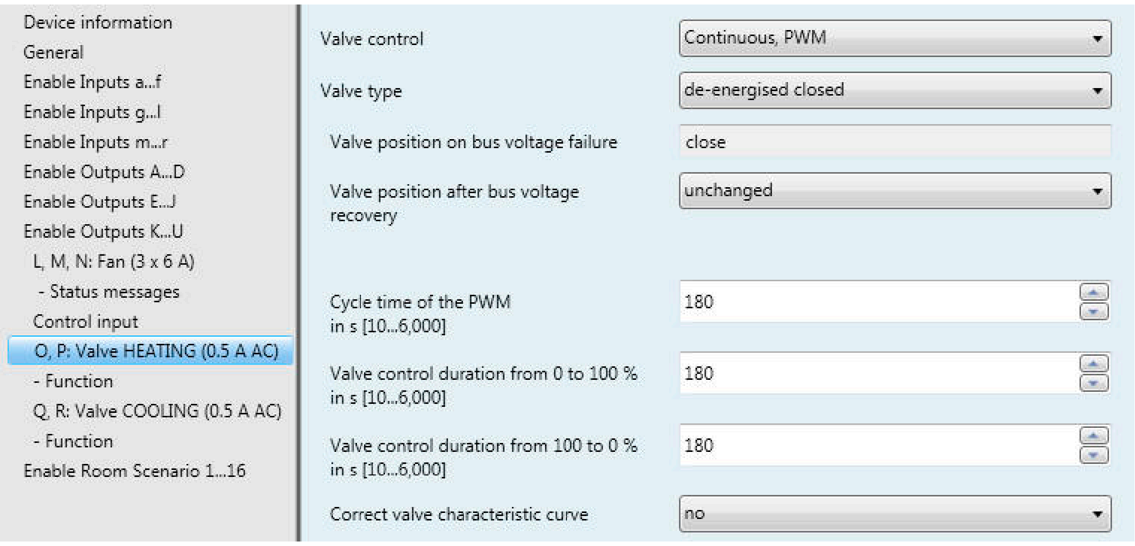
With this parameter, the number of operations (valve controls), after which automatic adjustment is undertaken, can be set.

Note
All actions greater than zero (motor does not move) are counted. The number should be taken from the technical data of the valve manufacturer.

3.2.10 Parameter window *O, P: Valve HEATING (0.5 A AC) – Continuous, PWM*

This parameter appears if the option *Continuous, PWM* has been selected in the *Valve control* parameter.

For further information see: Pulse width modulation (PWM), page 253



Valve control	Continuous, PWM
Valve type	de-energised closed
Valve position on bus voltage failure	close
Valve position after bus voltage recovery	unchanged
Cycle time of the PWM in s [10...6,000]	180
Valve control duration from 0 to 100 % in s [10...6,000]	180
Valve control duration from 100 to 0 % in s [10...6,000]	180
Correct valve characteristic curve	no

Valve type

Options: de-energised closed
de-energised opened

Using this parameter the valve type for the connected valve is set.

How does a de-energised closed (normally closed) valve behave?

If no current flows in the control circuit, the valve is closed. The valve is opened as soon as current flows in the control circuit.

How does a de-energised opened (normally opened) valve behave?

If no current flows in the control circuit, the valve is opened. The valve is closed as soon as current flows in the control circuit.

- *de-energised closed:* The following parameter appears:

Valve position on bus voltage failure

Note: closed

The valve remains closed at bus voltage failure.

- *de-energized opened:* The following parameter appears:

  Valve position on bus voltage failure

  Note: opened

  The valve remains opened at bus voltage failure.

Valve position after bus voltage recovery

Option: <u>unchanged</u>
select

Using this parameter, the position of the valves after bus voltage recovery can be set.

- *select:* The following parameter appears:

  Valve position in % [0…100]

  Option: <u>0</u>…100

  Using this parameter, the position of the valves after bus voltage recovery can be set as a percentage.

Cycle time of the PWM in s [10...6,000]

Option: 10…<u>180</u>…6,000

This is used to set the cycle time of the PWM control.

Important
The minimum pulse length is defined as 0.5 seconds, so that with very short cycle times (< 1 min.), there are very short switch on times (with small percentage values) or switch off times (with higher percentage values).

Valve control duration from 0 to 100 % in s [10...6,000]

Option: 10…<u>180</u>…6,000

With this parameter, a time is set in seconds that the connected valve requires to move from position 0 % (valve closed) to position 100 % (valve fully open).

Note
The time should be taken from the technical data of the valve, and it corresponds with the total runtime.

Valve control duration from 100 to 0 % in s [10...6,000]

Option: 10…<u>180</u>…6,000

With this parameter, a time is set in seconds that the connected valve requires to move from position 100 % (valve open) to position 0 % (valve fully closed).

Note
The time should be taken from the technical data of the valve, and it corresponds with the total runtime.

Fast heat up/cool down

In addition to the adjustable time, an additional time is determined in dependence on the change in control value. Thus, faster heat up or cool down of a room is achieved. For determination of the additional time the difference between the current and the new control value is determined. The additional time is dependent on how large the control value change from the current control value to the new control value should be.

Example
If the change in control value ascends, i.e. the current control value is at 10 % and the new control value is at 20 %, fast heat up is activated. If the change in control value descends, i.e. the current control value is at 60 % and the new control value is at 40 %, fast cool down is activated.

For further information see: Fast heat up/cool down, page 262.

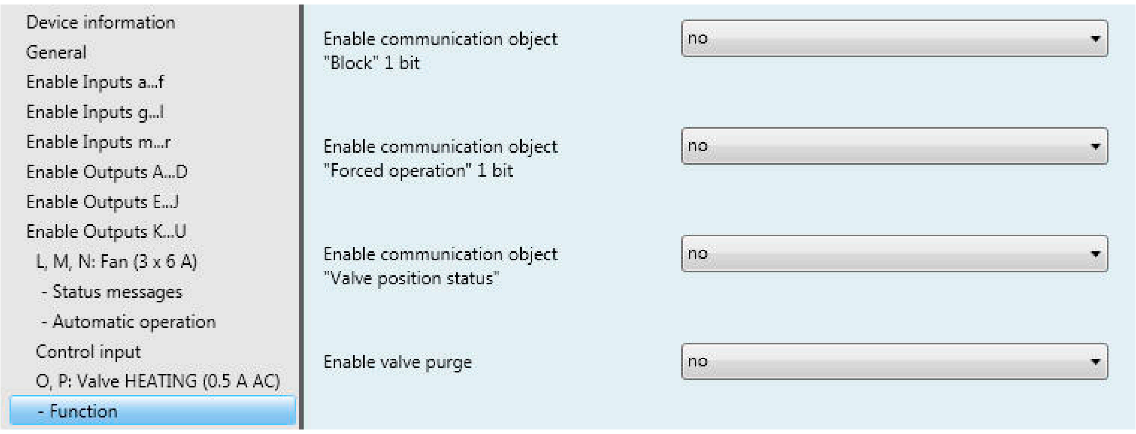
Correct valve characteristic curve

Option: no
yes

If the option *yes* is set in the parameter, the Parameter window - Curve, page 158 appears, in which the valve curve is set.

3.2.10.1 Parameter window - *Function*

Various communication objects can be enabled in this parameter window.



Enable communication object "Block" 1 bit: no

Enable communication object "Forced operation" 1 bit: no

Enable communication object "Valve position status": no

Enable valve purge: no

Enable communication object "Disable" 1 bit

Options: <u>no</u>
yes

- *yes:* The 1 bit communication object *Block* is enabled and can then be used for blocking. The following parameter appears:

  Disable on object value

  Options: <u>1</u>
  0

  This parameter defines the communication object value which disables/blocks the valve.

Enable communication object "Forced operation" 1 bit

Options: no (underlined)

yes

- *yes:* The 1 bit communication object *Forced operation* is enabled and can thus be forced operated. The following parameter appears:

  Forced operation on object value

  Options: 1 (underlined)

  0

  This parameter defines the communication object value which forcibly operates the valve.

  Valve position on forced operation in % [0…100]

  Options: 0…30…100

  This parameter determines the valve position in percent during forced operation.

Enable communication object "Valve position status"

Options: no

1 bit

1 byte

Note
The valve position status is sent immediately after the control value is received.

- *1 bit:* The following parameters appear:

  Send object value

  Options: no, update only

  after a change

  after request

  after a change or request

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

  Object value with valve position >0

  Options: 1

  0

- *1 byte:* The following parameter appears:

  Send object value

  Options: no, update only
  <u>after a change</u>
  after request
  after a change or request

  - *no, update only:* The status is updated but not sent.
  - *after a change:* The status is sent after a change.
  - *after request:* The status is sent after a request.
  - *after a change or request:* The status is sent after a change or a request.

Enable valve purge

Options: <u>no</u>
yes

- *yes:* The 1 bit communication object *Trigger valve purge* is enabled.

Note
If the valve purge is interrupted by a higher priority, it will restart after the completion of the priority task, unless, for example, the control value was 100 % or it was active for the duration of the purge time due to the higher priority. The valve position for purging is always the control value 100 %. **For further information see: Priorities with, …, page 261.**

With option *yes*, the following parameters appear:

Enable communication object "Status valve purge" 1 bit

Options: <u>no</u>
yes

- *yes:* The 1 bit communication object *Status valve purge* is enabled.

The status of the valve purge is visible via this communication object. The following parameter appears:

Send object value

Options: no, update only
<u>after a change</u>
after request
after a change or request

- *no, update only:* The status is updated but not sent.
- *after a change:* The status is sent after a change.
- *after request:* The status is sent after a request.
- *after a change or request:* The status is sent after a change or a request.

Note
The status is sent immediately as soon as a new control value is received.

Duration of valve purge in min. [1…255]

Options: 1…10…255

This parameter defines the time duration for the valve purge. In this time, the valve is fully opened. When the time has elapsed, the state before the purge is re-established.

Note
The opening time of the valve must be considered when entering the purge time.

Automatic valve purge

Options: no
yes

- *yes:* The following parameters appear:

  Purge cycle in weeks [1…12]

  Options: 1…6…12

  The counter for automatic purging starts to run when the parameter is downloaded. The time is reset each time it is downloaded.

  The time is reset as soon as purging is completed. This can occur either through automatic purging or via the communication object *Trigger valve purge*.

Note
Purging can also be triggered via the bus with the communication object *Trigger valve purge*. After bus voltage recovery and download the purge cycle continues, the bus failure time – the time for which the bus actually failed – is not considered. The purging cycle will restart if *Purge cycle in weeks [1…12]* is changed after the download.

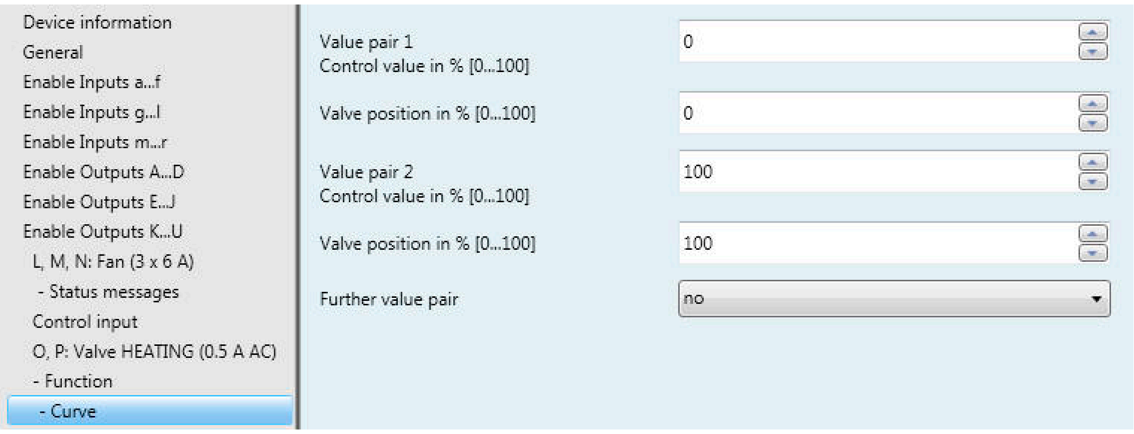
  Reset purge cycle from control value in % [1…99]

  Options: 1…99

  Hereby, the purge cycle from the set control value is reset.

3.2.10.2 Parameter window - *Curve*

The parameter window is visible if in parameter window *Valve HEATING* the parameter *Correct valve characteristic curve* has been selected with the option *yes*.



Value pair 1
Control value in % [0...100]: 0

Valve position in % [0...100]: 0

Value pair 2
Control value in % [0...100]: 100

Valve position in % [0...100]: 100

Further value pair: no

The following must be considered with the curve entries:

- The value pairs can be entered in any sequence. They are sorted in ascending order of the control value in the device, and intermediate values are interpolated.
- If value pairs have the same control value, the value pair with the largest value position applies. All other value pairs are ignored.
- The value pair with the smallest valve position applies for the correction of the smaller control values.
- If no value pair has been entered for the control value 0 %, the valve position of the first value pair applies for all control values from 0 to the first value pair.
- If no value pair has been entered for the control value 100 %, the valve position from the last value pair up to 100 % applies for the last value pair.

Note

The characteristic curve adjustment is also active with forced operation.

Caution

A parameterization of the value pair with the same control value leads to an undefined state and should be strictly avoided. Otherwise it can lead to destruction of the HVAC system.

Value pair 1
Control value in % [0...100]

Options: <u>0</u>…100

Valve position in % [0…100]

Options: <u>0</u>…100

Value pair 2
Control value in % [0...100]

Options: 0…<u>100</u>

Valve position in % [0…100]

Options: 0…<u>100</u>

Value pair 1 forms the lower limit and value pair 2 forms the upper limit of the curve.

The possibility of activating other value pairs allows different curve characteristics to be realised.

For further information see: Valve curve, page 249.

A total of four value pairs can be set.

Further value pair

Options: <u>no</u>
yes

- *yes:* A further value pair can be set.

  Value pair 3
  Control value in % [0...100]

  Options: 0…<u>50</u>…100

  Valve position in % [0…100]

  Options: 0…<u>50</u>…100

  Further value pair

  Options: <u>no</u>
  yes

  - *yes:* A further value pair can be set.

    Value pair 4
    Control value in % [0...100]

    Options: 0…<u>50</u>…100

    Valve position in % [0…100]

    Options: 0…<u>50</u>…100

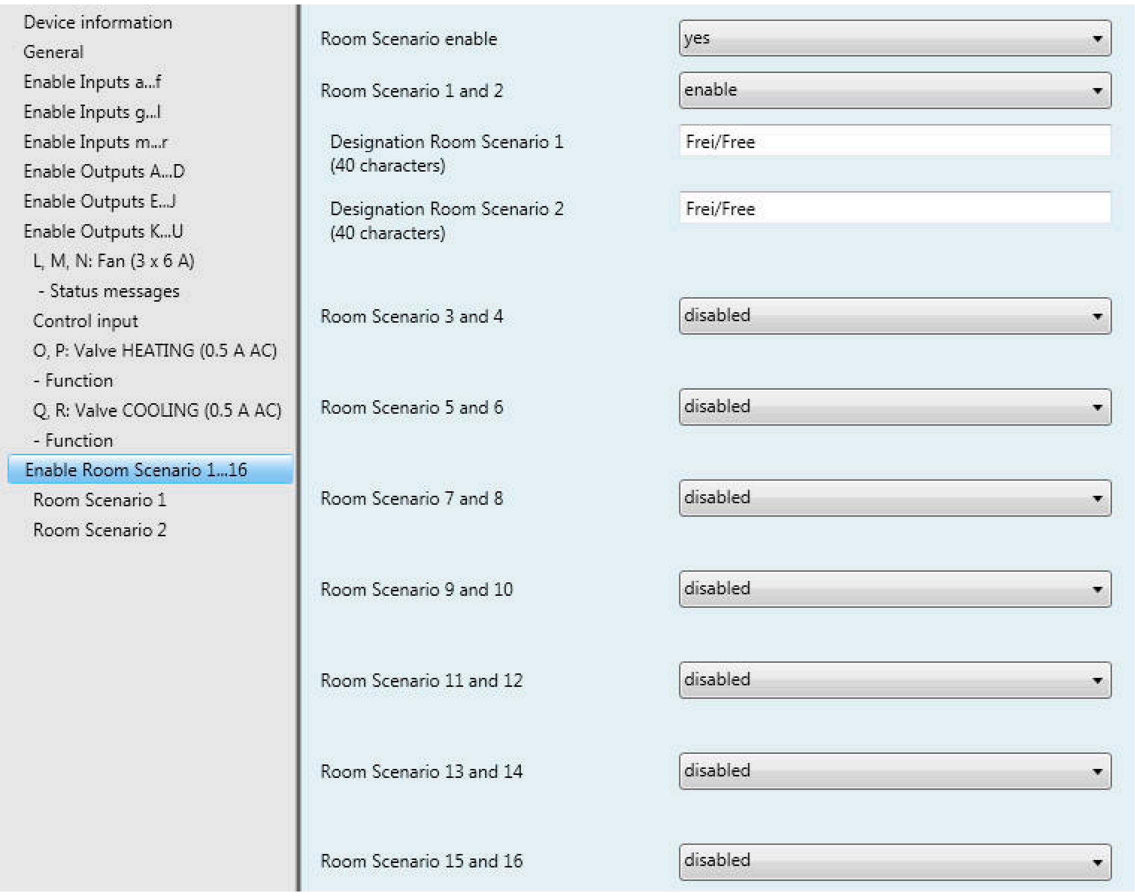
3.2.11 Parameter window Q, R: Valve COOLING (0.5 A AC)

The setting options of *valve COOLING* do not differentiate from those of *valve HEATING*.

The descriptions of the parameter setting options and adjustable communication objects for the *valve COOLING* are described under Parameter window O, P: Valve HEATING (0.5 A AC) – 3 point, opening and closing, page 147.

3.2.12 Parameter window *Enable Room Scenario 1…16*

In this parameter window, the Room Scenarios 1…16 can be enabled in pairs and assigned with a designation.



Room Scenario enable	yes
Room Scenario 1 and 2	enable
Designation Room Scenario 1 (40 characters)	Frei/Free
Designation Room Scenario 2 (40 characters)	Frei/Free
Room Scenario 3 and 4	disabled
Room Scenario 5 and 6	disabled
Room Scenario 7 and 8	disabled
Room Scenario 9 and 10	disabled
Room Scenario 11 and 12	disabled
Room Scenario 13 and 14	disabled
Room Scenario 15 and 16	disabled

Room Scenario enable

Options: <u>no</u>
yes

With this parameter, the Room Scenarios 1…16 as well as the seven communication objects No. 2…8 are enabled.

Note

In the following parameters, the Room Scenarios 1…16 are represented by x and y, as the functions for all Room Scenarios are the same. Here x represents the oddly number Room Scenarions1/3/5/7/9/11/13 or 15, and y represents the evenly numbered Room Scenarios 2/4/6/8/10/12/14 or 16.

Room Scenario x and y

Options: enabled
disabled

- *disabled:* The Room Scenarios x/y are disabled.
- *enable:* The Room Scenarios x/y are enabled. They are triggered by the receipt of a telegram on the communication object no. 2. The parameter windows *Room Scenario x* and *Room Scenario y* also appear. The following parameters also appear:

Designation Room Scenario x (40 characters)

Options: - - - TEXT - - -

With this parameter, it is possible to enter a text of up to 40 characters in length for identification or the Room Scenario in the ETS.

Designation Room Scenario y (40 characters)

Options: - - - TEXT - - -

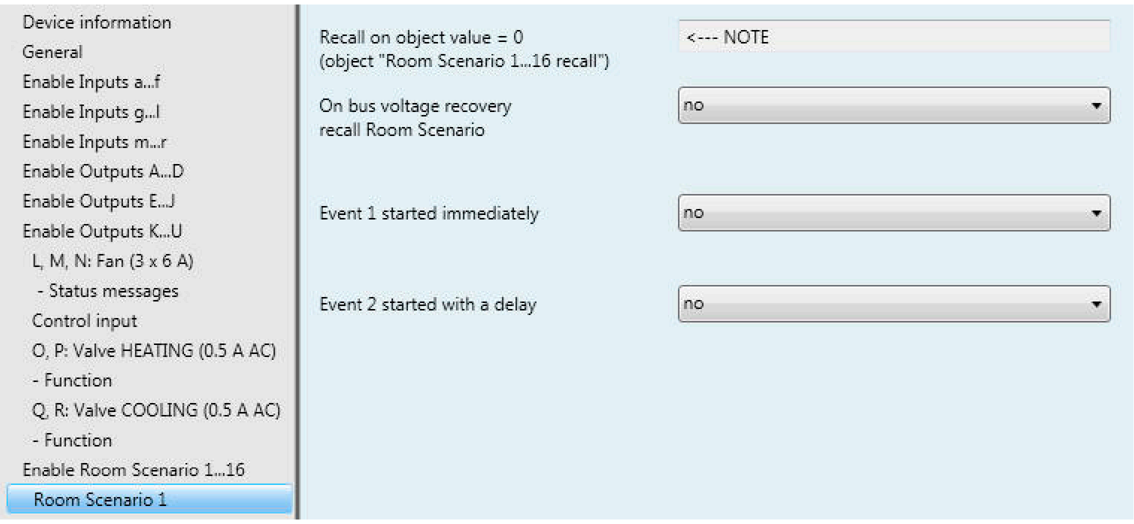
With this parameter, it is possible to enter a text of up to 40 characters in length for identification or the Room Scenario in the ETS.

Note
The entered text is used as to assist in providing an overview of the Room Scenarios and the functions they involve. It has no other function.

3.2.12.1 Parameter window *Room Scenario x*

This parameter window is visible if in parameter window *Enable Room Scenario 1…16* the option *yes* is selected with *Room Scenario enable* as well as with parameter *Room Scenario x and y* and the option *enable* has been selected.

Note
In the following parameters, the Room Scenarios 1…16 are represented by x and y, as the functions for all Room Scenarios are the same. Here x represents the oddly number Room Scenarions1/3/5/7/9/11/13 or 15, and y represents the evenly numbered Room Scenarios 2/4/6/8/10/12/14 or 16.



Recall on object value = 0 (object "Room Scenario 1...16 recall"): <--- NOTE
On bus voltage recovery recall Room Scenario: no
Event 1 started immediately: no
Event 2 started with a delay: no

Recall on object value = 0
(object "Room Scenario 1…16 recall")

<--- NOTE

The Room Scenarios are triggered via communication object no. 2.*Room Scenario 1…16 recall*, i.e. *Room Scenario 1* is triggered when a 0 is received. *Room Scenario 2* when a 1 is received etc.

For further information see: Communication objects General, page 170, and Room scenario External triggering, page 281.

The Room Scenarios can also be internally triggered via binary inputs. It is important to note that the Room Scenarios are always triggered in pair, e.g. *Room Scenario 5* when a 0 is received and *Room Scenario 6* when a 1 is received.

For further information see: Communication objects General, page 170, and Room scenario External triggering, page 281.

On bus voltage recovery
recall Room Scenario

Options: no
yes

Using this parameter, the reaction after bus voltage recovery is set.

- *no:* After bus voltage recovery, the state, which existed before bus voltage failure, is set.
- *yes:* This Room Scenario is triggered after bus voltage recovery.

Event 1 started immediately

Options: <u>no</u>
yes

- *no:* This is no reaction, when the value 0 is received. Event 1 is not started.
- *yes:* If the value 0 is received, event 1 starts. Event 1 is set via the following parameters.

Scene recall

Options: <u>only device internal</u>
only via the bus:
device internal and via the bus:

This parameter defines how and where a scene recall is sent with the start of event 1 via communication object no. 6 *Room Scenario Scene recall*.

- *only device internal:* The set scene number is only recalled internally in the device, e.g. in order to trigger a determined room state.
- *only via the bus:* The set scene number is only sent via the bus. Accordingly, further KNX devices can be integrated into the Room Scenario, or these are also contacted by a scene recall.
- *device internal and via the bus:* The set scene number is recalled both device internally as well as being sent via the bus. Thus, a Room Scenario can be triggered, and further KNX devices integrated into the scene can be contacted.

Scene number [1…64]

Options: <u>1</u>…64

This parameter defines the scene number, which is to be triggered by a scene recall. 64 scene numbers are available.

Switch 1 send

Options: <u>no</u>
ON
OFF
TOGGLE

This parameter defines if and with which value the communication object no. 3 should send a telegram.

- *no:* There is no reaction with the start of the event.
- *ON:* A telegram with the value 1 is sent via the communication object no. 3.
- *OFF:* A telegram with the value 0 is sent via the communication object no. 3.
- *TOGGLE:* Via the communication object no. 3, a telegram is sent with the opposite value, e.g. if the value 1 was read beforehand, when the event 1 is recalled the value 0 is sent, and vice versa.

Switch 2 send

Options: <u>no</u>
ON
OFF
TOGGLE

This parameter defines if and with which value the communication object no. 4 should send a telegram.

- *no:* There is no reaction with the start of the event.
- *ON:* A telegram with the value 1 is sent via the communication object no. 4.
- *OFF:* A telegram with the value 0 is sent via the communication object no. 4.
- *TOGGLE:* Via the communication object no. 4, a telegram is sent with the opposite value, e.g. if the value 1 was read beforehand, when the event 1 is recalled the value 0 is sent, and vice versa.

ON/OFF send to thermostat

Options: <u>no</u>
ON
OFF

This parameter defines whether a thermostat, e.g. RDF/A is switched on or off, or whether it remains in an unchanged state.

- *no:* There is no reaction with the start of the event.
- *ON:* A telegram with the value 1 is sent via the communication object no. 8.
- *OFF:* A telegram with the value 0 is sent via the communication object no. 8.

1 byte value send

Options: <u>no</u>
value [0…255]

This parameter determines whether a 1 byte value is sent.

- *value [0…255]:* The following parameter appears:

send value

Options: 0…255

Via communication object no. 9, a telegram with the respective value is sent on the bus.

Automatic Blind output enable

Options: no
yes

- *no:* There is no reaction with the start of the event.
- *yes:* The automatic function of output K is activated internally via the communication object no. 5 *Automatic Blind recall* (1 bit). At the same time, the telegram for automatic activation is sent on the bus. The KNX devices integrated into the automatic function are also contacted.

Note
The internal activation of the automatic function only occurs if in parameter window *Output K: Blinds/Shutters* is enabled with the *Enable function automatic*.

Internal blocking the inputs

Options: unchanged
activate
deactivate

This parameter acts directly on the binary inputs, which allow an internal block.

- *unchanged:* The internal block remains unchanged.
- *active:* The internal block is activated.
- *deactivate:* The internal block is deactivated.

For further information see: Block binary inputs, page 268

Event 2 started with a delay

Options: no
yes

- *no:* This is no reaction, when the value 0 is received. Event 2 is not started.
- *yes:* If the value 0 is received, event 2 starts. Event 2 is set via the following parameters.

Delay time
in s [0…65,535]

Options: 0…30…65,535

This parameter determines the duration, after which event 2 is started.

Note
The following parameters and their descriptions do not differ from those with the description *Event 1 started immediately*, page 164.

3.2.13 Commissioning without bus voltage

How is the device switched on and put into operation?
The device can be made operational by applying an auxiliary voltage from the power supply (NTI).

3.3 Communication objects

Note

As standard the write flag (with the exception of 1 bit communication objects) are deleted with the communication object values. Thus the communication object value cannot be changed via the bus. If this function is required, the Write flag must be set in the ETS.

The communication object value is overwritten with the parameterized value after bus voltage recovery.

3.3.1 Brief overview of the communication objects

CO no.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	A
0	In operation	System	1.002	1 bit	x			x	
1	Request status values	General	1.017	1 bit	x		x		
2	1…16 recall	Room Scenario	17.001	1 byte	x		x		
3	Switch 1	Room Scenario	1.001	1 bit	x			x	
4	Switch 2	Room Scenario	1.001	1 bit	x			x	
5	Automatic Blind recall	Room Scenario	1.001	1 bit	x			x	
6	KNX scene recall	Room Scenario	18.001	1 byte	x			x	
7	Internal block recall	Room Scenario	1.001	1 bit	x			x	
8	Thermostat ON/OFF	Room Scenario	1.001	1 bit	x			x	
9	Value [0…255] send	Room Scenario	5.010	1 byte	x			x	
10…27	the same CO as output A if L, M, N is parameterized as an output	Output L, M, N							
10	Fan speed switch	Fan (multi-level)	5.010	1 byte	x		x		
11	Switch speed 1	Fan (multi-level)	1.001	1 bit	x		x		
	Switch	Fan (one level)	1.001	1 bit	x		x		
12	Switch speed 2	Fan (multi-level)	1.001	1 bit	x		x		
13	Switch speed 3	Fan (multi-level)	1.001	1 bit	x		x		
14	Fan speed UP/DOWN	Fan (multi-level)	1.007	1 bit	x		x		
15	Status fan ON/OFF	Fan	1.001	1 bit	x			x	
16	Status fan speed	Fan (multi-level)	5.010	1 byte	x		x	x	
17	Status fan speed 1	Fan (multi-level)	1.001	1 bit	x	x		x	
18	Status fan speed 2	Fan (multi-level)	1.001	1 bit	x	x		x	
19	Status fan speed 3	Fan (multi-level)	1.001	1 bit	x	x		x	
20	Not assigned								
21	Limitation 1	Fan	1.003	1 bit	x		x		
22	Limitation 2	Fan	1.003	1 bit	x		x		
23	Limitation 3	Fan	1.003	1 bit	x		x		
24	Limitation 4	Fan	1.003	1 bit	x		x		
25	Forced operation	Fan	1.003	1 bit	x		x		
26	Automatic ON/OFF	Fan	1.003	1 bit	x		x		
27	Status automatic	Fan	1.003	1 bit	x	x	x		
28	Status byte mode	Fan	non DPT	1 byte	x		x	x	

CO no.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	A
29	Control value HEATING/COOLING	Control input	5.001	1 byte	x		x		
	Control value HEATING	Control input	5.001	1 byte	x		x		
30	Control value COOLING (extra!)	Control input	5.001	1 byte	x		x		
	Control value COOLING	Control input	5.001	1 byte	x		x		
31	Toggle HEATING/COOLING	Control input	1.100	1 bit	x		x		
32	Fault control value	Control input	1.005	1 bit	x	x		x	
33	Block	Valve HEATING	1.003	1 bit	x		x		
34	Forced operation	Valve HEATING	1.003	1 bit	x		x		
35	Trigger valve purge	Valve HEATING	1.017	1 bit	x		x		
36	Status valve purge	Valve HEATING	1.003	1 bit	x	x		x	
37	Status valve position	Valve HEATING	1.001	1 bit	x	x		x	
	Status valve position	Valve HEATING	5.001	1 byte	x	x		x	
38	Overload	Valve HEATING	1.005	1 bit	x	x		x	
39…44	the same CO as valve HEATING	Valve COOLING							
45	Block	Input a: Switch Sensor	1.003	1 bit	x		x		
		Input a: Switch/dim sensor	1.003	1 bit	x		x		
		Input a: Blind sensor	1.003	1 bit	x		x		
		Input a: Value/Forced operation	1.003	1 bit	x		x		
46	Switch 1	Input a: Switch Sensor	1.001	1 bit	x		x	x	
	Switch	Input a: Switch/dim sensor	1.001	1 bit	x		x	x	
	Blind UP/DOWN	Input a: Blind sensor	1.008	1 bit	x		x	x	
	Value 1	Input a: Value/Forced operation	variable		x			x	
47	Switch 2	Input a: Switch Sensor	1.001	1 bit	x		x	x	
	Dimming	Input a: Switch/dim sensor	3.007	4 bit	x			x	
	STOP/slat adjustment	Input a: Blind sensor	1.007	1 bit	x			x	
	Value 2	Input a: Value/Forced operation	variable		x			x	
48	Switch 3	Input a: Switch Sensor	1.001	1 bit	x		x	x	
	Upper limit position	Input a: Blind sensor	1.002	1 bit	x		x		
49	Event 0/1 started	Input a: Switch Sensor	1.001	1 bit	x		x		
	Lower limit position	Input a: Blind sensor	1.002	1 bit	x		x		
50…134	the same CO as input a	Input b…r							
135	Switch	Output A	1.001	1 bit	x		x		
136	Permanent ON	Output A	1.003	1 bit	x		x		
137	Disable function Time	Output A	1.003	1 bit	x		x		
138	Scene	Output A	18.001	1 byte	x		x		
139	Forced operation	Output A	1.003	1 bit	x		x		
	Forced operation	Output A	2.001	2 bit	x		x		
140	Status Switch	Output A	1.001	1 bit	x	x		x	
141	Logical Connection 1	Output A	1.002	1 bit	x		x		
142	Logical Connection 2	Output A	1.002	1 bit	x		x		

CO no.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	A
143…214	the same CO as output A if	Output B…J							
215…238	the same CO as output A if	Output S…U							
239	UP/DOWN move	Output K	1.008	1 bit	x		x		
240	Slat adjust UP/DOWN	Output K	1.007	1 bit	x		x		
	STOP UP/DOWN	Output K	1.007	1 bit	x		x		
241	Move to position [0…255]	Output K	5.001	1 byte	x		x	x	
242	Move slat [0…255]	Output K	5.001	1 byte	x		x	x	
243	Reference movement	Output K	1.008	1 bit	x		x		
244	Scene	Output K	18.001	1 byte	x		x		
245	Activation of aut. control	Output K	1.003	1 bit	x		x		
246	Sun	Output K	1.001	1 bit	x		x		
247	Sun: Move to position [0…255]	Output K	5.001	1 byte	x		x		
248	Sun: Move slat [0…255]	Output K	5.001	1 byte	x		x		
249	Safety operation A	Output K	1.005	1 bit	x		x		
250	Safety operation B	Output K	1.005	1 bit	x		x		
251	Status Position top	Output K	1.002	1 bit	x	x		x	
251	Status byte	Output K		1 byte	x		x	x	
252	Status Position bottom	Output K	1.002	1 byte	x		x	x	

3.3.2 Communication objects *General*

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>**0**</td><td>**In operation**</td><td>**System**</td><td>**1 bit**
DPT 1.002</td><td>**C, T**</td></tr>
<tr><td colspan="5">The communication object is enabled if in parameter window *General* the parameter *Send communication object "In operation"* has been selected with option *yes*.
In order to regularly monitor the presence of the device on the KNX, an in operation monitoring telegram can be sent cyclically on the bus.
As long as the communication object is activated, it sends a programmable *in operation* telegram.
Telegram value: 1 = system in operation with option *send value 1 cyclically*
0 = system in operation with option *send value 0 cyclically*</td></tr>
<tr><td>**1**</td><td>**Request status values**</td><td>**General**</td><td>**1 bit**
DPT 1.017</td><td>**C, W**</td></tr>
<tr><td colspan="5">The communication object is enabled if in parameter window *General* the parameter *Enable communication object "Request status values" 1 bit* has been selected with option *yes*.
If a telegram with the value x (x = 0; 1; 0 or 1) is received in the communication object, all status objects are sent on the bus, as long as these have not been programmed with the option *after a change or after request* or *after a change or request*.
The following function results for the option x = 1:
Telegram value: 1 = all status messages are sent.
0 = nothing happens.</td></tr>
</table>

3.3.3 Communication objects *Room Scenario*

<table>
<tr><th>No.</th><th>Function</th><th>Object name</th><th>Data type</th><th>Flags</th></tr>
<tr><td>2</td><td>1…16 recall</td><td>Room Scenario</td><td>1 byte
DPT 17.001</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
<table>
<tr><th>1 byte value [0…255]</th><th>EIS:</th><th>DPT 5.010 value</th></tr>
<tr><td>Value 0 =</td><td>Room Scenario 1</td><td>00000000</td></tr>
<tr><td>Value 1 =</td><td>Room Scenario 2</td><td>00000001</td></tr>
<tr><td>Value 2 =</td><td>Room Scenario 3</td><td>00000010</td></tr>
<tr><td>Value 3 =</td><td>Room Scenario 4</td><td>00000011</td></tr>
<tr><td>Value 4 =</td><td>Room Scenario 5</td><td>00000100</td></tr>
<tr><td>Value 5 =</td><td>Room Scenario 6</td><td>00000101</td></tr>
<tr><td>Value 6 =</td><td>Room Scenario 7</td><td>00000110</td></tr>
<tr><td>Value 7 =</td><td>Room Scenario 8</td><td>00000111</td></tr>
<tr><td>Value 8 =</td><td>Room Scenario 9</td><td>00001000</td></tr>
<tr><td>Value 9 =</td><td>Room Scenario 10</td><td>00001001</td></tr>
<tr><td>Value 10 =</td><td>Room Scenario 11</td><td>00001010</td></tr>
<tr><td>Value 11 =</td><td>Room Scenario 12</td><td>00001011</td></tr>
<tr><td>Value 12 =</td><td>Room Scenario 13</td><td>00001100</td></tr>
<tr><td>Value 13 =</td><td>Room Scenario 14</td><td>00001101</td></tr>
<tr><td>Value 14 =</td><td>Room Scenario 15</td><td>00001110</td></tr>
<tr><td>Value 15 =</td><td>Room Scenario 16</td><td>00001111</td></tr>
</table>
Sending a value from 16…255 is invalid and will be ignored.</td></tr>
<tr><td>3</td><td>Switch 1</td><td>Room Scenario</td><td>1 bit
DPT 1.001</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
In accordance with the parameterization, this communication object can be set to ON/OFF or TOGGLE. With the setting <i>TOGGLE</i>, the value set beforehand, e.g. value 0 is toggled directly to the value 1 and vice versa.
Telegram value: 0 = OFF
1 = ON</td></tr>
<tr><td>4</td><td>Switch 2</td><td>Room Scenario</td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 3.</td></tr>
<tr><td>5</td><td>Automatic Blind recall</td><td>Room Scenario</td><td>1 bit
DPT 1.001</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
Using this communication object, further KNX blind devices can be moved on automatic via the bus.
Telegram value: 0 = no activation of automatic blind
1 = activation of automatic blind</td></tr>
</table>

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>6</td><td>KNX scene recall</td><td>Room Scenario</td><td>1 byte
DPT 18.001</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
Using this 1 byte communication object, a scene command can be sent using a scene recall. The telegram contains the number of the respective scene as well as the information if the scene is to be recalled, or if the current switch state is to be assigned to the scene.
Telegram format (1 byte): MXSSSSSS
(MSB) (LSB)
M: 0 – scene is recalled
1 – store scene not possible
X: not used
S: Number of the scene (1…64: 00000000…00111111)
<table>
<tr><th colspan="2">1 byte telegram</th><th rowspan="2">Meaning</th></tr>
<tr><th>Decimal</th><th>Hexadecimal</th></tr>
<tr><td>00</td><td>00h</td><td>Call scene 1</td></tr>
<tr><td>01</td><td>01h</td><td>Call scene 2</td></tr>
<tr><td>02</td><td>02h</td><td>Call scene 3</td></tr>
<tr><td>…</td><td>…</td><td>…</td></tr>
<tr><td>03</td><td>3Fh</td><td>Call scene 64</td></tr>
</table>
</td></tr>
<tr><td>7</td><td>Internal block recall</td><td>Room Scenario</td><td>1 bit
DPT 1.001</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
With this communication object KNX devices can be disabled.
Telegram value: 0 = deactivate internal block.
1 = activate internal block.</td></tr>
<tr><td>8</td><td>Thermostat ON/OFF</td><td>Room Scenario</td><td>1 bit
DPT 1.001</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
Telegram value: 0 = thermostat OFF
1 = thermostat ON</td></tr>
<tr><td>9</td><td>Value [0…255] send</td><td>Room Scenario</td><td>1 byte
DPT 5.010</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Room Scenario 1…16</i> the parameter <i>Room Scenario</i> has been selected with the option <i>yes</i>.
This communication object sends a telegram with the operating modes if in the parameter window <i>Room Scenario x (x 1…16)</i> the parameter <i>Send 1 byte value</i> has been selected with the option <i>value [0…255]</i>.
1 byte value [0…255]: 00000000…11111111 (EIS 6 DPT 5.010 value)</td></tr>
</table>

3.3.4 Communication objects *L, M, N: Fan (3 x 6 A)*

Note
All three fan speeds can be parameterized individually as outputs L, M, and N. The descriptions of the communication objects for this purpose can be found under communication objects *Outputs*, page 197. The descriptions of the setting possibilities can be found in Parameter window Enable Outputs K…U, page 91.

3.3.4.1 Communication objects *Multi-level fan*

No.	Function	Object name	Data type	Flags
10	**Fan speed switch**	**Fan**	**1 byte** **DPT 5.010**	**C, W**

This communication object is enabled if in parameter window *L, M, N: Fan (3 x 6 A)* the parameters *Enable direct operation* and *Enable communication object "Switch speed" 1 byte* are selected with option *yes*.

With this communication object, the fan can be switched on via a 1 byte communication object of a fan speed. If another fan speed is switched on, at this point it will be switched off. A new fan speed is switched on taking the start-up phase into consideration.

Limitations through forced operation or one of the four limitations 1…4 are retained. Automatic operation is disabled. A renewed activation of automatic mode occurs via the communication object *Automatic ON/OFF.*

The following telegram values result:

1 byte value	**Hexadecimal**	**Binary value bit 76543210**	**Fan speed**
0	00	00000000	0 (OFF)
1	01	00000001	Fan speed 1
2	02	00000010	Fan speed 2
3	03	00000011	Fan speed 3
>3	>03	>00000011	Values greater than 3 are ignored

No.	Function	Object name	Data type	Flags
11	**Switch speed 1**	**Fan**	**1 bit:** **DPT 1.001**	**C, W**

This communication object is enabled if in parameter window *L, M, N: Fan (3 x 6 A)* the parameter *Enable direct operation* is selected with option *yes* and *Enable communication object "Switch speed x" 1 bit* has been selected with option *yes*.

Via the 1 bit communication object, the Room Master can receive a control value for fan speed 1.

Limitations through forced operation or one of the four limitations 1…4 are retained. Automatic operation is disabled. A renewed activation occurs via the communication objects *Automatic ON/OFF*.

If several ON telegrams are received consecutively in a short period of time at various communication objects *Fan speed 1-3*, the value last received by the fan control is the decisive value. An OFF telegram to one of the three communication objects, *Fan speed 1-3*, switches off the fan completely.

Telegram value: 0 = fan OFF
1 = fan ON in speed 1

No.	Function	Object name	Data type	Flags
12	**Switch speed 2**			

See communication object 11

No.	Function	Object name	Data type	Flags
13	**Switch speed 3**			

See communication object 11

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>14</td><td>Fan speed UP/DOWN</td><td>Fan</td><td>1 bit
DPT 1.007</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>L, M, N: Fan (3 x 6 A)</i>, the parameter <i>Enable direct operation</i> and <i>Enable communication object “Fan speed UP/DOWN” 1 bit</i> have been selected with option <i>yes</i>.
With this communication object, the fan can be switched one fan speed further up or down via a 1 bit telegram. Switching (UP/DOWN) is determined by the telegram value.
With multiple manual UP or DOWN switching, the target speed will be increased or reduced by a speed step. This is possible until the maximum or minimum possible speed is achieved. The parameterized limitations are considered here. Further UP/DOWN telegrams are ignored and not executed. Each new switching telegram initiates a new calculation of the target speed.
Telegram value: 0 = switch fan speed DOWN
1 = switch fan speed UP</td></tr>
<tr><td>15</td><td>Status fan ON/OFF</td><td>Fan</td><td>1 bit
DPT 1.001</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Status messages</i> the parameter <i>Enable communication object "Status fan ON/OFF" 1 bit</i> have been selected with option <i>yes</i>.
The communication object receives the communication object value 1 (ON), if at least one fan speed is not equal to zero (OFF). The value of the communication object is sent if not equal to zero. This communication object thus defines the status of the fan, whether it is switched on or off.
Telegram value: 0 = OFF
1 = ON
<table><tr><td>Note</td></tr><tr><td>Some fans require an ON telegram before you set a fan speed. Using the communication object <i>Status fan ON/OFF</i>, the fan can, for example, be switched on centrally with a switch actuator via the main switch.</td></tr></table></td></tr>
<tr><td>16</td><td>Status fan speed</td><td>Fan</td><td>1 byte
DPT 5.010</td><td>C, R, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Status messages</i> the parameter <i>Enable communication object "Status fan speed" 1 byte</i> has been selected with option <i>yes</i>.
You can parameterize whether only the communication object value is updated or if they are only sent on the bus after a change or on request. It is possible to parameterize if the actual or required stages are displayed with the status communication object.
With this communication object it is possible for example to display the fan speed on the display as a direct figure value.
The following telegram values apply for the 1 byte communication object:<table><tr><th>Figure value</th><th>Hexadecimal</th><th>Binary value bit 76543210</th><th>Fan speed</th></tr><tr><td>0</td><td>00</td><td>00000000</td><td>0 (OFF)</td></tr><tr><td>1</td><td>01</td><td>00000001</td><td>Fan speed 1</td></tr><tr><td>2</td><td>02</td><td>00000010</td><td>Fan speed 2</td></tr><tr><td>3</td><td>03</td><td>00000011</td><td>Fan speed 3</td></tr></table></td></tr>
</table>

No.	Function	Object name	Data type	Flags
17	**Status fan speed 1**	**Fan**	**1 bit** **DPT 1.001**	**C, R, T**
This communication object is enabled if in parameter window *Status messages* the parameter *Enable communication object "Status fan speed x" 1 bit* has been selected with option *yes*. It is possible to parameterize if a communication object value is only updated and not sent, sent on request, or only sent when changed. Furthermore, you can parameterize if the status should indicate a current fan speed or a required fan speed. With this communication object, it is possible to display the fan speed in a visualisation or to indicate it on a display. Telegram value: 0 = fan speed OFF 1 = fan speed ON				
18	**Status fan speed 2**			
See communication object 17				
19	**Status fan speed 3**			
See communication object 17				
20				
Not assigned.				
21	**Limitation 1**	**Fan**	**1 bit** **DPT 1.003**	**C, W**
This communication object is enabled if in parameter window *Automatic operation* the parameter *Enable limitations* has been selected with the option *yes*. **Note** Limitation 1 is only active in automatic mode. The limitation 1 is active if a telegram with the value 1 is received on the communication object *Limitation 1*. The Limitation 1 is deactivated if a telegram with the value 0 is received on the communication object *Limitation 1*. When Limitation 1 is activated, the fan can only assume the fan speed or fan speed ranges as parameterized in *Fan speed with limitation 1*. The valve position is independently programmable from the fan limitation. Telegram value: 0 = limitation x inactive 1 = limitation x active				
22	**Limitation 2**			
See communication object 21				
23	**Limitation 3**			
See communication object 21				
24	**Limitation 4**			
See communication object 21				

<table>
<tr><th>No.</th><th>Function</th><th>Object name</th><th>Data type</th><th>Flags</th></tr>
<tr><td>**25**</td><td>**Forced operation**</td><td>**Fan**</td><td>**1 bit**
DPT 1.003</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *L, M, N: Fan (3 x 6 A)* the parameter *Enable communication object "Forced operation" 1 bit* is selected with the option *yes*.
If a forced operation is activated, the Room Master switches independently from the control value and its parameterized Limitation 1…4 to forced operation.
The fan speed and valve position(s) during forced operation can be parameterized individually from one another.
Telegram value: 0 = no forced operation
1 = forced operation</td></tr>
<tr><td>**26**</td><td>**Automatic ON/OFF**</td><td>**Fan**</td><td>**1 bit**
DPT 1.003</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *L, M, N: Fan (3 x 6 A)* the *Automatic operation* has been selected.
If automatic mode is enabled, it will be activated after a download, ETS reset or by an ON telegram on this communication object.
Automatic mode is switched off, if a telegram is received on a “manual communication object”.
Manual communication objects are:
• Fan: Switch speed
• Fan: Speed x (x = 1, 2, 3), Fan speed switch
• Fan: Fan speed up/down
• Fan: Limitation x (x = 1, 2, 3 or 4)
During forced operation the automatic mode remains active; however, it is only operated within the allowed limits.
If the value 1 is set in the parameter:
Telegram value: 0 = automatic operation OFF
1 = automatic operation ON
If the value 0 is set in the parameter:
Telegram value: 0 = automatic operation ON
1 = automatic operation OFF</td></tr>
<tr><td>**27**</td><td>**Status automatic**</td><td>**Fan**</td><td>**1 bit**
DPT 1.003</td><td>**C, R, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *Status messages* the parameter Enable communication object *"Status automatic" 1 bit* is selected with option *yes*.
It is possible to parameterize if a communication object value is only updated and not sent, sent on request, or only sent when changed.
The communication object indicates the status of the automatic mode.
Telegram value: 0 = inactive
1 = activated</td></tr>
</table>

No.	Function	Object name	Data type	Flags
28	**Status byte mode**	**Fan**	**1 byte** **non DPT**	**C, R, T**

This communication object is enabled if in parameter window *Status messages* the parameter *Enable communication object “Status byte mode" 1 byte* is selected with option *yes*.

The operating state of the fan can be displayed or sent on the bus via this communication object. It is possible to parameterize if a communication object value is only updated and not sent, sent on request, or only sent when changed.

Bit sequence:	76543210	
Bit 7:	Forced operation	
	Telegram value:	0: inactive 1: active
Bit 6:	Limitation 1	
	Telegram value:	0: inactive 1: active
Bit 5:	Limitation 2	
	Telegram value:	0: inactive 1: active
Bit 4:	Limitation 3	
	Telegram value:	0: inactive 1: active
Bit 3:	Limitation 4	
	Telegram value:	0: inactive 1: active
Bit 2:	Thermostat fault	
	Telegram value:	0: inactive 1: active
Bit 1:	Automatic	
	Telegram value:	0: inactive 1: active
Bit 0:	HEATING/COOLING	
	Telegram value:	0: COOLING 1: HEATING

Note

Bit 0: If toggling between HEATING and COOLING is undertaken automatically using control variables, the status HEATING/COOLING is only switched in bit 0 if a value > 0 is received on the control value.

For further information see: Status byte fan, forced/operation, page 318

3.3.4.2 Communication objects *Fan one-level*

No.	Function	Object name	Data type	Flags
10				
Not assigned.				
11	**Switch**	**Fan**	**1 bit** **DPT 1.001**	**C, W**
This communication object is enabled if in parameter window *L, M, N: Fan (3 x 6 A)*, the parameter *Fan type* has been selected with the option *one-level*. The fan can be switched on or off with this 1 bit communication object. Limitations through forced operation or one of the four limitations 1…4 are retained. Automatic operation is disabled. A renewed activation occurs via the communication objects *Automatic ON/OFF*. If several ON telegrams with the value 1 are received, the value last received for the fan control is decisive. An OFF telegram switches the fan fully off. Telegram value: 0 = fan OFF 1 = fan ON				
12…14				
Not assigned.				
15	**Status fan ON/OFF**	**Fan**	**1 bit** **DPT 1.001**	**C, T**
This communication object is enabled if in parameter window *Status messages* the parameter *Enable communication object "Status fan ON/OFF" 1 bit* have been selected with option *yes*. The communication object receives the communication object value 1 (ON), if the fan speed is not equal to zero (OFF). The value of the communication object is updated and sent when the fan speed is changed. This communication object thus defines the status of the fan, whether it is switched on or off. It can also be used for control of a main switch for the fan. Telegram value: 0 = OFF 1 = ON **Note** Some fans require an ON telegram before you set a fan speed. Using the communication object *Status fan ON/OFF*, the fan can, for example, be *switched on centrally* with a switch actuator via the main switch.				
16…20				
Not assigned.				

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>**21**</td><td>**Limitation 1**</td><td>**Fan**</td><td>**1 bit**
DPT 1.003</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *Automatic operation* the parameter *Enable limitations* has been selected with the option *yes*.

Note
Limitation 1 is only active in automatic mode.

The limitation 1 is active if a telegram with the value 1 is received on the communication object *Limitation 1*. The *Limitation 1* is deactivated if a telegram with the value 0 is received on the communication object *Limitation 1*.
When *Limitation 1* is activated, the fan can only assume the set fan speed or speed range in the parameter window *Fan limitation*. The valve position is independently programmable from the fan limitation.
Telegram value: 0 = limitation x inactive
1 = limitation x active</td></tr>
<tr><td>**22**</td><td>**Limitation 2**</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 21</td></tr>
<tr><td>**23**</td><td>**Limitation 3**</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 21</td></tr>
<tr><td>**24**</td><td>**Limitation 4**</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 21</td></tr>
<tr><td>**25**</td><td>**Forced operation**</td><td>**Fan**</td><td>**1 bit**
DPT 1.003</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *L, M, N: Fan (3 x 6 A)* the parameter *Enable communication object "Forced operation" 1 bit* is selected with the option *yes*.
If a forced operation is activated, the Room Master switches independently from the control value and its parameterized Limitation 1…4 to forced operation.
The fan speed and valve position(s) during forced operation can be parameterized individually from one another.
Telegram value: 0 = no forced operation
1 = forced operation</td></tr>
</table>

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>26</td><td>Automatic ON/OFF</td><td>Fan</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>L, M, N: Fan (3 x 6 A)</i> the parameter <i>Enable automatic operation</i> has been selected with the option <i>yes</i>.
If automatic mode is enabled, it will be activated on this communication object with the value 1 after a download, ETS reset or via a telegram. Automatic mode is switched off, if a signal is received on a “manual communication object”.
Manual communication objects are:
• <i>Fan: Switch speed</i>
• <i>Fan: Speed x (x = 1, 2, 3), Fan speed switch</i>
• <i>Fan: Fan speed up/down</i>
• <i>Fan: Limitation x (x = 1, 2, 3 or 4)</i>
During one of the four limitations or forced operation, the automatic mode remains active, but however, it is only operated in the allowed limits.
If the value 1 is set in the parameter:
Telegram value: 0 = automatic operation OFF
1 = automatic operation ON
If the value 0 is set in the parameter:
Telegram value: 0 = automatic operation ON
1 = automatic operation OFF</td></tr>
<tr><td>27</td><td>Status automatic</td><td>Fan</td><td>1 bit
DPT 1.003</td><td>C, R, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Status messages</i> the parameter <i>Enable communication object "Status automatic" 1 bit</i> is selected with option <i>yes</i>.
It is possible to parameterize if a communication object value is only updated and not sent, sent on request, or only sent when changed.
The communication object indicates the status of the automatic mode.
Telegram value: 0 = inactive
1 = activated</td></tr>
</table>

No.	Function	Object name	Data type	Flags
28	**Status byte mode**	**Fan**	**1 byte** **non DPT**	**C, R, T**

This communication object is enabled if in parameter window – *Status messages* the parameter *Enable communication object “Status byte mode" 1 byte* is selected with option *yes*.

The operating state of the fan can be displayed or sent on the bus via this communication object. It is possible to parameterize if a communication object value is only updated and not sent, sent on request, or only sent when changed.

Bit sequence:	76543210	
Bit 7:	Forced operation	
	Telegram value:	0: inactive 1: active
Bit 6:	Limitation 1	
	Telegram value:	0: inactive 1: active
Bit 5:	Limitation 2	
	Telegram value:	0: inactive 1: active
Bit 4:	Limitation 3	
	Telegram value:	0: inactive 1: active
Bit 3:	Limitation 4	
	Telegram value:	0: inactive 1: active
Bit 2:	Thermostat fault	
	Telegram value:	0: inactive 1: active
Bit 1:	Automatic	
	Telegram value:	0: inactive 1: active
Bit 0:	HEATING/COOLING	
	Telegram value:	0: COOLING 1: HEATING

Note

Bit 0: If toggling between HEATING and COOLING is undertaken automatically using control variables, the status HEATING/COOLING is only switched in bit 0 if a value > 0 is received on the control value.

For further information see: Status byte code table, page 121

3.3.5 Communication objects *Control input*

3.3.5.1 Communication objects *HVAC System – 1 Control value/2 pipe*

<table>
<tr><th>No.</th><th>Function</th><th>Object name</th><th>Data type</th><th>Flags</th></tr>
<tr><td>29</td><td>Control value HEATING/COOLING</td><td>Control input</td><td>1 byte
DPT 5.001</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Control input</i> the parameter <i>HVAC System</i> has been selected with the option <i>1 Control value/2 pipe</i>.
Using this communication object, the control value HEATING or COOLING is predefined as a 1 byte value [0…255].
Telegram value: 0 = OFF, no heating or cooling
255 = ON, largest control value, maximum heating or cooling</td></tr>
<tr><td>30</td><td>Control value COOLING (extra!)</td><td>Control input</td><td>1 byte
DPT 5.001</td><td>C, W</td></tr>
<tr><td colspan="5">Note
Independent of communication object 29, the COOLING valve can be additionally controlled without monitoring via the communication object 30.
This communication object is enabled if in parameter window <i>Control input</i> the parameter <i>HVAC System</i> has been selected with the option <i>1 Control value/2 pipe</i>.
Using this communication object, the control value COOLING is predefined as a 1 byte value [0…255].
Telegram value: 0 = OFF, no cooling
255 = ON, largest control value, maximum cooling</td></tr>
<tr><td>31</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Not assigned.</td></tr>
</table>

3.3.5.2 Communication objects *HVAC System 1 Control value/4 pipe, with switching object*

No.	Function	Object name	Data type	Flags
29	**Control value HEATING/COOLING**	**Control input**	**1 byte** **DPT 5.001**	**C, W**
This communication object is enabled if in parameter window *Control input* the parameter *HVAC System* has been selected with the option *1 Control value/4 pipe, with switching object*. Using this communication object, the control value HEATING or COOLING is predefined as a 1 byte value [0…255]. Telegram value: 0 = OFF, no heating or cooling 255 = ON, largest control value, maximum heating or cooling				
30				
Not assigned.				
31	**Toggle HEATING/COOLING**	**Control input**	**1 bit** **DPT 1.100**	**C, W**
This communication object is enabled if in parameter window *Control input* the parameter *HVAC System* has been selected with the option *1 Control value/4 pipe, with switching object*. If the value 1 is set in the parameter: Telegram value: 0 = COOLING activated 1 = HEATING activated If the value 0 is set in the parameter: Telegram value: 0 = HEATING activated 1 = COOLING activated **Note** If communication object 31 *Toggle HEATING/COOLING – Control input* receives a value, the monitoring time is started.				

3.3.5.3 Communication objects *HVAC System – 2 Control values/2 pipe*

No.	Function	Object name	Data type	Flags
29	**Control value HEATING**	**Control input**	**1 byte** **DPT 5.001**	**C, W**
This communication object is enabled if in parameter window *Control input* the parameter *HVAC System* has been selected with the option *2 Control values/2 pipe*. Using this communication object, the control value HEATING is predefined as a 1 byte value [0…255]. Telegram value: 0 = OFF, no heating 255 = ON, largest control value, maximum heating				
30	**Control value COOLING**	**Control input**	**1 byte** **DPT 5.001**	**C, W**
This communication object is enabled if in parameter window *Control input* the parameter *HVAC System* has been selected with the option *2 Control value/2 pipe*. Using this communication object, the control value COOLING is predefined as a 1 byte value [0…255]. Telegram value: 0 = OFF, no cooling 255 = ON, largest control value, maximum cooling				
31				
Not assigned.				

3.3.5.4 Communication objects *HVAC System 2 Control values/2 pipe, with switching object*

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>29</td><td>Control value HEATING</td><td>Control input</td><td>1 byte
DPT 5.001</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Control input</i> the parameter <i>HVAC System</i> has been selected with the option <i>2 Control value/2 pipe, with switching object</i>.
Using this communication object, the control value HEATING is predefined as a 1 byte value [0…255].
Telegram value: 0 = OFF, no heating
255 = ON, largest control value, maximum heating</td></tr>
<tr><td>30</td><td>Control value COOLING</td><td>Control input</td><td>1 byte
DPT 5.001</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Control input</i> the parameter <i>HVAC System</i> has been selected with the option <i>2 Control value/2 pipe, with switching object</i>.
Using this communication object, the control value COOLING is predefined as a 1 byte value [0…255].
Telegram value: 0 = OFF, no cooling
255 = ON, largest control value, maximum cooling</td></tr>
<tr><td>31</td><td>Toggle HEATING/COOLING</td><td>Control input</td><td>1 bit
DPT 1.100</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Control input</i> the parameter <i>HVAC System</i> has been selected with the option <i>2 Control value/2 pipe, with switching object</i>.
If the value 1 is set in the parameter:
Telegram value: 0 = COOLING activated
1 = HEATING activated
If the value 0 is set in the parameter:
Telegram value: 0 = HEATING activated
1 = COOLING activated

Note
If communication object 31 <i>Toggle HEATING/COOLING – Control input</i> receives a value, the monitoring time is started.</td></tr>
</table>

3.3.5.5 Communication objects *HVAC System – 2 Control values/4 pipe*

No.	Function	Object name	Data type	Flags
29	**Control value HEATING**	**Control input**	**1 byte** **DPT 5.001**	**C, W**
This communication object is enabled if in parameter window *Control input* the parameter *HVAC System* has been selected with the option *2 Control value/2 pipe*. Using this communication object, the control value HEATING is predefined as a 1 byte value [0…255]. Telegram value: 0 = OFF, no heating 255 = ON, largest control value, maximum heating				
30	**Control value COOLING**	**Control input**	**1 byte** **DPT 5.001**	**C, W**
This communication object is enabled if in parameter window *Control input* the parameter *HVAC System* has been selected with the option *2 Control value/2 pipe*. Using this communication object, the control value COOLING is predefined as a 1 byte value [0…255]. Telegram value: 0 = OFF, no cooling 255 = ON, largest control value, maximum cooling				
31				
Not assigned.				

3.3.5.6 Communication object *Fault control value*

No.	Function	Object name	Data type	Flags
32	**Fault control value**	**Control input**	**1 bit** **DPT 1.005**	**C, R, T**

This communication object is enabled if in parameter window *Control input* the parameter *Monitoring control values e.g. thermostat* has been selected with the option *yes*.

This communication object indicates a malfunction of the control value, e.g. of a thermostat.

The Fan Coil control reports a fault and assumes the safety position with the communication object *Fault control value*. This safety position affects the fan speed and the valves.

Telegram value: 0 = no fault
1 = fault

Note

If for the communication object *Control value HEATING, Control value COOLING* or *Control value, HEATING/COOLING* no value is sent for a parameterized time, a fault of the thermostat is assumed. If communication object 32 *Toggle HEATING/COOLING – Control input* receives a value, the monitoring time is started.

3.3.6 Communication objects *Valve HEATING*

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>33</td><td>Block</td><td>Valve HEATING</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window - <i>Function</i> the parameter <i>Enable communication object “Block" 1 bit</i> has been selected with option <i>yes</i>.
The valve is disabled with this communication object. If the block is enabled, the highest priority is retained and the current control value is retained, i.e. the valve remains stationary. Movement to a target position, which may not have yet been achieved, will be performed to completion. If the block is removed, the target position which has been set without the block is approached.
Telegram value: 0 = valve not blocked
1 = valve blocked</td></tr>
<tr><td>34</td><td>Forced operation</td><td>Valve HEATING</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window - <i>Function</i> the parameter <i>Enable communication object "Forced operation" 1 bit</i> is selected with option <i>yes</i>.
This communication object sets the output in a defined state and blocks it. If the value 1 is received, forced operation is activated and the output triggers the programmed valve position. If the value 0 is received, forced operation ends. The contact position is retained until the FCA/S receives a new setting signal.
Telegram value: 0 = end forced operation
1 = start forced operation</td></tr>
<tr><td>35</td><td>Trigger valve purge</td><td>Valve HEATING</td><td>1 bit
DPT 1.017</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window - <i>Function</i> the parameter <i>Enable valve purge</i> has been selected with the option <i>yes</i>.
The valve purge is triggered using this communication object.
Telegram value: 0 = end valve purge, valve will be closed
1 = start valve purge, valve will be opened
<table><tr><td>Note for value 0</td></tr><tr><td>A purge currently underway is interrupted.
A purge not undertaken due to a higher priority will no longer be undertaken.
The purge cycle with automatic purge will be restarted.</td></tr></table></td></tr>
</table>

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>36</td><td>Status valve purge</td><td>Valve HEATING</td><td>1 bit
DPT 1.003</td><td>C, R, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window - <i>Function</i> the parameter <i>Enable valve purge</i> and <i>Enable communication object “Status valve purge" 1 bit</i> is selected with option <i>yes</i>.
The status of the valve purge is visible via this communication object.
Telegram value: 0 = valve purge not active
1 = valve purge active
Note
The status is displayed as soon as a purge has been activated. The status remains active even when the purge has been interrupted, e.g. by a priority.</td></tr>
<tr><td>37</td><td>Status valve position</td><td>Valve HEATING</td><td>1 bit
DPT 1.001</td><td>C, R, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window - <i>Function</i> the parameter <i>Enable communication object "Status valve position"</i>, the option <i>1 bit</i> has been selected.
The status of the valve position is visible via this communication object. The target position, to where the valve should move, is always transferred.
Telegram value: 0 = valve position equal to 0
1 = valve position not equal to 0</td></tr>
<tr><td>37</td><td>Status valve position</td><td>Valve HEATING</td><td>1 byte
DPT 5.001</td><td>C, R, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window - <i>Function</i> the parameter <i>Enable communication object "Status valve position"</i>, the option <i>1 byte</i> has been selected.
The status of the valve position is visible via this communication object. The target position, to where the valve should move, is always transferred.
Telegram value: 0…255 = valve position is displayed directly as a figure value</td></tr>
<tr><td>38</td><td>Overload</td><td>Valve HEATING</td><td>1 bit
DPT 1.005</td><td>C, R, T</td></tr>
<tr><td colspan="5">This communication object is always visible.
The communication object sends a 1 with a fault, e.g. through a thermal overload on the output of the valve HEATING.
Telegram value: 1 = there is a fault on the output <i>Valve HEATING</i>.
0 = fault acknowledgement.</td></tr>
</table>

3.3.7 Communication objects *Valve COOLING*

The communication objects of the valve COOLING do not differ from those of the valve HEATING.

The descriptions of the parameter setting options and adjustable communication objects for the Valve COOLING are described under Parameter window O, P: Valve HEATING (0.5 A AC) – 3 point, opening and closing, page 147 or under communication objects *Valve HEATING*, page 187.

The communication objects *Valve COOLING* have the nos. 39…44.

3.3.8 Communication objects *Inputs a…r*

The communication objects of all Inputs do not differentiate from one another and are explained using *Input a*.

The descriptions of the parameter setting options of *Inputs a…r* are described from Parameter window Enable Inputs a…f on page 34.

The communication objects *Input a* have the nos. 45…49.

The communication objects *Input b* have the nos. 50…54.

The communication objects *Input c* have the nos. 55…59.

The communication objects *Input d* have the nos. 60…64.

The communication objects *Input e* have the nos. 65…69.

The communication objects *Input f* have the nos. 70…74.

The communication objects *Input g* have the nos. 75…79.

The communication objects *Input h* have the nos. 80…84.

The communication objects *Input i* have the nos. 85…89.

The communication objects *Input j* have the nos. 90…94.

The communication objects *Input k* have the nos. 95…99.

The communication objects *Input l* have the nos. 100…104.

The communication objects *Input m* have the nos. 105…109.

The communication objects *Input n* have the nos. 110…114.

The communication objects *Input o* have the nos. 115…119.

The communication objects *Input p* have the nos. 120…124.

The communication objects *Input q* have the nos. 125…129.

The communication objects *Input r* have the nos. 130…134

3.3.8.1 Communication objects *Switch sensor*

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>**45**</td><td>**Block**</td><td>**Input a: Switch Sensor**</td><td>**1 bit**
DPT 1.003</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *a: Switch sensor* the parameter *Enable communication object "Block" 1 bit* has been selected with option *yes*.
Using the communication object *Block*, the input can be blocked or enabled. With activated communication object *Block* the inputs are blocked.

Note
When the input is blocked there is fundamentally no reaction to a signal change on the input, but:
– Waiting for a long button operation or a minimum signal duration is suspended.
– Parameterised *Cyclic sending* is not interrupted.
– The description of the communication object *Switch x* is still possible.
If the input state changed during the blocked phase, this leads to immediate sending of the new communication object value after enabling. If the input state remains the same during the blocking phase, the communication object value is not sent.

Telegram value: 0 = enable input a
1 = block input a</td></tr>
<tr><td>**46**</td><td>**Switch 1**</td><td>**Input a: Switch Sensor**</td><td>**1 bit**
DPT 1.001</td><td>**C, W, T**</td></tr>
<tr><td colspan="5">This communication object is enabled if in the parameter window *Enable inputs a-f* the parameter *Input a (binary input, contact scanning) has been selected with the option Switch sensor / fault monitoring input*.
In accordance with the parameter setting, this communication object can be switched by actuation of the input to *ON, OFF* or *TOGGLE* or can be set to *no reaction.* With toggle the previous value, e.g. 1, is toggled directly to the value 0. The communication object can be sent cyclically, e.g. for lifesign monitoring of the sensor.

Note
The communication object can be written to externally. Thus cyclic sending is interrupted or may not be possible depending on the parameter setting.
No further communication objects are visible with the setting.

Telegram value: 0 = OFF
1 = ON</td></tr>
<tr><td>**47**</td><td>**Switch 2**</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 46.</td></tr>
<tr><td>**48**</td><td>**Switch 3**</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 46.</td></tr>
<tr><td>**49**</td><td>**Event 0/1 started**</td><td>**Input a: Switch Sensor**</td><td>**1 bit**
DPT 1.001</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *a: Switch sensor* the parameter *Enable communication object "Event 0/1 started" 1 bit* has been selected with option *yes*.
The 1 bit communication object *Event 0/1 started* communication object is enabled. As a result, the same events except those of the push button/switch connected to the binary input can also be triggered by the receipt of a telegram on the communication object *Event 0/1* started.
Telegram value: 0 = Event 0 started
1 = Event 1 started</td></tr>
</table>

3.3.8.2 Communication objects *Switch/Dim sensor*

No.	Function	Object name	Data type	Flags
45	**Block**	**Input a:** **Switch/dim sensor**	**1 bit** **DPT 1.003**	**C, W**

This communication object is enabled if in parameter window *a: Switch/dim sensor* the parameter *Enable communication object "Block" 1 bit* has been selected with option *yes*.

Using the communication object *Block*, the input can be blocked or enabled. With activated communication object *Block* the inputs are blocked.

Note

When the input is blocked there is fundamentally no reaction to a signal change on the input, but:

– Waiting for a long button operation or a minimum signal duration is suspended.

– Parameterized *Cyclic sending* is interrupted with dimming steps.

– The description of the communication object *Switch* is still possible.

When enabling an input, a change of the signal states (as opposed to before the block) leads to immediate processing, e.g.:

– The minimum actuation or detection of a long/short button push starts.

– Communication objects send their value if necessary.

Telegram value: 0 = enable input a
1 = block input a

No.	Function	Object name	Data type	Flags
46	**Switch**	**Input a:** **Switch/dim sensor**	**1 bit** **DPT 1.001**	**C, W, T**

This communication object is enabled if in the parameter window *Enable inputs a-f* the parameter *Input a (binary input, contact scanning)* has been selected with the option *Switch/Dim sensor*.

In accordance with the parameter setting, this communication object can be switched by actuation of the input to *ON, OFF* or *TOGGLE* or can be set to *no reaction.* With toggle the previous value, e.g. 1, is toggled directly to the value 0. With parameter setting *TOGGLE*, the communication object as the non-sending group address should be linked with the switch feedback of the dimming actuator (updating of the switching state).

Note

The communication object can be written to externally. Thus cyclic sending is interrupted or may not be possible depending on the parameter setting.

No further communication objects are visible with the setting.

Telegram value: 0 = OFF
1 = ON

No.	Function	Object name	Data type	Flags
47	**Dimming**	**Input a:** **Switch/dim sensor**	**4 bit** **DTP 3.007**	**C, T**

This communication object is enabled if in the parameter window *Enable inputs a-f* the parameter *Input a (binary input, contact scanning)* has been selected with the option *Switch/Dim sensor*.

A long operation at the input has the effect that BRIGHTER or DARKER dim telegrams are sent via this communication object on the bus. A STOP telegram is sent and the cyclic sending of dim telegrams is stopped at the end of actuation with START-STOP-DIMMING.

No.	Function	Object name	Data type	Flags
48, 49				

Not assigned.

3.3.8.3 Communication objects *Blind sensor*

No.	Function	Object name	Data type	Flags
45	**Block**	**Input a:** **Blind sensor**	**1 bit** **DPT 1.003**	**C, W**
This communication object is enabled if in parameter window *a: Blind Sensor* the parameter *Enable communication object "Block" 1 bit* has been selected with option *yes*. Using the communication object *Block*, the input can be blocked or enabled. With activated communication object *Block* the inputs are blocked. **Note** When the input is blocked there is fundamentally no reaction to a signal change, but: – Waiting for a long button operation or a minimum signal duration is suspended. – Parameterised *Cyclic sending* is interrupted. – Communication objects continue to be updated and sent if necessary. When enabling an input, a change of the signal states (as opposed to before the block) leads to immediate processing, e.g.: – The minimum actuation or detection of a long/short button push starts. – Communication objects send their current value if necessary. Telegram value: 0 = enable input a 1 = block input a				
46	**Blind UP/DOWN**	**Input a:** **Blind sensor**	**1 bit** **DTP 1.008**	**C, W, T**
This communication object is enabled if in the parameter window *Enable inputs a…f* the parameter *Input a (binary input, contact scanning)* has been selected with the option *Blind sensor*. This communication object sends a blind motion telegram UP or DOWN on the bus. By receiving telegrams, the device also recognises movement telegrams of another sensor, e.g. parallel operation. Telegram value: 0 = UP 1 = DOWN				
47	**STOP/slat adjustment**	**Input a:** **Blind sensor**	**1 bit** **DTP 1.007**	**C, T**
This communication object is enabled if in the parameter window *Enable inputs a…f* the parameter *Input a (binary input, contact scanning)* has been selected with the option *Blind sensor*. This communication object sends a STOP telegram or slat adjustment. Telegram value: 0 = STOP/slat adjustment UP 1 = STOP/slat adjustment DOWN				

No.	Function	Object name	Data type	Flags
48	**Upper limit position**	**Input a:** **Blind sensor**	**1 bit** **DTP 1.002**	**C, W**

This communication object is enabled if in the parameter window *Enable inputs a…f* the parameter *Input a (binary input, contact scanning)* has been selected with the option *Blind sensor*.

With this communication object, the feedback of a blind actuator, which indicates whether the blind is located in the upper end position, can be integrated.

Note
The communication object is important for 1-button operation (synchronisation).

Telegram value: 0 = blind is not in upper end position.
1 = blind has reached the upper end position.

No.	Function	Object name	Data type	Flags
49	**Lower limit position**	**Input a:** **Blind sensor**	**1 bit** **DTP 1.002**	**C, W**

This communication object is enabled if in the parameter window *Enable inputs a…f* the parameter *Input a (binary input, contact scanning)* has been selected with the option *Blind sensor*.

With this communication object the feedback of a blind actuator which indicates whether the blind is located in the lower end position can be integrated.

Note
The communication object is important for 1-button operation (synchronisation).

Telegram value: 0 = blind is not in lower end position.
1 = blind has reached the lower end position.

3.3.8.4 Communication objects *Value/forced operation*

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>45</td><td>Block</td><td>Input a:
Value/Forced operation</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>a: Value/forced operation</i> the parameter <i>Enable communication object "Block" 1 bit</i> has been selected with option <i>yes</i>.
Using the communication object <i>Block</i>, the input can be blocked or enabled. With activated communication object <i>Block</i> the inputs are blocked.

Note
When the input is blocked there is fundamentally no reaction to a signal change, but:
– Waiting for a long button operation or a minimum signal duration is suspended.
– The parameter setting <i>8 bit scene</i> is ended with saving.
– Communication objects continue to be updated and sent if necessary.
When enabling an input, a change of the signal states (as opposed to before the block) leads to immediate processing, e.g.:
– The minimum actuation or detection of a long/short button push starts.
– Communication objects send their current value if necessary.

Telegram value: 0 = enable input a
1 = block input a</td></tr>
<tr><td>46</td><td>Value 1</td><td>Input a:
Value/Forced operation</td><td>DPT variable</td><td>C, T</td></tr>
<tr><td colspan="5">This communication object is enabled if in the parameter window <i>Enable inputs a-f</i> the parameter <i>Input a (binary input, contact scanning)</i> has been selected with the option <i>Value/forced</i> operation.
This communication object sends a value on the bus with short operation when opening or closing of the contact. The value and data type can be freely set in the parameters.

<table>
<tr><td>1 bit value [0/1]</td><td>EIS 1</td><td>DPT 1.001 switch telegram</td></tr>
<tr><td>2 bit value [0…3]</td><td>EIS 8</td><td>DPT 2.001 forced operation</td></tr>
<tr><td>1 byte value [-128…127]</td><td>EIS 14</td><td>DPT 6.010 value</td></tr>
<tr><td>1 byte value [0…255]</td><td>EIS 6</td><td>DPT 5.010 value</td></tr>
<tr><td>1 byte value [8 bit scene]</td><td>EIS 6</td><td>DPT 18.001 control scene</td></tr>
<tr><td>2 byte value [-32,768…32,767]</td><td>EIS 10</td><td>DPT 7.001 value</td></tr>
<tr><td>2 byte value [0…65,535]</td><td>EIS 10</td><td>DPT 8.001 value</td></tr>
<tr><td>2-byte value [EIB floating point]</td><td>EIS 5</td><td>DPT 9.001 temperature</td></tr>
<tr><td>3 byte value [time of day, weekday]</td><td>EIS 3</td><td>DPT 10.001 time of day, weekday</td></tr>
<tr><td>4 byte value [0…4,294,967,295]</td><td>EIS 11</td><td>DPT 12.001 value</td></tr>
<tr><td>4 byte value [-2,147,483,648…2,147,483,647]</td><td>EIS 11</td><td>DPT 13.001 value</td></tr>
</table></td></tr>
<tr><td>47</td><td>Value 2</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">See communication object 46.</td></tr>
<tr><td>48…49</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Not assigned.</td></tr>
</table>

3.3.9 Communication objects *Outputs*

The communication objects of all outputs differentiate from one another with the exception of the communication objects *Logical connection 1* and *Logical connection 2*. They are explained using *Output A*.

The descriptions of the parameter setting options of *Outputs A…U* are described from Parameter window Enable Outputs A…D, on page 67.

The communication objects *Output A* have the nos. 135…142.

The communication objects *Output B* have the nos. 143…150.

The communication objects *Output C* have the nos. 151…158.

The communication objects *Output D* have the nos. 159…166.

The communication objects *Output E* have the nos. 167…174.

The communication objects *Output F* have the nos. 175…182.

The communication objects *Output G* have the nos. 183…190.

The communication objects *Output H* have the nos. 191…198.

The communication objects *Output I* have the nos. 199…206.

The communication objects *Output J* have the nos. 207…214.

The communication objects *Blind K* have the nos. 239…251.

The communication objects *Output L* have the nos. 10…15.

The communication objects *Output M* have the nos. 16…21.

The communication objects *Output N* have the nos. 22…27.

The communication objects *Valve HEATING O, P* have the nos. 33…38.

The communication objects *Valve COOLING Q, R* have the nos. 39…44.

The communication objects *Output S* have the nos. 215…222.

The communication objects *Output T* have the nos. 223…230.

The communication objects *Output U* have the nos. 231…238

Note
The outputs L, M and N can be programmed as outputs and as fans. The descriptions of the communication objects for this purpose can be found under communication objects *L, M, N:* Fan (3 x 6 A), page 170. The descriptions of the setting possibilities can be found in Parameter window Enable Outputs K…U, page 91.

3.3.9.1 Communication objects *Output A*

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>135</td><td>Switch</td><td>Output A</td><td>1 bit
DPT 1.001</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in the parameter window <i>Enable Outputs A-D</i> the parameter <i>Output A (20 A/ 16 AX C-Load)</i> has been enabled.
This communication object is used for switching of the output ON/OFF. The device receives a switch telegram via a switch communication object.
Normally opened contact:
Telegram value 1 = switch ON
0 = switch OFF
Normally closed contact:
Telegram value 1 = switch OFF
0 = switch ON
Note
With logical connections or forced operations, a modification of the communication object <i>Switch</i> does not necessarily lead to a change of the contact position.
For further information see: Function chart, page 215</td></tr>
<tr><td>136</td><td>Permanent ON</td><td>Output A</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>A: Output (20 A/16 AX C-Load)</i> the parameter <i>Enable function Time</i> has been selected with the option <i>yes</i>.
With this communication object the output can be forcibly switched on.
If the communication object is assigned with the value 1, the output is switched on irrespective of the value of the object <i>Switch</i> and remains switched on until the communication object <i>Permanent ON</i> has the value 0. After ending the permanent ON state, the state of the communication object <i>Switch</i> is used.
Permanent ON only switches ON and “masks” the other functions. This means that the other functions (e.g. staircase lighting) continue to run in the background but do not initiate a switching action. After the end of permanent ON, the switching state, which would result without the permanent ON function, becomes active. For the function <i>Staircase lighting</i> the response after Permanent ON is parameterized in Parameter window A: Output - Time, page 74.
This communication object can be used for example to allow the service or maintenance and cleaning personnel to initiate a permanent ON. The device receives a switch telegram via the switch object.
Permanent ON becomes inactive after a download or bus voltage recovery.
Telegram value 1 = activates permanent ON mode
0 = deactivates permanent ON mode</td></tr>
</table>

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>137</td><td>Disable function time</td><td>Output A</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">
<p>This communication object is enabled if in parameter window <i>A: Output (20 A/16 AX C-Load)</i> the parameter <i>Enable function Time</i> has been selected with the option <i>yes</i>.</p>
<p>After bus voltage recovery, in parameter window-<i>Time</i> the communication object value with the parameter <i>Object value “Disable time function”</i> can be determined.</p>
<p>With the blocked function <i>Time</i> the output can only be switched on or off, the function <i>Staircase lighting</i> is not triggered.</p>
<p>Telegram value 1 = staircase lighting disabled
0 = staircase lighting enabled</p>
<p>The contact position at the time of disabling and enabling is retained and will only be changed with the next switch telegram to the communication object <i>Switch</i>.</p>
</td></tr>
<tr><td>138</td><td>Scene</td><td>Output A</td><td>1 byte
DPT 18.001</td><td>C, W</td></tr>
<tr><td colspan="5">
<p>This communication object is enabled if in parameter window <i>A: Output (20 A/16 AX C-Load)</i>, the parameter <i>Enable function Scene</i> has been selected with the option <i>yes</i>.</p>
<p>Using this 8 bit communication object a scene telegram can be sent using a coded telegram. The telegram contains the number of the respective scene as well as the information if the scene is to be retrieved, or if the current switch state is to be assigned to the scene.</p>
<p>Telegram format (1 byte): MXSSSSSS
(MSB) (LSB)
M: 0 – scene is recalled
1 – scene is stored (if allowed)
X: not used
S: Number of the scene (1-64: 00000000 … 00111111)</p>
<table>
<tr><th colspan="2">KNX 1 byte telegram value</th><th rowspan="2">Meaning</th></tr>
<tr><th>Decimal</th><th>Hexadecimal</th></tr>
<tr><td>00 or 64</td><td>00h or 40h</td><td>Call scene 1</td></tr>
<tr><td>01 or 65</td><td>01h or 41h</td><td>Recall scene 2</td></tr>
<tr><td>02 or 66</td><td>02h or 42h</td><td>Recall scene 3</td></tr>
<tr><td>…</td><td>…</td><td>…</td></tr>
<tr><td>63 or 127</td><td>3Fh or 7Fh</td><td>Recall scene 64</td></tr>
<tr><td>128 or 192</td><td>80h or B0h</td><td>Store scene 1</td></tr>
<tr><td>129 or 193</td><td>81h or B1h</td><td>Store scene 2</td></tr>
<tr><td>130 or 194</td><td>82h or B2h</td><td>Store scene 3</td></tr>
<tr><td>…</td><td>…</td><td>…</td></tr>
<tr><td>191 or 255</td><td>AFh or FFh</td><td>Store scene 64</td></tr>
</table>
<p>For further information see: Function scene, page 221 and Code table scene (8 bit), page 319</p>
</td></tr>
<tr><td>139</td><td>Forced operation</td><td>Output A</td><td>1 bit
DPT 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">
<p>This communication object is enabled if in parameter window <i>A: Output (20 A/16 AX C-Load)</i>, the parameter <i>Enable function forced operation</i> has been selected with the option <i>yes</i> and the parameter <i>Type of object “Forced operation”</i> has been selected with <i>1 bit</i>.</p>
<p>If the object receives the value 1, the output is forcibly set to the parameterized switch position, which has been set in the parameter window <i>Output A (20 A/16 AX C-Load)</i>. The forced positioning of the contact should remain until forced operation is ended. This is then the case when a 0 is received via the communication object <i>Forced operation</i>.</p>
<p>Please note that the function <i>Forced operation</i> and a bus failure have a higher priority on the switching state, see Function chart, page 215.</p>
</td></tr>
</table>

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>**139**</td><td>**Forced operation**</td><td>**Output A**</td><td>**2 bit**
DPT 2.001</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *A: Output (20 A/16 AX C-Load)*, the parameter *Enable function forced operation* has been selected with the option *yes* and the parameter *Type of object “Forced operation”* has been selected with 2 bit.
The output can be forcibly operated via this communication object (e.g. by a higher-level control). The object value directly defines the forced position of the contact:
0 or 1 = The output is not forcibly operated.
2 = The output is forcibly switched off
3 = The output is forcibly switched on</td></tr>
<tr><td>**140**</td><td>**Status switch**</td><td>**Output A**</td><td>**1 bit**
DPT 1.001</td><td>**C, R, T**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *A: Output (20 A/16 AX C-Load)*, the parameter *Enable communication object “Status switch” 1 bit* has been selected with the option *yes*.
You can parameterize whether the communication object value *no, update only, after a change* or *after request* is sent on the bus. The communication object value directly indicates the current contact position of the switching relay.
The status value can be inverted.
Telegram value 1 = relay ON or OFF depending on the parameterization
0 = Relay OFF or ON depending on the parameterization</td></tr>
<tr><td>**141**</td><td>**Logical Connection 1**</td><td>**Output A**</td><td>**1 bit**
DPT 1.002</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in the parameter window - *Logic* the parameters *Logical connection 1 active* has been selected with *yes*. The parameter window - *Logic* is enabled in the parameter window *A: Output (20 A/16 AX C-Load)*.
Using this communication object, the output of the first of two logic communication objects can be assigned. The logical connection is defined in the parameter window - *Logic*.
Initially the switch object is logically linked with the communication object *Logical connection 1*. The result is logically linked with the communication object *Logical connection 2*.
Note
The values of the communication objects *Logical connection 1/2* are stored at bus voltage failure. The values are set again after a bus voltage recovery.
If values are not assigned for communication objects *Logical connection 1/2*, they will be deactivated.
With a reset via the bus, the values of the communication objects *Logical connection 1/2* remain unchanged.
For further information see: Connection/Logic, page 219</td></tr>
<tr><td>**142**</td><td>**Logical Connection 2**</td><td>**Output A**</td><td>**1 bit**
DPT 1.002</td><td>**C, W**</td></tr>
<tr><td colspan="5">See communication object 141.</td></tr>
</table>

3.3.10 Communication objects *Output K: Blind and shutter*

In the following, the communication objects of output K: Blinds and shutters are explained using the selection blinds. If the blinds selection has a special function or if the function is not available, e.g. slat adjustment, this is clearly indicated. Otherwise the explanations apply for both operating modes.

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>239</td><td>UP/DOWN move</td><td>Output K</td><td>1 bit
DPT 1.008</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Outputs K-U</i>, the parameter <i>Output K (Shutter) (6 A)</i> has been selected with <i>Blind</i>.
This communication object moves the blinds or shutters UP (0) or DOWN (1).
If a telegram with the value 0 is received on the communication object, the blind moves UP. If a telegram with the value 1 is received, the blind moves DOWN. The output contact returns to the neutral middle position after the <i>Total travel time</i> has elapsed.
Telegram value: 0 = UP
1 = DOWN</td></tr>
<tr><td>240</td><td>Slat adj./STOP UP/DOWN or STOP UP/DOWN</td><td>Output K</td><td>1 bit
DPT 1.007</td><td>C, W</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Outputs K-U</i>, the parameter <i>Output K (Shutter) (6 A)</i> has been selected with <i>Blind</i>.
This communication object stops the blinds or shutters during movement. When the blind is stopped, the communication object is used for slat adjustment, one step UP (0) or DOWN (1).
If the blind is moving, the movement stops if a telegram is received on this communication object, regardless of if a 1 or a 0 is received.
Mode Blinds: If the shutter is at rest, when a telegram is received on this communication object, the blind for the switch on duration of the slat adjustment UP (0) or DOWN (1) is moved and then stopped.
Mode Shutters: When the blinds are at rest and a telegram is received on this communication object, no action is undertaken.
Telegram value: 0 = STOP/slat adjustment UP
1 = STOP/slat adjustment DOWN</td></tr>
<tr><td>241</td><td>Move to position [0…255]</td><td>Output K</td><td>1 byte
DPT 5.001</td><td>C,W,T</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window <i>Enable Outputs K-U</i>, the parameter <i>Output K (Shutter) (6 A)</i> has been selected with <i>Blind</i>.
This communication object is used for movement to and feedback from a determined position (0 = top, 255 = bottom).
If a telegram is received on this communication object, the blind is moved to the corresponding position of this received value.
After the target position is reached, the slats will assume the same position, which they had before the movement started. If a <i>Move slats 0…255</i> telegram is received during movement, the received target position is approached.
Telegram value: 0 = upper
… = intermediate position
255 = bottom</td></tr>
</table>

No.	Function	Object name	Data type	Flags
242	**Move slat [0…255]**	**Output K**	**1 byte** **DPT 5.001**	**C,W,T**
This communication object is enabled if in parameter window *Enable Outputs K-U*, the parameter *Output K (Shutter) (6 A)* has been selected with *Blind*. This communication object serves the movement and the feedback of a defined slat position and is therefore only available in blind mode. If a telegram is received on this communications object, the slats are then positioned in accordance with the received value. If the shutter is currently moving, the movement will continue to the target position and positioning of the slats is then undertaken. Telegram value: 0 = slat fully UP … = intermediate position 255 = slat DOWN				
243	**Reference movement**	**Output K**	**1 bit** **DPT 1.008**	**C, W**
This communication object is enabled if in parameter window *Enable Outputs K-U*, the parameter *Output K (Shutter) (6 A)* has been selected with *Blind*. This communication object is used for the compensation of deviations in the position, e.g. after frequent UP/DOWN in the intermediate positions. The blinds are moved to the end position (0 = top, 1 = bottom) and back. If a telegram is received on this communication object, the blinds are moved fully upwards or downwards. The current position is stored in order to move the blinds later to the parameterized position after the reference movement. If the option *move to saved position* is set, and if the automatic function was set for the blinds before the reference movement, then the function *Automatic* will be reactivated, after the saved position is reached. Telegram value: 0 = reference movement fully upwards 1 = reference movement fully downwards				

No.	Function	Object name	Data type	Flags
244	**Scene**	**Output K**	**1 byte** **DPT 18.001**	**C, W**

This communication object is enabled if in parameter window *K: Blinds (6 A)*, the parameter *Enable function Scene* has been selected with the option *yes*.

This communication object is used for calling or storing a scene (position blinds and slats). The object number contains a scene number (1-64) as well as the instruction regarding whether a scene should be called or stored. The storing of the scene value is implemented on the device.

Using this 8 bit communication object a scene telegram can be sent using a coded telegram. The telegram contains the number of the respective scene as well as the information if the scene is to be retrieved, or if the current switch state is to be assigned to the scene.

Telegram format (1 byte): MXSSSSSS
(MSB) (LSB)
M: 0 – scene is recalled
1 – scene is stored (if allowed)
X: not used
S: Number of the scene (1-64: 00000000 … 00111111)

KNX 1 byte telegram value		**Meaning**
Decimal	**Hexadecimal**	
00 or 64	00h or 40h	Call scene 1
01 or 65	01h or 41h	Recall scene 2
02 or 66	02h or 42h	Recall scene 3
…	…	…
63 or 127	3Fh or 7Fh	Recall scene 64
128 or 192	80h or B0h	Store scene 1
129 or 193	81h or B1h	Store scene 2
130 or 194	82h or B2h	Store scene 3
…	…	…
191 or 255	AFh or FFh	Store scene 64

For further information see: Function scene, page 221 and Code table scene (8 bit), page 319

No.	Function	Object name	Data type	Flags
245	**Activation of aut. control**	**Output K**	**1 bit** **DPT 1.003**	**C, W**

This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Enable function automatic* has been selected with *yes*.

This communication object is used for activation and deactivation of the function Automatic.

If a telegram with the value 1 is received on this communication object, the automatic control is activated for the corresponding output and the output moves to the automatic position. This can be defined via the communication objects *Sun, Sun: Move to position 0…255* and *Sun: Move slats 0…255*.

If a telegram with the value 0 is received, the blind remains in the current position and no longer reacts to incoming telegrams on the automatic communication objects. If the blind is currently in motion, it will not be interrupted.

Telegram value: 0 = automatic control deactivated
1 = automatic control activated

<table>
<tr><td>No.</td><td>Function</td><td>Object name</td><td>Data type</td><td>Flags</td></tr>
<tr><td>**246**</td><td>**Sun**</td><td>**Output K**</td><td>**1 bit**
DPT 1.001</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Enable function automatic* has been selected with *yes*.
This communication object serves for activation of the sun protection: The blind moves to the sun screening position.
Incoming telegrams on this communication object are only considered if the value is 1 for the communication object *Activation of aut. control*.
If a telegram with the value 1 is received on the communications object *Sun*, he blind moves to the parameterized position with Sun = 1. If a telegram with the value 0 is received, the blind moves to the parameterized position with sun = 0.
The reaction to incoming telegrams can be delayed in its execution via the parameter *Delay time on sun = 1* and *Delay time on sun = 0*, in order to avoid that the shutter/blinds continuously move up and down in changeable weather. If a telegram with the opposing value is received within the delay time, the Position if sun = 1 is not executed, and the blind remains in the Position if sun = 0 position or vice versa.
If the option *Receive position via 8 bit values* is set as *Position if sun = 1*, the output will move to the position after the delay has timed out, that was last received on the communication objects *Sun: Move to position [0..255]* (blinds and shutters) as well as *Sun: Move slats 0…255* (only for blinds).
Telegram value: 0 = no sun
1 = sun</td></tr>
<tr><td>**247**</td><td>**Sun: Move to position [0…255]**</td><td>**Output K**</td><td>**1 byte**
DPT 5.001</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Enable function automatic* has been selected with *yes*.
This communication object serves for setting the position during active sun protection.
Incoming telegrams on this communication object are implemented immediately only if the automatic control is activated (Activation of aut. control = 1) and the sun shines (sun = 1). The blind is then positioned in accordance with the received value.
Telegram value: 0 = top
… = intermediate position
255 = bottom</td></tr>
<tr><td>**248**</td><td>**Sun: Move slat [0…255]**</td><td>**Output K**</td><td>**1 byte**
DPT 5.001</td><td>**C, W**</td></tr>
<tr><td colspan="5">This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Enable function automatic* has been selected with *yes*.
This communication object serves for setting the slat position during active sun screening and is thus only available with blind operation.
Incoming telegrams on this communication object are implemented immediately only if the automatic control is activated (Activation of aut. control = 1) and the sun shines (sun = 1). The slats are then positioned to correspond with the received value.
The movement telegram *Sun: Move to position [0..255]* is always moved up to the target position before the positioning of the slats is executed.
Telegram value: 0 = slat fully UP
… = intermediate position
255 = slat DOWN</td></tr>
</table>

No.	Function	Object name	Data type	Flags
249	**Safety operation A**	**Output K**	**1 bit** **DPT 1.005**	**C, W**
This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Enable function safety operation* has been selected with the option *yes*. Using this communication object, movement to a fixed position is possible and normal operation is inhibited.				
250	**Safety operation B**	**Output K**	**1 bit** **DPT 1.005**	**C, W**
See communication object 249.				
251	**Status Position top**	**Output K**	**1 bit** **DPT 1.002**	**C, R, T**
This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Extra status response* has been selected with the option *End positions*. This communication object defines whether the blind is or is not in the upper end position. The object value is sent about five seconds after completion of a movement action. Telegram value: 0 = blind in upper end position 1 = blind not in upper end position				
252	**Status Position bottom**	**Output K**	**1 bit** **DPT 1.002**	**C, R, T**
This communication object is enabled if in parameter window *K: Blind (6 A)* or the parameter *Extra status response* has been selected with the option *End positions*. This communication object defines whether the blind is or is not in the lower end position. The communication object value is sent about five seconds after completion of a movement action. Telegram value: 0 = blind in lower end position 1 = blind not in lower end position				

No.	Function	Object name	Data type	Flags
251	**Status byte**	**Output K**	**1 byte**	**C, R, T**

This communication object is enabled if in parameter window *K: Blind (6 A)* the parameter *Extra status response* has been selected with the option *Status byte*.

This communication object provides information about the state of the output and the operation. The information is provided in coded format in a 1 byte value.

With this communication object, the Room Master sends the information concerning the mode in which the output is currently operating. Only one mode can be activated at any time.

The status byte is sent after a change.

Bit sequence: 76543210

Bit 7: Not assigned
Always: 0

Bit 6: Not assigned
Always: 0

Bit 5: Safety operation A
Telegram value: 0: inactive
1: active

Bit 4: Safety operation B
Telegram value: 0: inactive
1: active

Bit 3: Automatic
Telegram value: 0: inactive
1: active

Bit 2: Sun
Telegram value: 0: inactive
1: active

Bit 1: Upper end position
Telegram value: 0: inactive
1: active

Bit 0: Lower limit position
Telegram value: 0: inactive
1: active

Special coding for bit 0 and bit 1:

Bit sequence 00: Blind between upper and lower end position
Bit sequence 01: Lower limit position
Bit sequence 10: Upper end position
Bit sequence 11: Blind position undefined

For further information see: Status byte blind/shutters, page 319

4 Planning and Application

In this section you will find a description of different types of fans, blowers and fan coil controls. Here also tips and application examples are described for practical use of the device.

4.1 Input

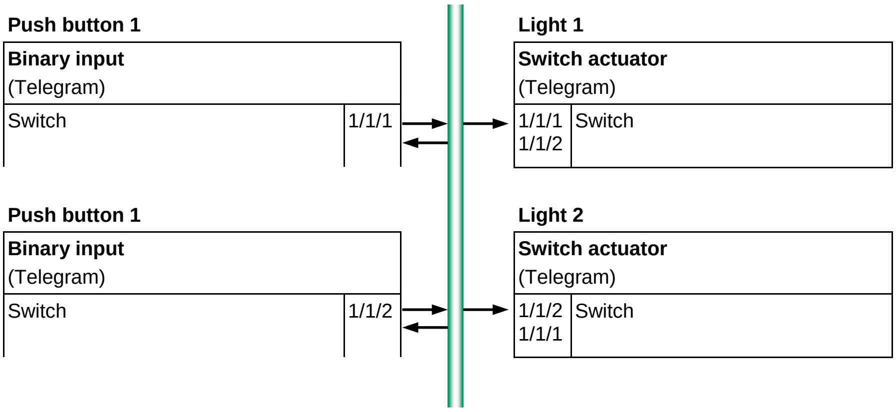
In this chapter the central function and the application explanations for the inputs are explained. The inputs are equipped with the binary contact scanning function.

4.1.1 Operation with central function (Switch light)

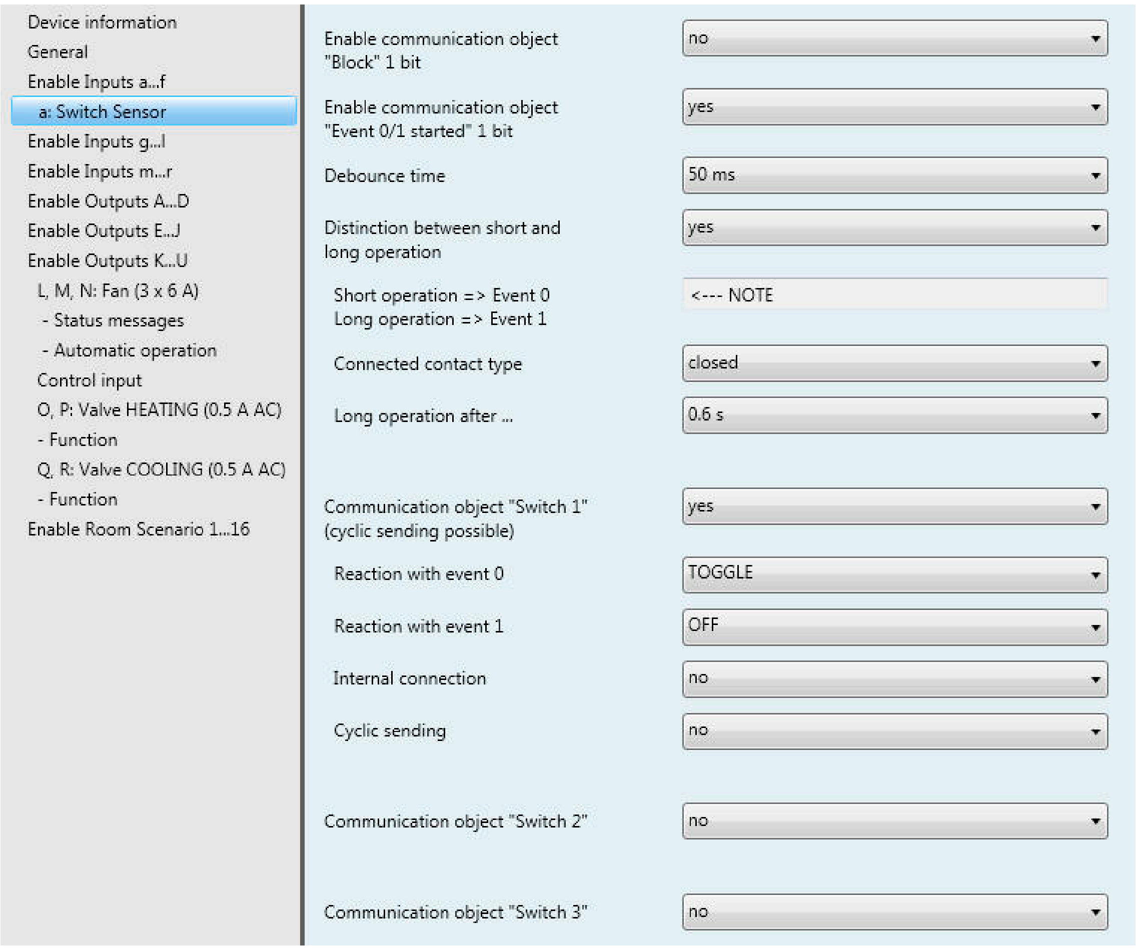
1 push button operation

A short operation switches the lighting ON or OFF A long operation centrally switches OFF the lighting.

Logical connection of the group addresses:



In parameter window *a: Switch Sensor*, the settings for button 1 appear as follows:



Enable communication object "Block" 1 bit	no
Enable communication object "Event 0/1 started" 1 bit	yes
Debounce time	50 ms
Distinction between short and long operation	yes
Short operation => Event 0 Long operation => Event 1	<--- NOTE
Connected contact type	closed
Long operation after ...	0.6 s
Communication object "Switch 1" (cyclic sending possible)	yes
Reaction with event 0	TOGGLE
Reaction with event 1	OFF
Internal connection	no
Cyclic sending	no
Communication object "Switch 2"	no
Communication object "Switch 3"	no

Short operation:	TOGGLE
Long operation:	OFF

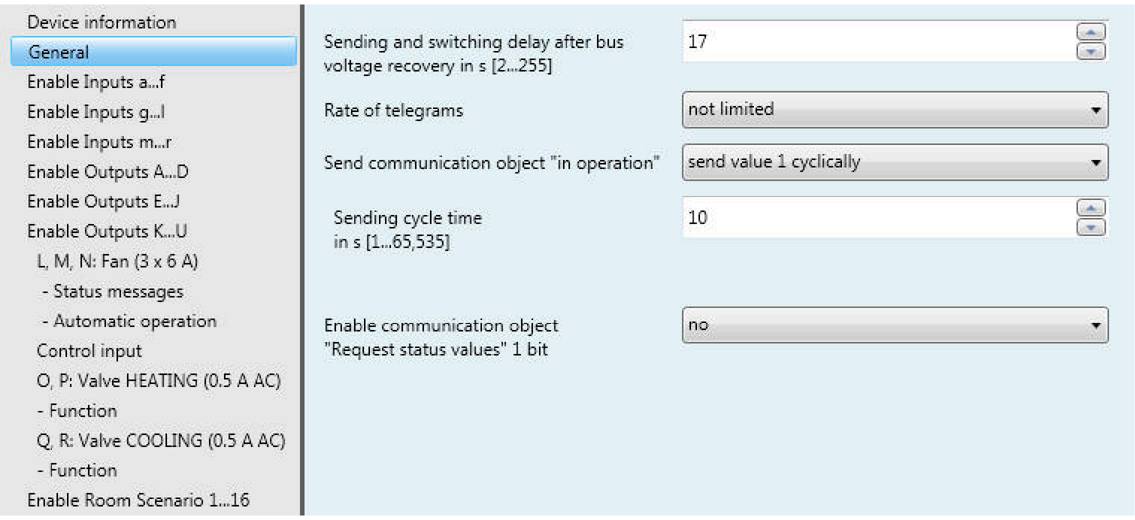
4.1.2 Fault monitoring input

In a switchgear system, two incoming circuit-breakers, a coupling switch and a generator switch are to be monitored.

For monitoring purposes, the input sends a cyclic In operation telegram every 10 s. The inactive waiting time and the send delay time should each be set to at least 17 s. Every 30 seconds and when closing the contact, an ON telegram is sent, and when opening the contact, an OFF telegram is sent.

Incoming circuit breaker:	Minimum signal time 200 ms
Coupling switch:	Minimum signal time 200 ms
Generator switch:	Minimum signal time 200 ms

In the parameter window *General,* the settings appear as follows:



Sending and switching delay after bus voltage recovery in s [2...255]: 17

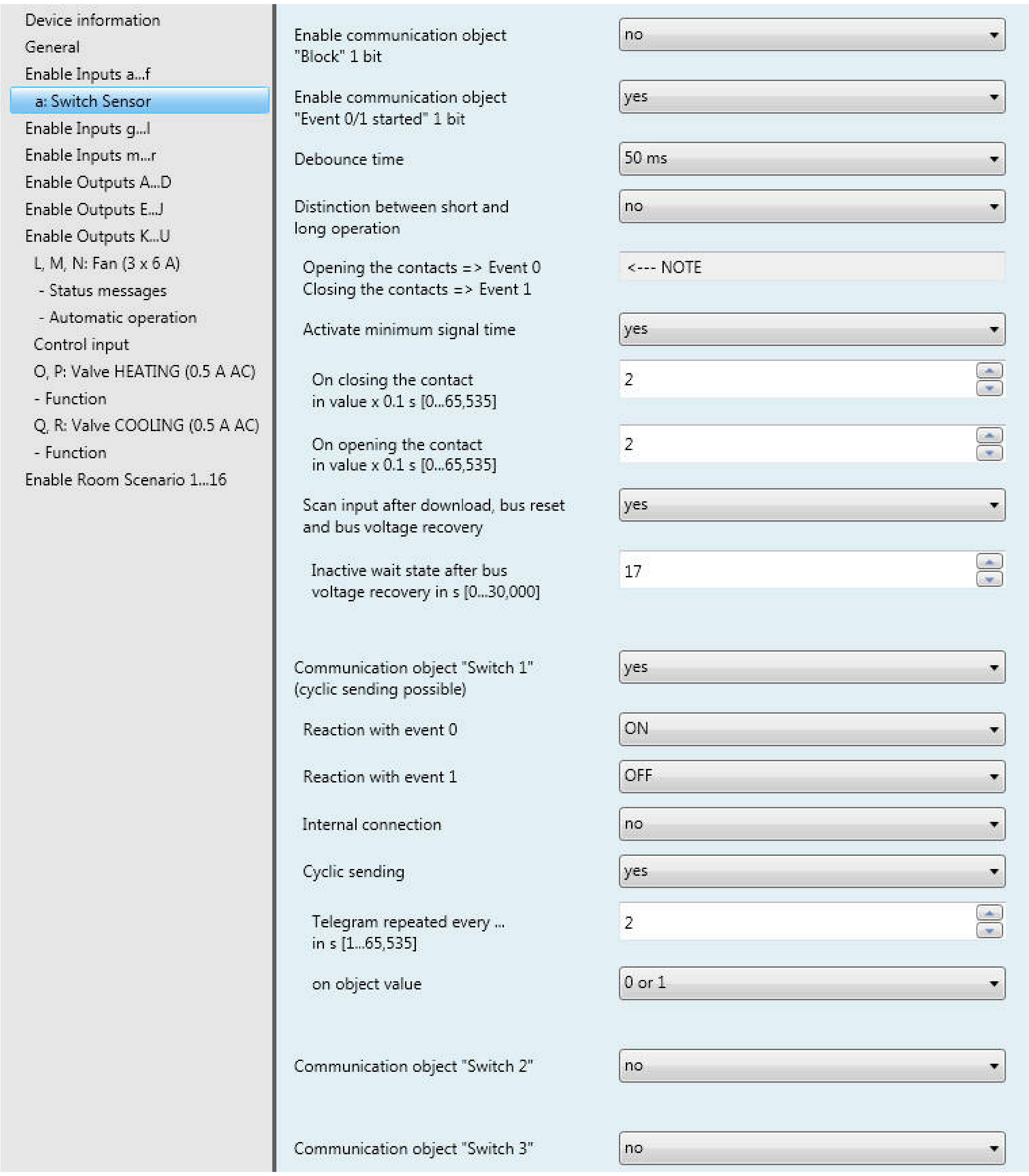
Rate of telegrams: not limited

Send communication object "in operation": send value 1 cyclically

Sending cycle time in s [1...65,535]: 10

Enable communication object "Request status values" 1 bit: no

In the parameter window *a: Switch Sensor*, the settings appear as follows:



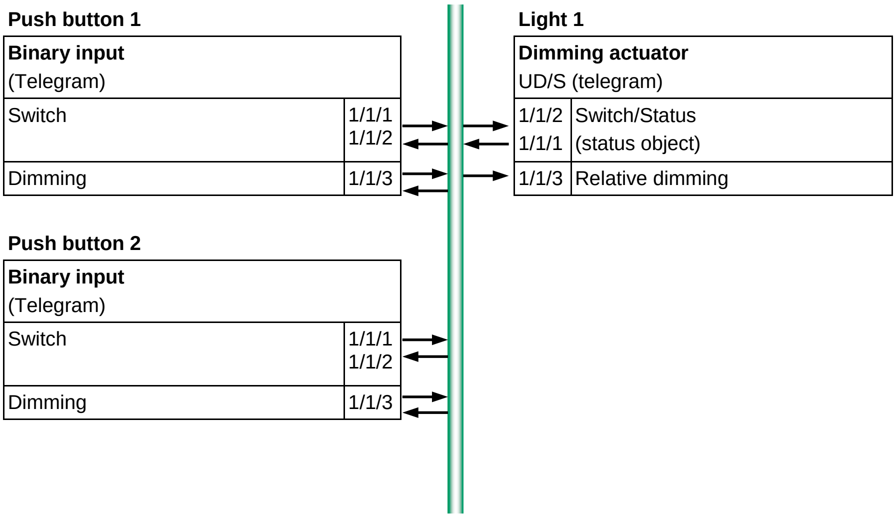
Enable communication object "Block" 1 bit	no
Enable communication object "Event 0/1 started" 1 bit	yes
Debounce time	50 ms
Distinction between short and long operation	no
Opening the contacts => Event 0 Closing the contacts => Event 1	<--- NOTE
Activate minimum signal time	yes
On closing the contact in value x 0.1 s [0...65,535]	2
On opening the contact in value x 0.1 s [0...65,535]	2
Scan input after download, bus reset and bus voltage recovery	yes
Inactive wait state after bus voltage recovery in s [0...30,000]	17
Communication object "Switch 1" (cyclic sending possible)	yes
Reaction with event 0	ON
Reaction with event 1	OFF
Internal connection	no
Cyclic sending	yes
Telegram repeated every ... in s [1...65,535]	2
on object value	0 or 1
Communication object "Switch 2"	no
Communication object "Switch 3"	no

4.1.3 Operation of the illumination (dimming lights)

1 push button operation

A short operation switches the lighting ON or OFF, a longer operation dims BRIGHTER or DARKER alternately (contrary to the last dimming process). Both buttons operate the same lighting.

Logical connection of the group addresses:



Push button 1

Binary input (Telegram)	
Switch	1/1/1 1/1/2
Dimming	1/1/3

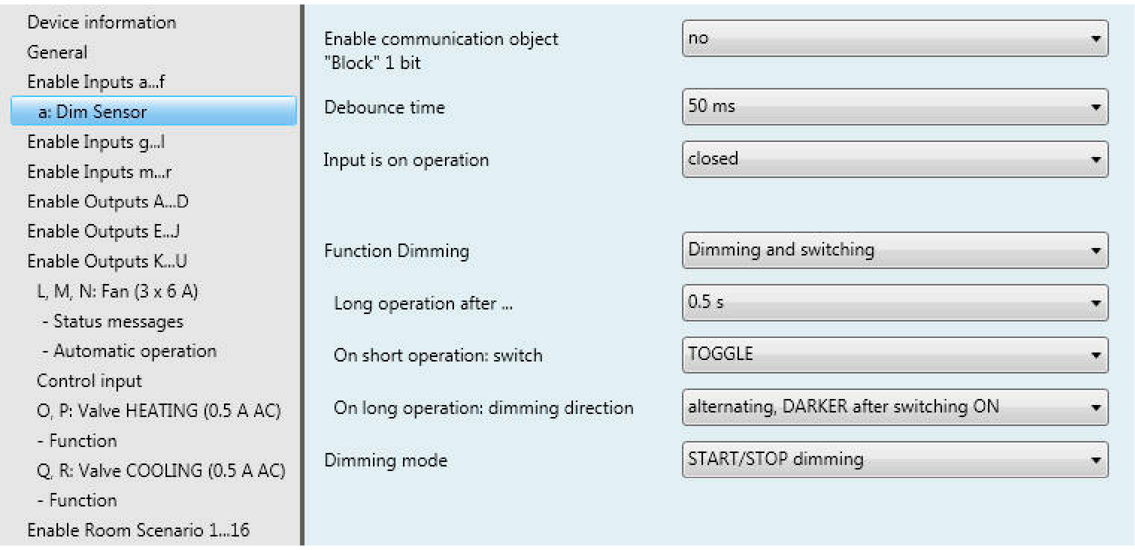
Light 1

Dimming actuator UD/S (telegram)	
1/1/2 1/1/1	Switch/Status (status object)
1/1/3	Relative dimming

Push button 2

Binary input (Telegram)	
Switch	1/1/1 1/1/2
Dimming	1/1/3

In parameter window *a: Dim Sensor*, the settings for button 1 and button 2 appear as follows:



Enable communication object "Block" 1 bit	no
Debounce time	50 ms
Input is on operation	closed
Function Dimming	Dimming and switching
Long operation after ...	0.5 s
On short operation: switch	TOGGLE
On long operation: dimming direction	alternating, DARKER after switching ON
Dimming mode	START/STOP dimming

2 push button operation

The same group address logical connection is also suitable for 2 button dimming. Modification of the parameters:

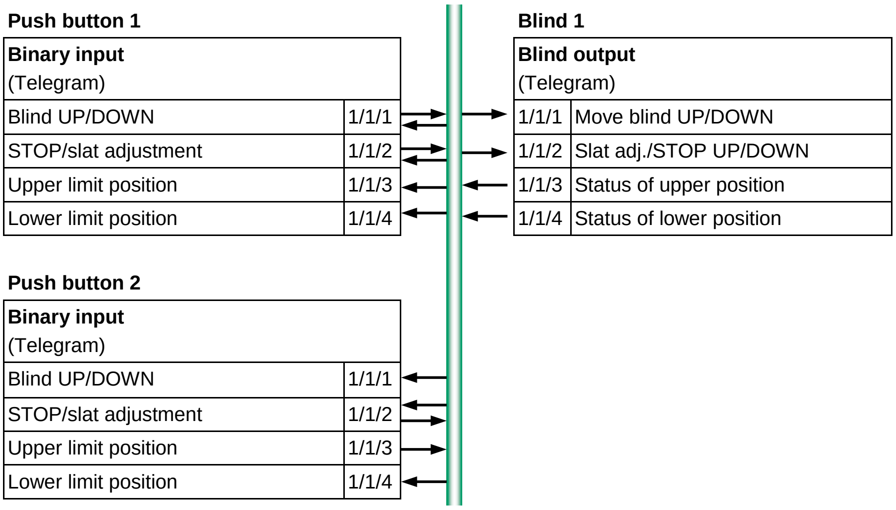
On short operation: Switch	= ON or OFF
On long operation: Dimming direction	= Dim BRIGHTER or dim DARKER

4.1.4 Operation of blinds

1 push button operation

Push button 1 and push button 2 operate blind 1 from different locations. With a short button operation, the blind moves (in the opposite direction to the last movement); a long operation offsets the slat.

Logical connection of the group addresses:



Push button 1

Binary input (Telegram)	
Blind UP/DOWN	1/1/1
STOP/slat adjustment	1/1/2
Upper limit position	1/1/3
Lower limit position	1/1/4

Blind 1

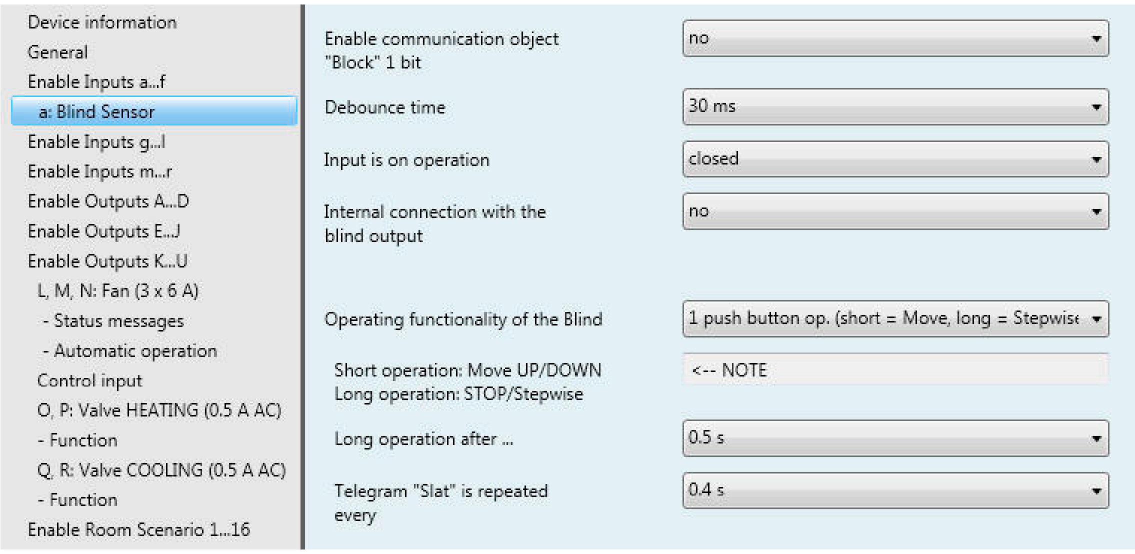
Blind output (Telegram)	
1/1/1	Move blind UP/DOWN
1/1/2	Slat adj./STOP UP/DOWN
1/1/3	Status of upper position
1/1/4	Status of lower position

Push button 2

Binary input (Telegram)	
Blind UP/DOWN	1/1/1
STOP/slat adjustment	1/1/2
Upper limit position	1/1/3
Lower limit position	1/1/4

* Feedback is signalled to the binary input via the communication objects *Upper limit position* and *Lower limit position* to indicate if the blind actuator is in the end position. If this is not possible 2 button operation is recommended.

In parameter window *a: Blind sensor*, the settings for button 1 and button 2 appear as follows:

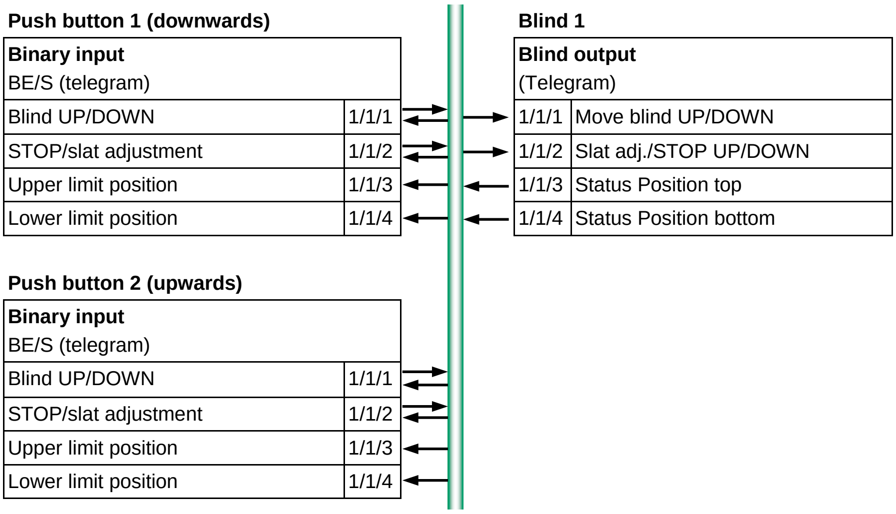


Enable communication object "Block" 1 bit	no
Debounce time	30 ms
Input is on operation	closed
Internal connection with the blind output	no
Operating functionality of the Blind	1 push button op. (short = Move, long = Stepwise
Short operation: Move UP/DOWN Long operation: STOP/Stepwise	<-- NOTE
Long operation after ...	0.5 s
Telegram "Slat" is repeated every	0.4 s

2 push button operation

Push button 1 and push button 2 operate blind 1 from one location. With long operation, the slat will moves DOWN (push button 1) or UP (push button 2). With short operation, the slat will CLOSE (push button 1) or OPEN (push button 2) by a step.

Logical connection of the group addresses:



Push button 1 (downwards)

Binary input BE/S (telegram)	
Blind UP/DOWN	1/1/1
STOP/slat adjustment	1/1/2
Upper limit position	1/1/3
Lower limit position	1/1/4

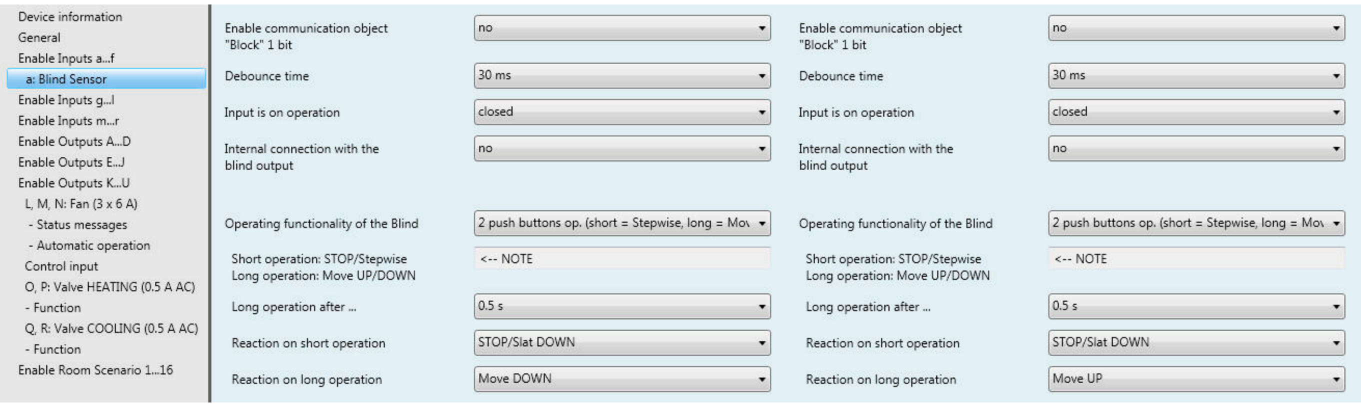
Blind 1

Blind output (Telegram)	
1/1/1	Move blind UP/DOWN
1/1/2	Slat adj./STOP UP/DOWN
1/1/3	Status Position top
1/1/4	Status Position bottom

Push button 2 (upwards)

Binary input BE/S (telegram)	
Blind UP/DOWN	1/1/1
STOP/slat adjustment	1/1/2
Upper limit position	1/1/3
Lower limit position	1/1/4

In parameter window *a: Blind sensor*, the settings for button 1 and button 2 appear as follows:



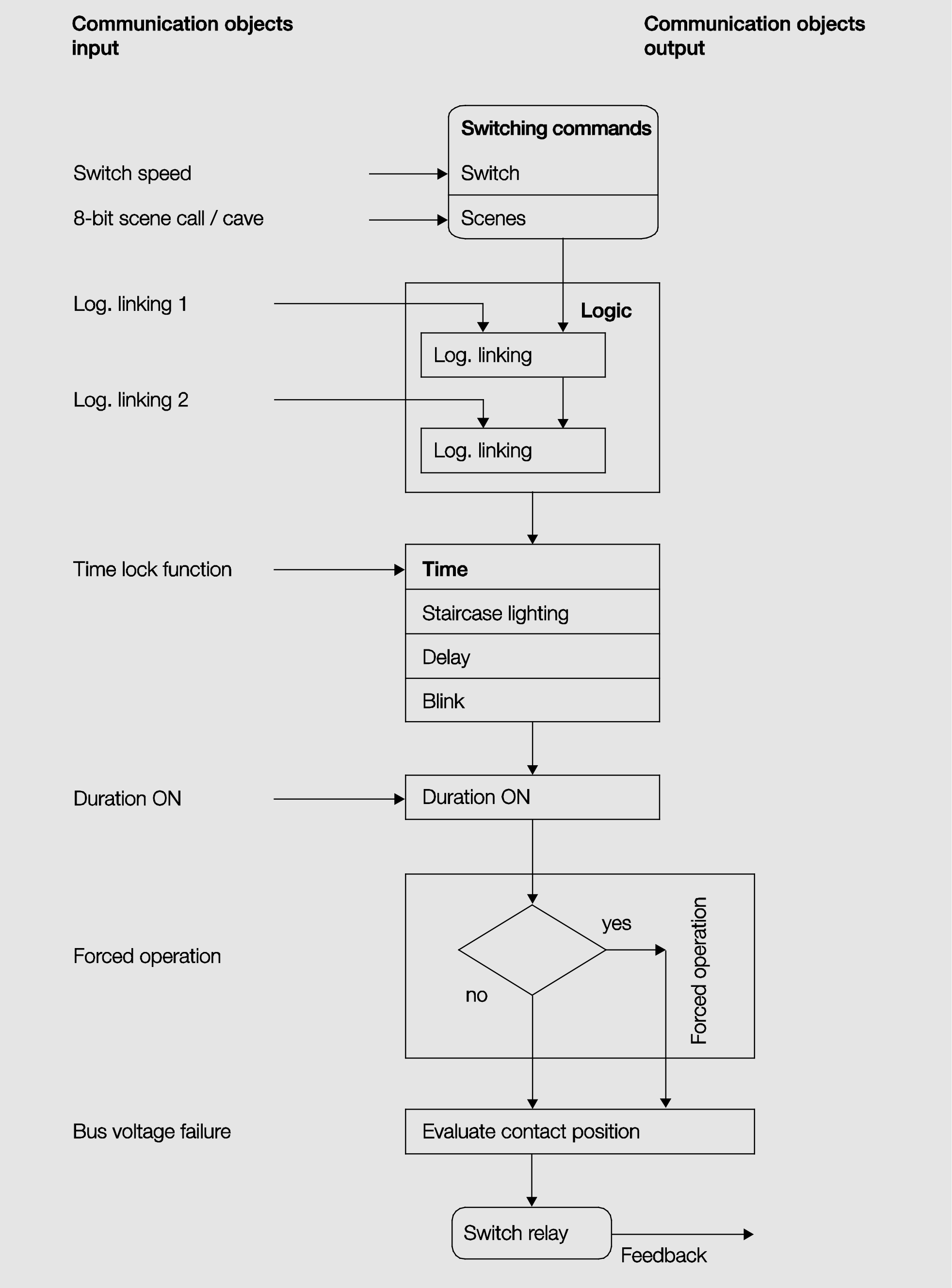
Enable communication object "Block" 1 bit	no	Enable communication object "Block" 1 bit	no
Debounce time	30 ms	Debounce time	30 ms
Input is on operation	closed	Input is on operation	closed
Internal connection with the blind output	no	Internal connection with the blind output	no
Operating functionality of the Blind	2 push buttons op. (short = Stepwise, long = Mov	Operating functionality of the Blind	2 push buttons op. (short = Stepwise, long = Mov
Short operation: STOP/Stepwise Long operation: Move UP/DOWN	<-- NOTE	Short operation: STOP/Stepwise Long operation: Move UP/DOWN	<-- NOTE
Long operation after ...	0.5 s	Long operation after ...	0.5 s
Reaction on short operation	STOP/Slat DOWN	Reaction on short operation	STOP/Slat DOWN
Reaction on long operation	Move DOWN	Reaction on long operation	Move UP

4.2 Output

In this chapter, the function charts and the application explanations for the outputs are explained.

4.2.1 Function chart

The following illustration indicates the sequence, in which the functions are processed. Communication objects, which lead to the same box, have the same priority and are processed in the sequence, in which the telegrams are received.



Note
If a telegram is received via the communication object *Switch*, this is connected to both logical objects if they are activated. The result of this action serves as the input signal for the function *Time*. If this is not blocked, a corresponding switch signal is generated, e.g. delay or flashing. Before the switch telegram of the relay is reached, the forced operation is checked and executed as a priority if necessary. Subsequently, the switching action is only dependent on the state of the bus voltage. The relay is switched if a switching action allows it.

4.2.2 Function *Time*

The function *Time* can be enabled (value 0) and disabled (value 1) via the bus (1 bit communication object *Disable function time*). The output operates without a delay as long as the function *Time* is disabled.

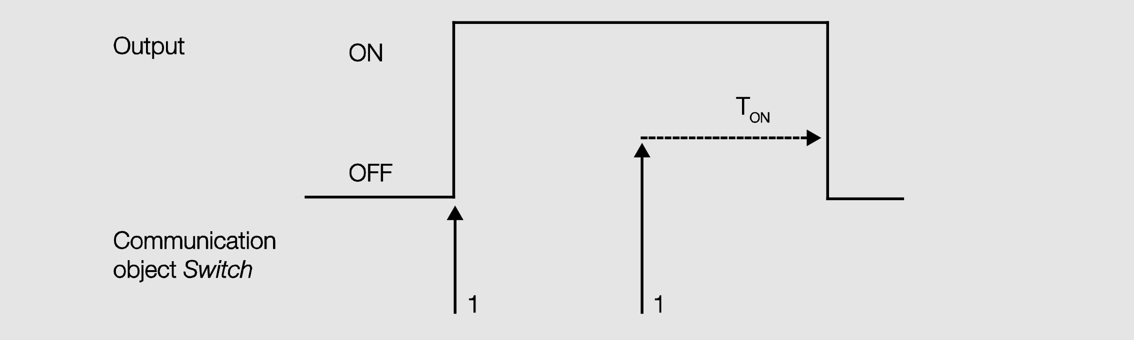
Different functions can be realised using the function *Time*:

- Staircase lighting
- Switching ON and OFF delay
- Flashing

You can switch, for example, between functions, e.g. function *Staircase lighting* (night time operation) and normal ON/OFF switch function (daytime operation).

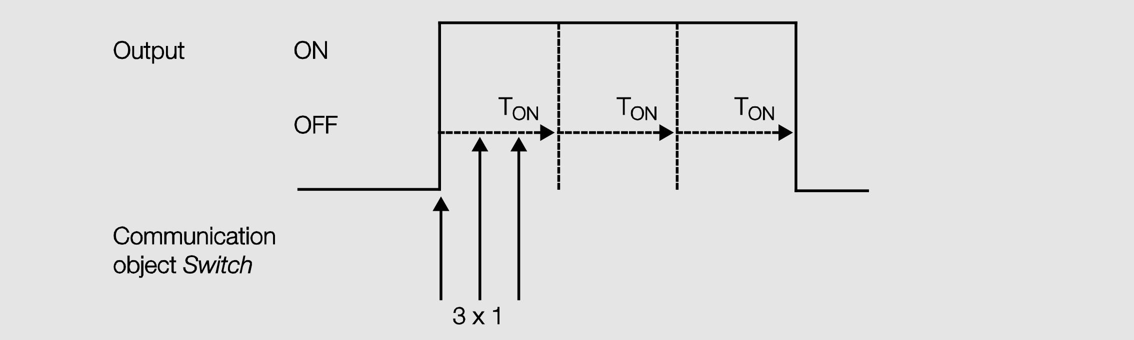
4.2.2.1 Staircase lighting

After the staircase lighting time T_{ON} the output switches off automatically. For every telegram with the value 1 the time restarts *Retrigger function,* except if the parameter *Extending staircase lighting by multiple operation ("pumping up")* on Parameter window A: Output - Time, page 74, is set to *no, no pump up possible.*



The response is the fundamental response of the staircase lighting function.

Via “pumping up” – actuation of the push button several times in succession – the user can adapt the staircase lighting to current needs. The maximum duration of the staircase lighting time can be set in the parameters.

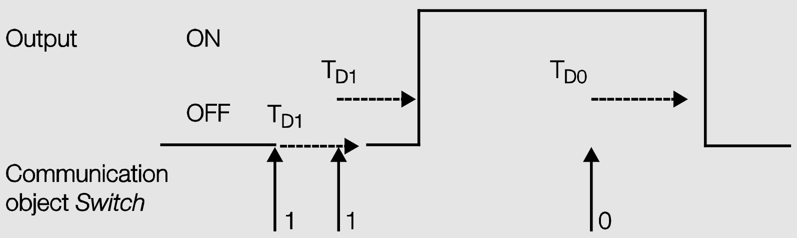


If the device receives a further ON telegram when the staircase lighting is switched on, the staircase lighting time is added to the remaining period.

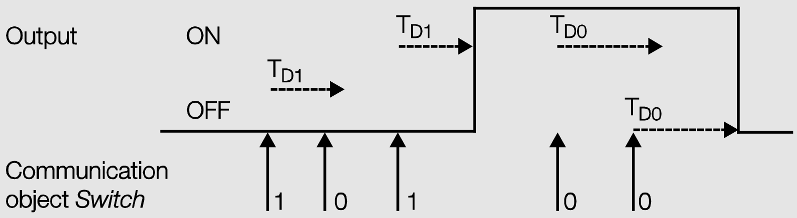
4.2.2.2 Switching ON and OFF delay

The switching ON and OFF delay delays switch on or switch off of the output.

Example 1:



Example 2:



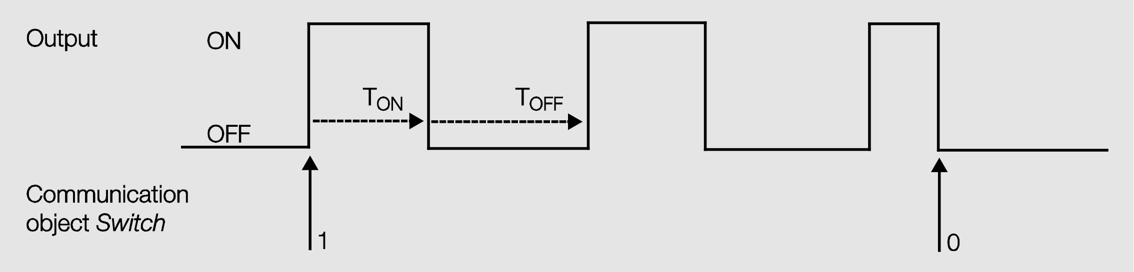
The delay time T_{D1} or T_{D0} starts after a switch telegram, and after it has timed out, the output executes the switch telegram.

If a new ON telegram with the value 1 is received during the switch on delay, the time of the switch on delay starts again. The same applies to switch off for the switch off delay. If a new OFF telegram with the value 0 is received during the switch off delay, the time of the switch off delay starts again.

Note
If the device receives an OFF telegram during the switch on delay T_{D1}, an ON telegram is ignored.

4.2.2.3 Flashing

The output can flash when the output is switched on and off periodically.

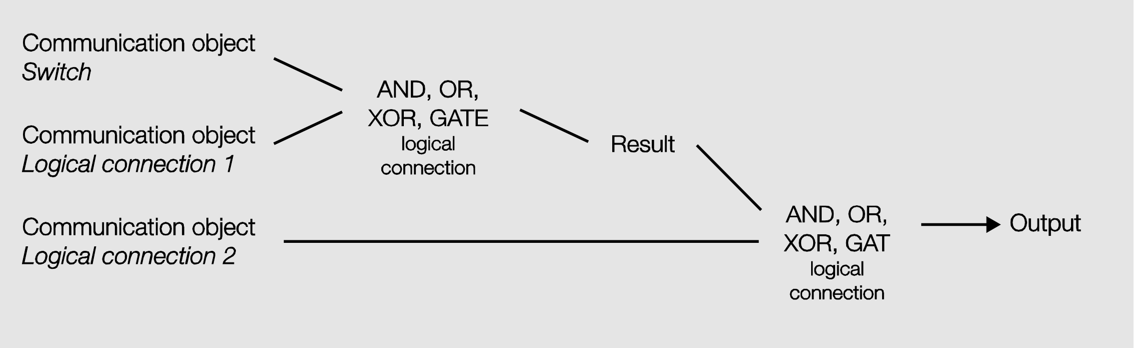


The switch on time (T_{ON}) and switch off time (T_{OFF}) during flashing can be programmed.

Note
The contact life of the contacts should be considered and can be found in the technical data. A limitation of the number of switching operations with the parameter *Number of impulses* may be useful. Furthermore, a delay in the switching sequence may possibly be caused by the limited availability of switching energy with very frequent switching. The possible number of switching operations should be considered.

4.2.3 Connection/logic

With the function *Connection/Logic* it is possible to connect the switching of the output with certain conditions. Two connection communication objects are available:



At first the communication object *Switch* is evaluated with the communication object *Logical connection 1*. The result is logically linked with the communication object *Logical connection 2*.

The following logic functions are possible:

Communication object values						Explanations
Logical function	**Switch**	**Connection 1**	**Result**	**Connection 2**	**Output**	
AND	0	0	0	0	0	The result is 1 if both input values are 1. The output is 1 if both input values are 1.
	0	1	0	1	0	
	1	0	0	0	0	
	1	1	1	1	1	
OR	0	0	0	0	0	The result is 1 if one of both input values is 1.
	0	1	1	1	1	
	1	0	1	0	1	
	1	1	1	1	1	
XOR	0	0	0	0	0	The result is 1 when both input values have a different value.
	0	1	1	1	0	
	1	0	1	0	1	
	1	1	0	1	1	
GATE	0	closed		closed		The communication object *Switch* is only allowed through if the GATE (connection) is open. Otherwise the receipt of the communication object *Switch* is ignored.
	0	open	0	open	0	
	1	closed		closed		
	1	open	1	open	1	

The logic function is always re-calculated when a communication object value is received.

Gate function example

- The GATE logic is programmed so that a disable is implemented as soon as the communication object *Logical connection x* receives a 0.
- The output of the logical connection is 0.
- The communication object *Logical connection 1* receives a 0, i.e. the GATE blocks.
- The communication object *Switch* receives 0, 1, 0, 1. The output of the logic operation always remains 0.
- The communication object *Logical connection x* receives a 1, i.e. the GATE is enabled if it is set in the parameters.
- The output of the logical connection is recalculated.

Note

The values of the communication objects *Logical connection 1/2* are stored at bus voltage failure. The values are set again after a bus voltage recovery.

If values are not assigned for communication objects *Logical connection 1/2*, they will be deactivated.

With a reset via the bus, the values of the communication objects *Logical connection 1/2* remain unchanged.

Note

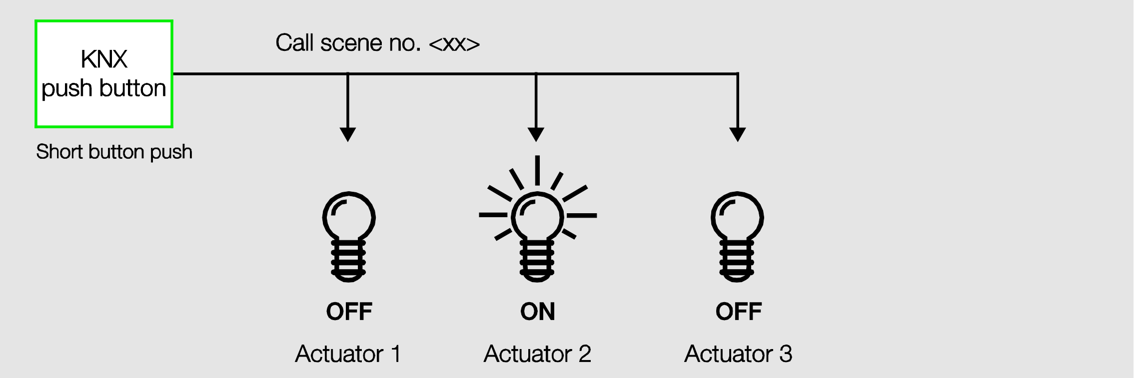
If telegrams are received on the communication object *Switch* during the block, they will not be stored.

For this reason, the output or the event remain unchanged when the GATE is enabled.

The output switches if the GATE is enabled and a telegram is received on the communication object *Switch*.

4.2.4 Function *Scene*

With the scene using 8 bits, the push button issues the Room Master with the instruction to call a scene. The scene is not stored in the push button but rather in the Room Master.



A scene number is sent with the telegram value which must correspond with the scene number in the parameters of the Room Master.

Up to 64 different scenes are managed via a single group address. The scene telegram contains the call or store functions of a scene.

In the following, the scene function is described which controls multiple KNX devices.

With the scene it is possible to retrieve one of 64 scenes or to connect multiple KNX devices in a scene. The scene can be retrieved or stored using a single telegram. It is a prerequisite that all the operating devices are parameterized with the same scene number.

Each KNX device involved receives the scene telegram and independently controls the scenes values. Using the Room Master, for example, the outputs are switched on or off, the blind moves to a determine position.

Up to 64 different scenes can be managed via a single KNX group address. The following information is contained in a scene telegram:

- Number of the scene (1…64)
- Call scene / store scene

For further information see: Code table scene (8 bit), page 320

Benefits
The function *Scene* with ABB i-bus® devices offers the following decisive advantage: All settings to be undertaken in a scene are stored in the device. Therefore, they must not be sent via the KNX when a scene is called, and only a figure value which has been assigned to this scene is necessary. This considerably reduces the load on the bus and prevents unnecessary telegram traffic on the KNX.

Note
The scene numbering 1…64 is retrieved via the KNX with a telegram number 0 to 63. For corresponding scene coding see Code table scene (8 bit), page 320.

4.3 Output K

In this chapter, the drive types and the application explanations for output K are explained.

4.3.1 Drive types

Output K can control two drive types, blinds or shutters:

1. **Blind**

The drive moves UP/DOWN, the blind moves UP/DOWN and the slat adjustment can OPEN/CLOSE.

2. **Shutter**

The drive moves the blinds UP and DOWN. In contrast to the blind drive type, there are no communication objects available for control of the slats.

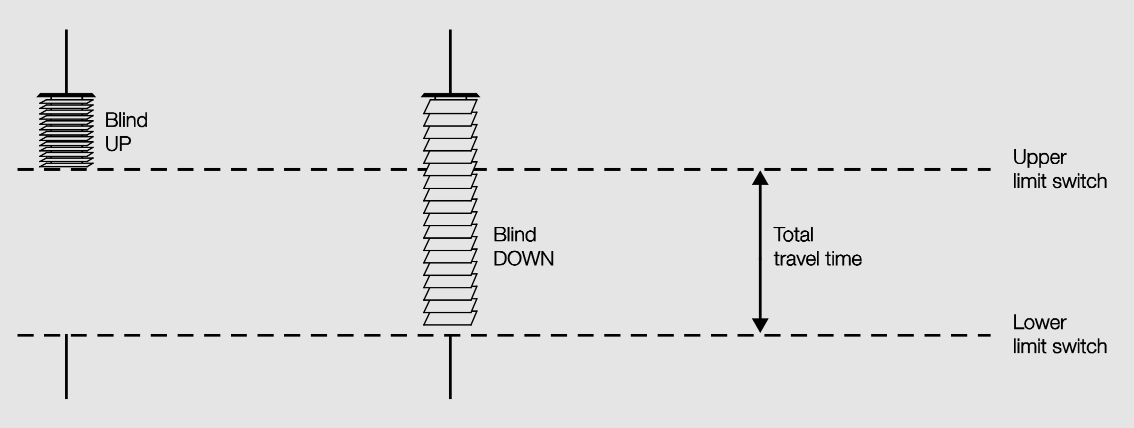
4.3.2 General functions

The general functions of the shutters and blinds do not differentiate from one another. For this reason they are explained in the following based on the blind settings.

4.3.2.1 Travel times

Total travel time

The total travel time is the time that a blind requires for a movement from fully upwards to fully downwards. Should the Room Master receive an UP or DOWN movement telegram, the corresponding output is switched and the blind is moved in the appropriate direction.



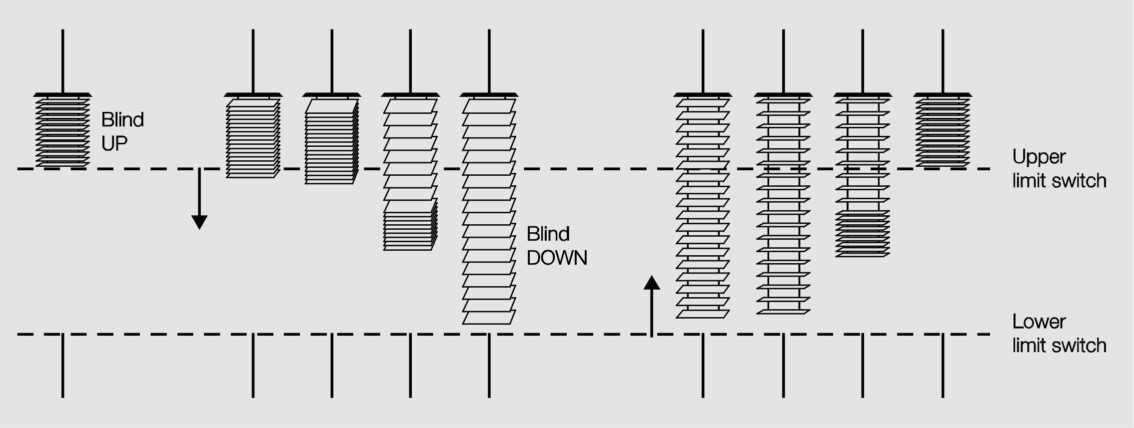
The blind is moved in this direction until the Room Master receives a STOP telegram or the upper or lower limit positions are reached and the motor is switched off by the end limit switch.

When the motor is switched off by an end limit switch, the corresponding contact on the Room Master remains closed until the parameterized total travel time has timed out including any programmed “overflow time”. Now there is no longer voltage on the output.

Note
With the assistance of the total travel time the current position of the blind is determined in on-going operation. For this reason, the total travel time should be measured and programmed as accurately as possible, particularly when the functions *move to position* or *automatic control* are used. Only so is it possible to exactly calculate the current position of the blind.

Duration of slat adjustment

After the blind moves upwards, the slats are open (horizontal slat position). If the shutter is moved downwards, the slat is initially closed (slat position vertical) and the shutter moves downwards. If the shutter is now once again moved upwards, the slats will once again be opened (slat position horizontal) and will then be moved upwards.



Short movement action can be undertaken by the Room Master in order to purposely adjust the slat angle. Thus the blind is moved for a brief programmed time – the so-called *duration of slat adjustment* – in the required direction and in this way undertakes a slat adjustment (STEP telegram). The smaller the *duration of slat adjustment* selected, the more accurate the adjustment of the slat angle.

Measurement of the total slat travel time

The total travel time of the slat from opened (horizontal slat position) to closed (vertical slat position) can simply be determined in this way: Open the slat fully. Then count how many slat adjustments are necessary to completely close the slats. The total slat adjustment travel time results from the number of slat adjustments multiplied by the switch-on duration. This value is entered as a parameter.

Reversing time, pause between two movement actions

To ensure that the shutter drive is not damaged by a sudden change in direction, the output contacts are electrically disconnected for the duration of the programmed reversing time and only then are the output contacts for the required direction of movement switched.

Important
The technical data of the drive manufacturer must be observed when programming the reversing time!

Note
The output contacts for the direction of movement UP and DOWN are configured to be electrically mutually exclusive, thus ensuring that voltage cannot be applied simultaneously to both contacts that would damage or destroy the drive.

4.3.2.2 Safety

At the activation of Safety you can set in the Room Master if the shutter should move UP, DOWN, STOP or remain unchanged.

When Safety is rescinded, the blind is moved to the parameterized position.

The Safety function is suitable for example, to move shutters and blinds up and down when windows have to be cleaned.

⚠ **Danger**
Please note that safety is not sufficient to protect the cleaning personnel from preventing the shutters from moving downwards. Adequate protection should be guaranteed by another method.

4.3.2.3 Determination of the current position

Reference movement

The Room Master permanently determines the current position of the shutter as well as the position of the shutter angle based on the duration of the individual movement actions. Over extended periods slight inaccuracies can occur in the determination of the position for different reasons. For this reason the Room Master uses the upper and lower end positions for unique determination of the current position of the blind. Every time when the blind is in the upper end position, the position is updated in the memory of the Room Master.

If the end positions are not reached in normal operation, a reference movement which is fully upwards or fully downwards can be performed via a telegram. After a reference movement the blind remains in the reference position or moves back to the stored position as specified in the programming.

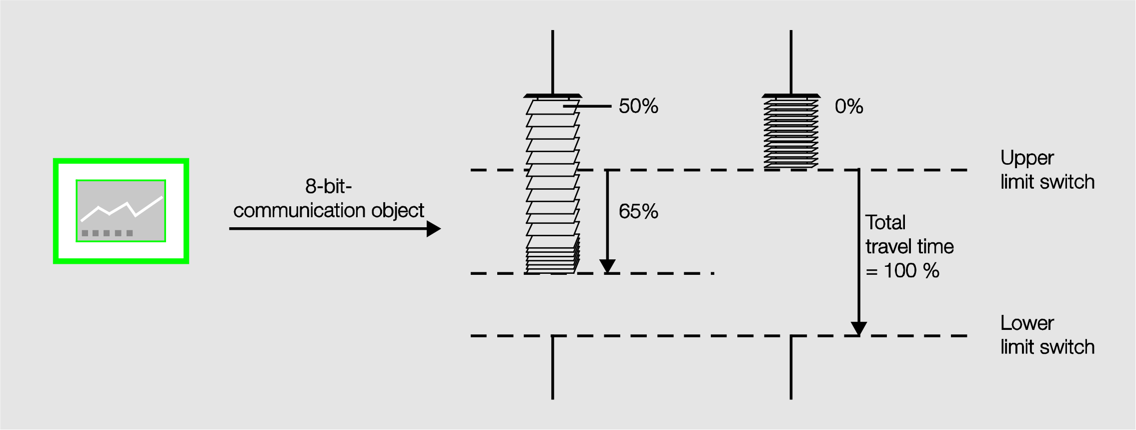
Direct and indirect movement to the position

With the parameter *Move to position* you can set if the blind moves from its current position either directly to the target position with the *move to position telegram*, or if each movement should perform a reference movement indirectly via a start position (upper end position or lower end position) to the target position.

4.3.2.4 Move to position in % [0…100]

The blind can be moved into any position via an 8 bit value. In the *Blind* operating mode, the slats can also be positioned into any angle via an 8 bit value.

In this way, it can be decided for each movement telegram which position the blind should move to. For example, it is possible to set the position from a display unit or a visualisation terminal directly using a value.



4.3.3 Automatic control

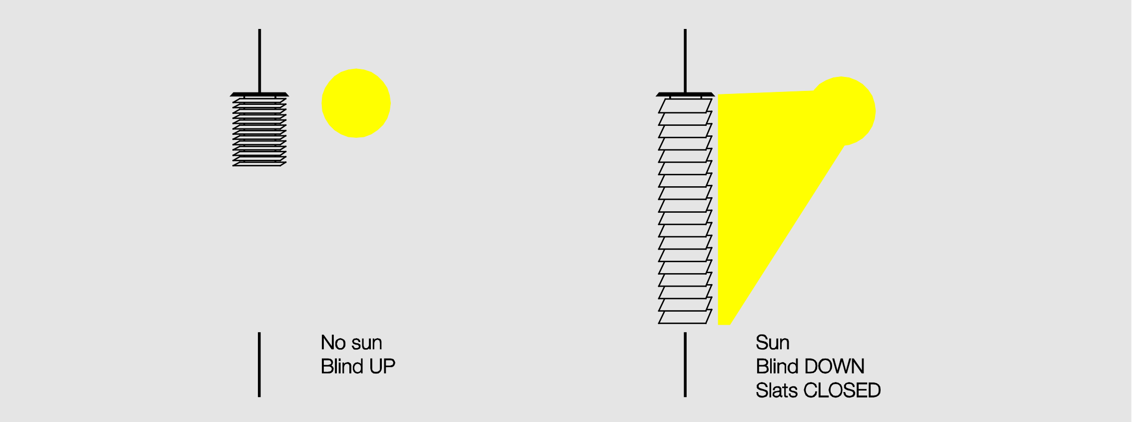
Using the automatic control, it is possible to realise a comfortable automatic sun screening system as well as to feedback the status of the blind.

4.3.3.1 Automatic sun protection

Function

Together with other KNX components, e.g. JSB/S, a very comfortable automatic sun protection control can be established with the RM/S.

For example, the blinds can be moved upwards if the sunshine is very weak or if the window concerned is in the shadows. As much light as possible is thereby let into the room without any disruptive direct sunlight being taken into account. If there is blazing sunshine on the window however, the blind is lowered and the slats are closed to the extent that direct sunlight cannot penetrate the room. The residual opening in the blinds lets in a sufficient level of diffuse light into the room.



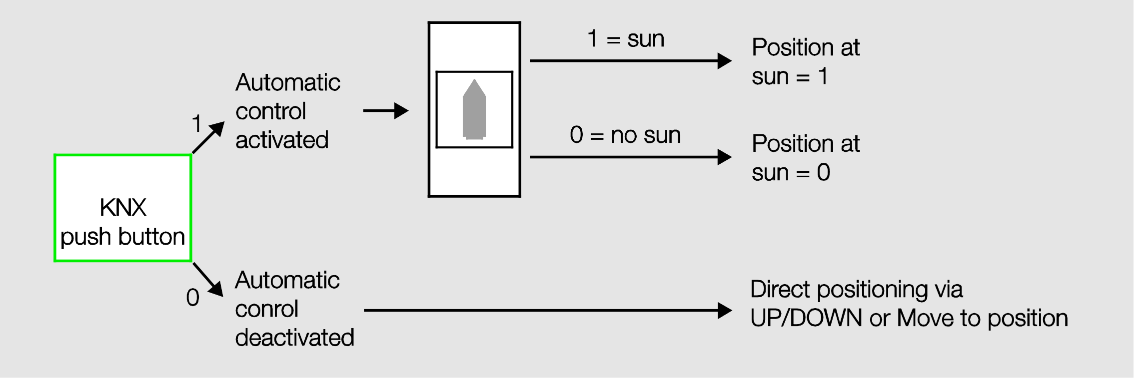
When using special directional slats, the direct daylight into the room is guided, so that the no disruptive direct light penetrates the room but at the same time optimum use is made of the existing natural light.

Setting up a simple automatic sun protection system

Two further components are required in addition to the Room Master and switch sensor in order to set up a simple automatic sun protection system: an activation option for the user, e.g. a further switch sensor or the second rocker of the UP/DOWN touch sensor and a brightness sensor.

With the help of the second switch sensor, the user of the room can specify whether he wishes to use the automatic sun protection or whether he would rather control the shutters manually. If the automatic sun protection is activated via a switch sensor, the blind moves automatically until either the automatic sun protection is deactivated via the same switch sensor or the user issues a direct movement telegram, e.g. UP/DOWN or move into position and the automatic function is thus also deactivated.

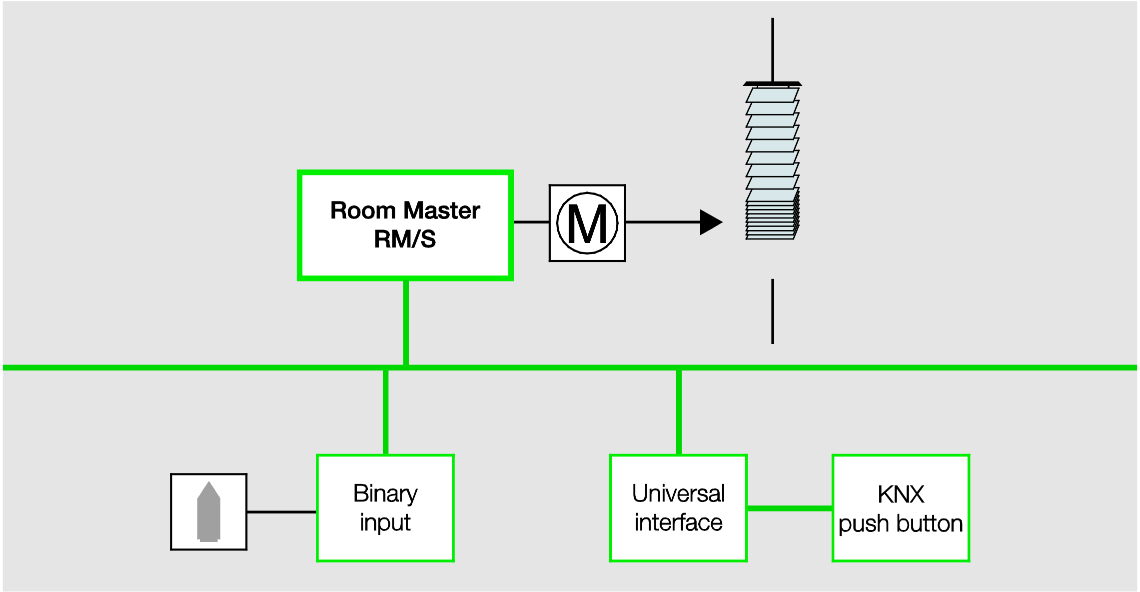
The Room Master receives the information via the brightness sensor as to whether there is direct sunlight on the window or the facade. Once the adjustable delay period has elapsed, the Room Master positions the blind according to the set *Position if sun = 1 (sun shining)* or *Position if sun = 0 (sun not shining).*



Planning a simple automatic sun protection system

To set up an automatic sun protection system with tracking of the sun's position the following KNX components are required:

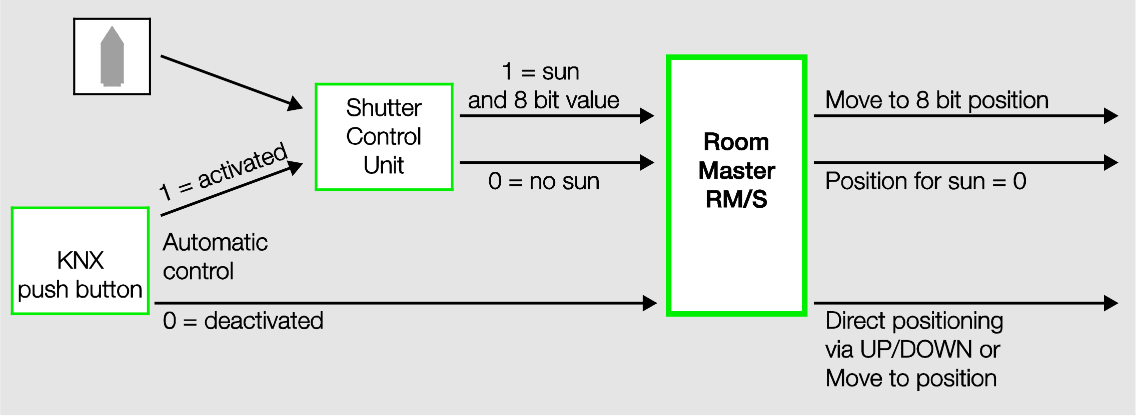
- Room Master
- KNX switch sensor or universal interface with push button, or direct via the binary input of the Room Master
- Brightness sensor



Design of an automatic sun protection system with tracking of the sun's position

To set up an automatic sun protection system with tracking of the sun's position, an additional Shutter Control Unit JSB/S 1.1 is required.

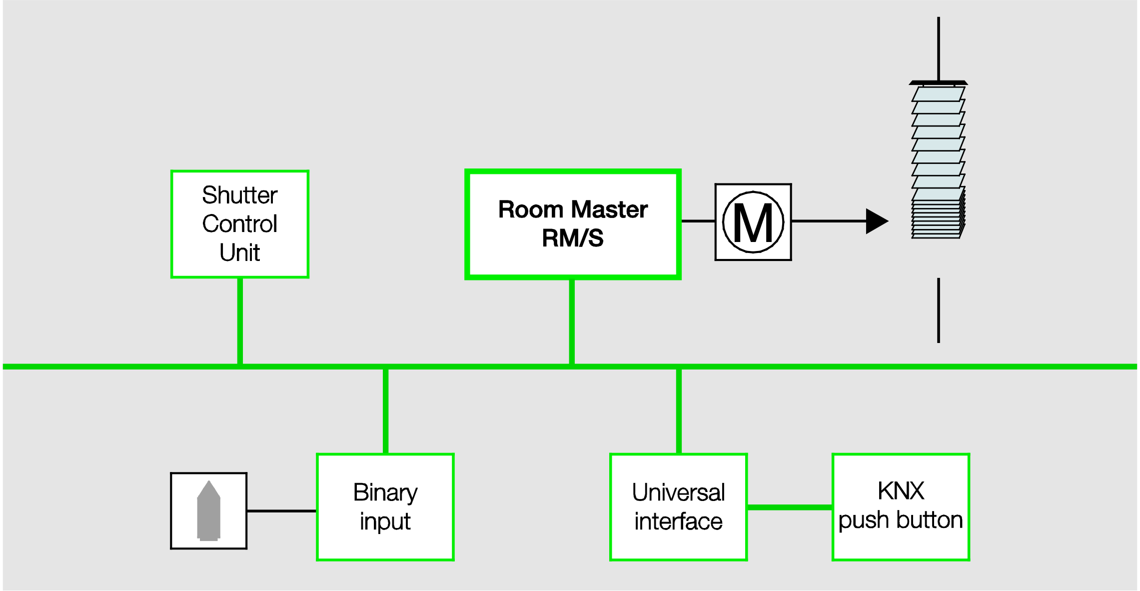
The current position of the sun is continually calculated in the shutter control unit. The blind is moved via an 8 bit value into the optimum position to deflect direct sunshine but to let through as much diffuse light as possible. The influence of shadows e.g. the buildings opposite can also be taken into account in the shutter control unit.



Planning a simple automatic sun protection system with tracking of the sun's position

The following KNX components are required for setting up an automatic sun protection system including automatic sun protection with tracking of the sun's position:

- Room Master
- KNX switch sensor or universal interface with push button, or direct via the binary input of the Room Master brightness sensor
- Blind control unit



The current position of the sun is calculated based on the time of day. The Shutter Control Unit can be operated as an independent clock, as a master clock or as a slave clock on the KNX. Several shutter control units can also be synchronised together. If the Shutter Control Unit is operated as an independent clock or as a master clock, no further time switches are required.

The Shutter Control Unit can likewise be operated as a slave clock if for example a master clock is present in the installation. A time switch which can send the time and date on the KNX must be used as a master clock.

4.3.3.2 Status feedback

Position in [0…100]

The Room Master can feedback the position of the blind on the bus as an 8 bit value via the same communication object used to call the position. The corresponding group address should be defined in the ETS as the “sending group address”.

4.4 Heating, ventilation, climate control with Fan Coil units

The Room Master RM/S controls single-phase fans, blowers or Fan Coil units. Three speed single phase fans with step or changeover control are possible.

Special fan properties such as switchover pauses, dwell times and a start-up phase can be parameterized. Up to two input variables for heating and cooling signals, e.g. for a thermostat, are available.

The separate fan and valve parameterization in the RM/S provides a maximum in flexibility and very many combination possibilities for various applications in the heating, ventilation and air-conditioning (HVAC) field.

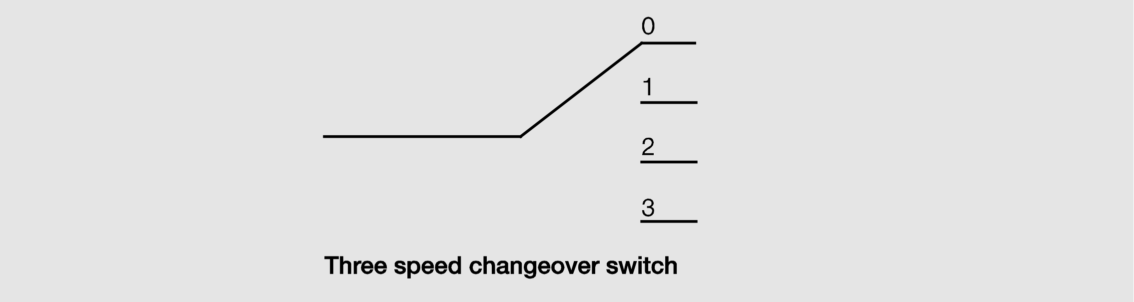
4.4.1 Terms

Fan Coil unit is a term used for a fan convector or blower convection unit.

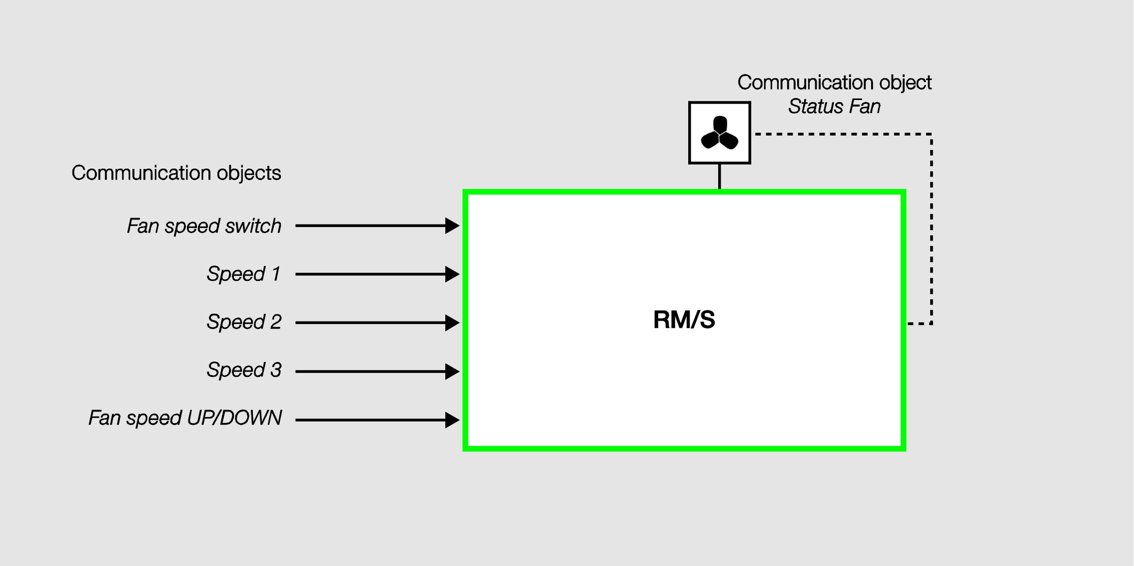
The Fan Coil unit is connected to a central heating and cooling water supply and generates the desired temperature for the room. A room can be heated, cooled and ventilated using a Fan Coil unit.

4.4.2 Fan operation

In fan operation a single phase fan, blower or convector can be controlled. In combination with a valve control 2, 3 or 4 pipe system can be implemented. The fans are controlled via a 3 stage speed controller. For this purpose, 3 windings are tapped off of the fan motor. The speed which results is dependent on the tap-off. It must be ensured that two contacts are not switched on simultaneously with a changeover control. For control purposes, at least one 3 stage changeover switch with zero position is usually used. This switch is mapped with a group of outputs in the Room Master.



The control of the RM/S is implemented in accordance with the following schematic principle:



With the three communication objects *Fan speed x switch (x = 1, 2, or 3)* that are independent of each other, the fan stages are controlled via the outputs of the Room Master.

Alternatively, the fan control can be implemented via a 1 byte communication object *Switch speed* or via the communication object *Fan speed UP/DOWN*.

Some ventilation controls require an additional central switch on mechanism (main switch) in addition to the stage switch. This can be implemented with a further output of the Room Master. The output must be linked to the communication object *Status Fan ON/OFF*. Hereby, the main switch is switched on if at least one fan speed is set. If the fan is OFF (*Status Fan ON/OFF = 0*), the main switch is also switched off.

4.4.2.1 Fan in a two-way connection

Control of a fan is usually implemented with a changeover switch.

The following control table results for a three-stage fan, which simulates the RM/S with a group of switch outputs:

	Output L	Output M	Output N
OFF	0	0	0
Fan speed 1	1	0	0
Fan speed 2	0	1	0
Fan speed 3	0	0	1

4.4.2.2 Fan with speed switching

In some cases, the fan is controlled via a step switch. The following control table results for a three-speed fan, which simulates the RM/S with its outputs:

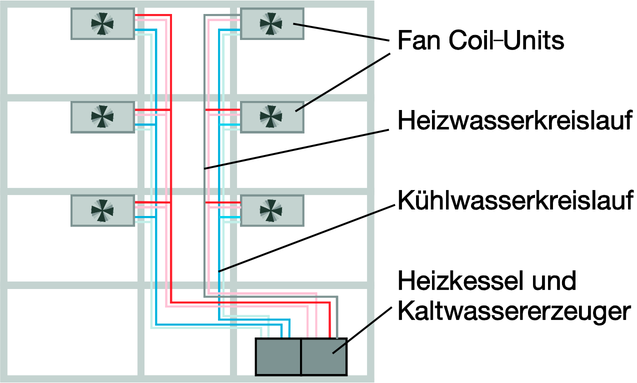
	Output L	Output M	Output N
OFF	0	0	0
Fan speed 1	1	0	0
Fan speed 2	1	1	0
Fan speed 3	1	1	1

The step switch cannot be switched on rapidly. If for example, fan speed 3 is to be switched on from the OFF state, fan speeds 1 and 2 must be controlled with the associated dwell times first.

4.4.3 Configuration of a HVAC system with Fan Coil units

A HVAC system with Fan Coil units (HVAC = heating, ventilation, air-conditioning) consists of a central heating and cooling water system. The Fan Coil units are installed in rooms and directly connected to the heating and cooling circuit.

4.4.4 Design of a Fan Coil unit

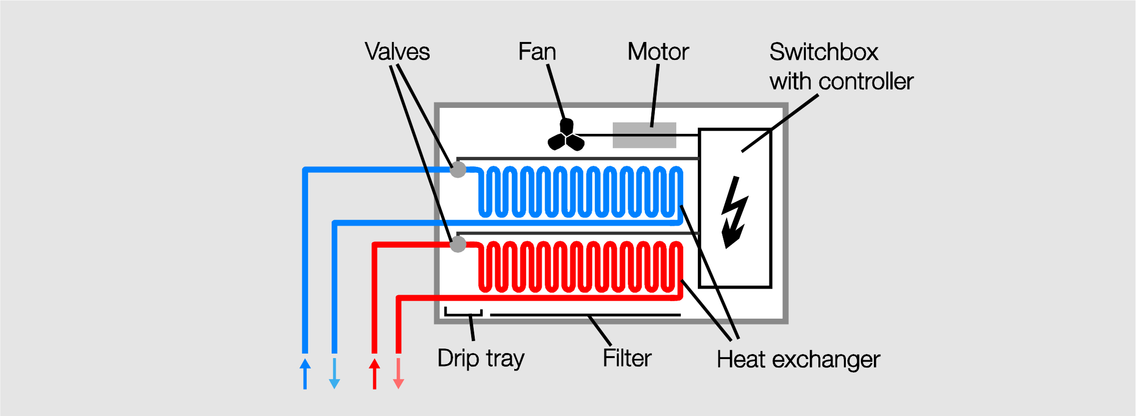


The Fan Coil unit consists of a fan or blower-convector and one or two heat exchangers, which emit heating or cooling power to the room.

If only one heat exchanger and one heating or cooling circuit are available, you have a 2 pipe system.

If two heat exchangers with two separate heating and cooling circuits are in use, you have a 4 pipe system. The Room Master directly controls the fan.

The heat exchanger and the fan are the most important components of a Fan Coil unit. Heating or cooling water flows in the heat exchanger depending on the desired room temperature. The flow of water through the heat exchanger is controlled via the valves.

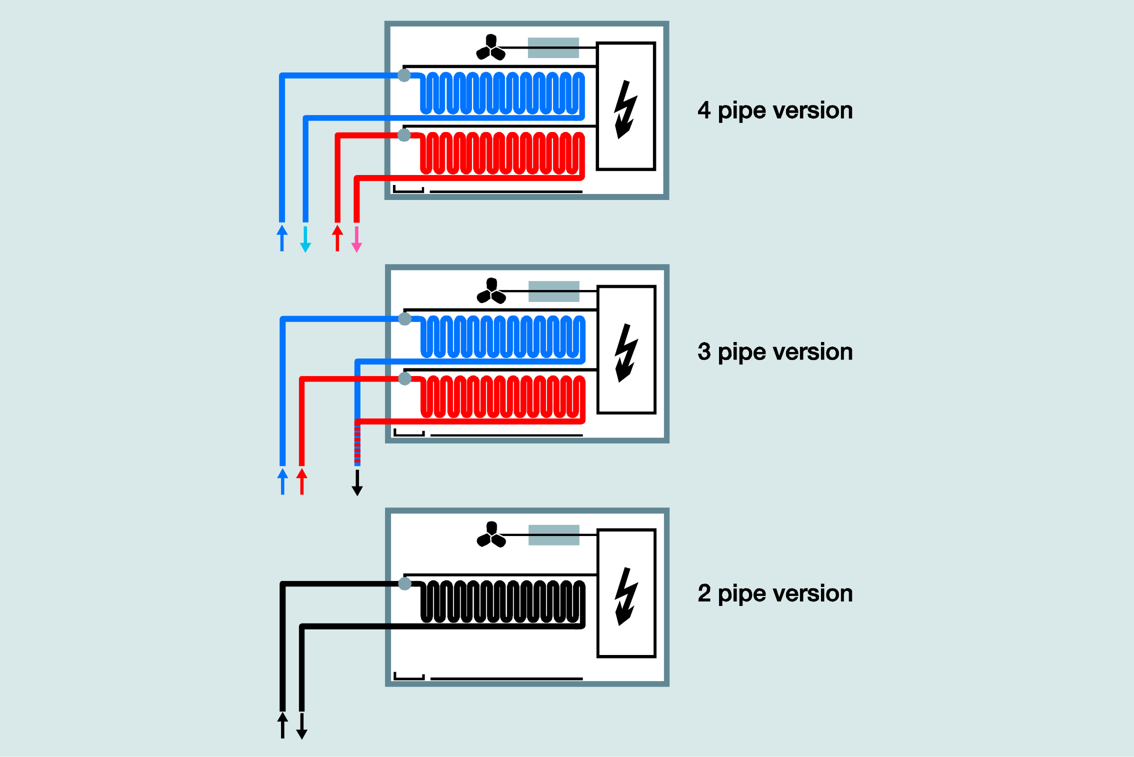


The fan blows air past the heat exchanger and into the room through a filter. The air is heated or cooled in the heat exchangers and thus generates the desired room temperature. The fan is driven by a motor. The motor and the valves are controlled by a Room Master.

The water condensation, which results during cooling, collects in a condensation water trough (drip tray).

4.4.5 Pipe systems

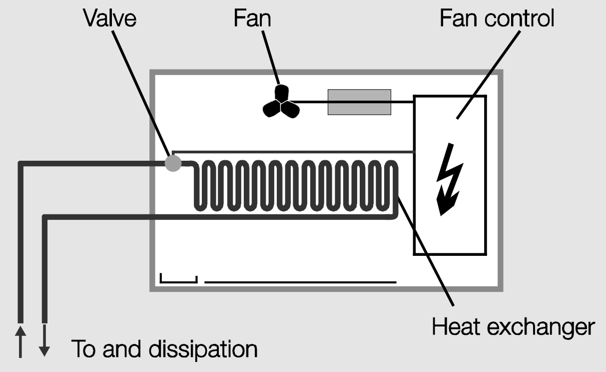
A Fan Coil unit can be configured as a 4, 3 or 2 pipe system.



4.4.5.1 2 pipe system, configuration

The 2 pipe system consists of just a single water circuit, which is heated or cooled alternately to suit the season. In a 2 pipe Fan Coil unit, there is only one heat exchanger with a valve.

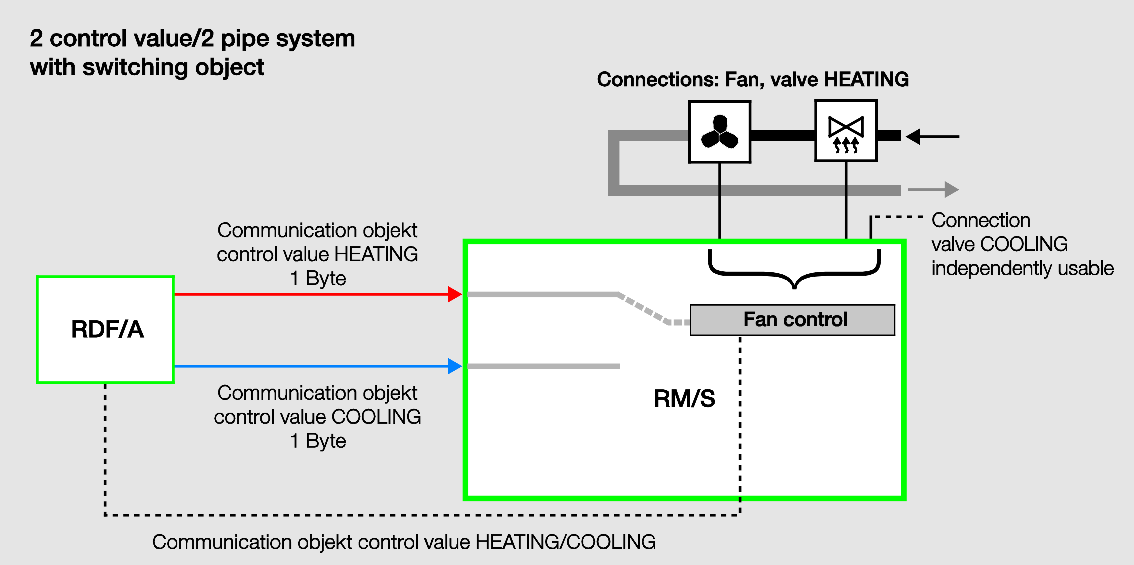
2 pipe system configuration



Note
In some HVAC systems, cooling is undertaken exclusively with a 2 pipe Fan Coil unit. The heating function is undertaken by a conventional heater or an electrical heater.

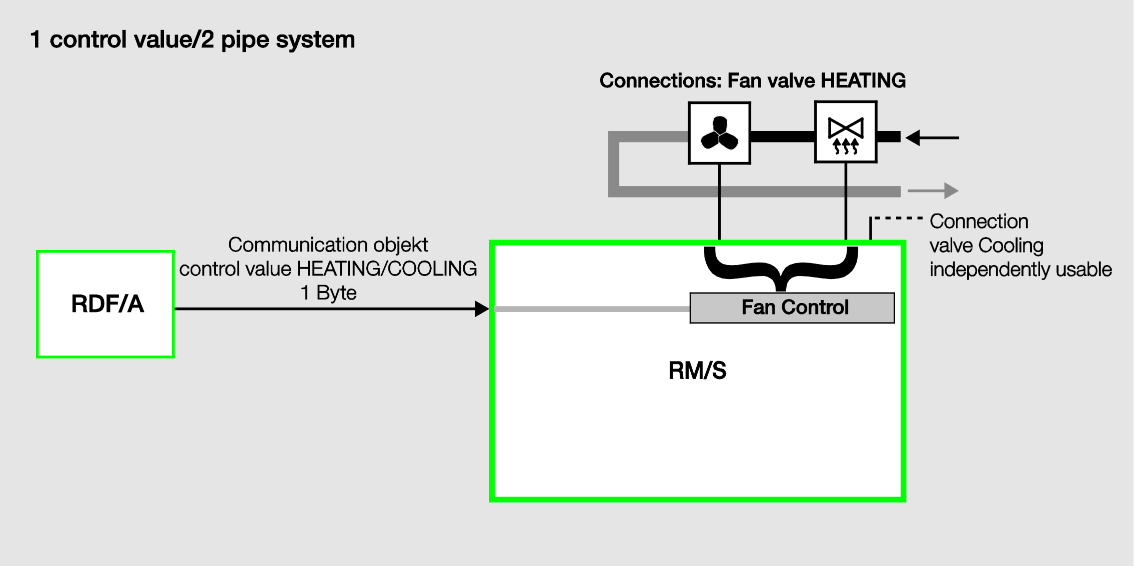
4.4.5.2 2 pipe system HEATING and COOLING

In this system, only one heat exchanger is available for HEATING and COOLING. Depending on the weather, warm or cold water is supplied centrally to the pipe system (2 pipes). The Room Master or the thermostat is informed if warm or cold water is currently flowing through the system. Depending on this setting, both control values act on just a single valve. The thermostat decides which control value (HEATING/COOLING) is actively sent. The RM/S controls the fan speed and only one valve.



4.4.5.3 2 pipe system HEATING or COOLING

In this system, one heat exchanger is available for HEATING or COOLING. The control value for HEATING or COOLING is provided by a thermostat. Only warm or only cold water is supplied centrally to the pipe system (2 pipes). Depending on this setting, one control value acts on one valve. The thermostat sends the control value (HEATING/COOLING), and the RM/S controls the fan speed and the valve.

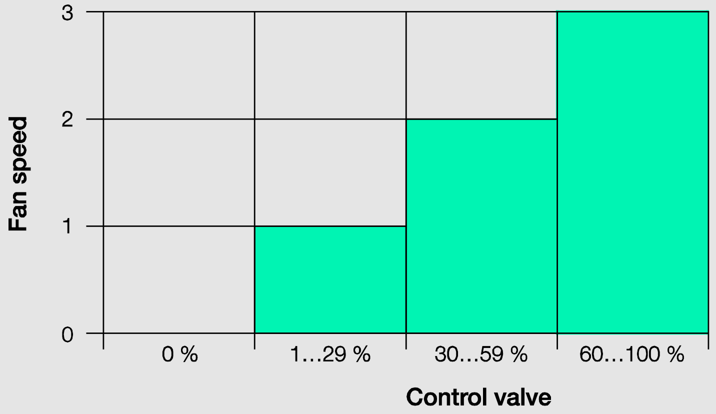


Note
Both 2 pipe systems can be established using a 3 speed fan or blower. Depending on the control value (1 byte or 1 bit), which is sent from a thermostat, the Room Master determines the corresponding fan speeds via programmable threshold values.

For a continuous control value (1 byte; 0…100 %), the threshold values for the fan speeds can be defined for example as follows:

Example

Three speed fan:	Switch thresholds in the RM/S:
Fan speed 1: 1…29 %	Off -> Fan speed 1 = 1%
Fan speed 2: 30…59%	Fan speed 1 -> 2 = 30%
Fan speed 3: 60…100%	Fan speed 2 -> 3 = 60%

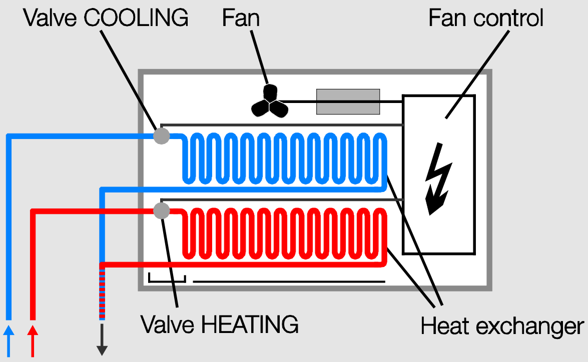


4.4.5.4 3 pipe system, configuration

The 3 pipe system has a similar design to the 4 pipe system. There is a separate inlet for heating and cooling water as well as two separate heat exchangers with one valve each. In contrast to a 4 pipe system, the 3 pipe system has a common return for heating and cooling water.

The Room Master directly controls the fan and provides two communication objects for control of the valves.

3 pipe system, configuration

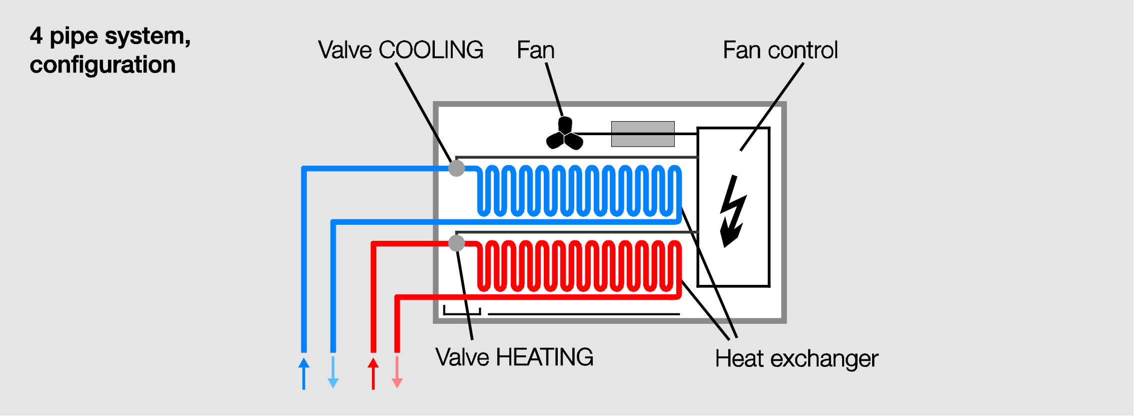


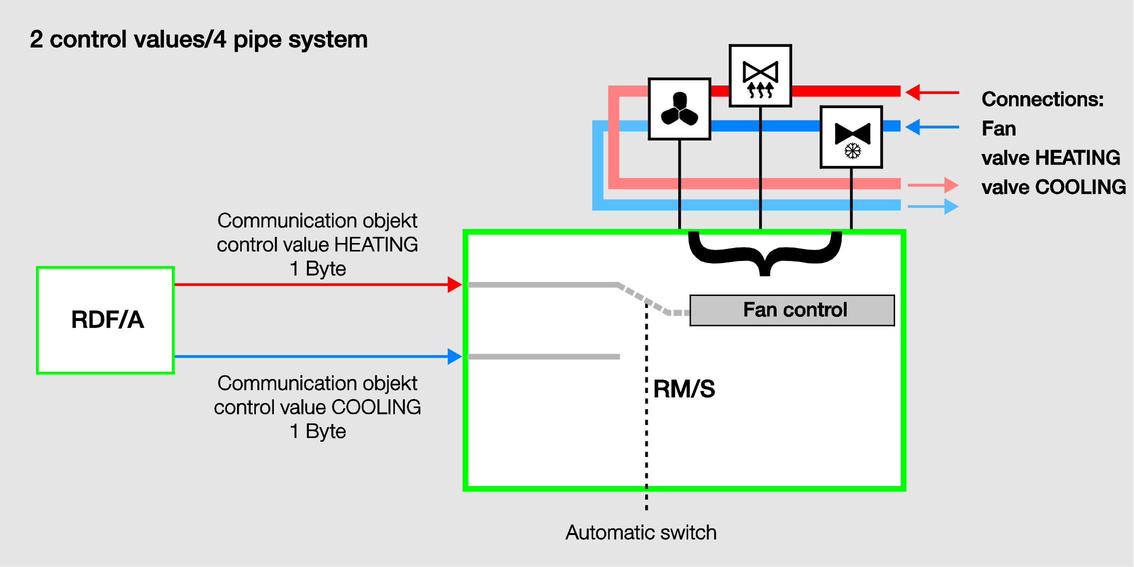
4.4.5.5 4 pipe system, configuration

In a 4 pipe system, two separate heat exchangers (for HEATING and COOLING) are available. Warm and cold water is provided centrally to two separate pipe systems (of 2 pipes each).

The thermostat onsite decides if heating or cooling is applied. The thermostat sends a separate heating and cooling signal.

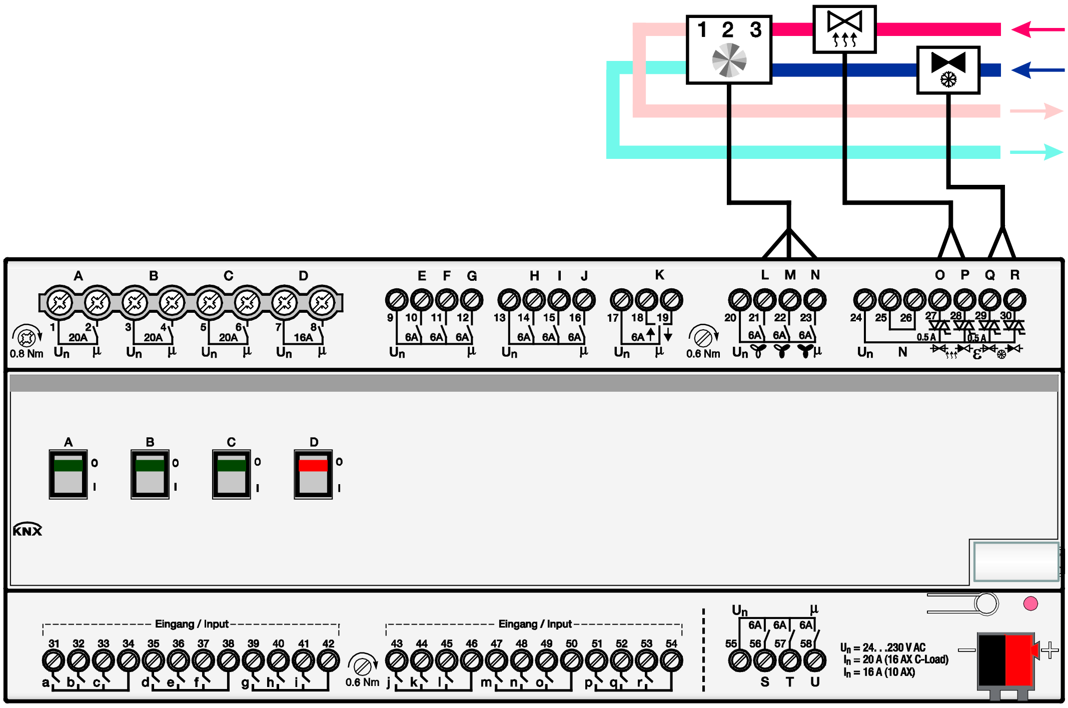
The Room Master directly controls the fan.





4.5 System configuration with the Room Master

In this function, the Room Master is used for control of the heating and cooling valve as well as for switching the fan outputs. The temperature detection and regulation is undertaken by a thermostat.



2CDC 072 058 F0411

Even the offset of the set point value as well as changeover of the operating modes is implemented by the thermostat. The sensors can be connected directly to the Room Master in order to consider the monitoring of the condensed water and the window contact.

In order to correctly implement this function, the thermostat must send the actual setting value as well as the corresponding operating mode to the Room Master via the bus.

4.5.1 Automatic operation

With automatic fan control, a fan drive is connected directly to the Room Master and switched via three floating contacts. A single speed, two speed or three speed fan can be connected.

The fan speed is set automatically in dependence on the control value. For example, the following control value ranges can be programmed for the corresponding fan speeds:

Control value	Fan speed
0… 9 %	0 (fan off)
10… 39 %	1
40… 69 %	2
70…100 %	3

Important

The Room Master RM/S is purely an input and output device which does not have a controller for a thermostat.

Control of the room temperature is implemented using a thermostat which generally detects the room temperature. The RM/S primarily controls a fan and valves. In addition to a manual control via the communication objects *Fan speed x, Fan speed switch or Fan speed UP/DOWN*, the Room Master can also operate in automatic mode together with a thermostat. Communication objects *Control value HEATING, Control value COOLING* or when operating with just a single input variable, the communication object *Control value HEATING/COOLING*, are available.

The automatic mode is enabled in the parameter window *Fan* with the parameter *Enable automatic operation*. Depending on the HVAC system, this is set in the parameter window *Control input* and the respective communication objects are enabled.

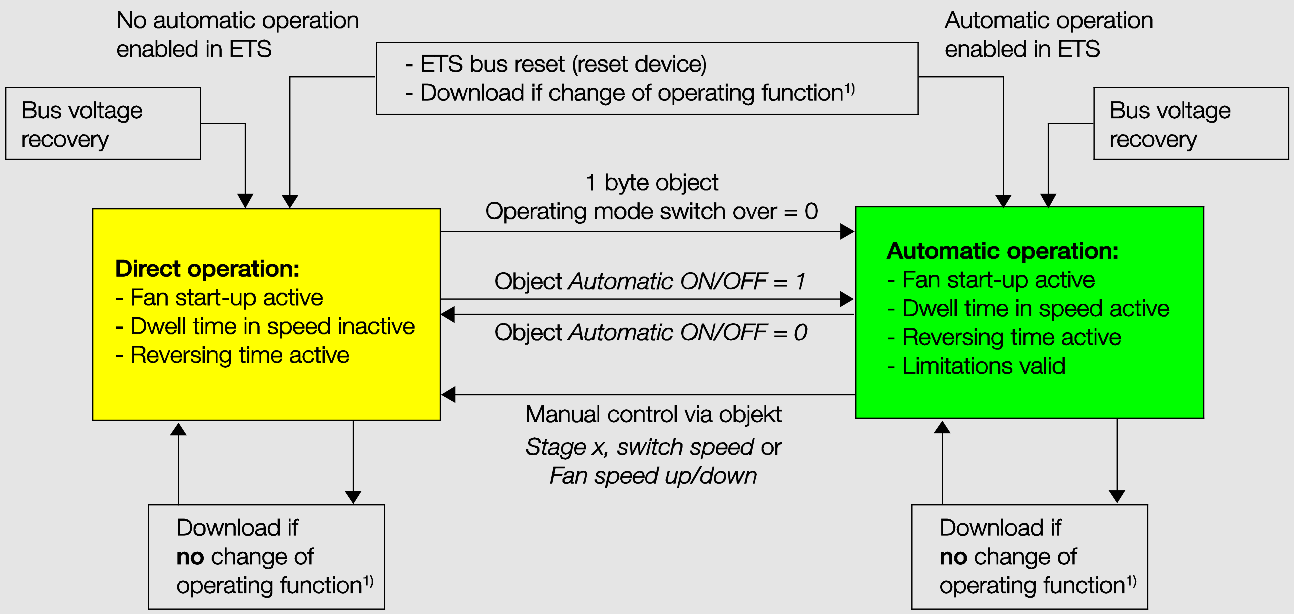
An automatic operation parameterized in the ETS only becomes active after the first download. With a subsequent download, the automatic operating state (active, inactive) is retained as it was before the download. However, there is an exception when system properties such as HVAC systems, fan control (changeover, step control) or the fan stage count have been changed (1/2/3). In these cases, the automatic mode is activated if the automatic mode has been enabled in the ETS.

Automatic mode is switched off either by a manual setting telegram via the communication objects *Speed x (x = 1, 2, 3), Fan speed switch or Fan speed UP/DOWN,* or if a telegram with the value 0 is received via the communication object *Automatic ON/OFF*.

The automatic operation can be reactivated by the communication object *Automatic ON/OFF*.

An activation of one of the four limitations or the forced operation does not end automatic operation. By using a range limit (several fan stages are permissible), a limited automatic control with several fan stages (speeds) is possible.

The following functional diagram shows the relationship between automatic and manual operation of the Room Master.



[1] An operating function can occur on the one hand by the change from **HEATING** to **COOLING**, by the switchover of the number of fan speeds, by the switchover from a step to changeover switch or via the switchover to another HVAC system.

4.5.2 Direct operation

With direct fan control via the ABB i-bus®, a fan drive is connected directly to the Room Master and switched via three floating contacts. A single speed, two speed or three speed fan can be connected.

The Room Master sets the fan speed in accordance with the value received via the ABB i-bus®. The value is received as a 1 byte value. The conversion of the received 1 byte value to the fan speed occurs in the same way as the automatic fan control via the parameterized threshold values.

1 byte value	Fan speed
0… 9 %	0 (fan off)
10… 39 %	1
40… 69 %	2
70…100 %	3

4.5.3 Switchover between automatic and direct operation

In the Room Master you can switch between automatic operation and direct operation. The changeover to manual fan control is implemented via a 1 bit value. The fan stage is switched in accordance with the received 1 byte value.

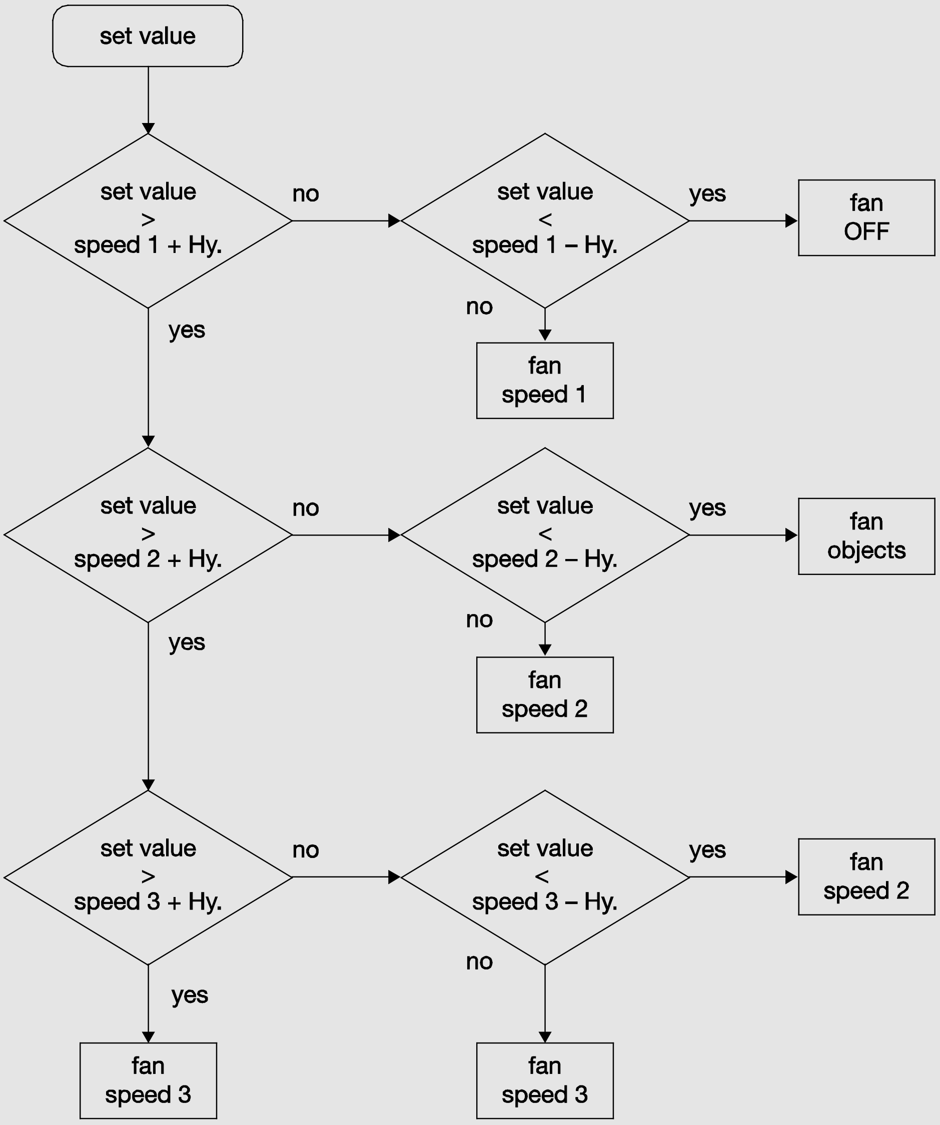
The fan control is changed back to automatic operation if a 1 is received in the respective communication object.

The current status of automatic operation is fed-back via a 1 bit value.

4.5.4 Logic of the stage switching

The following illustration indicates the logic of a switchover stage for a Room Master in dependence on the control values and the parameterized threshold values and hysteresis.

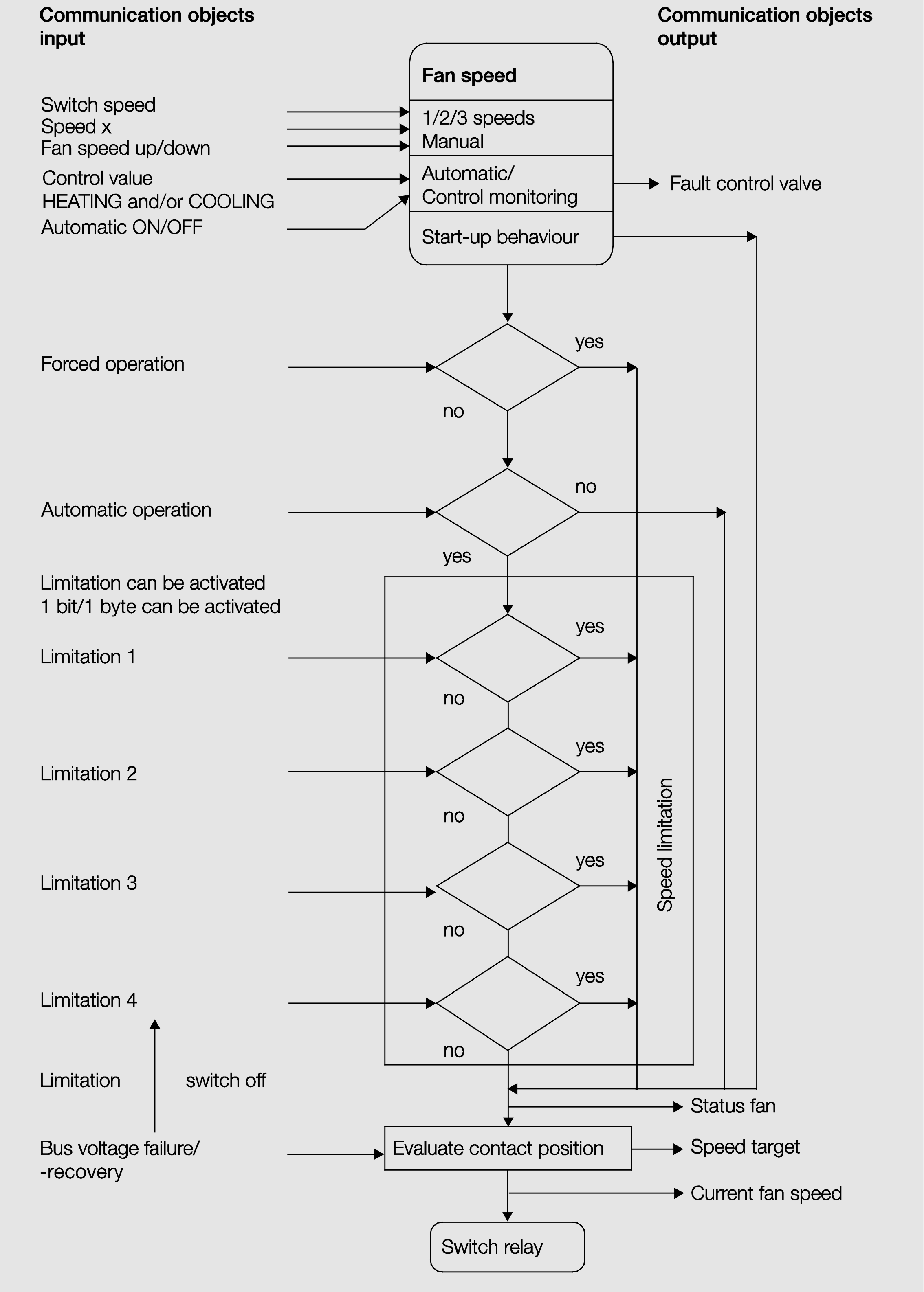
The diagram relates to a three speed fan without parameterized fan limitations. The fan limitations are only relevant after the fan speed has been determined and do not change the flow chart.



Hy. = Hysteresis
If fan speed x – Hysteresis < 0 % the fan speed x – Hysteresis = 1 %
If fan speed x + Hysteresis > 100 % the fan speed x + Hysteresis = 99 %

4.5.5 Fan operation functional diagram

The following illustration indicates the sequence in which the functions of the fan control are processed. Communication objects, which lead to the same box have the same priority and are processed in the sequence in which the telegrams are received.



4.6 Valve drives, valves and controller

4.6.1 Electromotor valve drives

Electromotor valve drives open and close valves via a small electric motor. Electromotor valve drives are offered as proportional or as 2 or 3-way valve drives.

Proportional valve drives are controlled via an analogue signal, e.g. 0…10 V. They can be controlled with the Fan Coil Actuator. 2 or 3-point valve drives are controlled via switching of the supply voltage.

2-point valve drives are controlled via the telegrams OPEN and CLOSE. The valve can only be completely open or completely closed. 2-point valves are controlled via a 2-point control or pulse width modulation (PWM). 2-point valve drives that are intended for a 2-point control cannot be controlled with the Room Master.

The Room Master does not support the control of electric motor 3-point valve drives. These are normally connected via three connection cables to a Fan Coil unit: Neutral conductor, switched phase to OPEN, switched phase for CLOSE. Using 3-point control valve drives, the valve can be opened by any desired percentage and the position can be retained over an extended period. If the valve does not move, no voltage is applied to the motor.

The valve is opened wide enough to allow the exact quantity of hot or cold water to flow that is required to bring the heat exchanger to the required temperature. Thus the valve is controlled via the valve opening (0…100 %). The control usually used in most cases is continuous control.

4.6.2 Electro-thermal valve drives

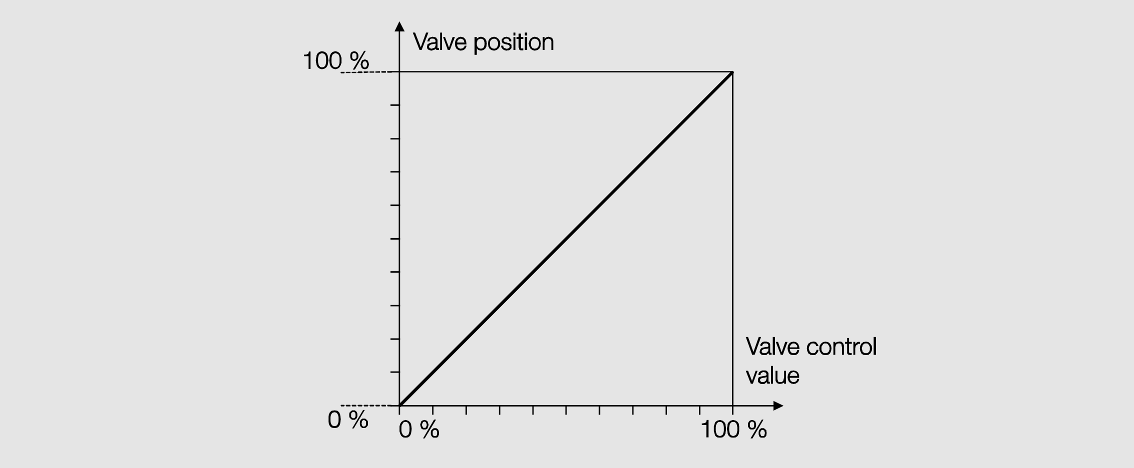
Electro-thermal drives are adjusted due to heat expansion of a material caused by a flow of electric current. Electro-thermal valve drives are controlled by pulse width modulation. The Room Master supports the control of electro-thermal valve drives via pulse width modulation.

Electro-thermal valve drives are offered in the *de-energised closed* and *de-energized opened* variants. Depending on the variant, the valve is opened when voltage is applied and closed when no voltage is applied, or vice versa.

Electro-thermal valve drives connected via two connection cables to the Room Master.

4.6.3 Valve curve

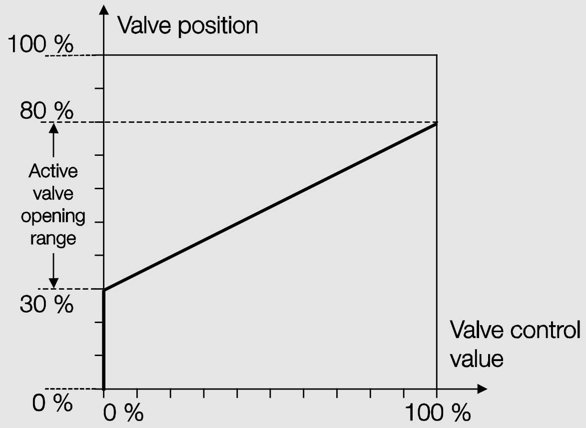
The Room Master controls valves with linear valve curves. The valve control is matched linearly to the control value. The valve is closed with a control value of 0 %, i.e. also 0 %. The valve is fully open with a control value of 100 %, i.e. also 100 %. The same ratio also applies for all intermediate values.



Linear valve curve

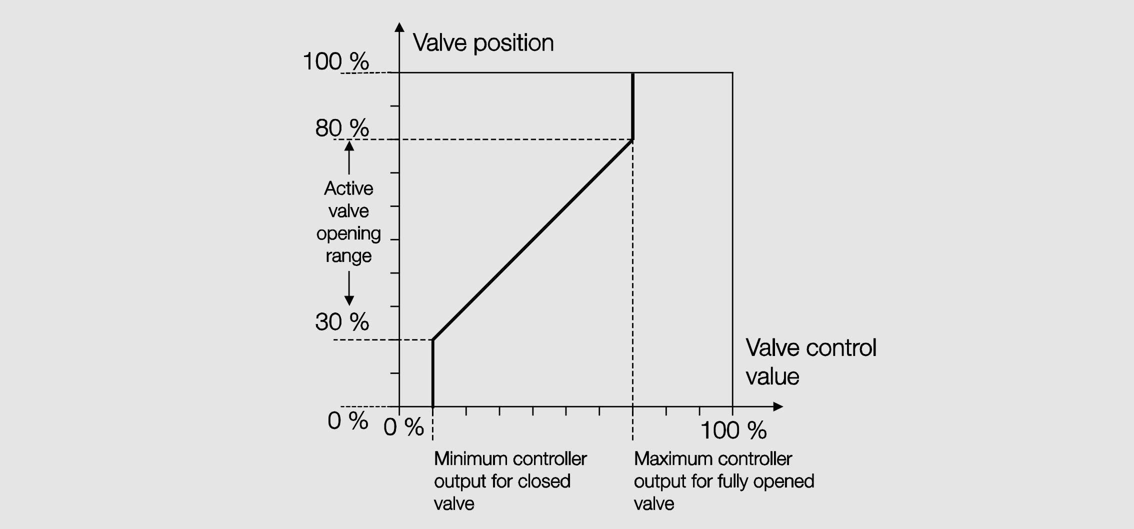
These valve curves can be matched for different valve types. Many valves, for example, have practically no flow when barely opened and achieve maximum flow at 60-80 %. Furthermore, many valves emit an annoying whistling sound at low flows.

These effects can be taken into consideration by limitation of the active valve opening range. The positioning frequency of the valve drive may also be reduced by this limitation.



Limitation of the active valve opening range

A further adaption of the valve curve is implemented via the limitation of the valve control value. The valve output does not react in the upper and lower range due to this limitation. Thus, for example, a valve movement with a minimal heating or cooling requirement can be avoided.



Limitation of the valve control value

A further adaption of the curve can be undertaken in the Parameter window - Curve, page 158, which is separately adjustable for the heating and the cooling valve. The control value can be adapted to the valve characteristic curve using the adjustable parameters. The positioning frequency of the valve drive may also be reduced by this function.

A reduction of the positioning frequency reduces the current requirement for positioning and increases the service life of the valve. However, a reduced positioning frequency will also impair the accuracy of the temperature control.

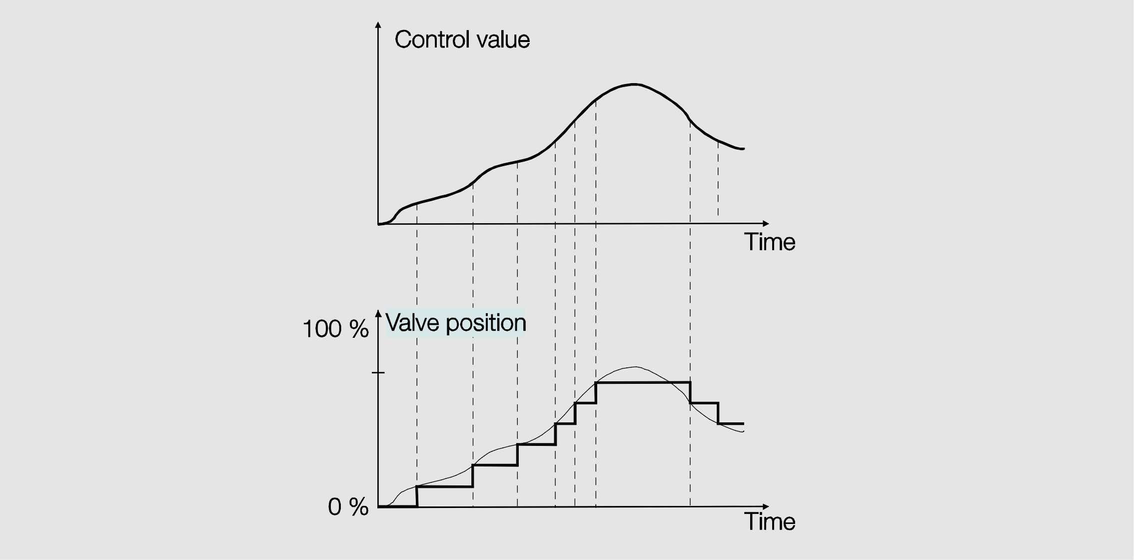
4.6.4 Control types

The following control types are commonly used for the control of valves in heating, air-conditioning and ventilation applications.

- Continuous control
- Pulse width modulation (PWM)
- Pulse width modulation – calculation

4.6.4.1 Continuous control

With continuous control, a control value is calculated based, on the target temperature and the actual temperature, and is used for optimum control of the temperature. The valve is brought to a position, which complies with the calculated control value. With this method the valve can be fully opened, fully closed and even positioned in every intermediate position.



Continuous control is the most precise form of temperature control. At the same time, the positioning frequency of the valve drive can be kept low. Continuous control can be implemented with the Room Master for electro-motor 3-point valve drives. This is implemented via a 1 byte control.

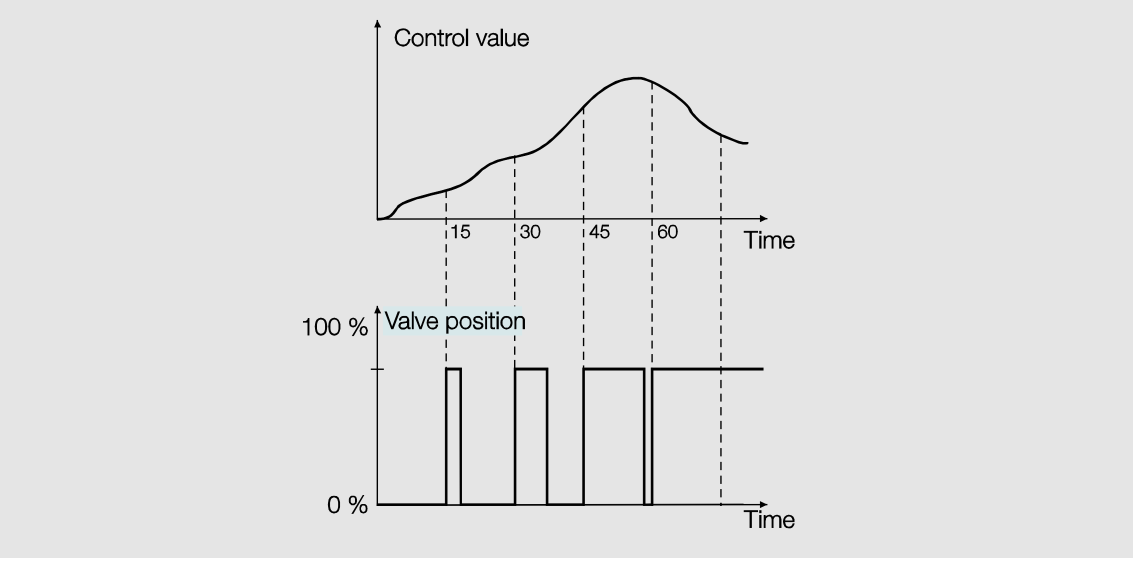
What is a 1 byte control?

For 1 byte control, a value of 0…255 (corresponds to 0 %…100 %) is preset by the room thermostat. At 0 %, for example, the valve is closed and at 100 % it is fully opened.

4.6.4.2 Pulse width modulation (PWM)

With pulse width modulation, the valve is operated as with 2-point control exclusively in the positions *fully opened* and *fully closed*. In contrast to a 2-point control, the position is not controlled via limit values, but rather by calculated control values similar to continuous control.

The control value is fixed for a timed cycle and recalculated in the duration for valve opening. The control value 20 % at a cycle time of 15 minutes, for example, will be recalculated for a valve opening time of three minutes. The control value 50 % results in a valve opening time of 7.5 minutes.

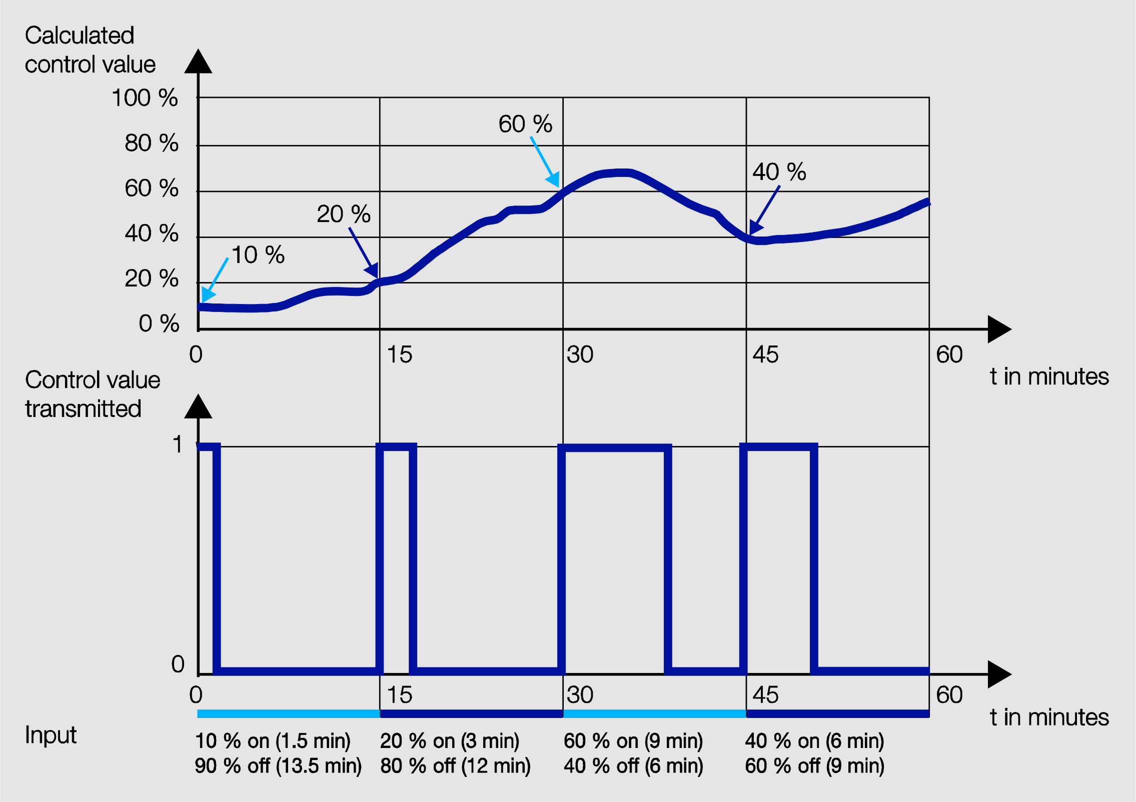


With pulse width modulation, a relatively accurate control of the temperature can be achieved without any resulting overshoots. Simple, attractively-priced control valves can be used. The positioning frequency of the control valve is relatively high.

Pulse width modulation can be used with the Room Master in conjunction with electro-thermal valve drives.

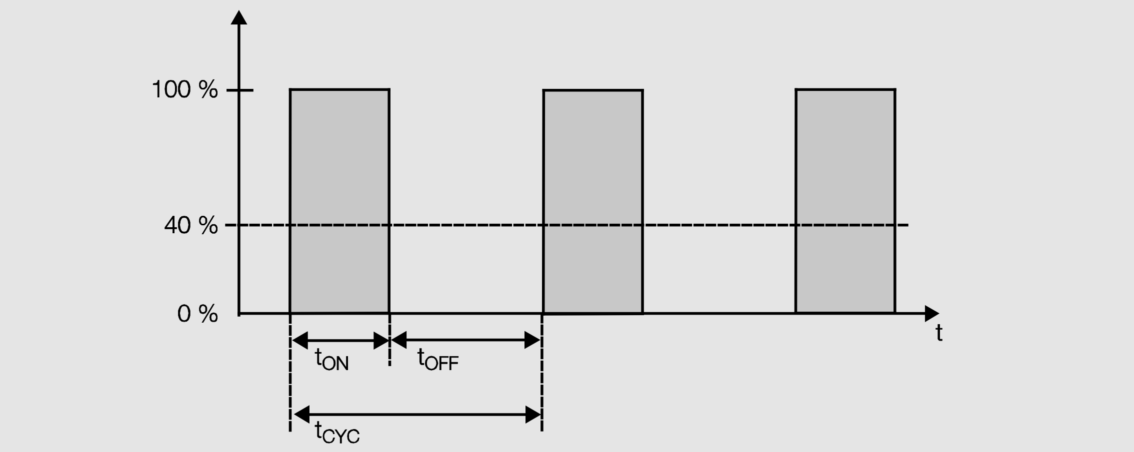
An example: When the RM/S receives a 1 byte control value (continuous control) as an input signal, and this value together with the parameterized cycle time from a PWM calculation is converted into a signal for a 2-point control (on - off - on).

With PWM control, the received control value (0…100 %) calculated in the control algorithm is converted to a pulse width modulation. The conversion is based on a constant cycle time. If the RM/S, for example, receives a control value of 20 %, then for a cycle time of 15 minutes the valve will be opened for three minutes (20 % of 15 minutes) and closed for 12 minutes (80 % of 15 minutes).



4.6.4.3 Pulse width modulation – calculation

With pulse width modulation, the control is implemented by a variable mark-space ratio.



During the time t_{ON} the valve is opened and during the time t_{OFF} it is closed.
Due to $t_{ON} = 0.4 \times t_{CYC}$ the valve is set to about 40 % on. t_{CYC} is the so-called PWM cycle time for continuous control.

4.7 Behaviour with, …

4.7.1 Bus voltage recovery

General

- At bus voltage recovery, the communication object values can be parameterized; if not they are set to the value 0.
- Timers are out of operation and should be restarted.
- Status communication objects are sent as long as the option *after a change* has been set.
- The contact position is not known with 100 % certainty after bus voltage recovery. It is assumed that the contact position has not changed during the bus failure (no manual operation possibilities occur). Only after a new switch event is the contact position known to the Room Master.
- The send delay is only active at bus voltage recovery!

Switch contact output

- The communication object value *Staircase lighting time* remains unchanged as before bus voltage failure.
- The communication object value *Disable function time* is independent of the selected option.
- The communication object value *Permanent ON* remains unchanged as before bus voltage failure.
- The switch contact output switches as follows:
    - After the set communication object value *Switch* with bus voltage recovery.
    - If the parameter *Object value “Switch” at bus voltage recovery* is not parameterized, the behaviour at bus voltage failure is decisive.
    - If none of the two above options are selected, the last position is retained as with bus voltage failure.

Note
If a staircase lighting time was active at bus voltage failure, it will restart.

Note
The values of the communication objects *Logical connection 1/2* are stored at bus voltage failure. The values are set again after a bus voltage recovery. If values are not assigned for communication objects *Logical connection 1/2*, they will be deactivated. With a reset via the bus, the values of the communication objects *Logical connection 1/2* remain unchanged.

Inputs

- The inactive waiting time is only active at bus voltage recovery.

Valves

- The purging cycle restarts if it was active before the failure.
- The priorities blocking, forced operation, purging and adjustment are re-established and executed as priorities.

  The priorities are defined as follows:

  1. Reference movement
  2. Communication object *Block*
  3. Communication object *Forced operation*
  4. Valve Purge
  5. Adjustment
  6. Control values

Note
Here 1 corresponds to the highest priority.

- The value parameterized for bus voltage recovery is only carried out if no higher priority (with the exception of manual operation/reference movement) was active before the failure. If during bus voltage recovery and an active priority a new control value is received, it will replace the Control value that was defined in the parameterization.

Blind

The behaviour of the shutter/blind output is programmable. The output can assume any state or remain unchanged.

Note
The position of the blind or the shutter is saved at bus voltage failure if the function *Automatic* is activated. The blind or shutter remain in the same position. At bus voltage recovery, the position is retained and the value of the communication object is undefined. The value is only updated after a renewed motion telegram. If the communication object *Automatic ON/OFF* has not been assigned to a group address, the function *Automatic* is deactivated at a download.

4.7.2 Reset via bus

What is an ETS reset?

Generally an ETS reset is defined as a reset of the device via the ETS. The ETS reset is initiated in the ETS3 under the menu item *Commissioning* with the function *Reset device*. This stops the user program and it is restarted.

Note
For all resets after delivery including the first download, the response will comply with that of a reset via the bus. A send and switch delay is not executed. All states are reset.

Switch contact output

- The communication object value *Staircase lighting time* receives its parameterized value.
- The communication object value *Disable function time* is 0, i.e. function *Time* is not blocked.
- The object value *Permanent ON* is 0, i.e. permanent on is not active.
- The switch contact output goes to the safely opened state.

Note
The values of the communication objects *Logical connection 1/2* are stored at bus voltage failure. The values are set again after a bus voltage recovery. If values are not assigned for communication objects *Logical connection 1/2*, they will be deactivated. With a reset via the bus, the values of the communication objects *Logical connection 1/2* remain unchanged.

Blind/Shutter

Note
The position of the blind or the shutter is saved at bus voltage failure if the function *Automatic* is activated. The blind or shutter remain in the same position. At bus voltage recovery, the position is retained and the value of the communication object is undefined. The value is only updated after a renewed motion telegram. If the communication object *Automatic ON/OFF* has not been assigned to a group address, the function *Automatic* is deactivated at a download.

4.7.3 Download

General

After a change of the fan control (speed control or changeover control) of the fan type, a full reset of the Room Master is required in order to avoid incorrect function. This full reset has the same effect as reset of the device in the ETS. In this case, the communication objects are normally written with the value 0. The timers stop and are set to 0. Status communication objects are set to 0 (with the exception of automatic, if it is active) and contacts are opened.

With the normal download, where no re-parameterization of the fan type and fan control has occurred, an action has the effect that in the ideal case no unwanted reactions are initiated and thus normal operation is not influenced. . Communication object values remain unchanged. Timer will not operate and must only be restarted. Status values are updated and sent. The contact position remains unchanged and only changes with the next switch telegram.

Note
After a download with a change, the application complies in behaviour to a reset of the device in the ETS.

Switch contact output

The communication object value *Staircase lighting time* remains unchanged.

The communication object value *Disable function time* remains unchanged.

Exception: The communication object value is set to 0 if there is no assignment to the communication object.

Note
Otherwise, the block for the function *Time* is removed, if the communication object *Disable function time* is not available. The switch contact output will otherwise use the new parameters.

The communication object value *Permanent ON* remains unchanged.

The switch contact output remains unchanged.

Blind/Shutter

Note
If the communication object *Automatic ON/OFF* has not been assigned to a group address, the function *Automatic* is deactivated at a download.

4.7.4 Reaction on bus voltage failure

After the contact positions have set with bus voltage failure, the Room Master remains functional until the bus voltage recovers.

Note
The values of the communication objects *Logical connection 1/2* are stored at bus voltage failure. The values are set again after a bus voltage recovery. If values are not assigned for communication objects *Logical connection 1/2*, they will be deactivated. With a reset via the bus, the values of the communication objects *Logical connection 1/2* remain unchanged.

Only the energy for a non-delayed switching action for each output is available should the bus voltage fail. Reversing times, dwell times and start-up behaviour cannot be considered. For this reason, it is only possible for the fan at bus voltage recovery to retain the fan speed (unchanged) or to switch off.

The special behaviour is described in the following table.

Blind

The behaviour of the shutter/blind output is programmable. The output can assume any state or remain unchanged.

Note
The position of the blind or the shutter is saved at bus voltage failure if the function *Automatic* is activated. The blind or shutter remain in the same position. At bus voltage recovery, the position is retained and the value of the communication object is undefined. The value is only updated after a renewed motion telegram. If the communication object *Automatic ON/OFF* has not been assigned to a group address, the function *Automatic* is deactivated at a download.

4.8 Priorities with, …

4.8.1 Valve HEATING/COOLING

The priorities are defined as follows:

1. Reference movement
2. Communication object *Block*
3. Communication object *Forced operation*
4. Valve Purge
5. Adjustment
6. Control values

Note
Here 1 corresponds to the highest priority.

4.9 Fast heat up/cool down

4.9.1 Heat up

If the new valve position is greater than the current position during heat up, the contact will close immediately.

The closing time is calculated from:

T_{up} = Valve adjustment duration from 0 to 100%

V_{act} = Current valve position [0…255]

V_{new} = New valve position [0…255]

T_{new} = Switch on time of the PWM at the new valve position

T_{cyc} = PWM cycle time

T+1 = Is added on the way to V_{new} at every position

Calculation of the closing time

$$T_{new} = \frac{T_{cyc}}{255} \times V_{new}$$

$$T_{+1} = \frac{T_{up}}{255} \times \frac{V_{act}}{255}$$

Calculation of the closing time at switchover

$$T = T_{new} + \left(T_{+1}\left[atV_{act}\right]\right) + \left(T_{+1}\left[atV_{act} + 1\right]\right) + ... + \left(T_{+1}\left[atV_{new}\right]\right)$$

This means:

For a movement from 0…99 %, the contact remains closed for about T_{up} + T_{cyc}.

For a change in the lower % range it results in significantly shorter closing times than for changes in the upper % range.

Thereafter, the contact is opened in accordance with the new PWM cycle and the PWM cycle is started.

4.9.2 Cooling down

If the new valve position is less than the current position during cooling down, the contact will open immediately.

The opening time is calculated from:

T_{down} = Valve adjustment duration from 100 to 0 %

V_{act} = Current valve position [0…255]

V_{new} = New valve position [0…255]

T_{new} = Switch off time of the PWM at the new valve position

T_{cyc} = PWM cycle time

T+1 = Is added on the way to V_{new} at every position

Calculation of the opening time

$$T_{new} = \frac{T_{cyc}}{255} \times \left(255 - V_{new}\right)$$

$$T_{+1} = \frac{T_{down}}{255} \times \frac{255 - V_{act}}{255}$$

Calculation of the opening time at switchover

$$T = T_{new} + \left(T_{+1}\left[atV_{act}\right]\right) + \left(T_{+1}\left[atV_{act} + 1\right]\right) + ... + \left(T_{+1}\left[atV_{new}\right]\right)$$

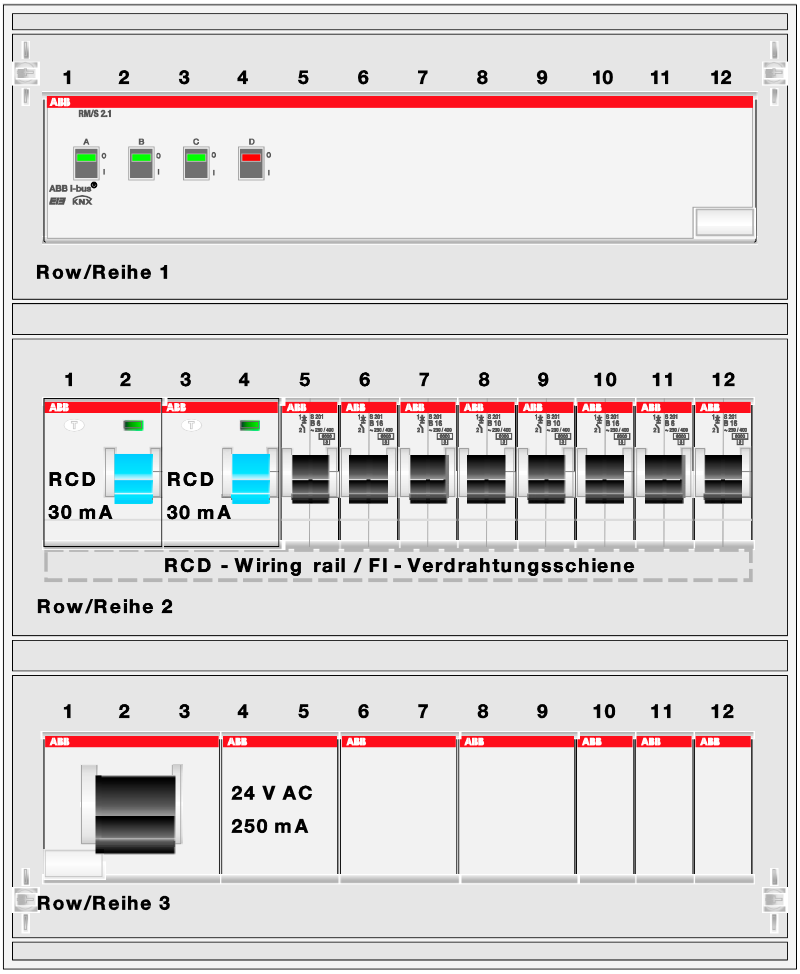
This means:

For a movement from 99…0 % the contact remains opened for about T_{down} + T_{cyc}.

For a change in the lower % range, it results in significantly shorter opening times than for changes in the upper % range.

Thereafter, the contact is opened in accordance with the new PWM cycle and the PWM cycle is started.

4.10 Configuration of a distribution board with Room Master Premium



Row 1	
1…12	Room Master
Row 2	
1…4	RCCB
5 (6A)	Power supply (bell system transformer)
6 (16 A)	Power outlet circuit
7 (16 A)	Power outlet circuit
8 (10A)	Electrical heating/auxiliary output
9 (10A)	Light circuit + blind
10 (16 A)	Room supply
11 (6A)	Fan Coil (HVAC)
12 (16A)	Blower bathroom
Row 3	
1…3	Main switch 16A
4…5	Bell system transformer (TS24/8-12-24)
6…12	Dimmer, Audio/Video, etc.

5 Pre-configuration

In this chapter, the method of function of the Room Scenarios is described. Furthermore, you will find an overview of the pre-configured settings of the RM/S. These are explained using the pre-configured Room Scenarios.

5.1 Pre-configured Room Scenarios

In total, eight of the sixteen possible Room Scenarios are already pre-configured.

The first three Room Scenarios (RS) are triggered externally by reception:

- RS 1: Check In – Room occupied
- RS 2: Check Out – Room not occupied
- RS 3: Standby – Release the room for service

The next five Room Scenarios (RS) are triggered internally via the binary inputs:

- RS 4: Emergency pressed (in the bathroom)
- RS 5: Remove key card (at the room entrance)
- RS 6: Insert key card (at the room entrance)
- RS 7: Master OFF (on the bed)
- RS 8: Master ON (on the bed)

The Room Scenarios 9…16 are not used.

5.2 Prerequisites for commissioning

The following preconditions must be fulfilled in order to put the preconfigured RM/S completely into operation.

Connections of the outputs to:

- Room supply/outlets
- Floor or desk light socket
- Blower bathroom
- Auxiliary electrical heater
- Lamps: Bed left/right, main room 1/2, hall, bathroom
- Blind
- Fan 1…3, valves
- Thermostat, e.g. RDF/A

Important
The maximum permissible current of a KNX line may not be exceeded. During planning and installation ensure that the KNX line is correctly dimensioned. The device features a maximum current consumption of 24 mA (Fan-In 2).

Connections of the binary outputs to:

Input	Function	Connection to	
		Push button	Switch
a	Master	x	
b	Bedside left	x	
c	Bedside right	x	
d	Main room 1	x	
e	Main room 2	x	
f	Hall	x	
g	Bathroom	x	
h	Bathroom fan	x	
i	Emergency call		x
j	Auxiliary electrical heater	x	
k	Drip tray		x
l	Floor or desk light	x	
m	Open blind	x	
n	Close blind	x	
o	Window contact		x
p	Key card		x
q	Do not disturb	x	
r	Room service	x	

🟦 Special Room Scenario

If all inputs and outputs are connected and the bus voltage is connected to the RM/S, the device is ready to operate.

Note

The device is in a preconfigured state. During initial commissioning it must be noted that most of the binary inputs are internally inhibited. Only the binary inputs *Key card*, *Emergency*, *Window contact* and *Drip tray* are functional.

For further information see: Block binary inputs, page 266

The inhibited inputs can be enabled as follows:

- By a telegram with the value 5 to the communication object no. 2 or
- Via the direct connection of the key card switch with the binary input p by introducing the key card.

5.3 Preconfigured binary inputs

In this chapter, you will find all preconfigured settings for the binary inputs. They are represented in a table sorted by themes to provide the fastest overview.

- Block binary inputs
- Operating modes:
    - Operating mode Switch sensor
    - Operating mode Blind sensor
    - Operating mode Value/Forced operation
- Scan binary inputs

5.3.1 Block binary inputs

The binary inputs can be blocked internally. In the parameter windows *Enable inputs x…y*, page 34, it is possible for each individual input to determine whether to block or not block this input. The resulting blocking mask for the binary inputs can be called for each Room Scenario. The call results due to an event in the Room Scenario. If an internal block is called, the binary input is physically disabled. Pressing a connected push button/switch as well as incoming telegrams on communication object *Event 0/1 started* are ignored.

In the preconfigured version some special functions cannot be blocked.

The following tables provide an overview of the binary inputs of the RM/S that are internally blocked and not internally blocked in the default delivery state:

Input	Function	Block input	
		yes	no
a	Master	x	
b	Bedside left	x	
c	Bedside right	x	
d	Main room 1	x	
e	Main room 2	x	
f	Hall	x	
g	Bathroom	x	
h	Bathroom fan	x	
i	Emergency call		x
j	Auxiliary electrical heater	x	
k	Drip tray		x
l	Floor or desk light	x	
m	Open blind	x	
n	Close blind	x	
o	Window contact		x
p	Key card		x
q	Do not disturb	x	
r	Room service	x	

🟦 Special Room Scenario

5.3.2 Operating modes

The following table provides an overview of the operating mode that is preconfigured for each binary input:

Input	Function	Operating mode		
		Switch Sensor	Blind sensor	Value/Forced operation
a	Master	x		
b	Bedside left	x		
c	Bedside right	x		
d	Main room 1	x		
e	Main room 2	x		
f	Hall	x		
g	Bathroom	x		
h	Bathroom fan	x		
i	Emergency call	x		
j	Auxiliary electrical heater	x		
k	Drip tray	x		
l	Floor or desk light	x		
m	Open blind		x	
n	Close blind		x	
o	Window contact			x
p	Key card	x		
q	Do not disturb	x		
r	Room service	x		

🟦 Special Room Scenario

5.3.2.1 Operating mode Switch sensor

The following table provides an overview of which binary inputs are parameterized, so that a differentiation is made in operating mode *Switch sensor* between a short and long operation of a push button/switch.

Input	**Function**	**Distinction between short and long operation**	
		yes	**no**
a	Master		x
b	Bedside left		x
c	Bedside right		x
d	Main room 1		x
e	Main room 2		x
f[1]	Hall	from 1 s	
g	Bathroom		x
h	Bathroom fan		x
i	Emergency call		x
j	Auxiliary electrical heater		x
k	Drip tray		x
l	Floor or desk light		x
m	Open blind	--	--
n	Close blind	--	--
o	Window contact	--	--
p	Key card		x
q[2]	Do not disturb	from 1 s	
r[3]	Room service	from 1 s	

🟦 Special Room Scenario

[1] Output I is switched on or switched off with every actuation of the push button in the hall. The room service personnel can switch off the *Room service* display (Output T) with a button push longer than 1s. If this option is linked, for example, via a group address with the display at reception, they will be informed simultaneously.

[2] Output S is switched on every time push button *Do not disturb* is pressed. By pushing the button for longer than 1s, the guest can switch off the display *Do not disturb* (Output S). The display *Do not disturb* (Output S) is switched off at the latest when the key card is removed and the guest leaves the room.

[3] Output T is switched on every time the button *Room service* is pressed. By pushing the button for longer than 1s, the guest can switch off the display *Room service* (Output T). The display *Room service* (Output T) is switched off at the latest when the key card is removed and the guest leaves the room.

The following table presents you with an overview of how the preconfigured binary inputs of the RM/S react to the events of switch 1:

Input	**Function**	**Switch 1**		**Internal connection**
		Event 0	**Event 1**	
a	Master	TOGGLE	no reaction	RS 7/8
b	Bedside left	TOGGLE	no reaction	E (6 A)
c	Bedside right	TOGGLE	no reaction	F (6 A)
d	Main room 1	TOGGLE	no reaction	G (6 A)
e	Main room 2	TOGGLE	no reaction	H (6 A)
f[1]	Hall	TOGGLE	no reaction	I (6 A)
g	Bathroom	TOGGLE	no reaction	J (6 A)
h	Bathroom fan	ON	no reaction	C (20 A/16 AX C-Load)
i	Emergency call	ON	ON	RS ¾
j	Auxiliary electrical heater	TOGGLE	no reaction	D (16 A/10 AX)
k	Drip tray	OFF	ON	--
l	Floor or desk light	TOGGLE	no reaction	B (20 A/16 AX C-Load)
m	Open blind	--	--	--
n	Close blind	--	--	--
o	Window contact	--	--	--
p	Key card	OFF	ON	RS 5/6
q[2]	Do not disturb	ON	OFF	S (6 A)
r[3]	Room service	ON	OFF	T (6 A)

🟦 Special Room Scenario

[1] Output I is switched on or switched off with every actuation of the push button in the hall. The room service personnel can switch off the *Room service* display (Output T) with a button push longer than 1s. If this option is linked, for example, via a group address with the display at reception, they will be informed simultaneously .

[2] Output S is switched on every time push button *Do not disturb* is pressed. By pushing the button for longer than 1s, the guest can switch off the display *Do not disturb* (Output S). The display *Do not disturb* (Output S) is switched off at the latest when the key card is removed and the guest leaves the room.

[3] Output T is switched on every time the button *Room service* is pressed. By pushing the button for longer than 1s, the guest can switch off the display *Room service* (Output T). The display *Room service* (Output T) is switched off at the latest when the key card is removed and the guest leaves the room.

The following table presents you with an overview of how the preconfigured binary inputs of the RM/S react to the events of switch 2:

Input	Function	Switch 2		Internal Connection
		Event 0	**Event 1**	
a	Master	--	--	--
b	Bedside left	--	--	--
c	Bedside right	--	--	--
d	Main room 1	--	--	--
e	Main room 2	--	--	--
f[1]	Hall	no reaction	OFF	T (6 A)
g	Bathroom	--	--	--
h	Bathroom fan	--	--	--
i	Emergency call	--	--	--
j	Auxiliary electrical heater	--	--	--
k	Drip tray	--	--	--
l	Floor or desk light	--	--	--
m	Open blind	--	--	--
n	Close blind	--	--	--
o	Window contact	--	--	--
p	Key card	--	--	--
q	Do not disturb	--	--	--
r	Room service	--	--	--

🟦 Special Room Scenario

[1] Output I is switched on or switched off with every actuation of the push button in the hall. The room service personnel can switch off the *Room service* display (Output T) with a button push longer than 1s. If this option is linked, for example, via a group address with the display at reception, they will be informed simultaneously.

5.3.2.2 Operating mode Blind sensor

The following table presents you with an overview of how the preconfigured binary inputs react to the Operating functionality of the Blind:

Input	Function	2 push button operation (short = stepwise, long = move)		Internal connection
		Reaction on short operation	Reaction on long operation	
a	Master	--	--	--
b	Bedside left	--	--	--
c	Bedside right	--	--	--
d	Main room 1	--	--	--
e	Main room 2	--	--	--
f	Hall	--	--	--
g	Bathroom	--	--	--
h	Bathroom fan	--	--	--
i	Emergency call	--	--	--
j	Auxiliary electrical heater	--	--	--
k	Drip tray	--	--	--
l	Floor or desk light	--	--	--
m	Open blind	STOP/slat UP	Move UP	K (6 A)
n	Close blind	STOP Slat DOWN	Move DOWN	K (6 A)
o	Window contact	--	--	--
p	Key card	--	--	--
q	Do not disturb	--	--	--
r	Room service	--	--	--

🟦 Special Room Scenario

5.3.2.3 Operating mode Value/Forced operation

The following table provides an overview of which binary inputs are parameterized, so that a differentiation is made in operating mode Value/Forced operation between a short and long operation of a push button/switch:

Input	**Function**	**Distinction between short and long operation**	
		yes	**no**
a	Master	--	--
b	Bedside left	--	--
c	Bedside right	--	--
d	Main room 1	--	--
e	Main room 2	--	--
f	Hall	--	--
g	Bathroom	--	--
h	Bathroom fan	--	--
i	Emergency call	--	--
j	Auxiliary electrical heater	--	--
k	Drip tray	--	--
l	Floor or desk light	--	--
m	Open blind	--	--
n	Close blind	--	--
o	Window contact		x
p	Key card	--	--
q	Do not disturb	--	--
r	Room service	--	--

🟦 Special Room Scenario

The following table presents you with an overview of how the preconfigured binary inputs react to the Value/Forced operation:

		Value/Forced operation (1 byte value)	
Input	**Function**	**Value 1**	**Value 2**
a	Master	--	--
b	Bedside left	--	--
c	Bedside right	--	--
d	Main room 1	--	--
e	Main room 2	--	--
f	Hall	--	--
g	Bathroom	--	--
h	Bathroom fan	--	--
i	Emergency call	--	--
j	Auxiliary electrical heater	--	--
k	Drip tray	--	--
l	Floor or desk light	--	--
m	Open blind	--	--
n	Close blind	--	--
o	Window contact	4	0
p	Key card	--	--
q	Do not disturb	--	--
r	Room service	--	--

🟦 Special Room Scenario

5.3.3 Scan binary inputs

The following table provides an overview of the preconfigured binary inputs that are scanned after a download, bus reset or bus voltage recovery. Also stated is the inactive waiting time, which is the time delay duration after which the input should be scanned:

Input	Function	Scan input after download, bus reset and bus voltage recovery		Inactive waiting time after bus voltage recovery in s
		yes	no	
a	Master		x	--
b	Bedside left		x	--
c	Bedside right		x	--
d	Main room 1		x	--
e	Main room 2		x	--
f	Hall		x	--
g	Bathroom		x	--
h	Bathroom fan		x	--
i	Emergency call		x	--
j	Auxiliary electrical heater		x	--
k	Drip tray	x		0
l	Floor or desk light		x	--
m	Open blind	--	--	--
n	Close blind	--	--	--
o	Window contact	x		0
p	Key card	x		0
q	Do not disturb		x	--
r	Room service		x	--

🟦 Special Room Scenario

Note

The inactive waiting time after bus voltage recovery occurs immediately with the exception of input i. Binary input i is scanned with a delay in order to ensure that Room Scenarios configured under an emergency signal have triggered.

5.4 Preconfigured outputs

In this chapter, you will find all preconfigured settings for the outputs. They are shown in table form to provide a quick overview.

Important
Each output can be assigned to a maximum of eight scenarios.

Room Scenarios	**Check In**	**Check Out**	**Standby**	**Emergency call**	**Remove key card**	**Remove key card delayed**	**Introduce key card**	**Master OFF**	**Master ON**
Scene number	**1**	**2**	**3**	**4**	**5**[1]	**15**[1]	**6**	**7**	**8**
A: Socket switched	OFF	OFF	OFF	--	OFF	OFF	ON	--	--
B: Floor or desk light socket	ON	OFF	OFF	ON	--	OFF	ON	OFF	ON
C2: Bathroom fan	OFF	OFF	OFF	--	OFF	OFF	--	OFF	--
D: Auxiliary electrical heater	OFF	OFF	OFF	--	OFF	OFF	--	--	--
E: Bedside left	OFF	OFF	OFF	--	OFF	OFF	--	OFF	--
F: Bedside right	OFF	OFF	OFF	--	OFF	OFF	--	OFF	--
G: Main room 1	OFF	OFF	OFF	ON	OFF	OFF	--	OFF	--
H: Main room 2	OFF	OFF	OFF	ON	OFF	OFF	--	OFF	--
I: Hall	ON	OFF	OFF	ON	--	OFF	ON	OFF	ON
J: Bathroom	OFF	OFF	OFF	ON	OFF	OFF	--	OFF	--
K: Blind	--	Position 0 Slat 0	Position 100 Slat 100	--	--	--	--	--	--
L, M, N: Fan	Is set via the control value of the RDF/A.								
O, P, Q, R: Valves									
S: Do not disturb	OFF	OFF	OFF	OFF	OFF	OFF	--	--	--
T: Room service	OFF	ON	OFF	--	OFF	OFF	--	OFF	--
U: Room occupied/Please wait	OFF	OFF	OFF	--	OFF	OFF	ON	--	--
RDF/A	ON	--	OFF	--	--	OFF	ON	--	--
	Comfort	Economy	--	--	--	--	Comfort	--	--

🟦 Special Room Scenario

---

[1] In Room Scenario *Remove key card* event 1 is connected to scene 5 and event 2 to scene 15. Event 15 is preconfigured with a delay time of 120 seconds. For this reason, outputs B and I remain with event 1, scene 5 remains unchanged and the binary inputs are not blocked. It is thus possible during the delay time to switch on and off the lights or to use the outlets. After the delay time has timed out, event 2 scene 15 is triggered, and all outputs switch off.

[2] Please note that output C is preconfigured with the function *Staircase lighting*. For this reason, the fan in the bathroom switches on directly with a button push for 300 seconds (5 minutes) and will switch off by itself, after the staircase lighting time has elapsed.

5.5 Triggering Room Scenarios

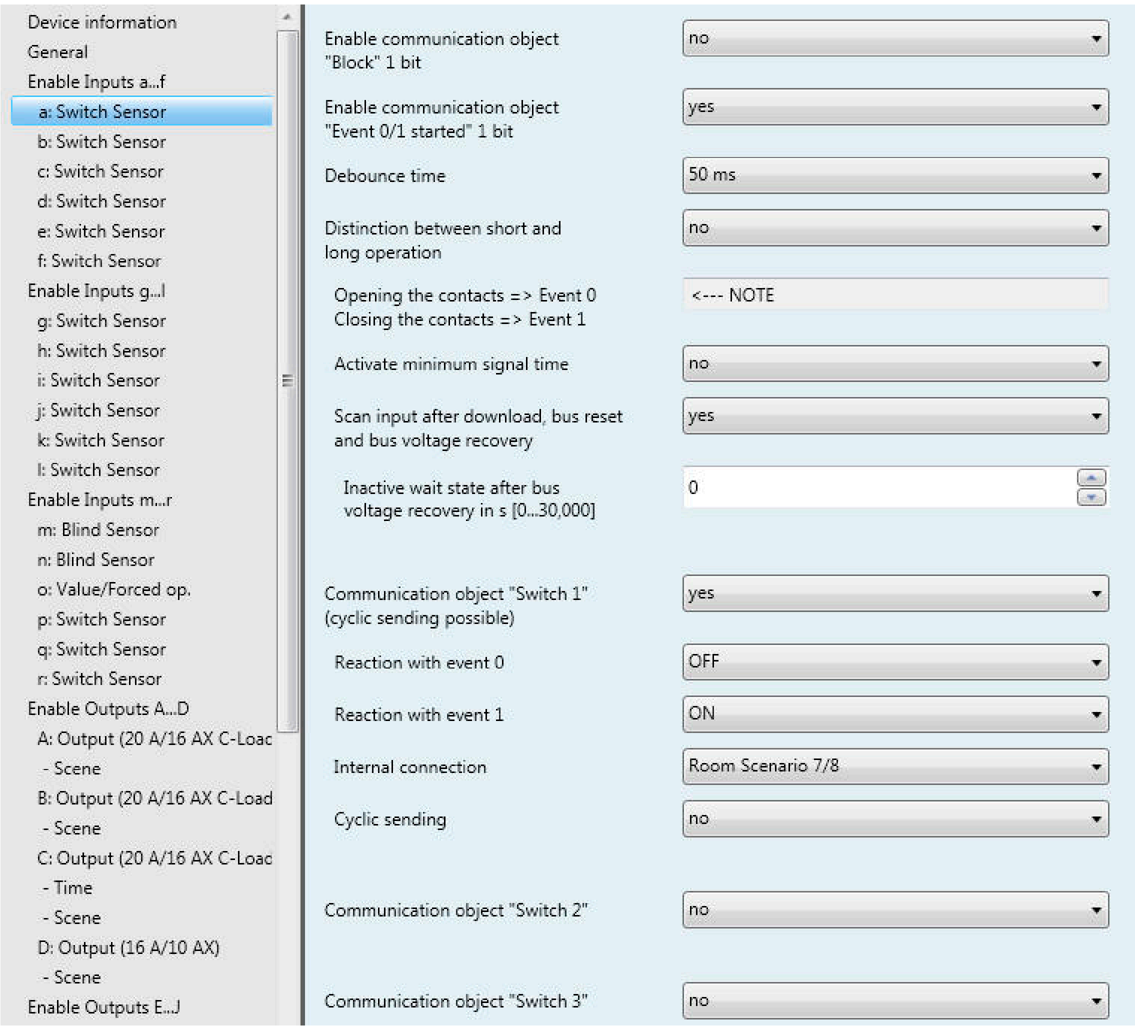
A Room Scenario consists of two events. Thereby, one event will trigger up to seven telegrams immediately, and the other event can trigger the same seven telegrams via a delay set with a timer.

Each of these events can be parameterized individually:

- Sending of two 1 bit values,
- Activation of the automatic function of a blind,
- Triggering a KNX scene, internally or via the bus,
- Deactivation/activation of the internal block of the binary inputs,
- Switching on/off the thermostat, e.g. RDF/A,
- Activation of the thermostat, e.g. RDF/A, with a defined operating mode.

5.5.1 Room Scenario internal triggering

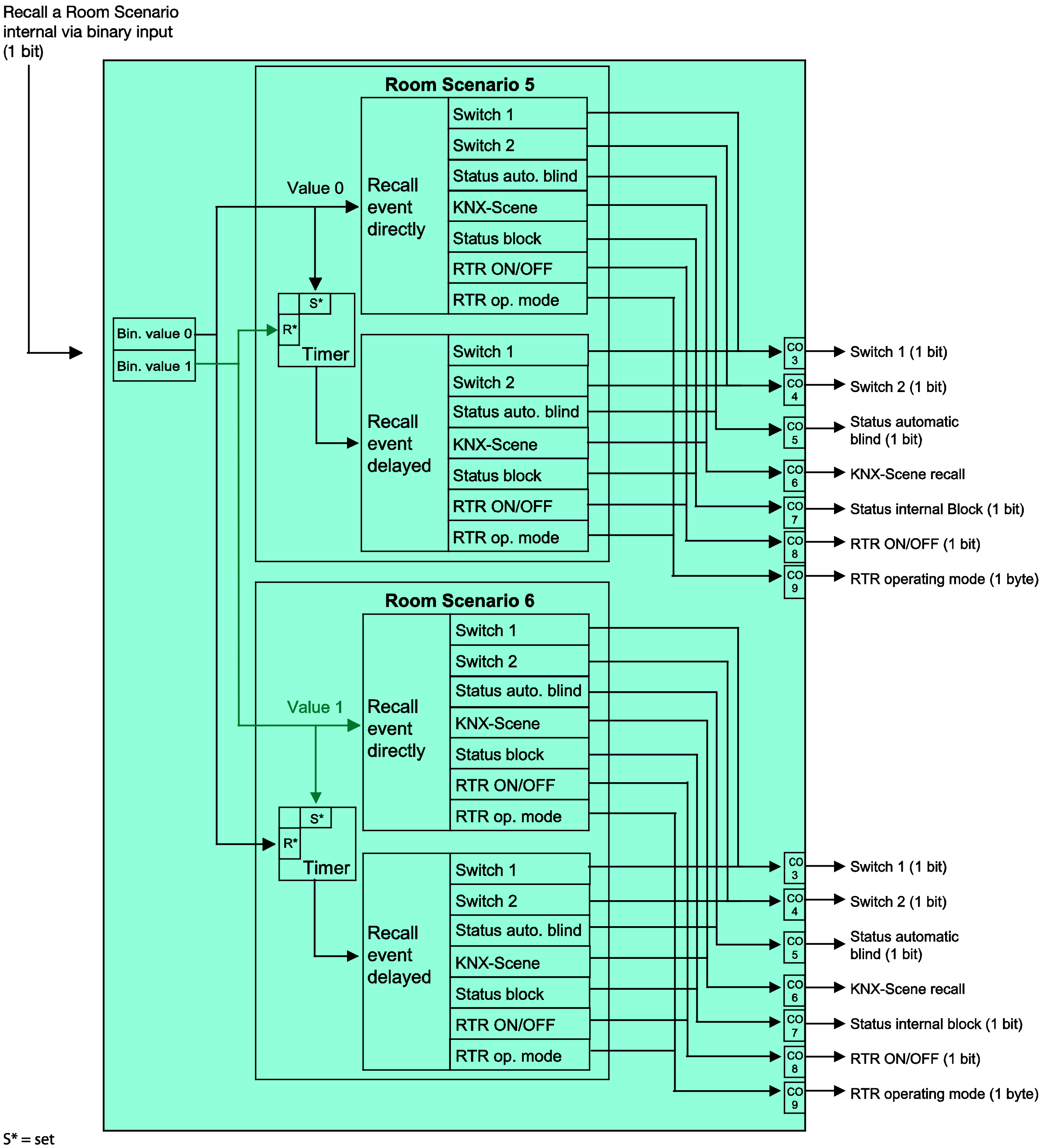
Every binary input can be triggered by two Room Scenarios connected to one another. The binary value 0 always triggers a Room Scenario with odd numbering, i.e. 1, 3, 5, 7, 9, 11, 13 or 15, and binary value 1 triggers a Room Scenario with even numbering, i.e. 2, 4, 6, 8, 10, 12, 14 or 16.



Enable communication object "Block" 1 bit	no
Enable communication object "Event 0/1 started" 1 bit	yes
Debounce time	50 ms
Distinction between short and long operation	no
Opening the contacts => Event 0 Closing the contacts => Event 1	<--- NOTE
Activate minimum signal time	no
Scan input after download, bus reset and bus voltage recovery	yes
Inactive wait state after bus voltage recovery in s [0...30,000]	0
Communication object "Switch 1" (cyclic sending possible)	yes
Reaction with event 0	OFF
Reaction with event 1	ON
Internal connection	Room Scenario 7/8
Cyclic sending	no
Communication object "Switch 2"	no
Communication object "Switch 3"	no

However, only one Room Scenario can be active at a time. An activated Room Scenario can however trigger two events, one of them immediately and the other delayed via a timer. Through the connection in pairs of the Room Scenarios, the binary value triggers one of both connected Room Scenarios and overwrites the previous Room Scenario.

The following overview shows the method of function based on Room Scenarios 5 and 6:



S* = set
R* = reset

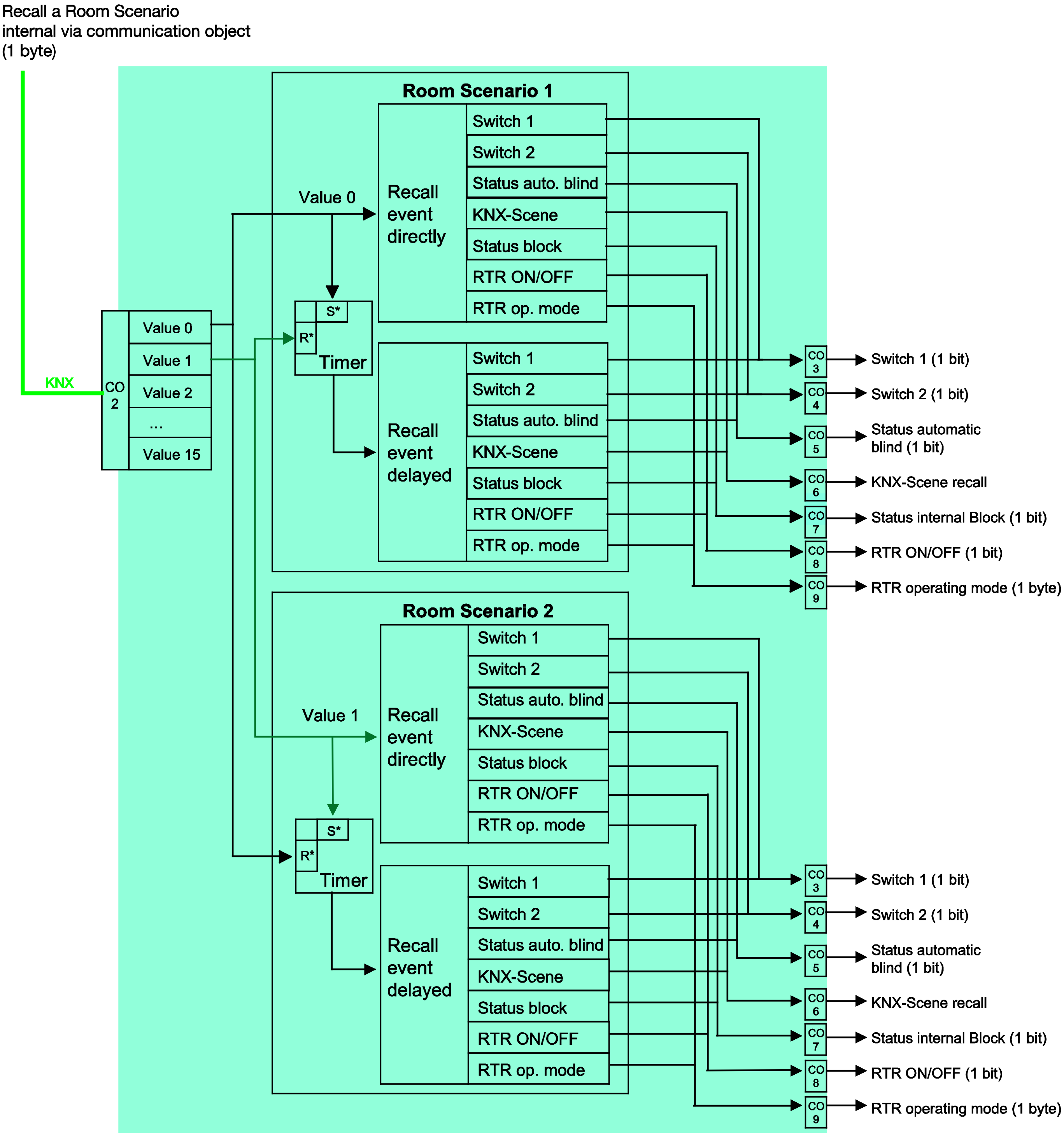
5.5.2 Room scenario External triggering

A Room Scenario can also be triggered externally via the bus by the receipt of a 1 byte value on the communication object no. 2. The 1 byte values are divided as follows:

0 = Room Scenario 1
1 = Room Scenario 2
2 = Room Scenario 3
3 = Room Scenario 4
4 = Room Scenario 5
5 = Room Scenario 6
6 = Room Scenario 7
7 = Room Scenario 8
8 = Room Scenario 9
9 = Room Scenario 10
10 = Room Scenario 11
11 = Room Scenario 12
12 = Room Scenario 13
13 = Room Scenario 14
14 = Room Scenario 15
15 = Room Scenario 16

The 1 byte values 16…255 are not occupied.

The following overview shows the method of function based on Room Scenarios 1 and 2:



S* = set
R* = reset

5.5.3 Overview table for triggering Room Scenarios

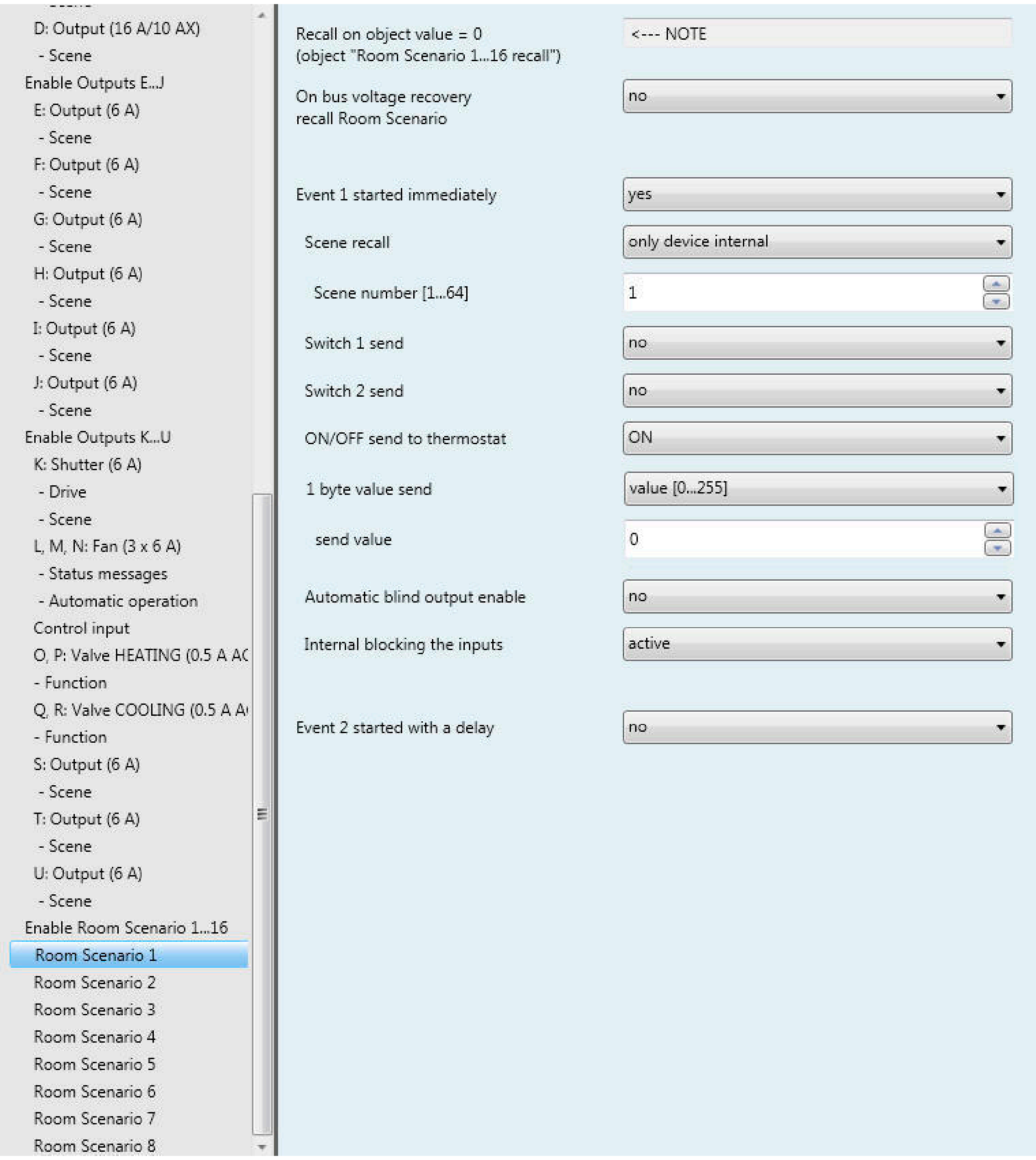
Room Scenarios	Function	How is the Room Scenario triggered?		Which Room Scenario is intended for this purpose?	Call via 1 byte	Assigned scene number	Remark
		Internal	External				
Check In	Room is occupied		x	RS 1	x	1	Is triggered by reception
Check Out	Room is released		x	RS 2	x	2	Is triggered by reception
Standby	Temporarily unoccupied		x	RS 3	x	3	Is triggered by reception
Emergency call	ON	x		RS 4	x	4	Is triggered directly by the emergency switch
Key card	Remove	x		RS 5	x	5/15	Is triggered directly by the key card switch
Key card	Insert	x		RS 6	x	6	Is triggered directly by the key card switch
Master	OFF	x		RS 7	x	7	Is triggered directly by the master switch
Master	ON	x		RS 8	x	8	Is triggered directly by the master switch
FREE				RS 9	x		
FREE				RS 10	x		
FREE				RS 11	x		
FREE				RS 12	x		
FREE				RS 13	x		
FREE				RS 14	x		
FREE				RS 15	x		
FREE				RS 16	x		
Drip tray / window contact							Is connected via the CO* of the input with the thermostat, e.g. RDF/A

*CO = communication objects

🟦 Special Room Scenario

5.6 Room Scenario 1

The Room Scenario 1 *Check In – Room occupied* is triggered by the 1 byte value 0 via communication object no. 2. The following default values in parameter window *Room Scenario 1* are preset:



Recall on object value = 0 (object "Room Scenario 1...16 recall")	<--- NOTE
On bus voltage recovery recall Room Scenario	no
Event 1 started immediately	yes
Scene recall	only device internal
Scene number [1...64]	1
Switch 1 send	no
Switch 2 send	no
ON/OFF send to thermostat	ON
1 byte value send	value [0...255]
send value	0
Automatic blind output enable	no
Internal blocking the inputs	active
Event 2 started with a delay	no

Further settings and assignments in different parameter windows of the outputs are also necessary.

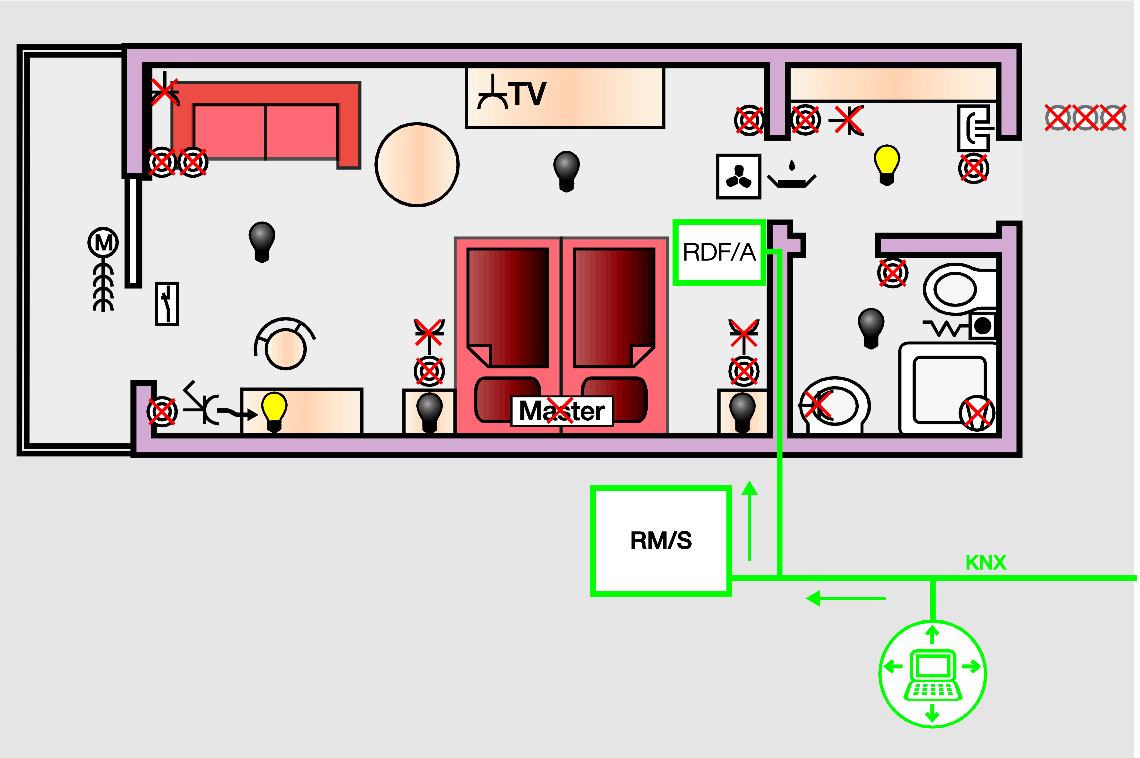
The following table includes an overview of these preconfigured settings:

Outputs	**Parameter window *Scene* of the individual outputs**		
	No scene assigned => unchanged	**Standard value**	**Assignment to scene number**
A: Socket switched		OFF	1
B: Floor or desk light socket		ON	1
C: Bathroom fan		OFF	1
D: Auxiliary electrical heater		OFF	1
E: Bedside left		OFF	1
F: Bedside right		OFF	1
G: Main room 1		OFF	1
H: Main room 2		OFF	1
I: Hall		ON	1
J: Bathroom		OFF	1
K: Blind	x		
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb		OFF	1
T: Room service		OFF	1
U: Room occupied; Please wait		OFF	1

🟦 Default setting of the standard value in the parameter windows of the outputs.

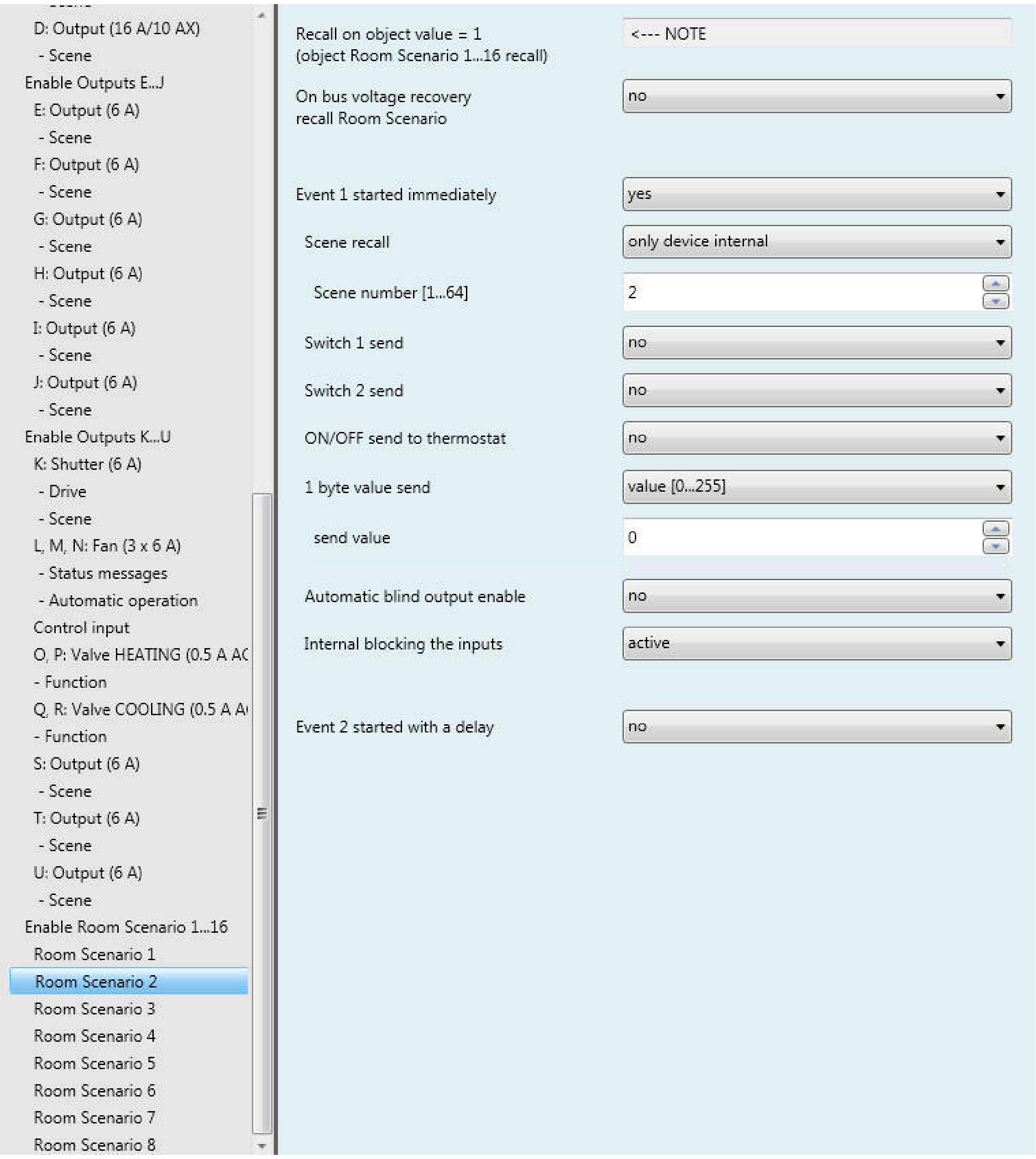
5.6.1 Room Scenario 1 in action

After Room Scenario 1 *Check In* has been triggered by reception via the bus, the Room Master switches the hall light and the floor/desk light on directly via the outputs. Different binary inputs as well as the outlets and the fan in the bathroom are blocked. The displays *Do not disturb*, *Room occupied*, *Please wait* as well as *Room service* are switched off. The thermostat, e.g. RDF/A is instructed to change to *Comfort* operating mode via a bus telegram.



5.7 Room Scenario 2

The Room Scenario 2 *Check Out – Room not occupied* is triggered by the 1 byte value 1 via communication object no. 2. The following default values in parameter window *Room Scenario 2* are preset:



Recall on object value = 1 (object Room Scenario 1...16 recall)	<--- NOTE
On bus voltage recovery recall Room Scenario	no
Event 1 started immediately	yes
Scene recall	only device internal
Scene number [1...64]	2
Switch 1 send	no
Switch 2 send	no
ON/OFF send to thermostat	no
1 byte value send	value [0...255]
send value	0
Automatic blind output enable	no
Internal blocking the inputs	active
Event 2 started with a delay	no

Further settings and assignments in different parameter windows of the outputs are also necessary.

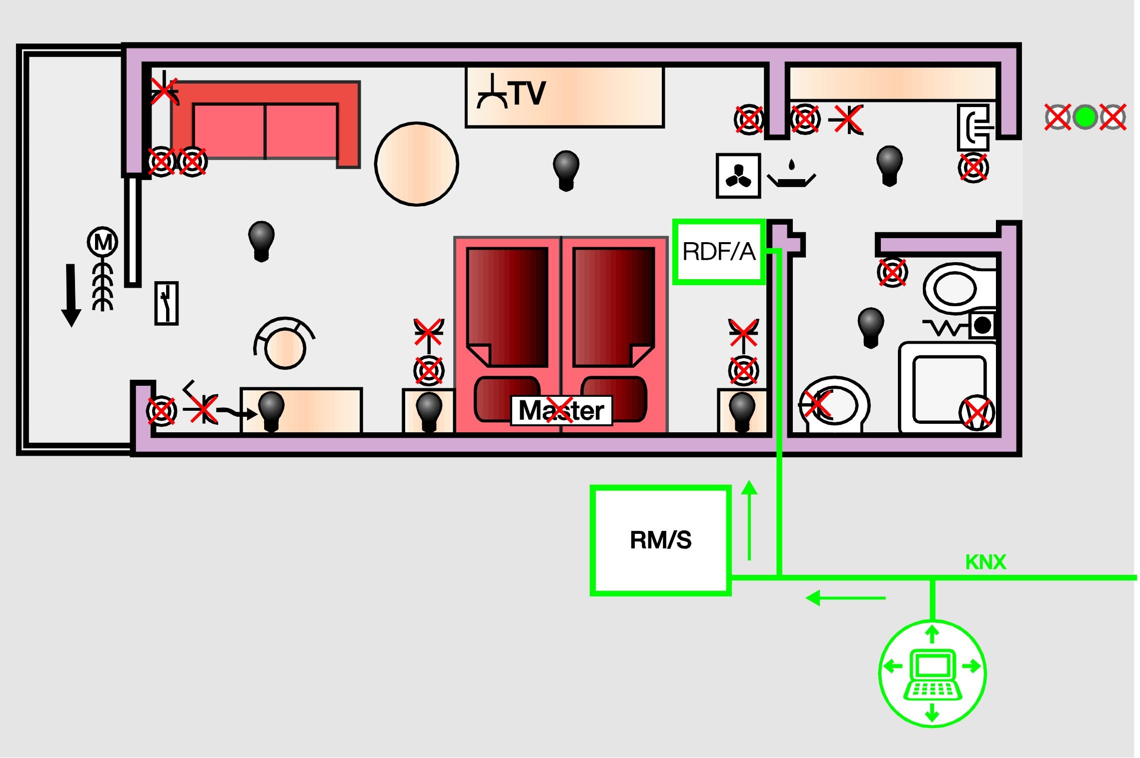
The following table includes an overview of these preconfigured settings:

	Parameter window *Scene* of the individual outputs		
Outputs	**No scene assigned => unchanged**	**Standard value**	**Assignment to scene number**
A: Socket switched		OFF	2
B: Floor or desk light socket		OFF	2
C: Bathroom fan		OFF	2
D: Auxiliary electrical heater		OFF	2
E: Bedside left		OFF	2
F: Bedside right		OFF	2
G: Main room 1		OFF	2
H: Main room 2		OFF	2
I: Hall		OFF	2
J: Bathroom		OFF	2
K: Blind		Position 0 Slat 0	2
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb		OFF	2
T: Room service		ON	2
U: Room occupied; Please wait		OFF	2

🟦 Default setting of the standard value in the parameter windows of the outputs.

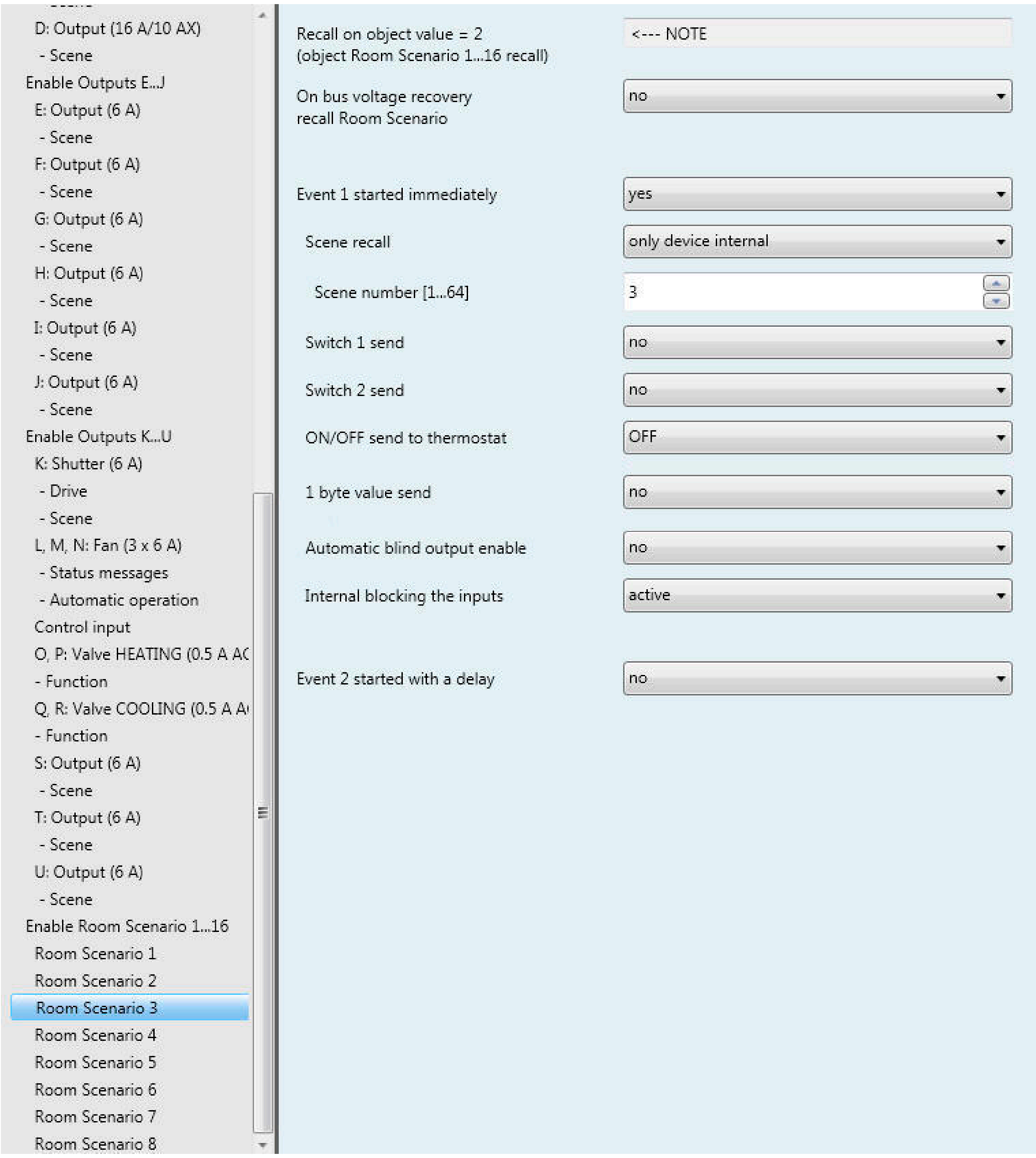
5.7.1 Room Scenario 2 in action

After Room Scenario 2 *Check Out* has been triggered by reception via the bus, the Room Master switches all lights off directly via the outputs. The blind moves DOWNWARDS. Different binary inputs as well as the outlets and the fan in the bathroom are blocked. The displays *Do not disturb* as well as *Room occupied*, *Please wait* are switched off, and the display *Room service* is switched on. The thermostat, e.g. RDF/A receives a telegram via the bus to change to *Standby*.



5.8 Room Scenario 3

The Room Scenario 3 *Standby – Room released* is triggered by the 1 byte value 2 via communication object no. 2. The following default values in parameter window *Room Scenario 3* are preset:



Recall on object value = 2 (object Room Scenario 1...16 recall): <--- NOTE

On bus voltage recovery recall Room Scenario: no

Event 1 started immediately: yes

Scene recall: only device internal

Scene number [1...64]: 3

Switch 1 send: no

Switch 2 send: no

ON/OFF send to thermostat: OFF

1 byte value send: no

Automatic blind output enable: no

Internal blocking the inputs: active

Event 2 started with a delay: no

Further settings and assignments in different parameter windows of the outputs are also necessary.

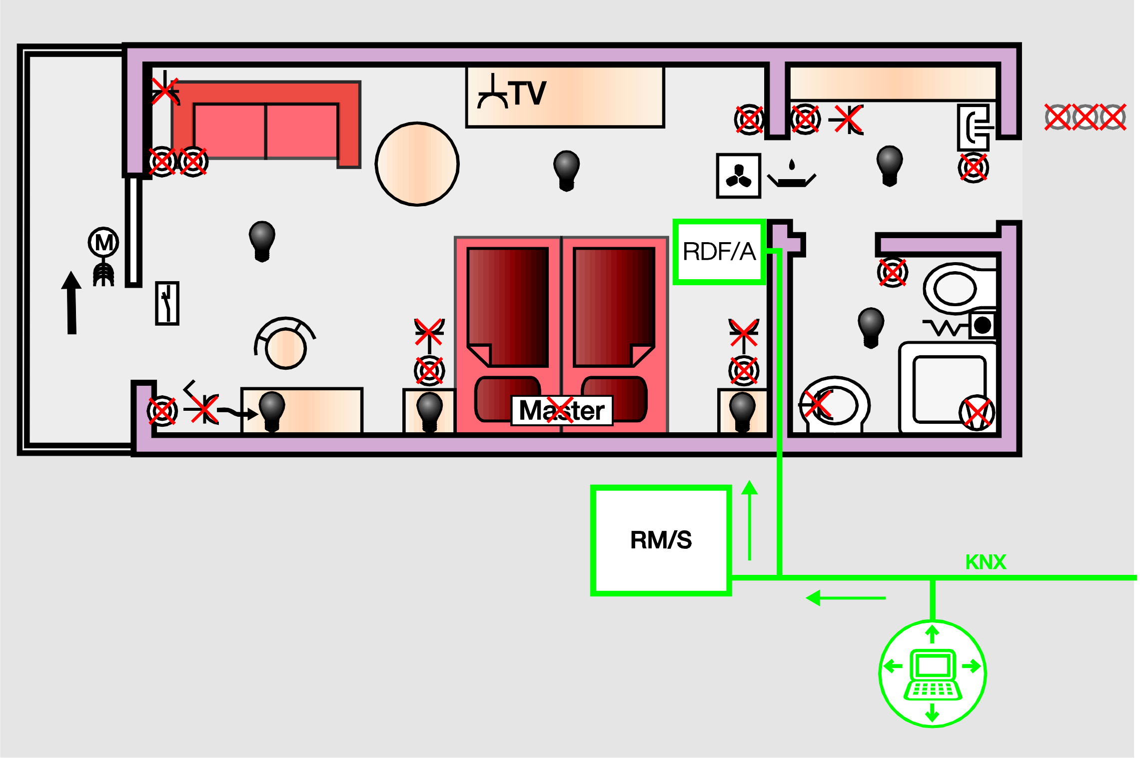
The following table includes an overview of these preconfigured settings:

	Parameter window *Scene* of the individual outputs		
Outputs	**No scene assigned => unchanged**	**Standard value**	**Assignment to scene number**
A: Socket switched		OFF	3
B: Floor or desk light socket		OFF	3
C: Bathroom fan		OFF	3
D: Auxiliary electrical heater		OFF	3
E: Bedside left		OFF	3
F: Bedside right		OFF	3
G: Main room 1		OFF	3
H: Main room 2		OFF	3
I: Hall		OFF	3
J: Bathroom		OFF	3
K: Blind		Position 100 Slat 100	3
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb		OFF	3
T: Room service		OFF	3
U: Room occupied; Please wait		OFF	3

🟦 Default setting of the standard value in the parameter windows of the outputs.

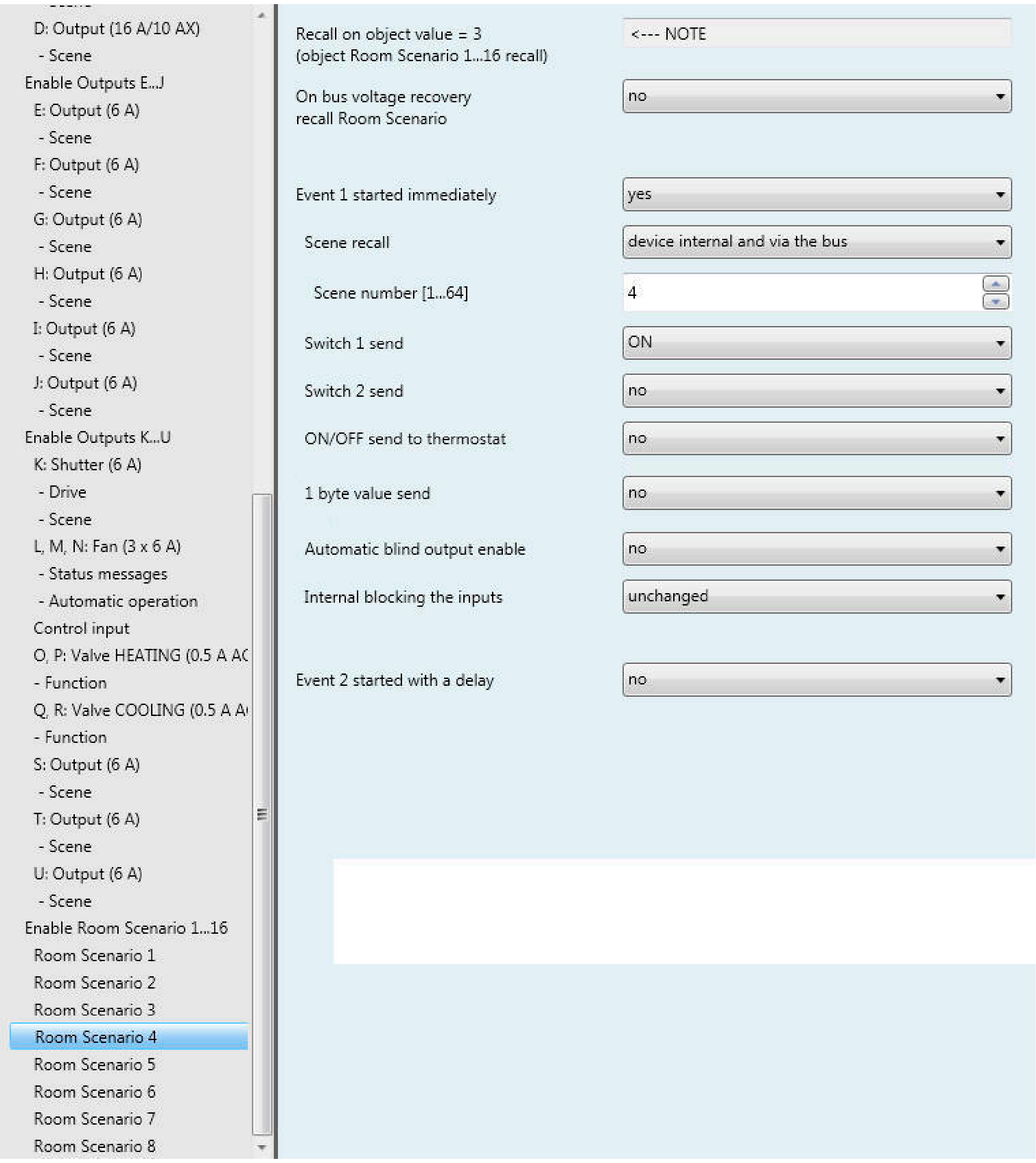
5.8.1 Room Scenario 3 in action

After Room Scenario 3 *Standby – Room released* has been triggered by reception via the bus, the Room Master switches all lights off directly via the outputs. The blind moves UPWARDS. Different binary inputs as well as the outlets and the fan in the bathroom are blocked. The displays *Do not disturb*, *Room occupied*, *Please wait* as well as *Room service* are switched off. The thermostat, e.g. RDF/A receives a telegram via the bus to change to *Building Protection*.



5.9 Room Scenario 4

Room Scenario 4 *Emergency pressed* is triggered via binary input i directly connected to the emergency switch in the bathroom. The following default values in parameter window *Room Scenario 4* are preset:



Recall on object value = 3 (object Room Scenario 1...16 recall)	<--- NOTE
On bus voltage recovery recall Room Scenario	no
Event 1 started immediately	yes
Scene recall	device internal and via the bus
Scene number [1...64]	4
Switch 1 send	ON
Switch 2 send	no
ON/OFF send to thermostat	no
1 byte value send	no
Automatic blind output enable	no
Internal blocking the inputs	unchanged
Event 2 started with a delay	no

Further settings and assignments in different parameter windows of the outputs are also necessary.

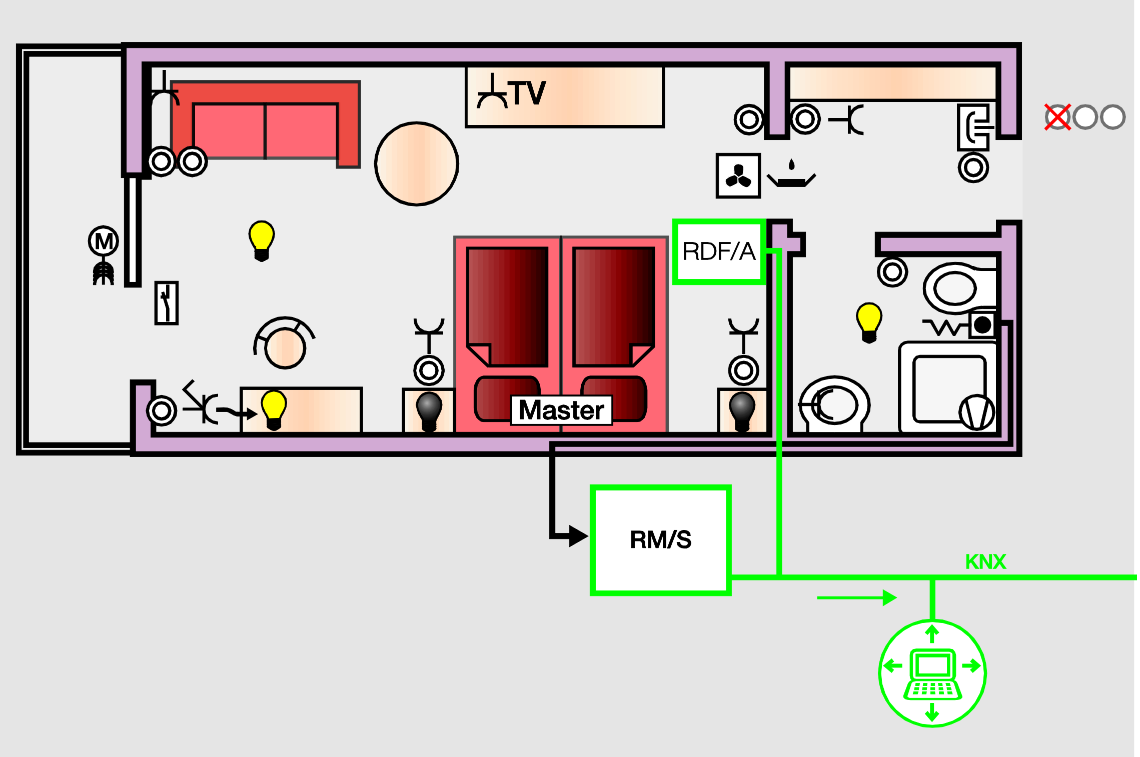
The following table includes an overview of these preconfigured settings:

Outputs	**Parameter window *Scene* of the individual outputs**		
	No scene assigned => unchanged	**Standard value**	**Assignment to scene number**
A: Socket switched	x		
B: Floor or desk light socket		ON	4
C: Bathroom fan	x		
D: Auxiliary electrical heater	x		
E: Bedside left	x		
F: Bedside right	x		
G: Main room 1		ON	4
H: Main room 2		ON	4
I: Hall		ON	4
J: Bathroom		ON	4
K: Blind	x		
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb		OFF	4
T: Room service	x		
U: Room occupied; Please wait	x		

🟦 Default setting of the standard value in the parameter windows of the outputs.

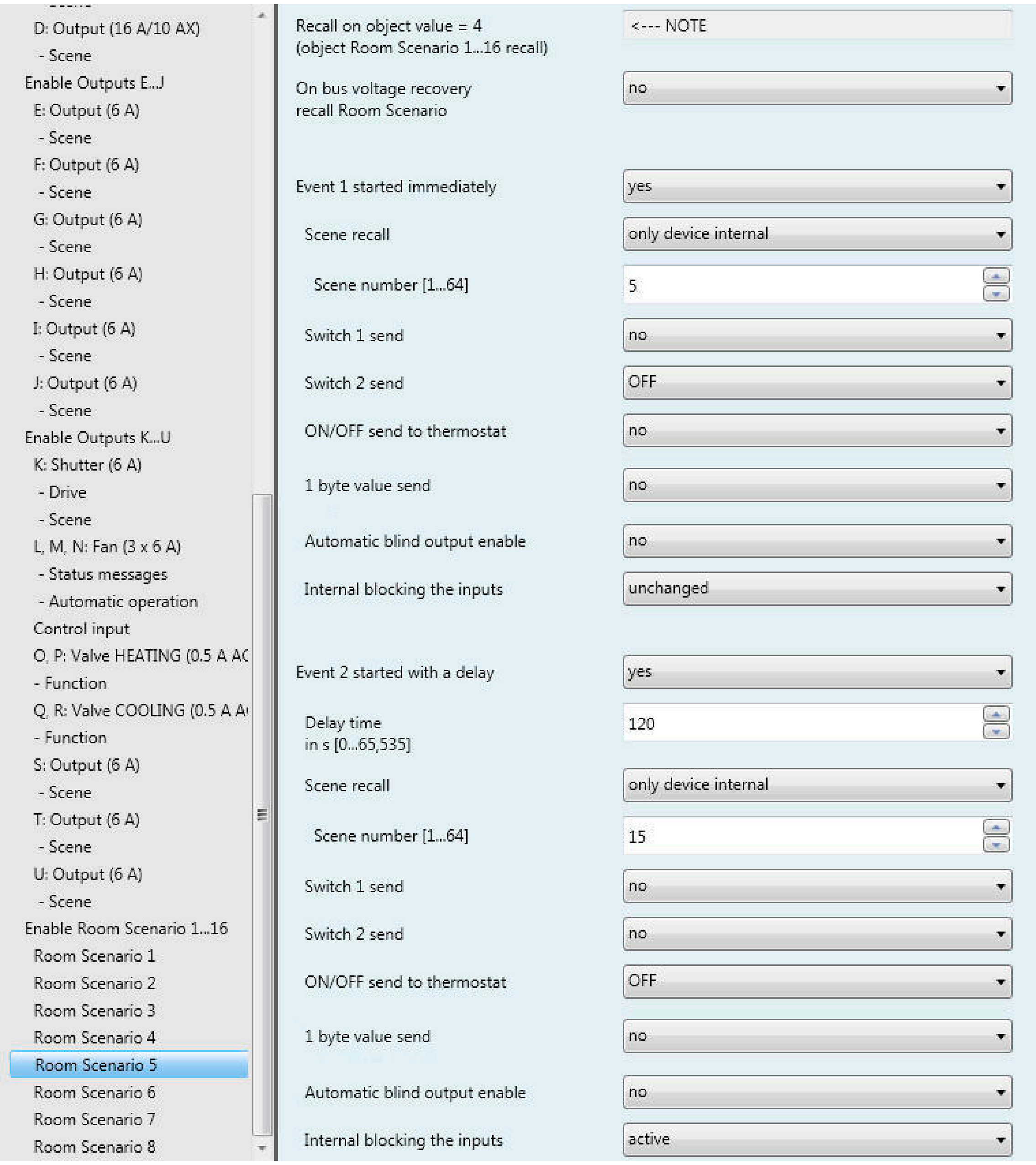
5.9.1 Room Scenario 4 in action

After Room Scenario 4 *Emergency pressed* has been triggered directly via the emergency switch, the Room Master switches defined lamps on directly via the outputs. The display *Do not disturb* is switched off. A message is sent to reception via the bus – communication object no. 3 *Switch 1* sends an ON telegram with the value 1.



5.10 Room Scenario 5

Room Scenario 5 *Remove key card* is triggered directly via the key card switch directly connected to binary input p. The following default values in parameter window *Room Scenario 5* are preset:



Recall on object value = 4 (object Room Scenario 1...16 recall)	<--- NOTE
On bus voltage recovery recall Room Scenario	no
Event 1 started immediately	yes
Scene recall	only device internal
Scene number [1...64]	5
Switch 1 send	no
Switch 2 send	OFF
ON/OFF send to thermostat	no
1 byte value send	no
Automatic blind output enable	no
Internal blocking the inputs	unchanged
Event 2 started with a delay	yes
Delay time in s [0...65,535]	120
Scene recall	only device internal
Scene number [1...64]	15
Switch 1 send	no
Switch 2 send	no
ON/OFF send to thermostat	OFF
1 byte value send	no
Automatic blind output enable	no
Internal blocking the inputs	active

Further settings and assignments in different parameter windows of the outputs are also necessary.

The following tables include an overview of these preconfigured settings for event 1:

	Parameter window *Scene* of the individual outputs		
Outputs	**No scene assigned => unchanged**	**Standard value**	**Assignment to scene number**
A: Socket switched		OFF	5
B: Floor or desk light socket	x		
C: Bathroom fan		OFF	5
D: Auxiliary electrical heater		OFF	5
E: Bedside left		OFF	5
F: Bedside right		OFF	5
G: Main room 1		OFF	5
H: Main room 2		OFF	5
I: Hall	x		
J: Bathroom		OFF	5
K: Blind	x		
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb		OFF	5
T: Room service		OFF	5
U: Room occupied; Please wait		OFF	5

🟦 Default setting of the standard value in the parameter windows of the outputs.

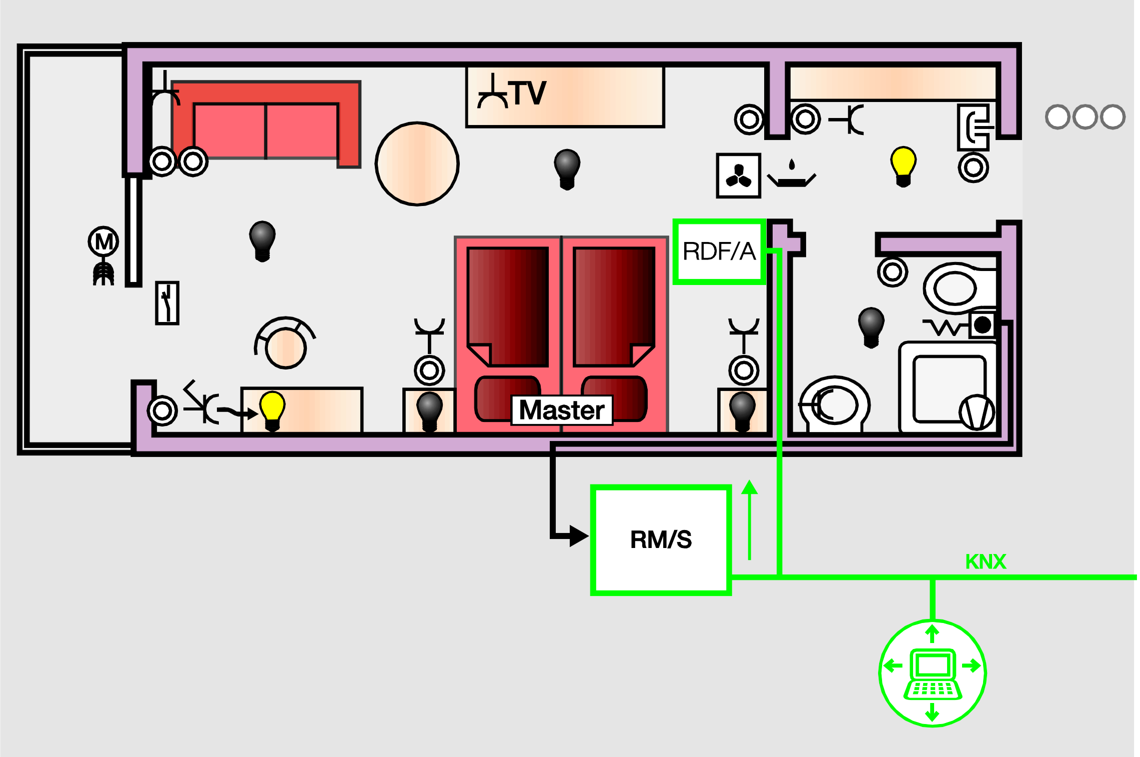
The following tables include an overview of these preconfigured settings for event 2 that is triggered with a delay:

	Parameter window *Scene* of the individual outputs		
Outputs	**No scene assigned => unchanged**	**Standard value**	**Assignment to scene number**
A: Socket switched		OFF	15
B: Floor or desk light socket		OFF	15
C: Bathroom fan		OFF	15
D: Auxiliary electrical heater		OFF	15
E: Bedside left		OFF	15
F: Bedside right		OFF	15
G: Main room 1		OFF	15
H: Main room 2		OFF	15
I: Hall		OFF	15
J: Bathroom		OFF	15
K: Blind	x		
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb		OFF	15
T: Room service		OFF	15
U: Room occupied; Please wait		OFF	15

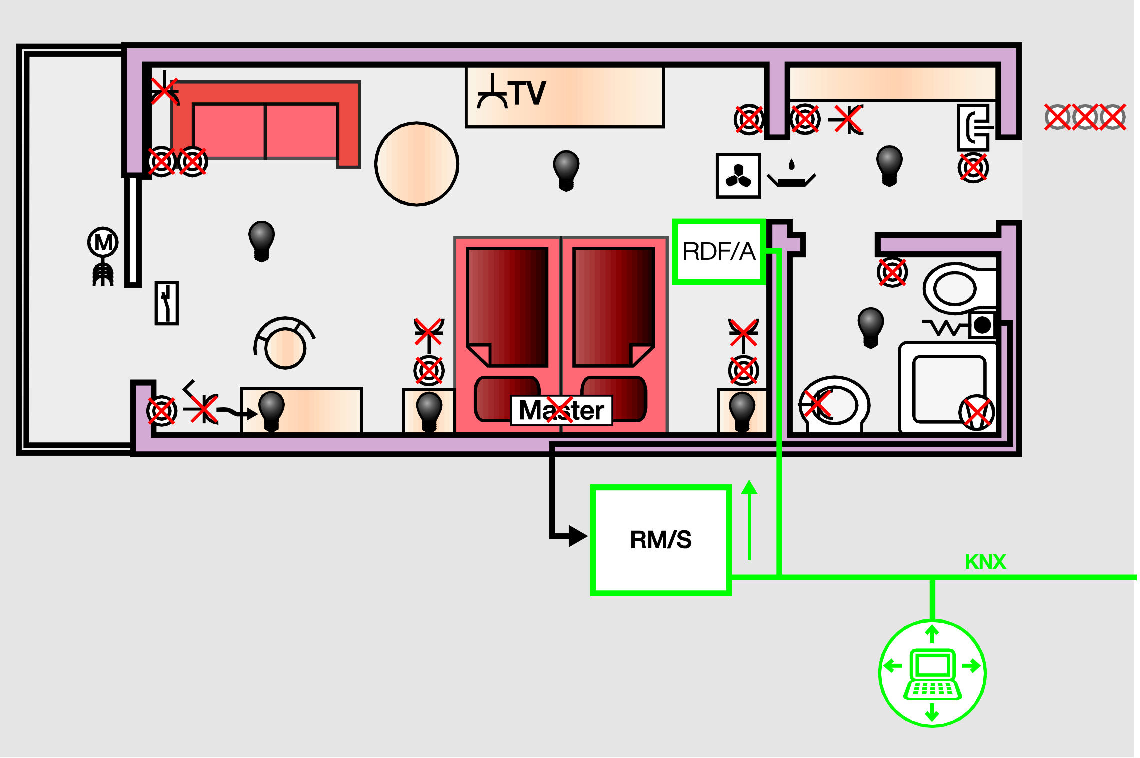
🟦 Default setting of the standard value in the parameter windows of the outputs.

5.10.1 Room Scenario 5 in action

After Room Scenario 5 *Remove key card* has been triggered directly via the key card switch, the Room Master directly switches all lights off, with the exception of the hall light and the floor/desk light, via the outputs on event 1. The thermostat, e.g. RDF/A receives a telegram via the bus to change to *Building Protection*.

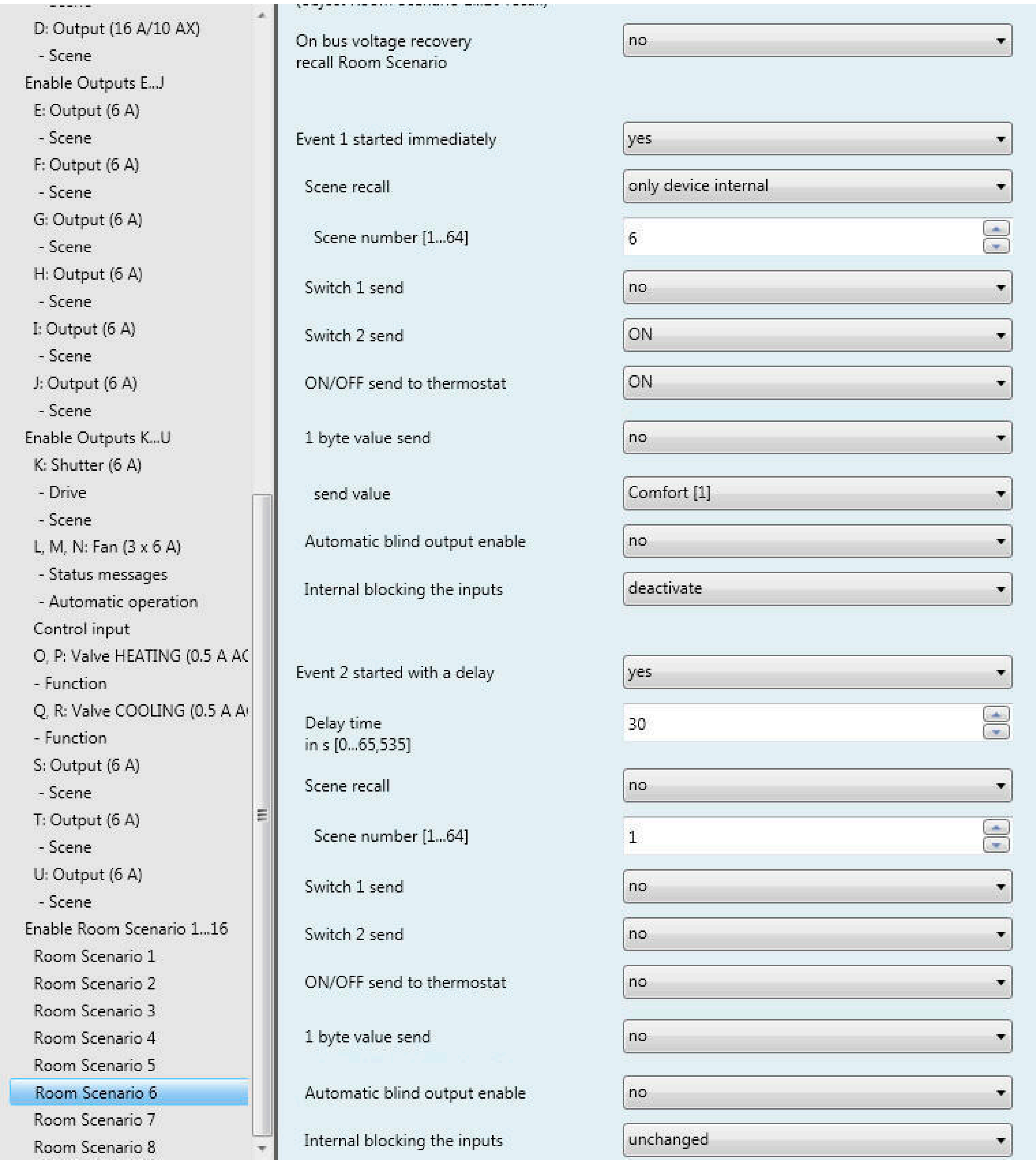


All lights are switched off directly via the outputs with delayed event 2, after the delay time has timed out. Different binary inputs as well as the outlets and the fan in the bathroom are blocked. The displays *Do not disturb*, *Room occupied*, *Please wait* as well as *Room service* are switched off. The thermostat, e.g. RDF/A receives a telegram via the bus to change to *Building Protection*.



5.11 Room Scenario 6

Room Scenario 6 *Insert key card* is triggered directly via the key card switch directly connected to binary input p. The following default values in parameter window *Room Scenario 6* are preset:



On bus voltage recovery recall Room Scenario	no
Event 1 started immediately	yes
Scene recall	only device internal
Scene number [1...64]	6
Switch 1 send	no
Switch 2 send	ON
ON/OFF send to thermostat	ON
1 byte value send	no
send value	Comfort [1]
Automatic blind output enable	no
Internal blocking the inputs	deactivate
Event 2 started with a delay	yes
Delay time in s [0...65,535]	30
Scene recall	no
Scene number [1...64]	1
Switch 1 send	no
Switch 2 send	no
ON/OFF send to thermostat	no
1 byte value send	no
Automatic blind output enable	no
Internal blocking the inputs	unchanged

Note

In Room Scenario *Insert key card* the parameter started with a delay *Event 2* should be selected with the option *yes*.

Reason: If the key card is briefly removed (shorter than the delay time of event 2) and the key card is reintroduced, the room is set to an inactive state by delayed event 2 of Room Scenario *Remove key card*. If delayed event 2 is active in Room Scenario 6, this will reset the timer. In this way delayed event 2 of Room Scenario 5 is deleted and not executed.

Further settings and assignments in different parameter windows of the outputs are also necessary.

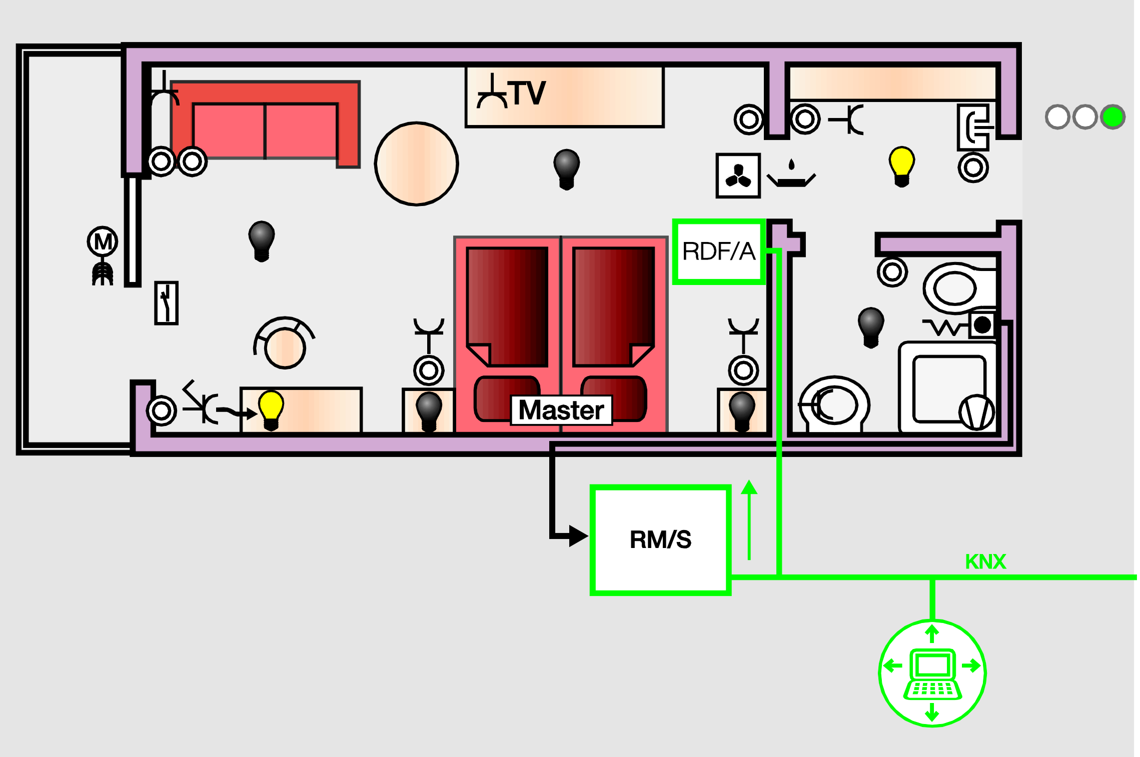
The following table includes an overview of these preconfigured settings:

	Parameter window *Scene* of the individual outputs		
Outputs	**No scene assigned => unchanged**	**Standard value**	**Assignment to scene number**
A: Socket switched		ON	6
B: Floor or desk light socket		ON	6
C: Bathroom fan	x		
D: Auxiliary electrical heater	x		
E: Bedside left	x		
F: Bedside right	x		
G: Main room 1	x		
H: Main room 2	x		
I: Hall		ON	6
J: Bathroom	x		
K: Blind	x		
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb	x		
T: Room service	x		
U: Room occupied; Please wait		ON	6

🟦 Default setting of the standard value in the parameter windows of the outputs.

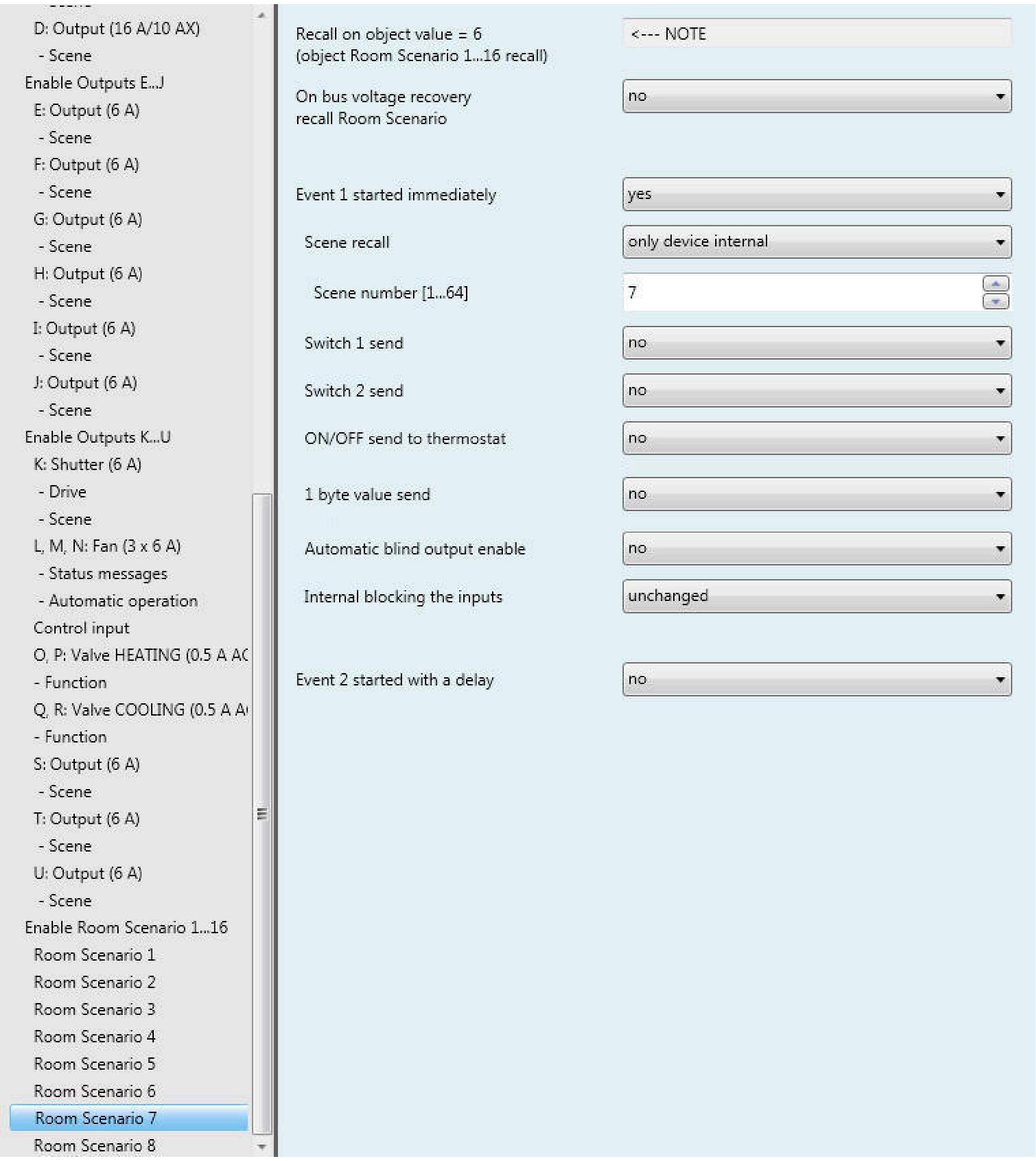
5.11.1 Room Scenario 6 in action

After Room Scenario 6 *Insert key card* has been triggered by the key card switch, the Room Master switches the hall light and the floor/desk light on directly via the outputs. The display *Room occupied*, *Please wait* is switched on. The thermostat, e.g. RDF/A receives a telegram via the bus to change to *Comfort*.



5.12 Room Scenario 7

Room Scenario 7 *Master OFF* is triggered directly via the master switch on the bed connected to binary input a. The following default values in parameter window *Room Scenario 7* are preset:



Recall on object value = 6 (object Room Scenario 1...16 recall): <--- NOTE

On bus voltage recovery recall Room Scenario: no

Event 1 started immediately: yes

Scene recall: only device internal

Scene number [1...64]: 7

Switch 1 send: no

Switch 2 send: no

ON/OFF send to thermostat: no

1 byte value send: no

Automatic blind output enable: no

Internal blocking the inputs: unchanged

Event 2 started with a delay: no

Further settings and assignments in different parameter windows of the outputs are also necessary.

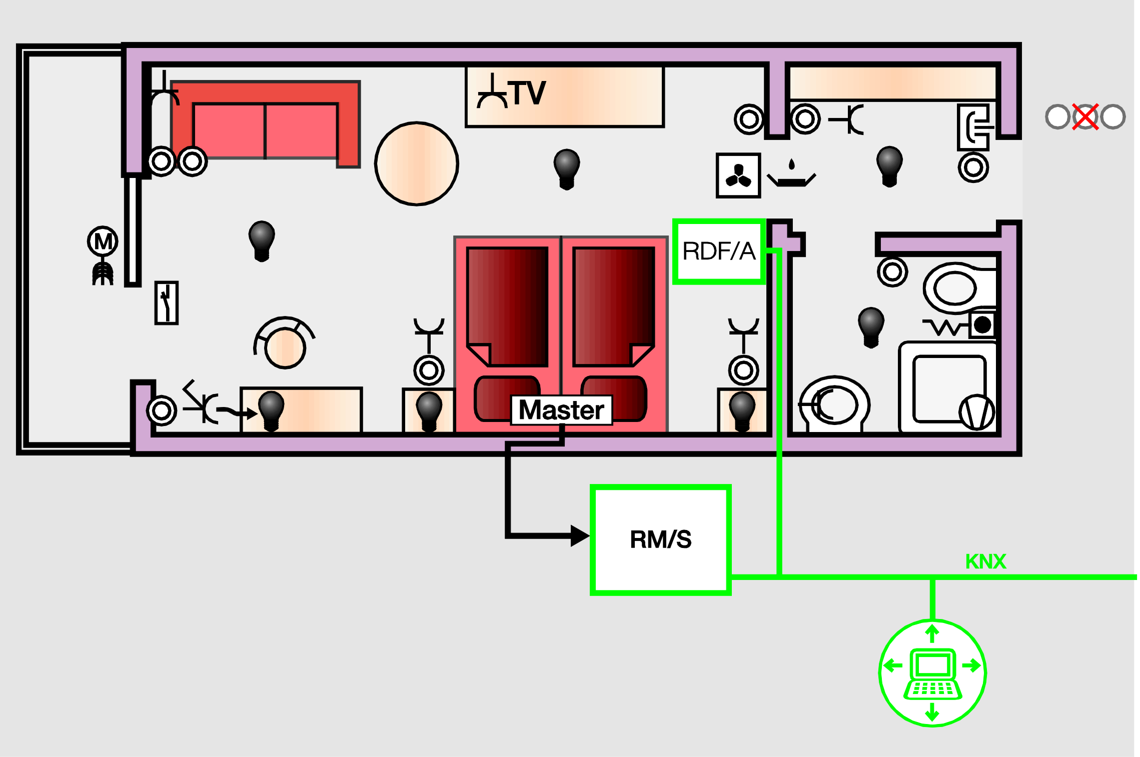
The following table includes an overview of these preconfigured settings:

	Parameter window *Scene* of the individual outputs		
Outputs	**No scene assigned => unchanged**	**Standard value**	**Assignment to scene number**
A: Socket switched	x		
B: Floor or desk light socket		OFF	7
C: Bathroom fan		OFF	7
D: Auxiliary electrical heater	x		
E: Bedside left		OFF	7
F: Bedside right		OFF	7
G: Main room 1		OFF	7
H: Main room 2		OFF	7
I: Hall		OFF	7
J: Bathroom		OFF	7
K: Blind	x		
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb	x		
T: Room service		OFF	7
U: Room occupied; Please wait	x		

🟦 Default setting of the standard value in the parameter windows of the outputs.

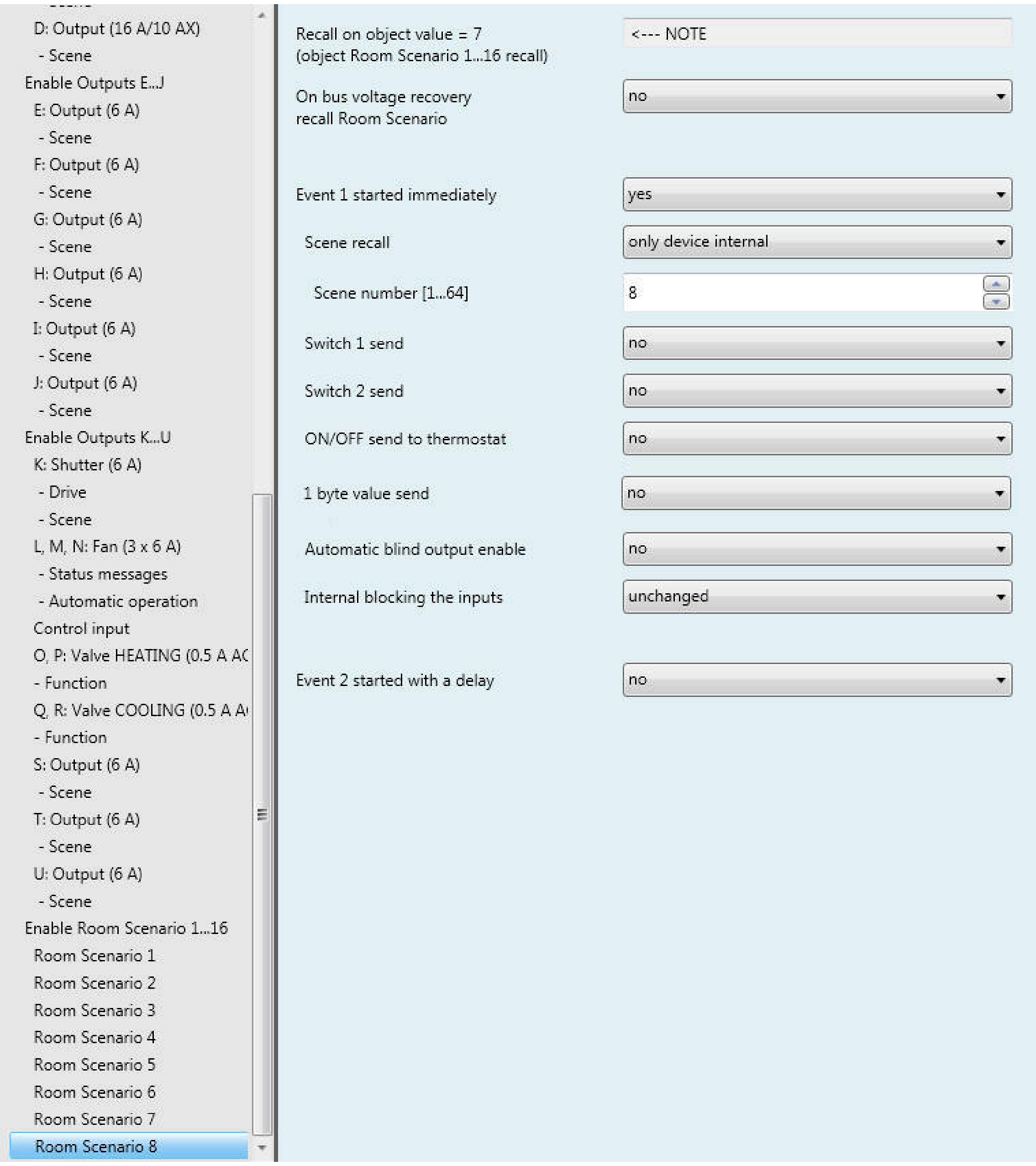
5.12.1 Room Scenario 7 in action

After Room Scenario 7 *Master OFF* has been triggered directly via the master switch, the Room Master switches off all lights and the fan in the bathroom directly via the outputs. The display *Room service* is switched off.



5.13 Room Scenario 8

Room Scenario 8 *Master ON* is triggered directly via the master push button on the bed connected to binary input a. The following default values in parameter window *Room Scenario 8* are preset:



Recall on object value = 7 (object Room Scenario 1...16 recall)	<--- NOTE
On bus voltage recovery recall Room Scenario	no
Event 1 started immediately	yes
Scene recall	only device internal
Scene number [1...64]	8
Switch 1 send	no
Switch 2 send	no
ON/OFF send to thermostat	no
1 byte value send	no
Automatic blind output enable	no
Internal blocking the inputs	unchanged
Event 2 started with a delay	no

Further settings and assignments in different parameter windows of the outputs are also necessary.

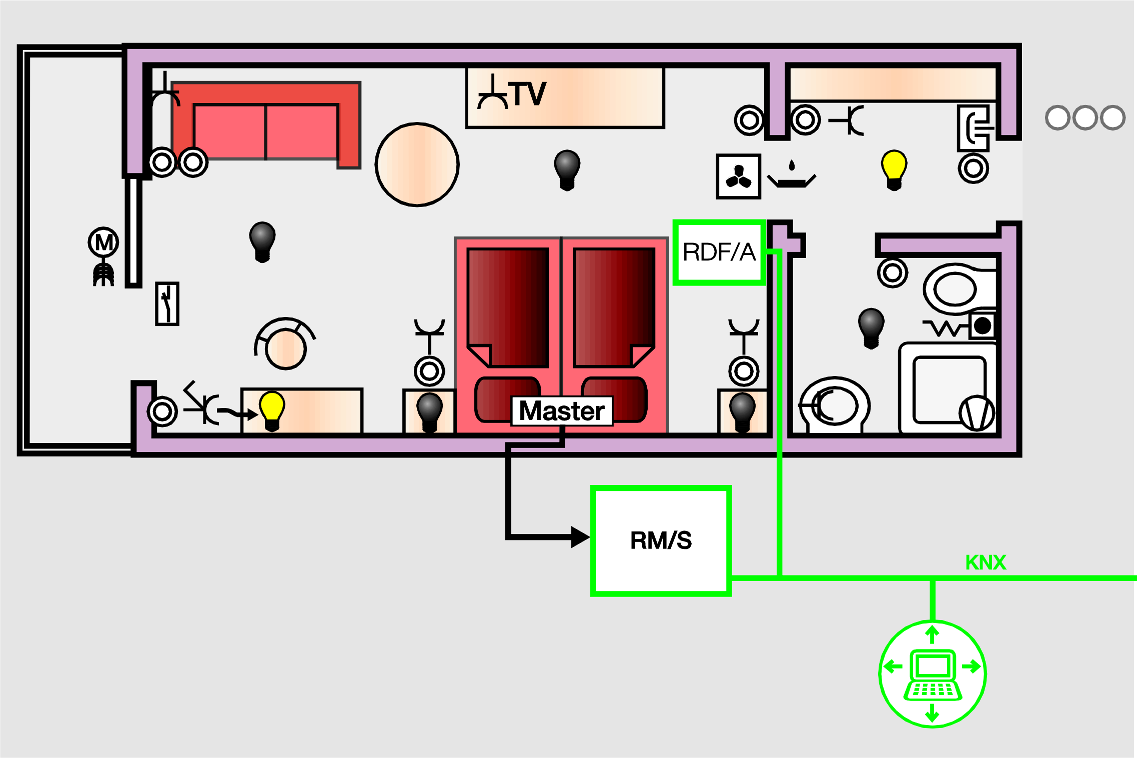
The following table includes an overview of these preconfigured settings:

Outputs	Parameter window *Scene* of the individual outputs		
	No scene assigned => unchanged	**Standard value**	**Assignment to scene number**
A: Socket switched	x	🟦	
B: Floor or desk light socket		🟦 ON	8
C: Bathroom fan	x	🟦	
D: Auxiliary electrical heater	x	🟦	
E: Bedside left	x	🟦	
F: Bedside right	x	🟦	
G: Main room 1	x	🟦	
H: Main room 2		🟦	
I: Hall		🟦 ON	8
J: Bathroom	x	🟦	
K: Blind	x	🟦	
L, M, N: Fan	Via control value of the RDF/A		
O, P, Q, R: Valves			
S: Do not disturb	x	🟦	
T: Room service	x	🟦	
U: Room occupied; Please wait	x	🟦	

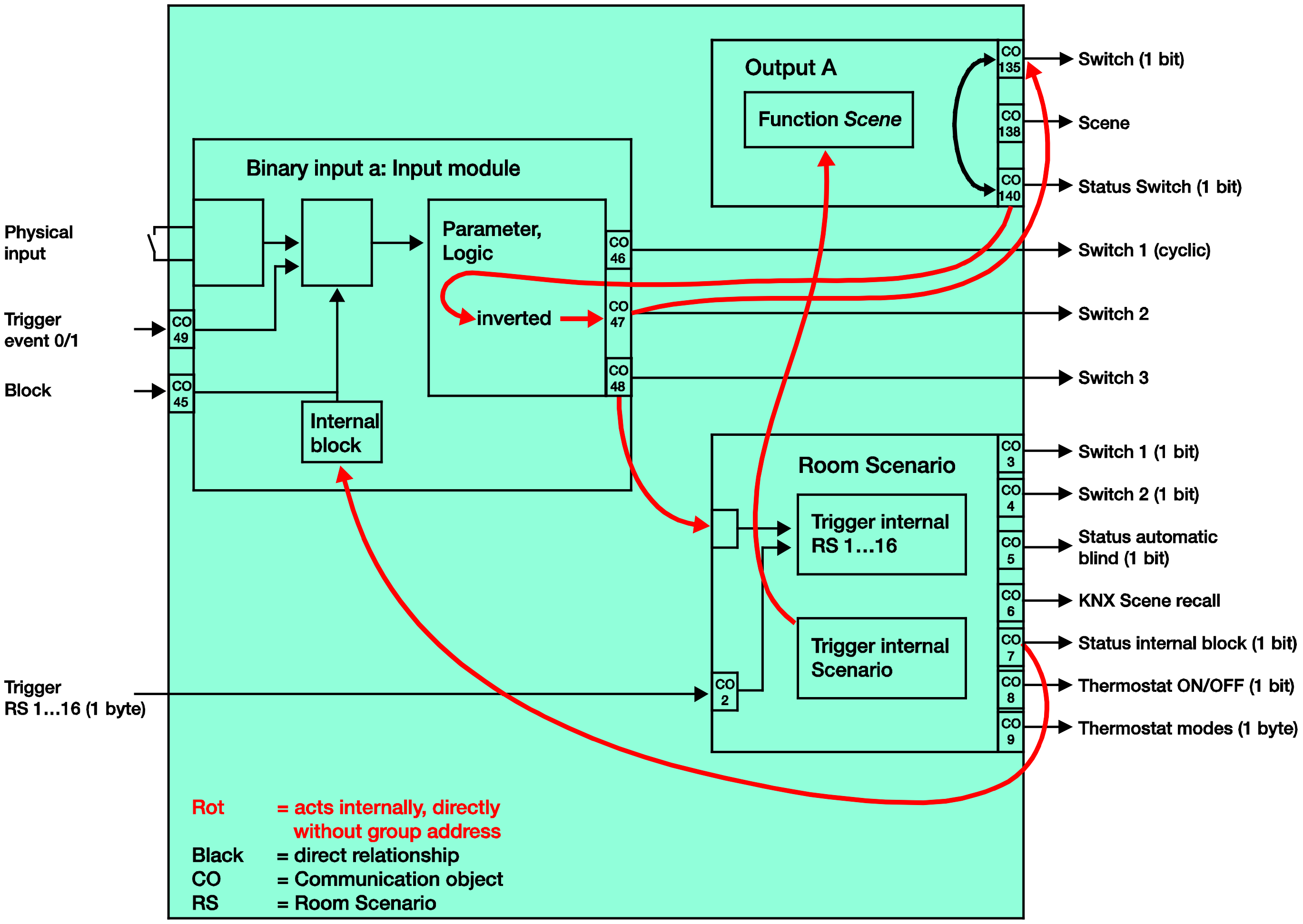
🟦 Default setting of the standard value in the parameter windows of the outputs.

5.13.1 Room Scenario 8 in action

After Room Scenario 8 *Master ON* has been triggered directly by the Master push button, the Room Master directly switches on the hall light and the floor/desk light via the outputs.



5.14 Special feature Switch sensor



This block diagram is only valid if a binary input is parameterized as a switch sensor with the *TOGGLE* switch function.

Parameterization of the binary input a:

Switch sensor

Switch 1: not used
Switch 2: switches directly on output A *TOGGLE*
Switch 3: activates a Room Scenario

Parameterization of the output a:

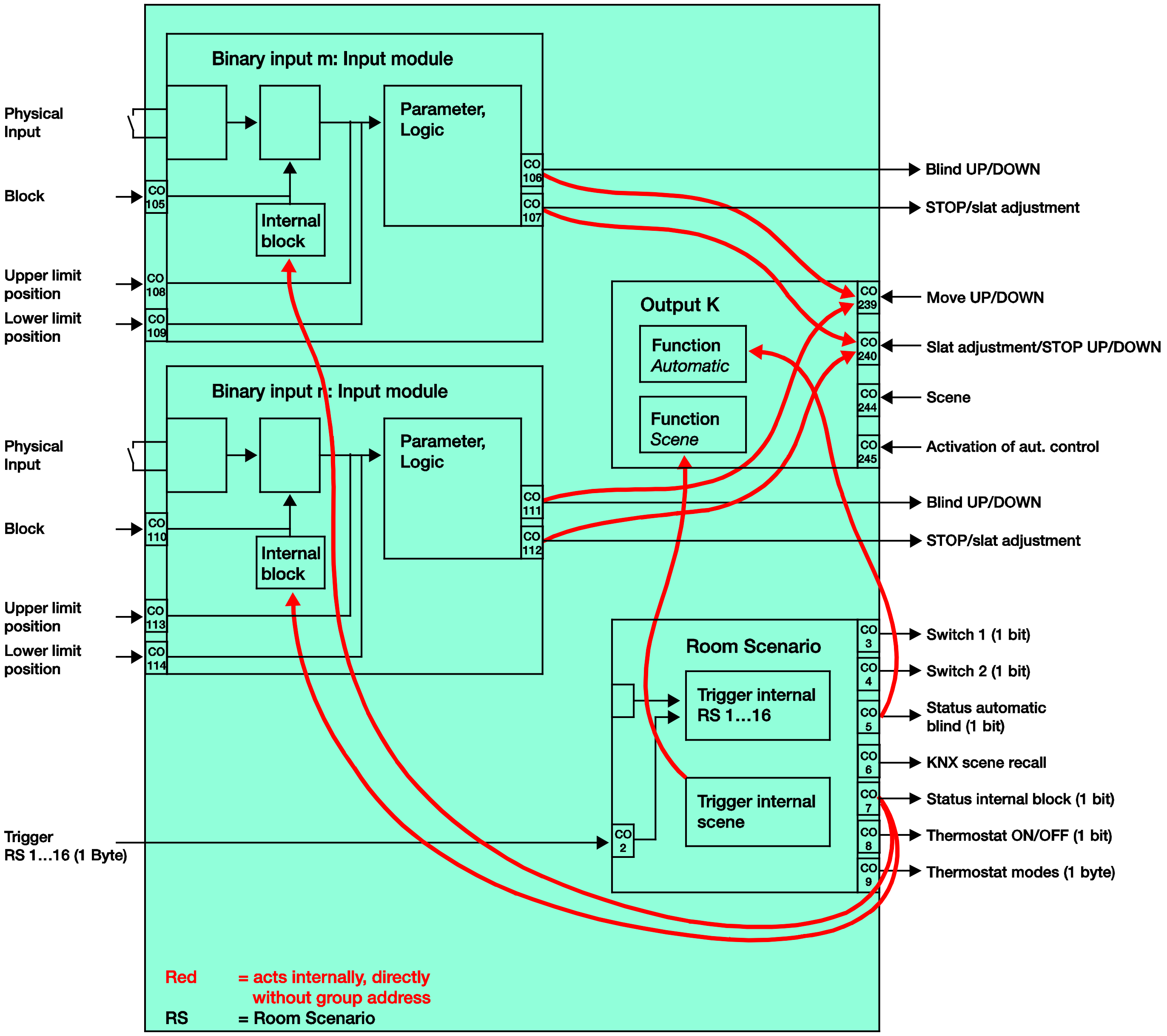
Normally open contact

Enable communication object No. 140: Status switch 1 bit = yes
Send object value = no, update only
Object value of contact position: 1 = closed, 0 = opened
Enable function Scene = yes

Note

The parametric programming as a N/O contact and the contact position must be matched to one another to ensure that the status of the output is correctly fed back to communication object *Switch 2*. In this way, pressing a button twice for ON/OFF switching is prevented.

5.15 Special feature Blind sensor



Parameterization of the binary input m:

2 button operation

Short operation = STOP/slat OPEN
Long operation = move UP

Parameterization of the binary input n:

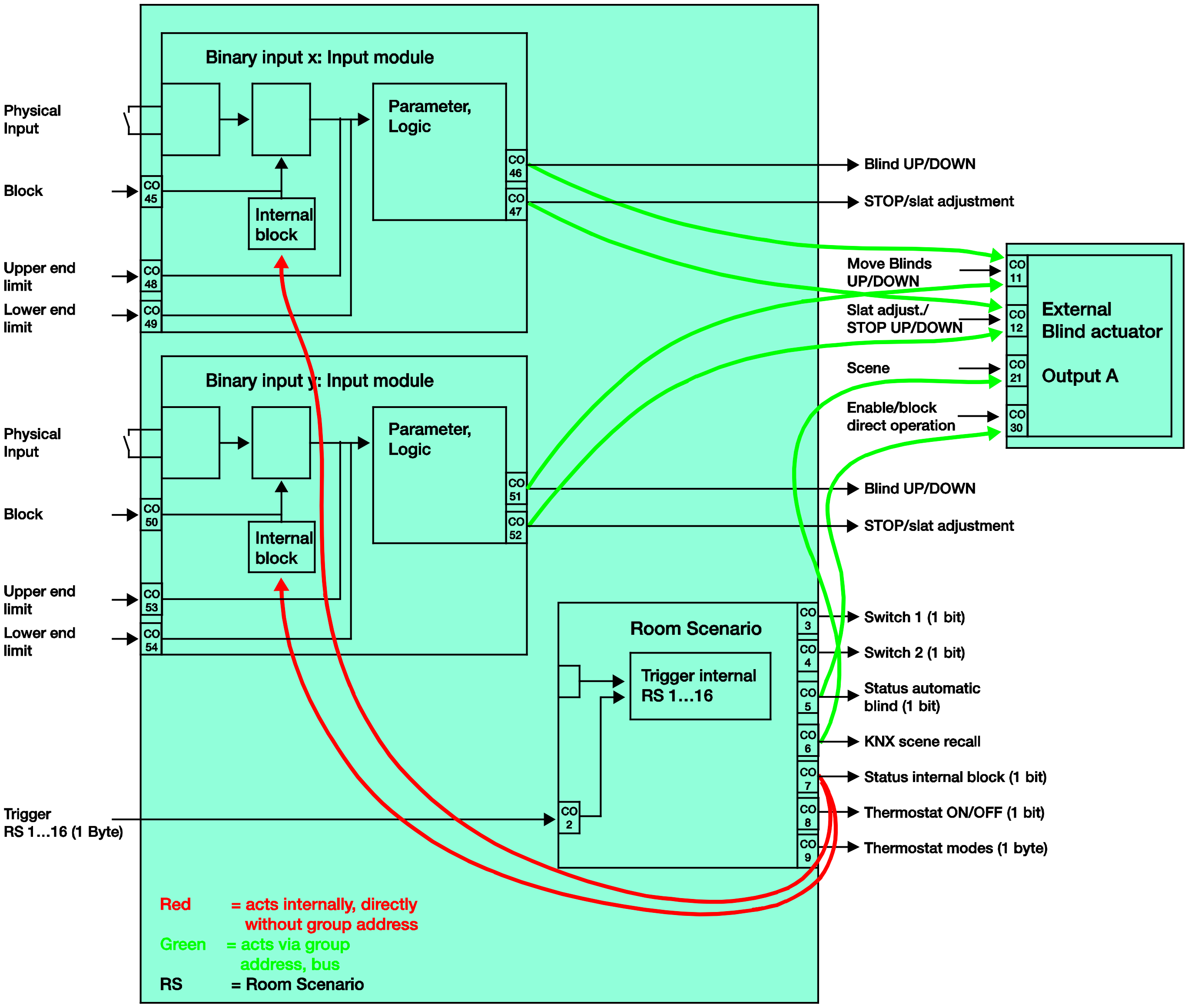
2 button operation

Short operation = STOP/slat CLOSE
Long operation = move DOWN

Parameterization of the output K:

Enable function automatic = yes
Enable function Scene = yes

5.15.1 Special feature Blind sensor with external Blind actuator



Parameterization of the binary input x:

2 button operation

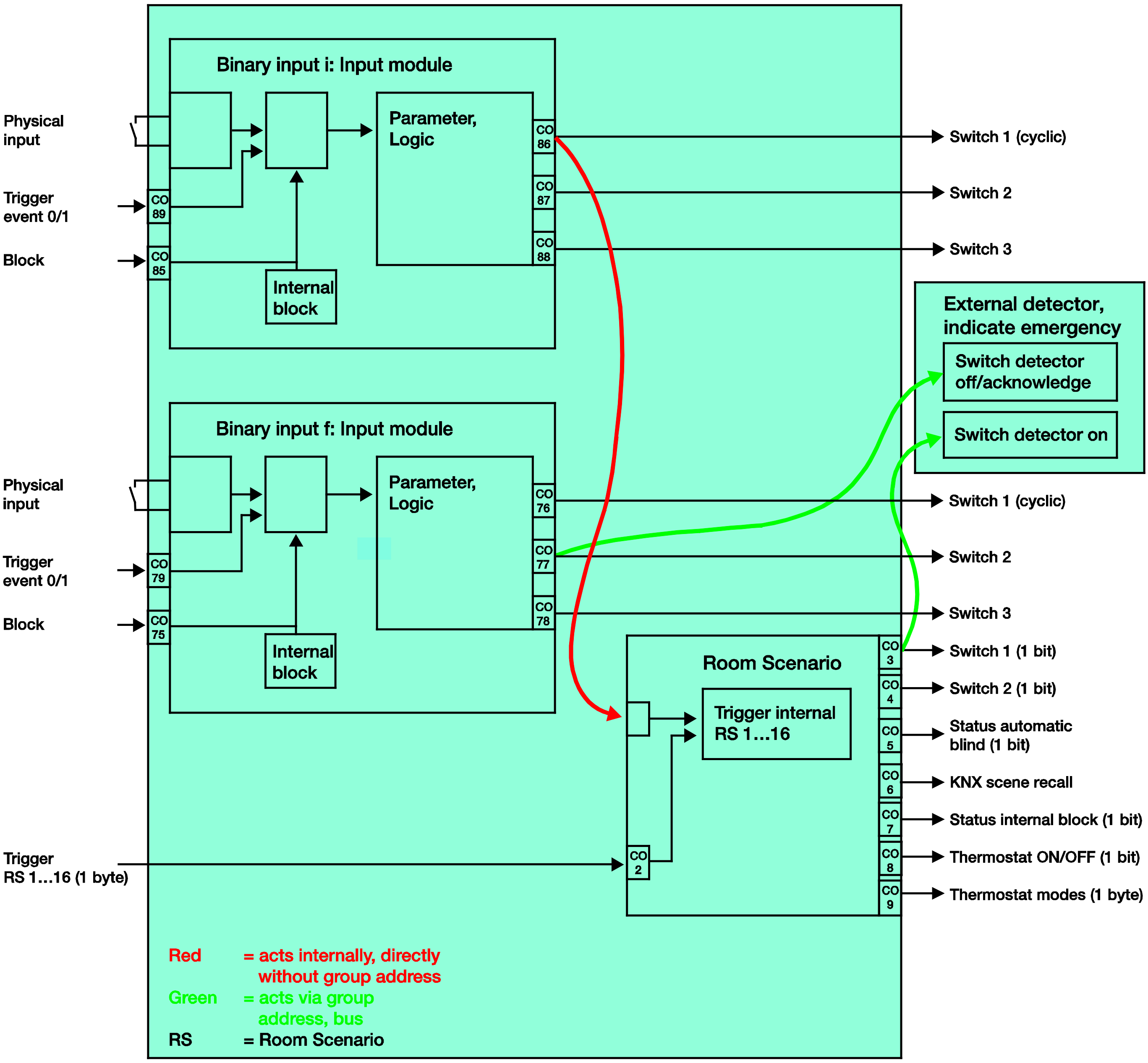
Short operation = STOP/slat OPEN
Long operation = move UP

Parameterization of the binary input y:

2 button operation

Short operation = STOP/slat CLOSE
Long operation = move DOWN

5.16 Special feature Acknowledge emergency



Parameterization of the binary input i (Emergency):

Switch sensor

Switch 1: activates Room Scenario 4: Event 0 = ON, Event 1 = ON
Internal connection = RS 3/4

Parameterization of the binary input f (Hall light):

Switch sensor

Distinction between short and long operation = yes
Long operation from... = 1 s

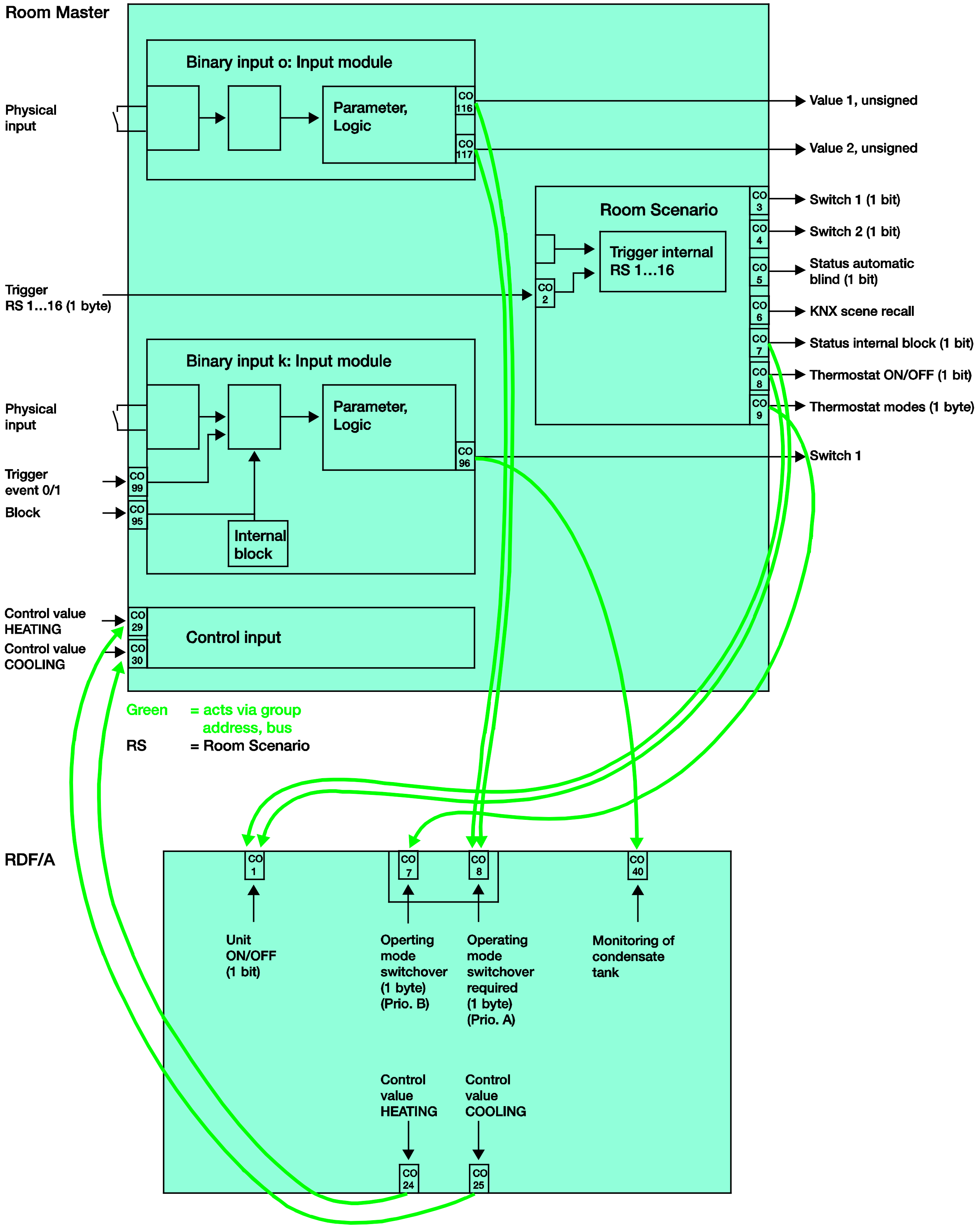
Switch 1: switches directly on output I *TOGGLE*
Event 0 = TOGGLE; Event 1 = no reaction
Internal connection = output I (6 A)

Switch 2: resets the detector and switches output T *OFF*
Event 0 = no reaction
Event 1 = OFF
Internal connection = output T (6 A)

Emergency call function:

If the emergency signal is triggered via a pull cord in the bathroom, Room Scenario 4 is set. An external signalling device is actuated by function Switch 1. By an extended actuation of the push button in the hall (input f), the emergency call is acknowledged and the signalling device is reset.

5.17 Special feature RDF/A



The room states set the RDF/A! The RDF/A sets the Room Master!

Note
The fan limitation must be set to same in both devices!

Parameterization of the binary input o (Window contact):

Value/Forced operation

Send value 1 [0…255]: 4 = Building Protection
Send value 2 [0…255]: 0 = Automatic
For further information see: Operating mode, page 165

Parameterization of the binary input k (Drip tray):

Switch sensor

Signal condensate tank (drip tray): 0 = OFF, 1 = ON

Parameterization of the RDF/A:

Switching the device On/Off: 0 = OFF, 1 = ON
Toggling of operating mode = such as thermostat on RM/S (Prio. B)
Toggling of operating mode forces = OMO as thermostat on RM/S (Prio. A)
Monitoring of condensate tank: 0 = OFF, 1 = ON

Function of the RDF/A:

Switching the control ON/OFF is the same as actuating the ON/OFF push button. OFF appears on the device display when the device is switched off. The control setpoint is converted to a programmable temperature setpoint value and the fan switches off immediately. Frost protection is activated internally. The buttons can be operated.

For further information see: Product manual RDF/A

5.18 Special feature Push button in hall

Output I is switched on or switched off with every actuation of the push button in the hall. The room service personnel can switch off the *Room service* display (Output T) with a button push longer than 1s. If this option is linked, for example, via a group address with the display at reception, they will be informed simultaneously.

5.19 Special feature Push button do not disturb

Output S is switched on every time push button *Do not disturb* is pressed. By pushing the button for longer than 1s, the guest can switch off the display *Do not disturb* (Output S). The display *Do not disturb* (Output S) is switched off at the latest when the key card is removed and the guest leaves the room.

5.20 Special feature Push button room service

Output T is switched on every time the button *Room service* is pressed. By pushing the button for longer than 1s, the guest can switch off the display *Room service* (Output T). The display *Room service* (Output T) is switched off at the latest when the key card is removed and the guest leaves the room.

5.21 Special feature Bathroom fan

Output C is preconfigured with the function Staircase lighting. For this reason, the fan in the bathroom switches on directly with a button push for 300 seconds (5 minutes) and will switch off by itself, after the staircase lighting time has elapsed.

A Appendix

A.1 Scope of delivery

The Room Master Premium is supplied together with the following components. The delivered items should be checked according to the following list.

- 1 pc. RM/S 2.1, Room Master Premium, MDRC
- 1 pc. Installation and operating instructions
- 1 pc. Bus connection terminal (red/black)

A.2 Status byte fan, forced/operation

Bit No.		7	6	5	4	3	2	1	0
8 bit value	Hexadecimal	Forced operation	Limitation 1	Limitation 2	Limitation 3	Limitation 4	Control faultr	Automatic	HEATING/COOLING
0	00								
1	01								■
2	02							■	
3	03							■	■
4	04						■		
5	05						■		■
6	06						■	■	
7	07						■	■	■
8	08					■			
9	09					■			■
10	0A					■		■	
11	0B					■		■	■
12	0C					■	■		
13	0D					■	■		■
14	0E					■	■	■	
15	0F					■	■	■	■
16	10				■				
17	11				■				■
18	12				■			■	
19	13				■			■	■
20	14				■		■		
21	15				■		■		■
22	16				■		■	■	
23	17				■		■	■	■
24	18				■	■			
25	19				■	■			■
26	1A				■	■		■	
27	1B				■	■		■	■
28	1C				■	■	■		
29	1D				■	■	■		■
30	1E				■	■	■	■	
31	1F				■	■	■	■	■
32	20			■					
33	21			■					■
34	22			■				■	
35	23			■				■	■
36	24			■			■		
37	25			■			■		■
38	26			■			■	■	
39	27			■			■	■	■
40	28			■		■			
41	29			■		■			■
42	2A			■		■		■	
43	2B			■		■		■	■
44	2C			■		■	■		
45	2D			■		■	■		■
46	2E			■		■	■	■	
47	2F			■		■	■	■	■
48	30			■	■				
49	31			■	■				■
50	32			■	■			■	
51	33			■	■			■	■
52	34			■	■		■		
53	35			■	■		■		■
54	36			■	■		■	■	
55	37			■	■		■	■	■
56	38			■	■	■			
57	39			■	■	■			■
58	3A			■	■	■		■	
59	3B			■	■	■		■	■
60	3C			■	■	■	■		
61	3D			■	■	■	■		■
62	3E			■	■	■	■	■	
63	3F			■	■	■	■	■	■
64	40		■						
65	41		■						■
66	42		■					■	
67	43		■					■	■
68	44		■				■		
69	45		■				■		■
70	46		■				■	■	
71	47		■				■	■	■
72	48		■			■			
73	49		■			■			■
74	4A		■			■		■	
75	4B		■			■		■	■
76	4C		■			■	■		
77	4D		■			■	■		■
78	4E		■			■	■	■	
79	4F		■			■	■	■	■
80	50		■		■				
81	51		■		■				■
82	52		■		■			■	
83	53		■		■			■	■
84	54		■		■		■		
85	55		■		■		■		■

Bit No.		7	6	5	4	3	2	1	0
8 bit value	Hexadecimal	Forced operation	Limitation 1	Limitation 2	Limitation 3	Limitation 4	Thermostat fault	Automatic	HEATING/COOLING
86	56		■		■		■	■	
87	57		■		■		■	■	■
88	58		■		■	■			
89	59		■		■	■			■
90	5A		■		■	■		■	
91	5B		■		■	■		■	■
92	5C		■		■	■	■		
93	5D		■		■	■	■		■
94	5E		■		■	■	■	■	
95	5F		■		■	■	■	■	■
96	60		■	■					
97	61		■	■					■
98	62		■	■				■	
99	63		■	■				■	■
100	64		■	■			■		
101	65		■	■			■		■
102	66		■	■			■	■	
103	67		■	■			■	■	■
104	68		■	■		■			
105	69		■	■		■			■
106	6A		■	■		■		■	
107	6B		■	■		■		■	■
108	6C		■	■		■	■		
109	6D		■	■		■	■		■
110	6E		■	■		■	■	■	
111	6F		■	■		■	■	■	■
112	70		■	■	■				
113	71		■	■	■				■
114	72		■	■	■			■	
115	73		■	■	■			■	■
116	74		■	■	■		■		
117	75		■	■	■		■		■
118	76		■	■	■		■	■	
119	77		■	■	■		■	■	■
120	78		■	■	■	■			
121	79		■	■	■	■			■
122	7A		■	■	■	■		■	
123	7B		■	■	■	■		■	■
124	7C		■	■	■	■	■		
125	7D		■	■	■	■	■		■
126	7E		■	■	■	■	■	■	
127	7F		■	■	■	■	■	■	■
128	80	■							
129	81	■							■
130	82	■						■	
131	83	■						■	■
132	84	■					■		
133	85	■					■		■
134	86	■					■	■	
135	87	■					■	■	■
136	88	■				■			
137	89	■				■			■
138	8A	■				■		■	
139	8B	■				■		■	■
140	8C	■				■	■		
141	8D	■				■	■		■
142	8E	■				■	■	■	
143	8F	■				■	■	■	■
144	90	■			■				
145	91	■			■				■
146	92	■			■			■	
147	93	■			■			■	■
148	94	■			■		■		
149	95	■			■		■		■
150	96	■			■		■	■	
151	97	■			■		■	■	■
152	98	■			■	■			
153	99	■			■	■			■
154	9A	■			■	■		■	
155	9B	■			■	■		■	■
156	9C	■			■	■	■		
157	9D	■			■	■	■		■
158	9E	■			■	■	■	■	
159	9F	■			■	■	■	■	■
160	A0	■		■					
161	A1	■		■					■
162	A2	■		■				■	
163	A3	■		■				■	■
164	A4	■		■			■		
165	A5	■		■			■		■
166	A6	■		■			■	■	
167	A7	■		■			■	■	■
168	A8	■		■		■			
169	A9	■		■		■			■
170	AA	■		■		■		■	
171	AB	■		■		■		■	■

Bit No.		7	6	5	4	3	2	1	0
8 bit value	Hexadecimal	Forced operation	Limitation 1	Limitation 2	Limitation 3	Limitation 4	Thermostat fault	Automatic	HEATING/COOLING
172	AC	■		■		■	■		
173	AD	■		■		■	■		■
174	AE	■		■		■	■	■	
175	AF	■		■		■	■	■	■
176	B0	■		■	■				
177	B1	■		■	■				■
178	B2	■		■	■			■	
179	B3	■		■	■			■	■
180	B4	■		■	■		■		
181	B5	■		■	■		■		■
182	B6	■		■	■		■	■	
183	B7	■		■	■		■	■	■
184	B8	■		■	■	■			
185	B9	■		■	■	■			■
186	BA	■		■	■	■		■	
187	BB	■		■	■	■		■	■
188	BC	■		■	■	■	■		
189	BD	■		■	■	■	■		■
190	BE	■		■	■	■	■	■	
191	BF	■		■	■	■	■	■	■
192	C0	■	■						
193	C1	■	■						■
194	C2	■	■					■	
195	C3	■	■					■	■
196	C4	■	■				■		
197	C5	■	■				■		■
198	C6	■	■				■	■	
199	C7	■	■				■	■	■
200	C8	■	■			■			
201	C9	■	■			■			■
202	CA	■	■			■		■	
203	CB	■	■			■		■	■
204	CC	■	■			■	■		
205	CD	■	■			■	■		■
206	CE	■	■			■	■	■	
207	CF	■	■			■	■	■	■
208	D0	■	■		■				
209	D1	■	■		■				■
210	D2	■	■		■			■	
211	D3	■	■		■			■	■
212	D4	■	■		■		■		
213	D5	■	■		■		■		■
214	D6	■	■		■		■	■	
215	D7	■	■		■		■	■	■
216	D8	■	■		■	■			
217	D9	■	■		■	■			■
218	DA	■	■		■	■		■	
219	DB	■	■		■	■		■	■
220	DC	■	■		■	■	■		
221	DD	■	■		■	■	■		■
222	DE	■	■		■	■	■	■	
223	DF	■	■		■	■	■	■	■
224	E0	■	■	■					
225	E1	■	■	■					■
226	E2	■	■	■				■	
227	E3	■	■	■				■	■
228	E4	■	■	■			■		
229	E5	■	■	■			■		■
230	E6	■	■	■			■	■	
231	E7	■	■	■			■	■	■
232	E8	■	■	■		■			
233	E9	■	■	■		■			■
234	EA	■	■	■		■		■	
235	EB	■	■	■		■		■	■
236	EC	■	■	■		■	■		
237	ED	■	■	■		■	■		■
238	EE	■	■	■		■	■	■	
239	EF	■	■	■		■	■	■	■
240	F0	■	■	■	■				
241	F1	■	■	■	■				■
242	F2	■	■	■	■			■	
243	F3	■	■	■	■			■	■
244	F4	■	■	■	■		■		
245	F5	■	■	■	■		■		■
246	F6	■	■	■	■		■	■	
247	F7	■	■	■	■		■	■	■
248	F8	■	■	■	■	■			
249	F9	■	■	■	■	■			■
250	FA	■	■	■	■	■		■	
251	FB	■	■	■	■	■		■	■
252	FC	■	■	■	■	■	■		
253	FD	■	■	■	■	■	■		■
254	FE	■	■	■	■	■	■	■	
255	FF	■	■	■	■	■	■	■	■

empty = value 0

■ = value 1, applicable

A.3 Status byte Blind/Shutters

Bit no.		7	6	5	4	3	2	1	0
B bit value	Hexadecimal	Not used	Not used	Safety A	Safety B	Automatic	Sun	End position top	End position bottom
0	00								
1	01								■
2	02							■	
3	03							■	■
4	04						■		
5	05						■		■
6	06						■	■	
7	07						■	■	■
8	08					■			
9	09					■			■
10	0A					■		■	
11	0B					■		■	■
12	0C					■	■		
13	0D					■	■		■
14	0E					■	■	■	
15	0F					■	■	■	■
16	10				■				
17	11				■				■
18	12				■			■	
19	13				■			■	■
20	14				■		■		
21	15				■		■		■
22	16				■		■	■	
23	17				■		■	■	■
24	18				■	■			
25	19				■	■			■
26	1A				■	■		■	
27	1B				■	■		■	■
28	1C				■	■	■		
29	1D				■	■	■		■
30	1E				■	■	■	■	
31	1F				■	■	■	■	■
32	20			■					
33	21			■					■
34	22			■				■	
35	23			■				■	■
36	24			■			■		
37	25			■			■		■
38	26			■			■	■	
39	27			■			■	■	■
40	28			■		■			
41	29			■		■			■
42	2A			■		■		■	
43	2B			■		■		■	■
44	2C			■		■	■		
45	2D			■		■	■		■
46	2E			■		■	■	■	
47	2F			■		■	■	■	■
48	30			■	■				
49	31			■	■				■
50	32			■	■			■	
51	33			■	■			■	■
52	34			■	■		■		
53	35			■	■		■		■
54	36			■	■		■	■	
55	37			■	■		■	■	■
56	38			■	■	■			
57	39			■	■	■			■
58	3A			■	■	■		■	
59	3B			■	■	■		■	■
60	3C			■	■	■	■		
61	3D			■	■	■	■		■
62	3E			■	■	■	■	■	
63	3F			■	■	■	■	■	■

empty = value 0

■ = value 1, applicable

Note

All combinations not listed or indicated are invalid.

A.4 Code table scene (8 bit)

Bit No.		7	6	5	4	3	2	1	0		
8 bit value	Hexadecimal	Call	not defined	Scene number	Scene number	Scene number	Scene number	Scene number	Scene number	Scene number	Call (A)
0	00									1	A
1	01								■	2	A
2	02							■		3	A
3	03							■	■	4	A
4	04						■			5	A
5	05						■		■	6	A
6	06						■	■		7	A
7	07						■	■	■	8	A
8	08					■				9	A
9	09					■			■	10	A
10	0A					■		■		11	A
11	0B					■		■	■	12	A
12	0C					■	■			13	A
13	0D					■	■		■	14	A
14	0E					■	■	■		15	A
15	0F					■	■	■	■	16	A
16	10				■					17	A
17	11				■				■	18	A
18	12				■			■		19	A
19	13				■			■	■	20	A
20	14				■		■			21	A
21	15				■		■		■	22	A
22	16				■		■	■		23	A
23	17				■		■	■	■	24	A
24	18				■	■				25	A
25	19				■	■			■	26	A
26	1A				■	■		■		27	A
27	1B				■	■		■	■	28	A
28	1C				■	■	■			29	A
29	1D				■	■	■		■	30	A
30	1E				■	■	■	■		31	A
31	1F				■	■	■	■	■	32	A
32	20			■						33	A
33	21			■					■	34	A
34	22			■				■		35	A
35	23			■				■	■	36	A
36	24			■			■			37	A
37	25			■			■		■	38	A
38	26			■			■	■		39	A
39	27			■			■	■	■	40	A
40	28			■		■				41	A
41	29			■		■			■	42	A
42	2A			■		■		■		43	A
43	2B			■		■		■	■	44	A
44	2C			■		■	■			45	A
45	2D			■		■	■		■	46	A
46	2E			■		■	■	■		47	A
47	2F			■		■	■	■	■	48	A
48	30			■	■					49	A
49	31			■	■				■	50	A
50	32			■	■			■		51	A
51	33			■	■			■	■	52	A
52	34			■	■		■			53	A
53	35			■	■		■		■	54	A
54	36			■	■		■	■		55	A
55	37			■	■		■	■	■	56	A
56	38			■	■	■				57	A
57	39			■	■	■			■	58	A
58	3A			■	■	■		■		59	A
59	3B			■	■	■		■	■	60	A
60	3C			■	■	■	■			61	A
61	3D			■	■	■	■		■	62	A
62	3E			■	■	■	■	■		63	A
63	3F			■	■	■	■	■	■	64	A

Bit No.		7	6	5	4	3	2	1	0		
8 bit value	Hexadecimal	Save	not defined	Scene number	Scene number	Scene number	Scene number	Scene number	Scene number	Scene number	Save (S)
128	80	■								1	S
129	81	■							■	2	S
130	82	■						■		3	S
131	83	■						■	■	4	S
132	84	■					■			5	S
133	85	■					■		■	6	S
134	86	■					■	■		7	S
135	87	■					■	■	■	8	S
136	88	■				■				9	S
137	89	■				■			■	10	S
138	8A	■				■		■		11	S
139	8B	■				■		■	■	12	S
140	8C	■				■	■			13	S
141	8D	■				■	■		■	14	S
142	8E	■				■	■	■		15	S
143	8F	■				■	■	■	■	16	S
144	90	■			■					17	S
145	91	■			■				■	18	S
146	92	■			■			■		19	S
147	93	■			■			■	■	20	S
148	94	■			■		■			21	S
149	95	■			■		■		■	22	S
150	96	■			■		■	■		23	S
151	97	■			■		■	■	■	24	S
152	98	■			■	■				25	S
153	99	■			■	■			■	26	S
154	9A	■			■	■		■		27	S
155	9B	■			■	■		■	■	28	S
156	9C	■			■	■	■			29	S
157	9D	■			■	■	■		■	30	S
158	9E	■			■	■	■	■		31	S
159	9F	■			■	■	■	■	■	32	S
160	A0	■		■						33	S
161	A1	■		■					■	34	S
162	A2	■		■				■		35	S
163	A3	■		■				■	■	36	S
164	A4	■		■			■			37	S
165	A5	■		■			■		■	38	S
166	A6	■		■			■	■		39	S
167	A7	■		■			■	■	■	40	S
168	A8	■		■		■				41	S
169	A9	■		■		■			■	42	S
170	AA	■		■		■		■		43	S
171	AB	■		■		■		■	■	44	S
172	AC	■		■		■	■			45	S
173	AD	■		■		■	■		■	46	S
174	AE	■		■		■	■	■		47	S
175	AF	■		■		■	■	■	■	48	S
176	B0	■		■	■					49	S
177	B1	■		■	■				■	50	S
178	B2	■		■	■			■		51	S
179	B3	■		■	■			■	■	52	S
180	B4	■		■	■		■			53	S
181	B5	■		■	■		■		■	54	S
182	B6	■		■	■		■	■		55	S
183	B7	■		■	■		■	■	■	56	S
184	B8	■		■	■	■				57	S
185	B9	■		■	■	■			■	58	S
186	BA	■		■	■	■		■		59	S
187	BB	■		■	■	■		■	■	60	S
188	BC	■		■	■	■	■			61	S
189	BD	■		■	■	■	■		■	62	S
190	BE	■		■	■	■	■	■		63	S
191	BF	■		■	■	■	■	■	■	64	S

empty = value 0

■ = value 1, applicable

Note

All combinations not listed or indicated are invalid.

A.5 Input 4 bit dimming telegram

The following table describes the 4 bit dim telegram:

Dec.	Hex.	Binary	Dim telegram
0	0	0000	STOP
1	1	0001	100 % DARKER
2	2	0010	50 % DARKER
3	3	0011	25 % DARKER
4	4	0100	12.5 % DARKER
5	5	0101	6.25 % DARKER
6	6	0110	3.13 % DARKER
7	7	0111	1.56 % DARKER
8	8	1000	STOP
9	9	1001	100 % BRIGHTER
10	A	1010	50 % BRIGHTER
11	B	1011	25 % BRIGHTER
12	C	1100	12.5 % BRIGHTER
13	D	1101	6.25 % BRIGHTER
14	E	1110	3.13 % BRIGHTER
15	F	1111	1.56 % BRIGHTER

A.6 Ordering information

Short description	**Description**	**Order code**	**bbn 40 16779 EAN**	**Price group**	**Weight 1 pcs [kg]**	**Pack unit [Pcs]**
RM/S 2.1	Room Master Premium, MDRC	2CDG 110 095 R0011	**665 67 4**	P2	0.7	1

A.7 Notizen

Notizen

Contact

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