

PRODUCT MANUAL

ABB i-bus[®] KNX

FCC/S 1.x.x.1

Fan Coil Controller

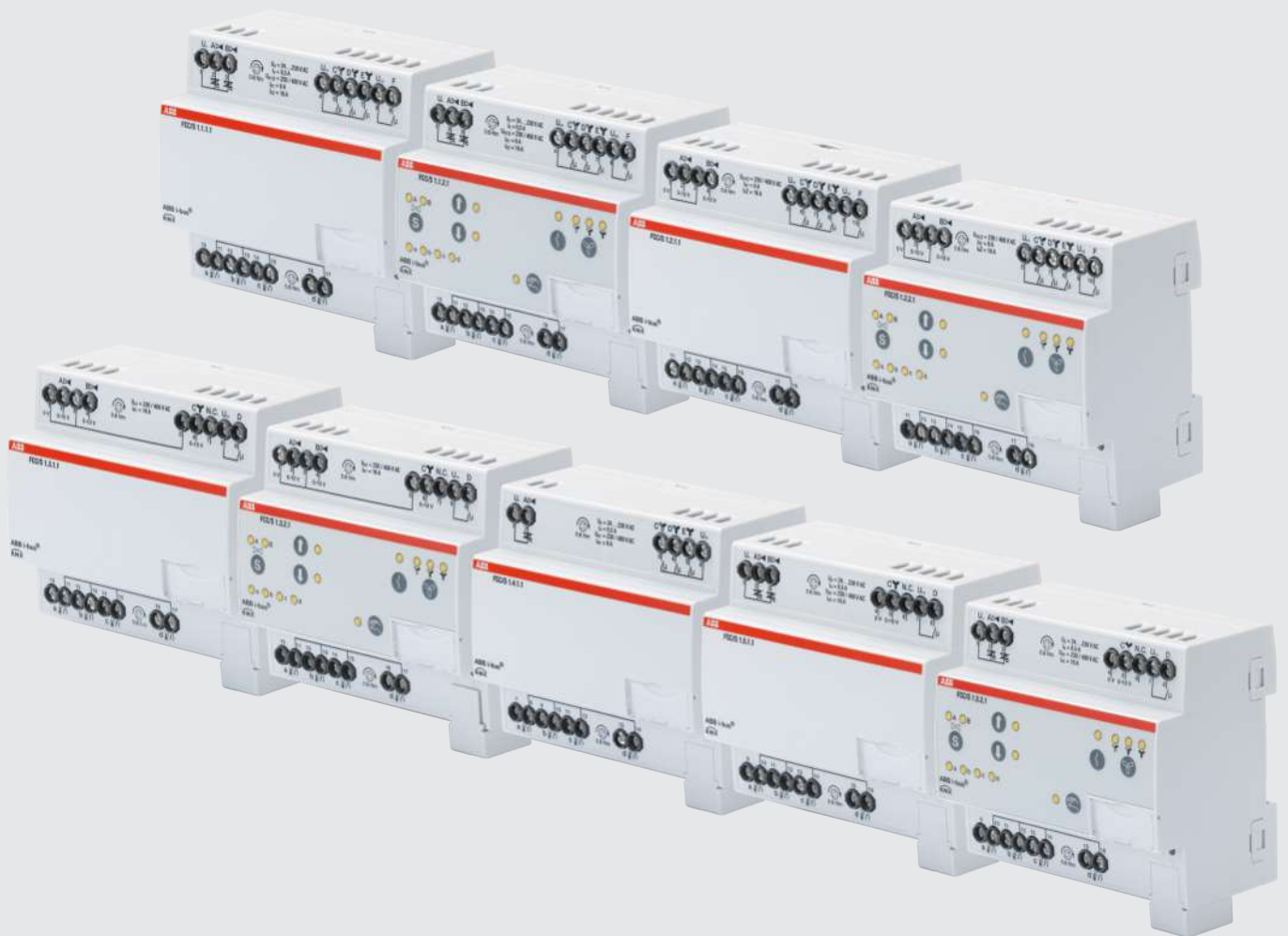


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1 About this document

1.1 Using the product manual

This manual provides detailed technical information on the function, installation and programming of the ABB i-bus® KNX device.

1.2 Legal disclaimer

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1.3 Explanation of symbols

1.	Instructions in specified sequence and result
2.	
⇒	
▶	Individual actions
a)	Priorities
1)	Processes run by the device in a specific sequence
•	List level 1
–	List level 2

Tab. 1: Explanation of symbols

Notes and warnings are represented as follows in this manual:



DANGER

This symbol is a warning about electrical voltage and indicates high-risk hazards that will definitely result in death or serious injury unless avoided.



DANGER

Indicates high-risk hazards that will definitely result in death or serious injury unless avoided.



WARNING

Indicates medium-risk hazards that could result in death or serious injury unless avoided.



CAUTION

Indicates low-risk hazards that could result in slight or moderate injury unless avoided.



CAUTION

Indicates a risk of malfunctions or damage to property and equipment, but with no risk to life and limb.

Example

For use in application, installation and programming examples

📘 Note

For use in tips on usage and operation

2 Safety

2.1 General safety instructions

- ▶ Protect the device from moisture, dirt and damage during transport, storage and operation.
- ▶ Operate the device only in a closed housing (distribution board).
- ▶ Operate the device only within the specified technical data.
- ▶ Mounting, installation, commissioning and maintenance must be carried out only by qualified electricians.
- ▶ Disconnect device from the supply of electrical power before mounting.

2.2 Qualification of the specialist personnel

Programming the device requires detailed specialist knowledge – particularly about the ETS commissioning software – through KNX training courses.

2.3 Proper use

The Fan Coil Controllers FCC/S are intended to be used to activate decentralized fan coil units in a KNX environment.

3 Product overview

3.1 Device description

The devices are modular installation devices (MDRC) in the proM design. They are designed for installation in electrical distribution boards and small housings with a 35 mm mounting rail (to EN 60715).

The devices are KNX-certified and can be used as products in a KNX system → EU declaration of conformity.

The devices are powered via the bus (ABB i-bus® KNX) and require no additional auxiliary voltage supply. The connection to the bus is made via a bus connection terminal on the front of the housing. The loads are connected to the outputs using screw terminals → terminal designation on the housing.

The software application Engineering Tool Software (ETS) is used for physical address assignment and parameterization.

The Fan Coil Controllers 1.1.X.1, 1.2.X.1 and 1.4.1.1 feature a mechanical relay in each fan output. These relays are mechanically independent from the other outputs.

All Fan Coil Controllers except the 1.4.1.1 variant also have an auxiliary relay for switching an additional heater. Switching noises cannot be avoided due to the mechanical nature of the design.

3.1.1 Membrane keypad

Depending on the product variant, the devices can be operated manually using the membrane keypad. The membranes on the devices differ only in the number of zone LEDs.

Complete overview of operating and display elements → corresponding sub-chapter of the individual product variant.

3.2 Product name description

Abbreviation	Designation		
F	Fan		
C	Coil		
C	Controller		
/S	MDRC		
X.	1	=	1-fold
X.	1	=	Thermoelectric Valve Drives (PWM); discrete speed fan (relay)
	2	=	Analog valve drives (0 ... 10 V); discrete speed fan (relay)
	3	=	Analog valve drives (0 ... 10 V); continuous fans (0 ... 10 V)
	4	=	Thermoelectric Valve Drives (PWM); discrete speed fan (relay)
	5	=	Thermoelectric Valve Drives (PWM); continuous fans (0 ... 10 V)
X.	1	=	without manual operation
	2	=	with manual operation
X	x	=	Version number (x = 1, 2, etc.)

Tab. 2: Product name description

3.3 Ordering details

Description	MW	Type	Order no.	Packaging [pcs.]	Weight (incl. packaging) [kg]
Fan Coil Controller	6	FCC/S 1.4.1.1	2CDG110209R0011	1	0.22
Fan Coil Controller	6	FCC/S 1.1.1.1	2CDG110210R0011	1	0.23
Fan Coil Controller	6	FCC/S 1.1.2.1	2CDG110211R0011	1	0.24
Fan Coil Controller	6	FCC/S 1.2.1.1	2CDG110212R0011	1	0.23
Fan Coil Controller	6	FCC/S 1.2.2.1	2CDG110213R0011	1	0.24
Fan Coil Controller	6	FCC/S 1.3.1.1	2CDG110214R0011	1	0.21
Fan Coil Controller	6	FCC/S 1.3.2.1	2CDG110215R0011	1	0.22
Fan Coil Controller	6	FCC/S 1.5.1.1	2CDG110234R0011	1	0.21
Fan Coil Controller	6	FCC/S 1.5.2.1	2CDG110235R0011	1	0.22

Tab. 3: Ordering details

3.4 Connections

The devices possess the following connections, depending on the product variant:

- 4 inputs for sensors or an analog room control unit (SAF/A or SAR/A)
- 2 valve outputs for activating valve drives (FCC/S 1.4.1.1: 1 valve output)
- 1 fan output
- 1 relay output (FCC/S 1.4.1.1 : no relay output)
- 1 bus connection

The tables below provide an overview of the maximum number of devices that can be connected to the individual product variants.

Fan output

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Discrete speed fans (1 ... 3-speeds)	1	1	1	1	–	–	1	–	–
Continuous fans (0 ... 10 V)	–	–	–	–	1	1	–	1	1

Tab. 4: Fan output

Relay output 16 A

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Electric heater	1	1	1	1	1	1	–	1	1

Tab. 5: Relay output 16 A

Valve outputs

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Thermoelectric valve drives (PWM)	2	2	–	–	–	–	1	2	2
Motor-driven valve drives (3-point)	1	1	–	–	–	–	–	1	1
Magnetic valve drives (open/closed)	2	2	–	–	–	–	1	2	2
Analog valve drives (0 ... 10 V)	–	–	2	2	2	2	–	–	–
6-way valve	–	–	1	1	1	1	–	–	–
VAV damper drive	–	–	2	2	2	2	–	–	–

Tab. 6: Valve outputs

Physical inputs

	FCC/S 1.1.1.1	FCC/S 1.1.2.1	FCC/S 1.2.1.1	FCC/S 1.2.2.1	FCC/S 1.3.1.1	FCC/S 1.3.2.1	FCC/S 1.4.1.1	FCC/S 1.5.1.1	FCC/S 1.5.2.1
Analog room control unit	1	1	1	1	1	1	1	1	1
Binary sensors (floating)	4	4	4	4	4	4	4	4	4
Temperature sensors	4	4	4	4	4	4	4	4	4

Tab. 7: Physical inputs

3.4.1

Inputs

Function	a	b	c	d
Temperature sensor				
PT100	x	x	x	x
PT1000	x	x	x	x
KT/KTY	x	x	x	x
KT/KT user-defined	x	x	x	x
NTC10k	x	x	x	x
NTC20k	x	x	x	x
NI-1000	x	x	x	x
Analog room control unit	x			
Binary sensor (floating)	x	x	x	x
Dew point sensor (floating)	x	x	x	x
Fill level sensor (floating)	x	x	x	x
Window contact (floating)	x	x	x	x

Tab. 8: Function of the inputs

3.4.2

Outputs

3.4.2.1

Valve outputs

FCC/S 1.1.X.1 and FCC/S 1.5.X.1

Function	A	B
Thermoelectric valve drives (PWM)	x	x
Magnetic valve drives (open/closed)	x	x
Motor-driven valve drives (3-point)	open	close
Fault detection (overload/short circuit)	x	x

Tab. 9: Function of the valve outputs

FCC/S 1.4.1.1

Function	A
Thermoelectric valve drives (PWM)	x
Magnetic valve drives (open/closed)	x
Fault detection (overload/short circuit)	x

Tab. 10: Function of the valve output

FCC/S 1.2.X.1 and FCC/S 1.3.X.1

Function	A	B
Analog valve drives		
0 ... 10 V	x	x
1 ... 10 V	x	x
2 ... 10 V	x	x
10 ... 0 V	x	x
6-way valve drive	x	
VAV damper drive – control signal	x	x
Fault detection (overload/short circuit)	x	x

Tab. 11: Function of the valve outputs

3.4.2.2 Fan output

FCC/S 1.1.X.1, FCC/S 1.2.X.1 and FCC/S 1.4.1.1

Function	Fan output
Number of fan speeds (5 A)	
1	x
2	x
3	x
Changeover switching	x
Step switching	x

Tab. 12: Function of the fan output

FCC/S 1.3.X.1 and FCC/S 1.5.X.1

Function	Fan output
Continuous fans (0 ... 10 V), voltage range can be selected as required	x
Fault detection (overload/short circuit)	x

Tab. 13: Function of the fan output

3.4.2.3 Relay output 16 A

This chapter does not apply to the FCC/S 1.4.X.1.

Function	Relay output
Use by internal controller for electric heater	x
Use as independent switching output	x
Internal connection to a device input	x

Tab. 14: Function of the relay output

3.5 Fan Coil Controller 1.1.1.1, PWM, MDRC



Fig. 1: Device illustration 1.1.1.1

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3.5.1 Dimension drawing

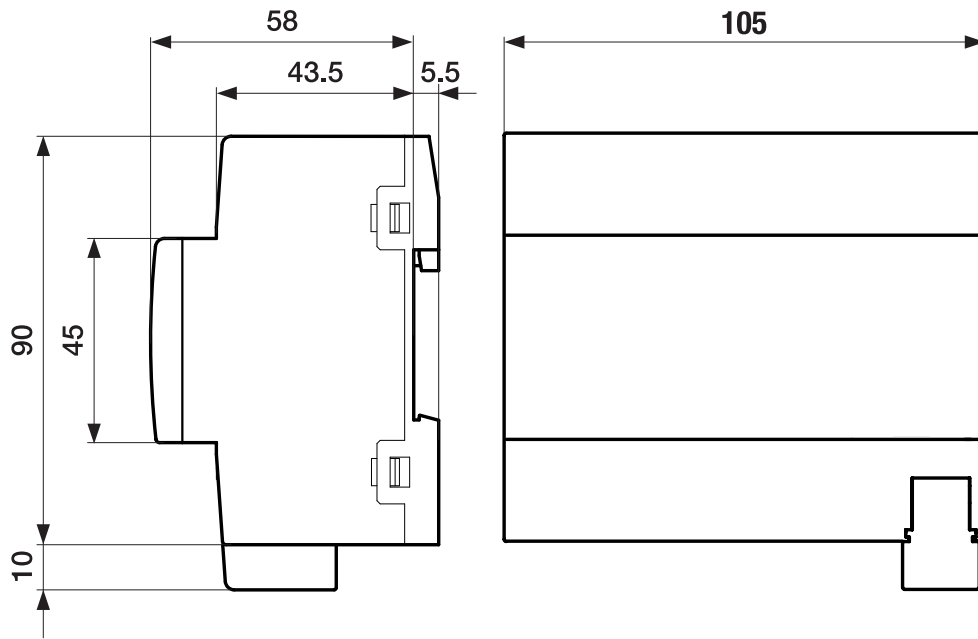


Fig. 2: Dimension drawing

2CDC072026F0017

3.5.2 Connection diagram

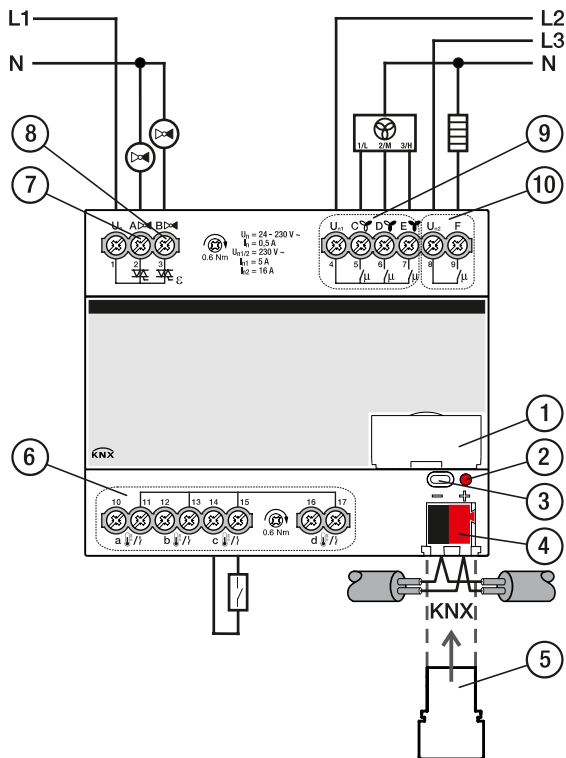



Fig. 3: Connection diagram FCC/S 1.1.1.1

—
Legend

- | | |
|---------------------------|--------------------|
| 1 Label carriers | 7 Valve output |
| 2 Programming LED | 8 Valve output |
| 3 Programming button | 9 Fan output |
| 4 Bus connection terminal | 10 Auxiliary relay |
| 5 Cover cap | 6 Input |

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3.5.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 15: Operating and display elements

3.5.4 Technical data

3.5.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.23 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, relay output 16 A	≤ 1 W
	Power loss, relay output 5 A	≤ 0.6 W
	Power loss, fan outputs	≤ 1.2 W
	Power loss, valve outputs	≤ 1.2 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDK508221D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 16: General technical data

3.5.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
	NTC	10k, 20k
Cable length	Between sensor and device input, one-way	≤ 100 m

Tab. 17: Inputs

3.5.4.3 Valve outputs – thermoelectric, PWM

Rated values	Number of outputs	2
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per output
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per output
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
	Minimum load (per output)	1.2 W

Tab. 18: Valve outputs – thermoelectric, PWM

3.5.4.4 Valve outputs – motor-driven, 3-point

Rated values	Number of outputs	1
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per channel
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per channel
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
Minimum load (per output)	1.2 VA	

Tab. 19: Valve outputs – motor-driven, 3-point

3.5.4.5 Fan outputs – relays 5 A

Rated values	Number of outputs	3
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	5 A
	Rated frequency	50/60 Hz
	Back-up protection	≤ 6 A
	Relay type	Bi-stable
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 5 A
	Switching current at 24 V AC	≥ 0.01 A
	Switching current at 24 V DC (resistive load)	≤ 5 A
	Switching current at 5 V AC	≥ 0.02 A
	Switching current at 12 V AC	≥ 0.01 A
	Switching current at 24 V AC	≥ 0.007 A
Service life	Mechanical service life	≥ 10 ⁷ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 20: Fan outputs – relays 5 A

3.5.4.6 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
Service life	Mechanical service life	$\geq 3 \times 10^6$ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	$\geq 10^5$ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 21: Outputs – relays 16 A

3.5.4.7 Device type

Device type	Fan Coil Controller	FCC/S 1.1.1.1
	Application	Fan Coil Unit Controller, PWM/ = current version number of the application
	Maximum number of group objects	114
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 22: Device type

i Note

Observe software information on the website → www.abb.com/knx.

3.6 Fan Coil Controller 1.1.2.1, PWM, MDRC



Fig. 4: Device illustration 1.1.2.1

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3.6.1 Dimension drawing

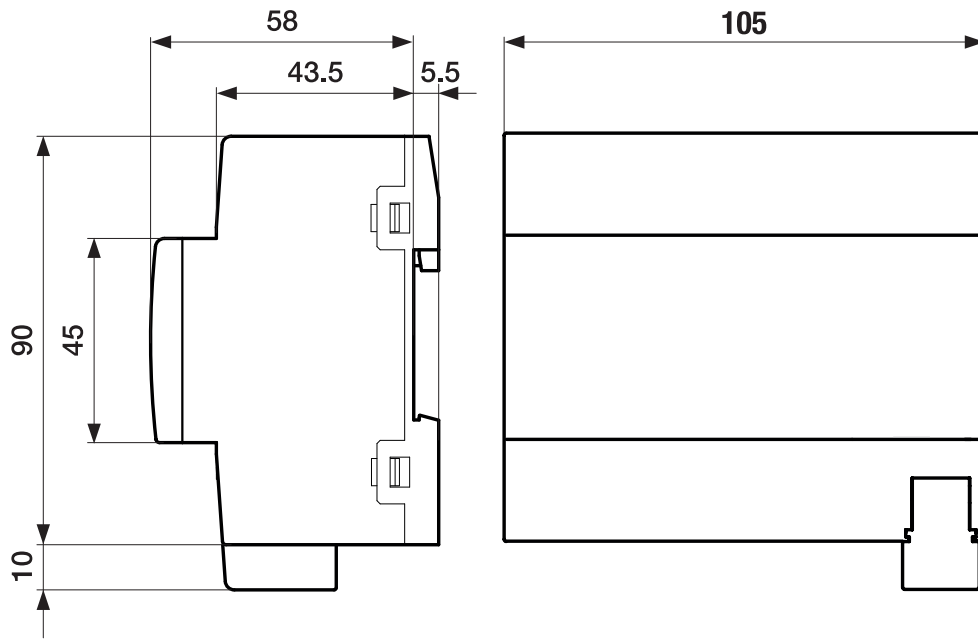


Fig. 5: Dimension drawing

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3.6.2 Connection diagram

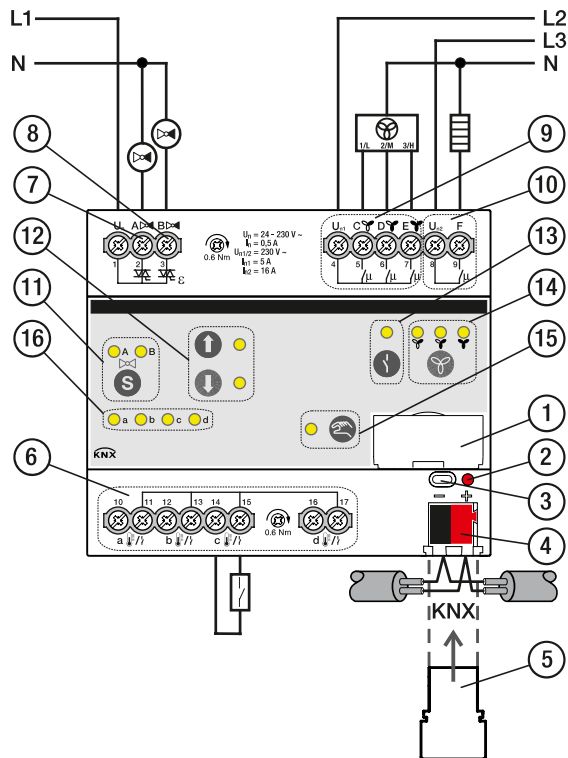



Fig. 6: Connection diagram FCC/S 1.1.2.1

Legend

- | | |
|---------------------------|---------------------------------------|
| 1 Label carriers | 10 Auxiliary relay |
| 2 Programming LED | 11 Switch valve output button/LED |
| 3 Programming button | 12 Valve output open/close button/LED |
| 4 Bus connection terminal | 13 Relay output open/close button/LED |
| 5 Cover cap | 14 Fan speed switching button/LED |
| 7 Valve output | 15 Manual operation button/LED |
| 8 Valve output | 16 Input LED |
| 9 Fan output | 6 Input |



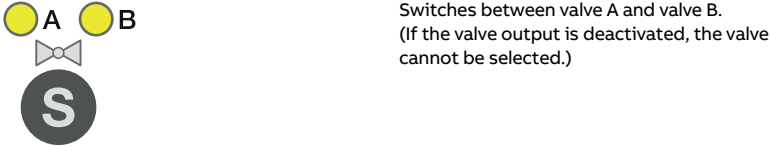





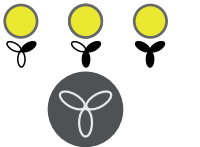
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3.6.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		



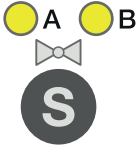


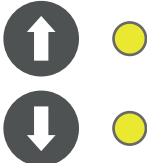

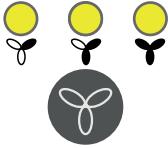
Tab. 23: Operating and display elements

3.6.3.1 Manual mode

Operating control/LED	Description/function	Display
	Activates the <i>KNX mode</i> with a short button push	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active
<i>Manual operation button/LED</i>		
	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
<i>Input LED</i>		
	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Switch valve output button/LED</i>		
	Sets the maximum valve control value (100 %) Resets the outputs with long button push > 5 s	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output open button/LED</i>		
	Sets the minimum valve control value (0 %)	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output close button/LED</i>		
		Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
		
	Opens/closes the relay	LED On: Relay contact closed LED Off: Relay contact open
<i>Relay output open/close button/LED</i>		
	Switches the fan speed in the following sequence: <ul style="list-style-type: none"> 0 > 1 > 2 > 3 > 0 > 1... (long button push always switches to 0)	Fan speed during step switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LEDs 1 & 2 On 3: all LEDs On Fan speed during changeover switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LED 2 On 3: LED 3 On
<i>Fan speed button/LED</i>		

Tab. 24: Operating and display elements

3.6.3.2 KNX operation

Operating control/LED	Description/function	Display
 <p>Manual operation button/LED</p>	Activates the <i>Manual operation</i> mode with long button push > 5 s	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active LED flashes when button is pushed: <i>Manual operation</i> deactivated via ETS
 <p>Input LED</p>	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
 <p>Switch valve output button/LED</p>	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output open button/LED</p>	Button without function	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output close button/LED</p>	Button without function	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	LED On: Relay contact closed LED Off: Relay contact open
 <p>Fan speed button/LED</p>	Button without function	Fan speed during step switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LEDs 1 & 2 On 3: all LEDs On Fan speed during changeover switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LED 2 On 3: LED 3 On

Tab. 25: Operating and display elements

3.6.4 Technical data

3.6.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.24 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overtoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, relay output 16 A	≤ 1 W
	Power loss, relay output 5 A	≤ 0.6 W
	Power loss, fan outputs	≤ 1.2 W
	Power loss, valve outputs	≤ 1.2 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDC508222S2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 26: General technical data

3.6.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
	NTC	10k, 20k
Cable length	Between sensor and device input, one-way	≤ 100 m

Tab. 27: Inputs

3.6.4.3 Valve outputs – thermoelectric, PWM

Rated values	Number of outputs	2
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per output
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per output
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
	Minimum load (per output)	1.2 W

Tab. 28: Valve outputs – thermoelectric, PWM

3.6.4.4 Valve outputs – motor-driven, 3-point

Rated values	Number of outputs	1
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per channel
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per channel
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
Minimum load (per output)	1.2 VA	

Tab. 29: Valve outputs – motor-driven, 3-point

3.6.4.5 Fan outputs – relays 5 A

Rated values	Number of outputs	3
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	5 A
	Rated frequency	50/60 Hz
	Back-up protection	≤ 6 A
	Relay type	Bi-stable
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 5 A
	Switching current at 24 V AC	≥ 0.01 A
	Switching current at 24 V DC (resistive load)	≤ 5 A
	Switching current at 5 V AC	≥ 0.02 A
	Switching current at 12 V AC	≥ 0.01 A
	Switching current at 24 V AC	≥ 0.007 A
Service life	Mechanical service life	≥ 10 ⁷ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 30: Fan outputs – relays 5 A

3.6.4.6 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
Service life	Mechanical service life	$\geq 3 \times 10^6$ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	$\geq 10^5$ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 31: Outputs – relays 16 A

3.6.4.7 Device type

Device type	Fan Coil Controller	FCC/S 1.1.2.1
	Application	Fan Coil Unit Controller, PWM/ = current version number of the application
	Maximum number of group objects	116
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 32: Device type

i Note

Observe software information on the website → www.abb.com/knx.

3.7 Fan Coil Controller 1.2.1.1, 0-10V, MDRC



Fig. 7: Device illustration 1.2.1.1

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3.7.1 Dimension drawing

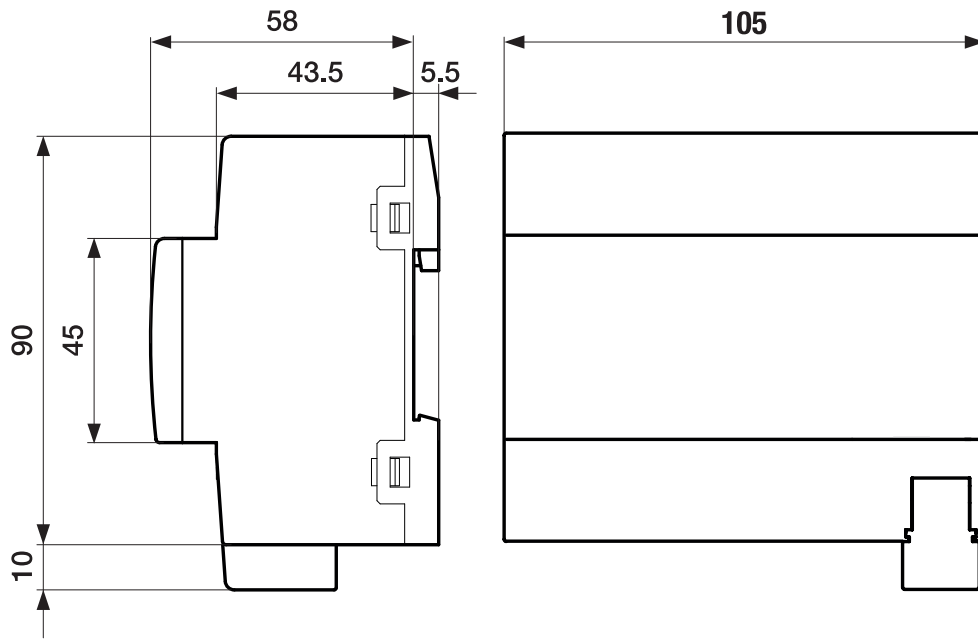


Fig. 8: Dimension drawing

2CDC072026F0017

3.7.2 Connection diagram

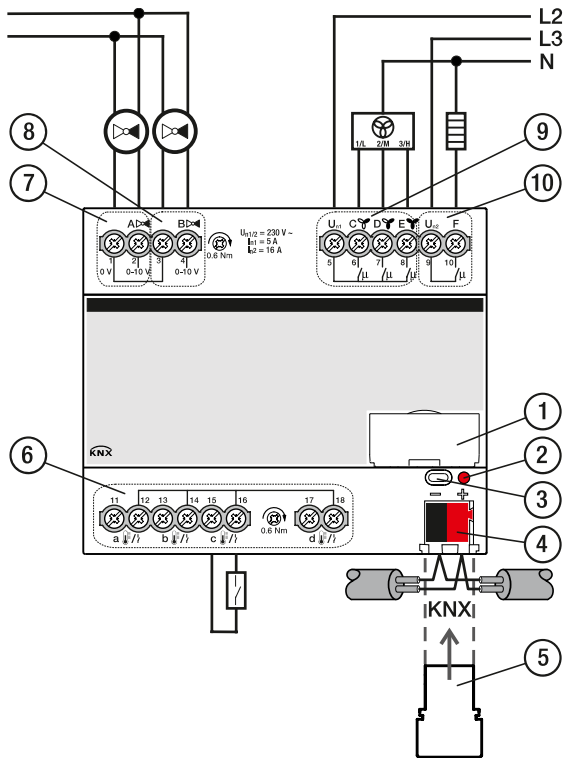



Fig. 9: Connection diagram FCC/S 1.2.1.1

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Legend

- | | |
|---------------------------|--------------------|
| 1 Label carriers | 7 Valve output |
| 2 Programming LED | 8 Valve output |
| 3 Programming button | 9 Fan output |
| 4 Bus connection terminal | 10 Auxiliary relay |
| 5 Cover cap | 6 Input |

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3.7.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 33: Operating and display elements

3.7.4 Technical data

3.7.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.23 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, relay output 16 A	≤ 1 W
	Power loss, relay output 5 A	≤ 0.6 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDK508223D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 34: General technical data

3.7.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 35: Inputs

3.7.4.3 Valve outputs – analog

Rated values	Number of outputs	2
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 36: Valve outputs – analog

3.7.4.4 Fan outputs – relays 5 A

Rated values	Number of outputs	3
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	5 A
	Rated frequency	50/60 Hz
	Back-up protection	≤ 6 A
	Relay type	Bi-stable
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 5 A
	Switching current at 24 V AC	≥ 0.01 A
	Switching current at 24 V DC (resistive load)	≤ 5 A
	Switching current at 5 V AC	≥ 0.02 A
	Switching current at 12 V AC	≥ 0.01 A
	Switching current at 24 V AC	≥ 0.007 A
Service life	Mechanical service life	≥ 10 ⁷ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 37: Fan outputs – relays 5 A

3.7.4.5 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
Service life	Mechanical service life	≥ 3 × 10 ⁶ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 38: Outputs – relays 16 A

3.7.4.6 Device type

Device type	Fan Coil Controller	FCC/S 1.2.1.1
	Application	Fan Coil Unit Controller, PWM/ ...
		... = current version number of the application
	Maximum number of group objects	116
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 39: Device type

Note

Observe software information on the website → www.abb.com/knx.

3.8 Fan Coil Controller 1.2.2.1, 0-10V, MDRC



Fig. 10: Device illustration 1.2.2.1

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3.8.1 Dimension drawing

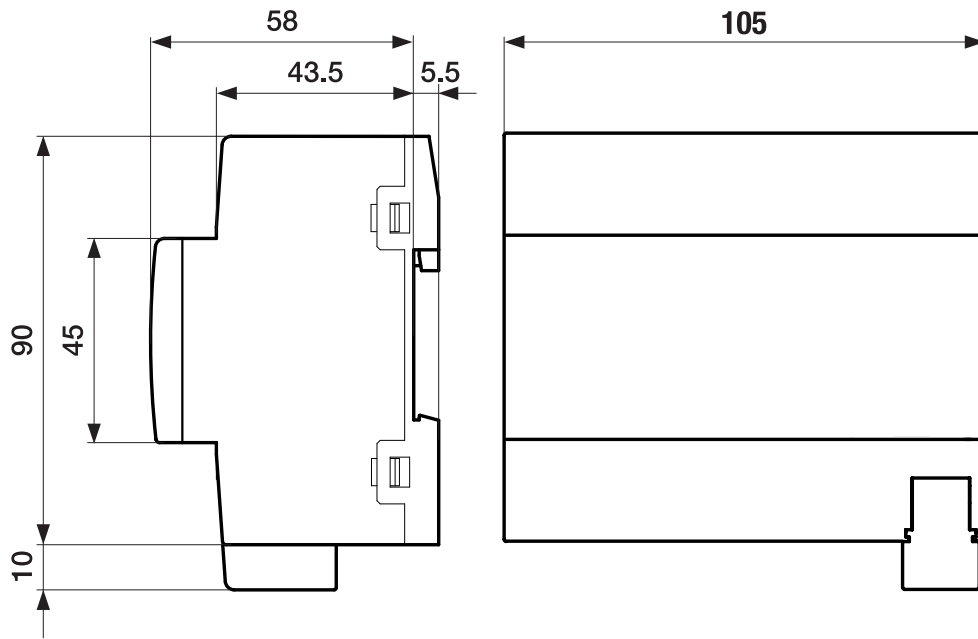


Fig. 11: Dimension drawing

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3.8.2 Connection diagram

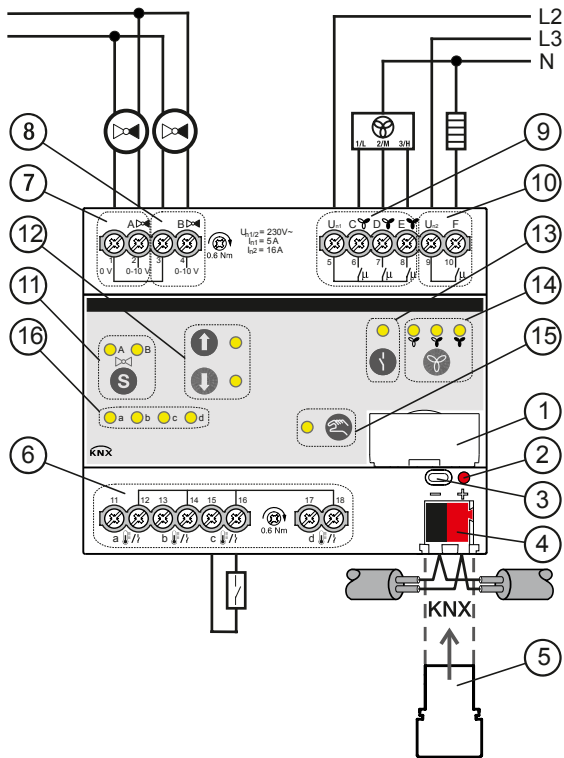



Fig. 12: Connection diagram FCC/S 1.2.2.1

Legend

- | | |
|---------------------------|---------------------------------------|
| 1 Label carriers | 10 Auxiliary relay |
| 2 Programming LED | 11 Switch valve output button/LED |
| 3 Programming button | 12 Valve output open/close button/LED |
| 4 Bus connection terminal | 13 Relay output open/close button/LED |
| 5 Cover cap | 14 Fan speed switching button/LED |
| 7 Valve output | 15 Manual operation button/LED |
| 8 Valve output | 16 Input LED |
| 9 Fan output | 6 Input |



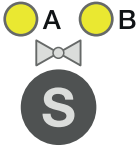





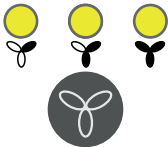
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3.8.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		



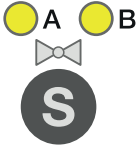


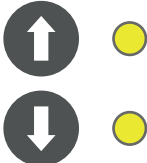

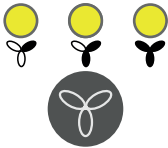
Tab. 40: Operating and display elements

3.8.3.1 Manual mode

Operating control/LED	Description/function	Display
	Activates the <i>KNX mode</i> with a short button push	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active
<i>Manual operation button/LED</i>		
	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
<i>Input LED</i>		
	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Switch valve output button/LED</i>		
	Sets the maximum valve control value (100 %) Resets the outputs with long button push > 5 s	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output open button/LED</i>		
	Sets the minimum valve control value (0 %)	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output close button/LED</i>		
		Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
		
	Opens/closes the relay	LED On: Relay contact closed LED Off: Relay contact open
<i>Relay output open/close button/LED</i>		
	Switches the fan speed in the following sequence: <ul style="list-style-type: none"> 0 > 1 > 2 > 3 > 0 > 1... (long button push always switches to 0)	Fan speed during step switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LEDs 1 & 2 On 3: all LEDs On Fan speed during changeover switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LED 2 On 3: LED 3 On
<i>Fan speed button/LED</i>		

Tab. 41: Operating and display elements

3.8.3.2 KNX operation

Operating control/LED	Description/function	Display
 <p>Manual operation button/LED</p>	Activates the <i>Manual operation</i> mode with long button push > 5 s	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active LED flashes when button is pushed: <i>Manual operation</i> deactivated via ETS
 <p>Input LED</p>	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
 <p>Switch valve output button/LED</p>	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output open button/LED</p>	Button without function	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output close button/LED</p>	Button without function	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	LED On: Relay contact closed LED Off: Relay contact open
 <p>Fan speed button/LED</p>	Button without function	Fan speed during step switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LEDs 1 & 2 On 3: all LEDs On Fan speed during changeover switching: <ul style="list-style-type: none"> 0: all LEDs Off 1: LED 1 On 2: LED 2 On 3: LED 3 On

Tab. 42: Operating and display elements

3.8.4 Technical data

3.8.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.24 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overtoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, relay output 16 A	≤ 1 W
	Power loss, relay output 5 A	≤ 0.6 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDK508224D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 43: General technical data

3.8.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 44: Inputs

3.8.4.3 Valve outputs – analog

Rated values	Number of outputs	2
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 45: Valve outputs – analog

3.8.4.4 Fan outputs – relays 5 A

Rated values	Number of outputs	3
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	5 A
	Rated frequency	50/60 Hz
	Back-up protection	≤ 6 A
	Relay type	Bi-stable
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 5 A
	Switching current at 24 V AC	≥ 0.01 A
	Switching current at 24 V DC (resistive load)	≤ 5 A
	Switching current at 5 V AC	≥ 0.02 A
	Switching current at 12 V AC	≥ 0.01 A
	Switching current at 24 V AC	≥ 0.007 A
Service life	Mechanical service life	≥ 10 ⁷ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 46: Fan outputs – relays 5 A

3.8.4.5 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
Service life	Mechanical service life	≥ 3 × 10 ⁶ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 47: Outputs – relays 16 A

3.8.4.6 Device type

Device type	Fan Coil Controller	FCC/S 1.2.2.1
	Application	Fan Coil Unit Controller, PWM/ ...
		... = current version number of the application
	Maximum number of group objects	118
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 48: Device type

Note

Observe software information on the website → www.abb.com/knx.

3.9 Fan Coil Controller 1.3.1.1, 0-10V, MDRC



Fig. 13: Device illustration 1.3.1.1

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3.9.1 Dimension drawing

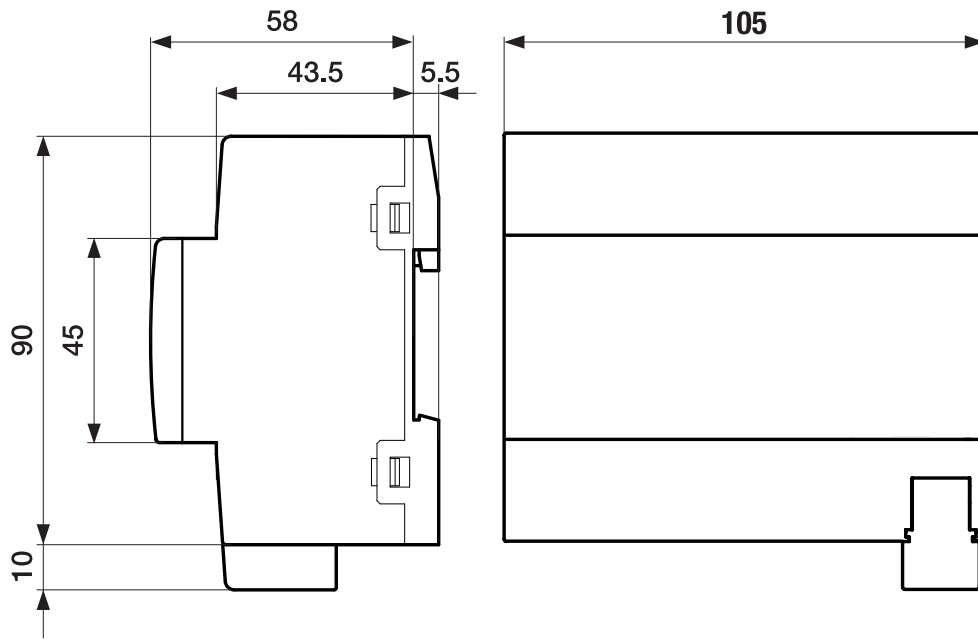


Fig. 14: Dimension drawing

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3.9.2 Connection diagram

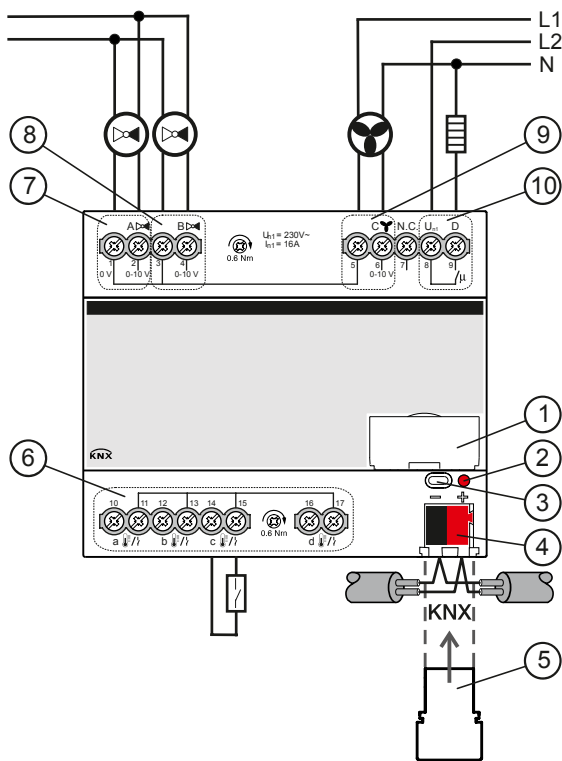



Fig. 15: Connection diagram FCC/S 1.3.1.1

Legend

- | | |
|---------------------------|--------------------|
| 1 Label carriers | 7 Valve output |
| 2 Programming LED | 8 Valve output |
| 3 Programming button | 9 Fan output |
| 4 Bus connection terminal | 10 Auxiliary relay |
| 5 Cover cap | 6 Input |

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3.9.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 49: Operating and display elements

3.9.4 Technical data

3.9.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.21 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, relay output 16 A	≤ 1 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDC508225D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 50: General technical data

3.9.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 51: Inputs

3.9.4.3 Valve outputs – analog

Rated values	Number of outputs	2
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 52: Valve outputs – analog

3.9.4.4 Fan outputs – analog

Rated values	Number of outputs	1
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 53: Fan outputs – analog

3.9.4.5 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
Service life	Switching current at 24 V AC	≥ 0.1 A
	Mechanical service life	≥ 3 × 10 ⁶ switching operations
Switching operations	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
	Switching operations per minute when one relay switches	≤ 500

Tab. 54: Outputs – relays 16 A

3.9.4.6 Device type

Device type	Fan Coil Controller	FCC/S 1.3.1.1
	Application	Fan Coil Unit Controller, PWM/ = current version number of the application
	Maximum number of group objects	116
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 55: Device type

Note

Observe software information on the website → www.abb.com/knx.

3.10 Fan Coil Controller 1.3.2.1, 0-10V, MDRC



Fig. 16: Device illustration 1.3.2.1

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3.10.1 Dimension drawing

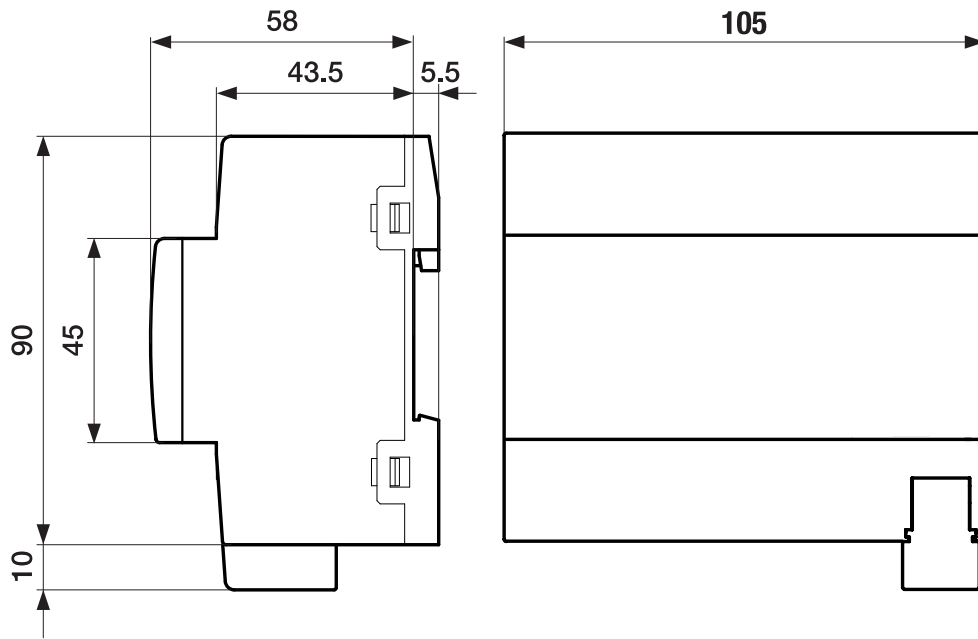


Fig. 17: Dimension drawing

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3.10.2 Connection diagram

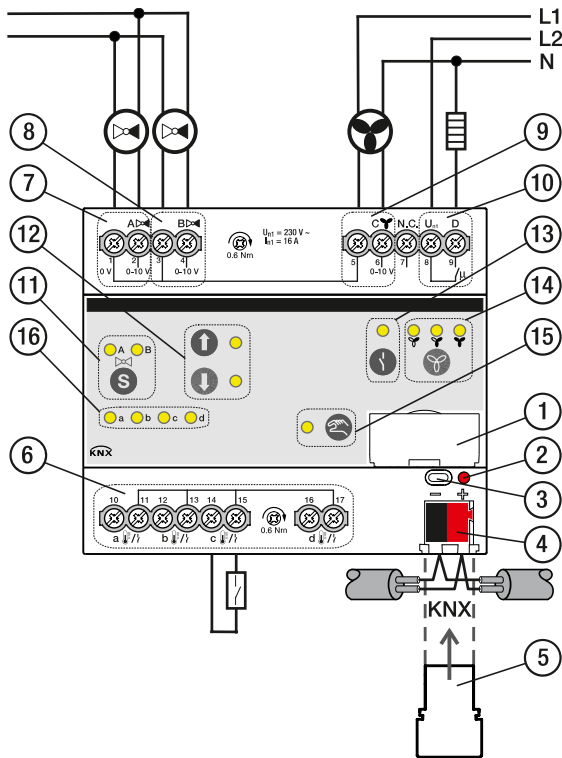



Fig. 18: Connection diagram FCC/S 1.3.2.1

—
Legend

- | | |
|---------------------------|---------------------------------------|
| 1 Label carriers | 10 Auxiliary relay |
| 2 Programming LED | 11 Switch valve output button/LED |
| 3 Programming button | 12 Valve output open/close button/LED |
| 4 Bus connection terminal | 13 Relay output open/close button/LED |
| 5 Cover cap | 14 Fan speed switching button/LED |
| 7 Valve output | 15 Manual operation button/LED |
| 8 Valve output | 16 Input LED |
| 9 Fan output | 6 Input |



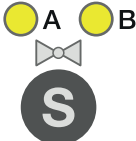





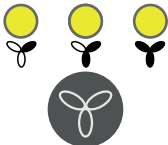
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3.10.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 56: Operating and display elements



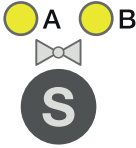


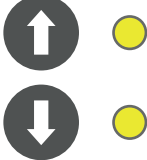

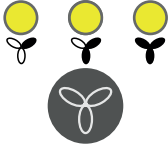
3.10.3.1 Manual mode

Operating control/LED	Description/function	Display
	Activates the <i>KNX mode</i> with a short button push	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active
<i>Manual operation button/LED</i>		
	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
<i>Input LED</i>		
	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Switch valve output button/LED</i>		
	Sets the maximum valve control value (100 %) Resets the outputs with long button push > 5 s	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output open button/LED</i>		
	Sets the minimum valve control value (0 %)	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output close button/LED</i>		
		Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
		
	Opens/closes the relay	LED On: Relay contact closed LED Off: Relay contact open
<i>Relay output open/close button/LED</i>		
	Switches the fan speed in the following sequence: <ul style="list-style-type: none"> 0 % > 33 % > 66 % > 100 % > 0 % > 33 %... (long button push always switches to 0 %)	Fan speed: <ul style="list-style-type: none"> 0 %: all LEDs Off 1 ... 33 %: LED 1 On 34 ... 66 %: LEDs 1 & 2 On 67 ... 100 %: all LEDs On All LEDs flashing: Fault on the 0-10 V output
<i>Fan speed button/LED</i>		

Tab. 57: Operating and display elements

3.10.3.2

KNX operation

Operating control/LED	Description/function	Display
 <p>Manual operation button/LED</p>	Activates the <i>Manual operation</i> mode with long button push > 5 s	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active LED flashes when button is pushed: <i>Manual operation</i> deactivated via ETS
 <p>Input LED</p>	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
 <p>Switch valve output button/LED</p>	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output open button/LED</p>	Button without function	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output close button/LED</p>	Button without function	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	LED On: Relay contact closed LED Off: Relay contact open
 <p>Fan speed button/LED</p>	Button without function	Fan speed: <ul style="list-style-type: none"> 0 %: all LEDs Off 1 ... 33 %: LED 1 On 34 ... 66 %: LEDs 1 & 2 On 67 ... 100 %: all LEDs On All LEDs flashing: Fault on the 0-10 V output

Tab. 58: Operating and display elements

3.10.4 Technical data

3.10.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.21 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, relay output 16 A	≤ 1 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDC508226D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 59: General technical data

3.10.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 60: Inputs

3.10.4.3 Valve outputs – analog

Rated values	Number of outputs	2
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 61: Valve outputs – analog

3.10.4.4 Fan outputs – analog

Rated values	Number of outputs	1
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 62: Fan outputs – analog

3.10.4.5 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
Service life	Switching current at 24 V AC	≥ 0.1 A
	Mechanical service life	≥ 3 × 10 ⁶ switching operations
Switching operations	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
	Switching operations per minute when one relay switches	≤ 500

Tab. 63: Outputs – relays 16 A

3.10.4.6 Device type

Device type	Fan Coil Controller	FCC/S 1.3.2.1
	Application	Fan Coil Unit Controller, PWM/ = current version number of the application
	Maximum number of group objects	118
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 64: Device type

Note

Observe software information on the website → www.abb.com/knx.

3.11 Fan Coil Controller 1.4.1.1, PWM, MDRC



Fig. 19: Device illustration 1.4.1.1

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3.11.1 Dimension drawing

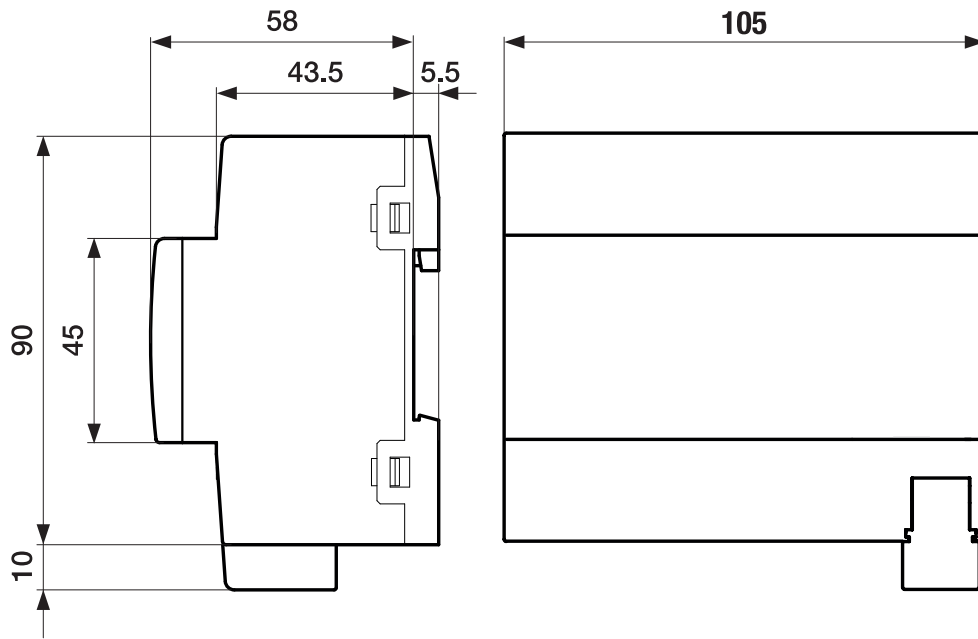


Fig. 20: Dimension drawing

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3.11.2 Connection diagram

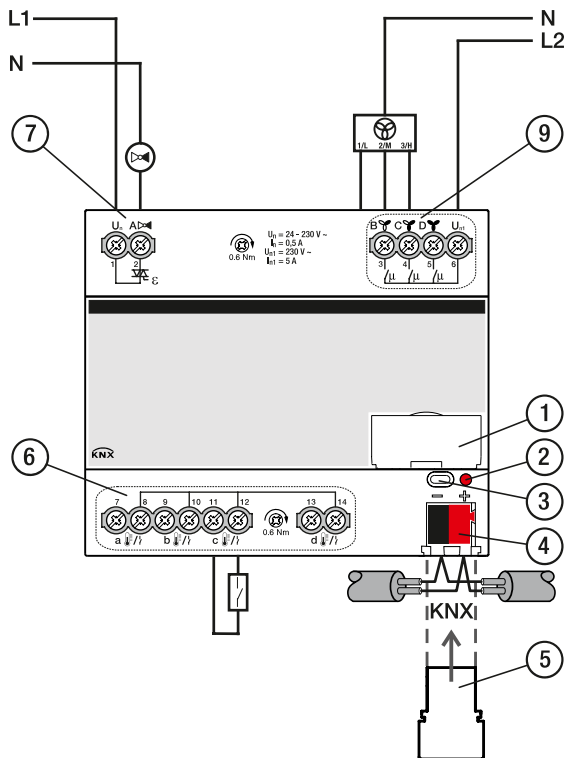



Fig. 21: Connection diagram FCC/S 1.4.1.1

Legend

- | | |
|---------------------------|----------------|
| 1 Label carriers | 5 Cover cap |
| 2 Programming LED | 7 Valve output |
| 3 Programming button | 9 Fan output |
| 4 Bus connection terminal | 6 Input |

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3.11.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 65: Operating and display elements

3.11.4 Technical data

3.11.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.22 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, fan outputs	≤ 1.2 W
	Power loss, valve outputs	≤ 1.2 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDK508227D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 66: General technical data

3.11.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 67: Inputs

3.11.4.3 Valve outputs – thermoelectric, PWM

Rated values	Number of outputs	1
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per output
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per output
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
	Minimum load (per output)	1.2 W

Tab. 68: Valve outputs – thermoelectric, PWM

3.11.4.4 Fan outputs – relays 5 A

Rated values	Number of outputs	3
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	5 A
	Rated frequency	50/60 Hz
	Back-up protection	≤ 6 A
	Relay type	Bi-stable
	Switching currents	AC-1 operation ($\cos \varphi = 0.8$)
Switching current at 24 V AC		≥ 0.01 A
Switching current at 24 V DC (resistive load)		≤ 5 A
Switching current at 5 V AC		≥ 0.02 A
Switching current at 12 V AC		≥ 0.01 A
Switching current at 24 V AC		≥ 0.007 A
Service life	Mechanical service life	≥ 10 ⁷ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 69: Fan outputs – relays 5 A

3.11.4.5 Device type

Device type	Fan Coil Controller	FCC/S 1.4.1.1
	Application	Fan Coil Unit Controller, PWM/ ...
		... = current version number of the application
	Maximum number of group objects	104
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 70: Device type

Note

Observe software information on the website → www.abb.com/knx.

3.12 Fan Coil Controller 1.5.1.1, PWM, MDRC



Fig. 22: Device illustration 1.5.1.1

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3.12.1 Dimension drawing

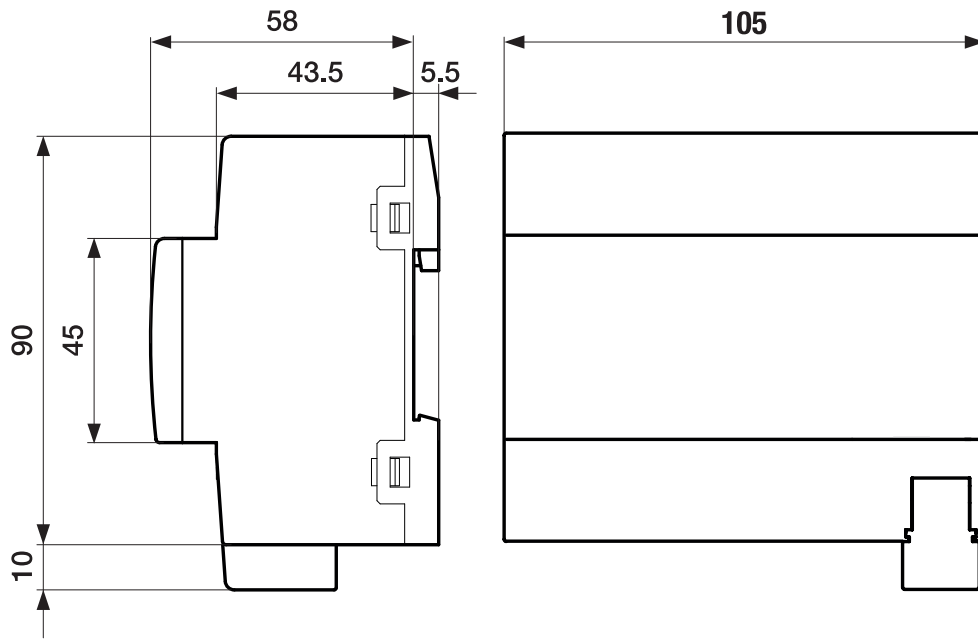


Fig. 23: Dimension drawing

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3.12.2

Connection diagram

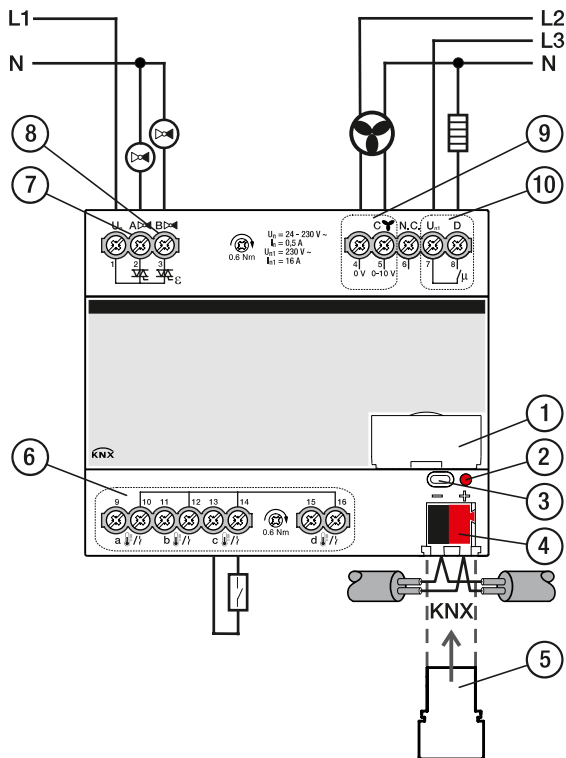



Fig. 24: Connection diagram FCC/S 1.5.1.1

Legend

- | | |
|---------------------------|--------------------|
| 1 Label carriers | 7 Valve output |
| 2 Programming LED | 8 Valve output |
| 3 Programming button | 9 Fan output |
| 4 Bus connection terminal | 10 Auxiliary relay |
| 5 Cover cap | 6 Input |

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3.12.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 71: Operating and display elements

3.12.4 Technical data

3.12.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.21 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, fan outputs	≤ 1.2 W
	Power loss, valve outputs	≤ 1.2 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDK508228D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 72: General technical data

3.12.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 73: Inputs

3.12.4.3 Valve outputs – thermoelectric, PWM

Rated values	Number of outputs	2
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per output
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per output
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
	Minimum load (per output)	1.2 W

Tab. 74: Valve outputs – thermoelectric, PWM

3.12.4.4 Valve outputs – motor-driven, 3-point

Rated values	Number of outputs	1
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per channel
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per channel
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
Minimum load (per output)	1.2 VA	

Tab. 75: Valve outputs – motor-driven, 3-point

3.12.4.5 Fan outputs – analog

Rated values	Number of outputs	1
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 76: Fan outputs – analog

3.12.4.6 Outputs – relays 16 A


Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
	Switching current at 24 V AC	≥ 0.1 A
Service life	Mechanical service life	≥ 3 × 10 ⁶ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 77: Outputs – relays 16 A

3.12.4.7 Device type

Device type	Fan Coil Controller	FCC/S 1.5.1.1
	Application	Fan Coil Unit Controller, PWM/ ...
		... = current version number of the application
	Maximum number of group objects	116
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 78: Device type

 Note

Observe software information on the website → www.abb.com/knx.

3.13 Fan Coil Controller 1.5.2.1, PWM, MDRC



Fig. 25: Device illustration 1.5.2.1

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3.13.1 Dimension drawing

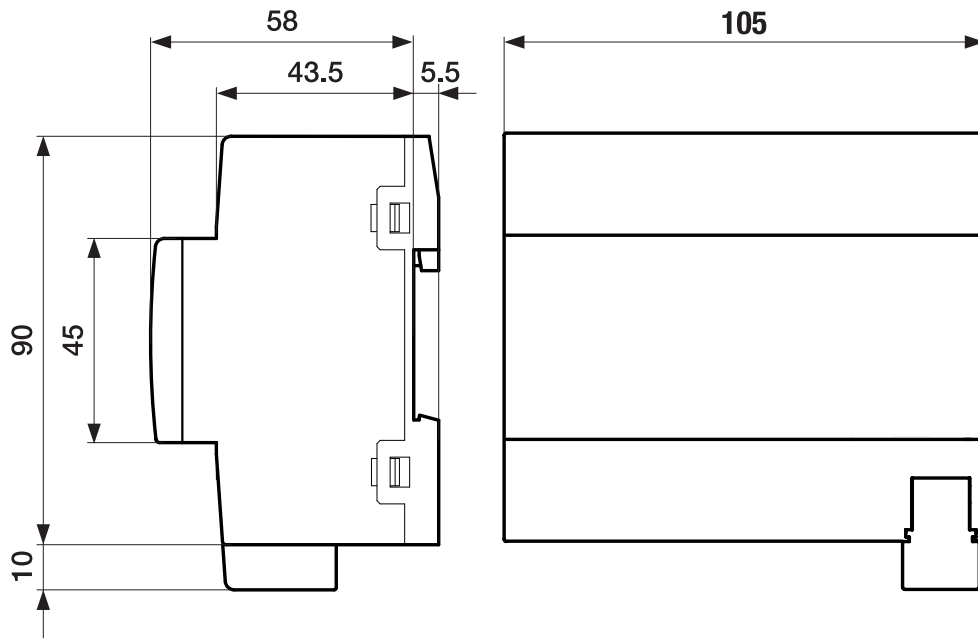


Fig. 26: Dimension drawing

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3.13.2 Connection diagram

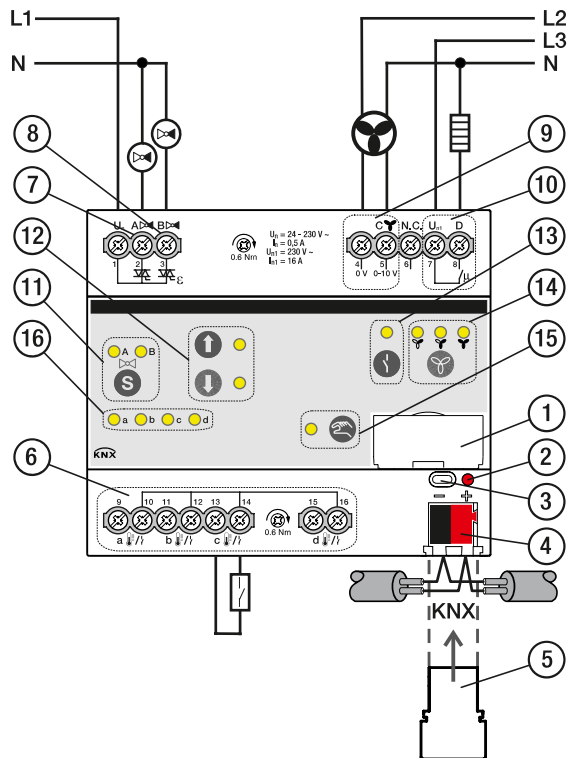



Fig. 27: Connection diagram FCC/S 1.5.2.1

—
Legend

- | | |
|---|---|
| <ul style="list-style-type: none"> 1 Label carriers 2 Programming LED 3 Programming button 4 Bus connection terminal 5 Cover cap 7 Valve output 8 Valve output 9 Fan output | <ul style="list-style-type: none"> 10 Auxiliary relay 11 Switch valve output button/LED 12 Valve output open/close button/LED 13 Relay output open/close button/LED 14 Fan speed switching button/LED 15 Manual operation button/LED 16 Input LED 6 Input |
|---|---|



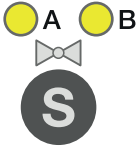





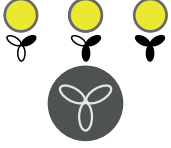
2CDC072019F0017

3.13.3 Operating and display elements

Operating control/LED	Description/function	Display
	Assignment of the physical address	LED On: Device in programming mode
<i>Programming button/LED</i>		

Tab. 79: Operating and display elements



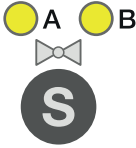


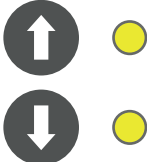

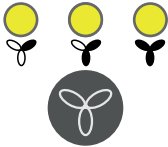
3.13.3.1 Manual mode

Operating control/LED	Description/function	Display
	Activates the <i>KNX mode</i> with a short button push	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active
<i>Manual operation button/LED</i>		
	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
<i>Input LED</i>		
	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Switch valve output button/LED</i>		
	Sets the maximum valve control value (100 %) Resets the outputs with long button push > 5 s	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output open button/LED</i>		
	Sets the minimum valve control value (0 %)	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
<i>Valve output close button/LED</i>		
		Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
		
	Opens/closes the relay	LED On: Relay contact closed LED Off: Relay contact open
<i>Relay output open/close button/LED</i>		
	Switches the fan speed in the following sequence: <ul style="list-style-type: none"> 0 % > 33 % > 66 % > 100 % > 0 % > 33 %... (long button push always switches to 0 %)	Fan speed: <ul style="list-style-type: none"> 0 %: all LEDs Off 1 ... 33 %: LED 1 On 34 ... 66 %: LEDs 1 & 2 On 67 ... 100 %: all LEDs On All LEDs flashing: Fault on the 0-10 V output
<i>Fan speed button/LED</i>		

Tab. 80: Operating and display elements

3.13.3.2

KNX operation

Operating control/LED	Description/function	Display
 <p>Manual operation button/LED</p>	Activates the <i>Manual operation</i> mode with long button push > 5 s	LED On: <i>Manual operation</i> active LED Off: <i>KNX operation</i> active LED flashes when button is pushed: <i>Manual operation</i> deactivated via ETS
 <p>Input LED</p>	Indication according to use of the inputs	Binary sensor: <ul style="list-style-type: none"> LED On: Contact closed LED Off: Contact open Temperature sensor: <ul style="list-style-type: none"> LED On: Temperature sensor connected LED flashing: Fault (cable break/short circuit) Analog control panel: <ul style="list-style-type: none"> LED On: Control panel connected LED flashing: Fault (cable break/short circuit)
 <p>Switch valve output button/LED</p>	Switches between valve A and valve B. (If the valve output is deactivated, the valve cannot be selected.)	LED On: Valve selected LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output open button/LED</p>	Button without function	LED On: Valve control value at 100 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output close button/LED</p>	Button without function	LED On: Valve control value at 0 % LED flashing: Fault on the output (e.g. overload/short circuit)
 <p>Valve output open/close button/LED</p>	Button without function	Both LEDs On: Valve control value between 1 and 99 % Both LEDs flashing: Fault on the output (e.g. overload/short circuit)
 <p>Relay output open/close button/LED</p>	Button without function	LED On: Relay contact closed LED Off: Relay contact open
 <p>Fan speed button/LED</p>	Button without function	Fan speed: <ul style="list-style-type: none"> 0 %: all LEDs Off 1 ... 33 %: LED 1 On 34 ... 66 %: LEDs 1 & 2 On 67 ... 100 %: all LEDs On All LEDs flashing: Fault on the 0-10 V output

Tab. 81: Operating and display elements

3.13.4 Technical data

3.13.4.1 General technical data

Device	Dimensions	90 × 105 × 63.5 mm (H x W x D)
	Mounting width in space units	6 modules, 17.5 mm each
	Weight	0.22 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 ... 31 V DC
	Current consumption, bus	< 12 mA
	Power loss, device	≤ 3 W
	Power loss, bus	≤ 0.25 W
	Power loss, fan outputs	≤ 1.2 W
	Power loss, valve outputs	≤ 1.2 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 ... 0.8 mm, solid
	Connection type, inputs/outputs	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 ... 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 ... 4 mm ²) / 2 × (0.2 ... 2.5 mm ²)
	Conductor cross section, rigid	1 × (0.2 ... 6 mm ²) / 2 × (0.2 ... 4 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 4 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
Length, wire end ferrule contact pin	≥ 10 mm	
Certificates and declarations	Declaration of conformity CE	→ 2CDK508229D2701
Ambient conditions	Operation	-5 ... +45 °C
	Transport	-25 ... +70 °C
	Storage	-25 ... +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Tab. 82: General technical data

3.13.4.2 Inputs

Rated values	Number of inputs	4
	Inputs for analog room control unit	1 (input a)
Contact scanning	Scanning current	≤ 1 mA
	Scanning voltage	≤ 12 V DC
Resistance	Selection	User-defined
	PT 1.000	2-conductor technology
	PT100	2-conductor technology
	KT	1k
	KTY	2k
	NI	1k
Cable length	NTC	10k, 20k
	Between sensor and device input, one-way	≤ 100 m

Tab. 83: Inputs

3.13.4.3 Valve outputs – thermoelectric, PWM

Rated values	Number of outputs	2
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per output
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per output
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
	Minimum load (per output)	1.2 W

Tab. 84: Valve outputs – thermoelectric, PWM

3.13.4.4 Valve outputs – motor-driven, 3-point

Rated values	Number of outputs	1
	Non-floating	Yes
	Rated voltage U_n	230 V AC
	Voltage range	24 ... 230 V AC
	Rated frequency	50/60 Hz
	Rated current I_n	0.5 A
	Continuous current at T_u Up to 20 °C	0.25 A resistive load per channel
	Continuous current at T_u Up to 45 °C	0.15 A resistive load per channel
	Inrush current at T_u Up to 45 °C	≤ 1.6 A (for 10 s)
		T_u = Ambient temperature
Minimum load (per output)	1.2 VA	

Tab. 85: Valve outputs – motor-driven, 3-point

3.13.4.5 Fan outputs – analog

Rated values	Number of outputs	1
	Control signal	0 ... 10 V DC
	Signal type	Analog
	Output load	> 10 kohms
	Output tolerance	± 10 %
	Current limitation	Up to 1.5 mA

Tab. 86: Fan outputs – analog

3.13.4.6 Outputs – relays 16 A

Rated values	Number of outputs	1
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
Switching currents	AC-1 operation ($\cos \varphi = 0.8$)	≤ 16 A
	AC-3 operation ($\cos \varphi = 0.45$)	≤ 6 A
	Fluorescent lighting load AX	≤ 6 AX
	Switching current at 24 V DC (resistive load)	≤ 16 A
	Switching current at 5 V AC	≥ 0.1 A
	Switching current at 12 V AC	≥ 0.1 A
	Switching current at 24 V AC	≥ 0.1 A
Service life	Mechanical service life	≥ 3 × 10 ⁶ switching operations
	AC-1 operation ($\cos \varphi = 0.8$)	≥ 10 ⁵ switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 500

Tab. 87: Outputs – relays 16 A

3.13.4.7 Device type

Device type	Fan Coil Controller	FCC/S 1.5.2.1
	Application	Fan Coil Unit Controller, PWM/ ...
		... = current version number of the application
	Maximum number of group objects	118
	Maximum number of group addresses	255
	Maximum number of assignments	255

Tab. 88: Device type

i Note

Observe software information on the website → www.abb.com/knx.

4 Function

4.1 Device functions

The following device functions are available for controlling a fan coil unit:

- Controller
- Actuator device

Controller

The internal controller is activated in the function as a controller unit. The controller is used to process the data received at the inputs (actual values) or via the bus (ABB i-bus® KNX) (actual values, setpoints and operating mode changes). The control values are calculated from the data received and transmitted to the outputs.

Actuator device

The internal controller is deactivated in the function as an actuator. The control values for activating the outputs are calculated by an external controller and received via the bus (ABB i-bus® KNX).

4.2 Software functions

4.2.1 Functional overview

Fan activation

Depending on the product variant, the following fan types can be controlled using the Fan Coil Controller FCC/S:

- Single-phase fans with up to three fan speeds (via step switching or changeover switching)
- Continuous fans (0 ... 10 V)

Valve activation

Depending on the product variant, the following valve drives can be controlled using the Fan Coil Controller FCC/S:

- FCC/S 1.1.X.1 and FCC/S 1.5.X.1
 - Thermoelectric Valve Drives (2-point)
 - Magnetic valve drives (2-point)
 - Motor-driven valve drives (3-point)
- FCC/S 1.4.1.1
 - Thermoelectric Valve Drives (2-point)
 - Magnetic valve drives (2-point)
- FCC/S 1.2.X.1 and FCC/S 1.3.X.1
 - Analog valve drives (0 ... 10 V)

To prevent simultaneous heating and cooling, the device prevents the heating and cooling valves from opening at the same time.

Manual operation on the device is additionally possible with the following product variants:

- FCC/S 1.1.2.1
- FCC/S 1.2.2.1
- FCC/S 1.3.2.1
- FCC/S 1.5.2.1

4.2.2 Safety mode

The safety mode is an operating state triggered by the device if cyclical monitoring is activated and the following errors or faults are present:

Fault Actual temperature receipt

The following actions are performed if no valid temperature value is received at the temperature input for longer than one minute:

- Group object *Fault Actual temperature (master)* is set to "Error"
- Value in the parameter *Control value on input fault* becomes valid

If no value is received on the group object *External temperature 1* or *External temperature 2* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Fault Actual temperature (master)* is set to "Error"
- Value in the parameter *Control value after exceeding monitoring time* becomes valid

The monitoring is activated in the parameter *Temperature input monitoring*.

Error Operating mode receipt

If no value is received on group object *Operating mode normal (master)* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Operating mode" receipt* is set to "Error"
- Value in the parameter *Operating mode after exceeding monitoring time* becomes valid

The monitoring is activated in the parameter *Monitor receipt of group object "Operating mode normal (master)"*.

Error Window status receipt

If no value is received on group object *Window contact (master/slave)* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Window contact" receipt* is set to "Error"
- Until a new value is received on group object *Window contact (master/slave)*, the controller is in *Building Protection* operating mode

The monitoring is activated in the parameter *Monitor receipt of group object "Window contact"*.

Error Dew point status receipt

If no value is received on group object *Dew point alarm* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Dew point alarm" receipt* is set to "Error"
- Until a new value is received on group object *Dew point alarm*, the controller is in *Building Protection* operating mode

The monitoring is activated in the parameter *Monitor receipt of group object "Dew point alarm"*.

Error Fill level status receipt

If no value is received on group object *Fill level alarm* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Fill level alarm" receipt* is set to "Error"
- Until a new value is received on group object *Fill level alarm*, the controller sets the control value for cooling to 0

The monitoring is activated in the parameter *Monitor receipt of group object "Fill level alarm"*.

Error Heating/cooling changeover receipt

If no value is received on group object *Heating/cooling changeover* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Heating/cooling changeover" receipt* is set to "Error"
- Value in the parameter *Heating/cooling mode when monitoring time exceeded* becomes valid

The monitoring is activated in the parameter *Monitor receipt of group object "Heating/cooling changeover"*.

Error Heating/cooling control value receipt

If no value is received on the group object *Control value Heating* or *Control value Cooling* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Control value" receipt* is set to "Error"
- Value in the parameter *Control value after exceeding monitoring time* becomes valid

The monitoring is activated in the parameter *Monitor receipt of "Control value heating/cooling" group objects*.

4.2.3 Fan activation

Single or multiple phase fans can be activated using the fan output. The fan for a fan coil unit can be controlled in automatic operation or in direct operation.

The fan is activated in accordance with the following schematic diagram:

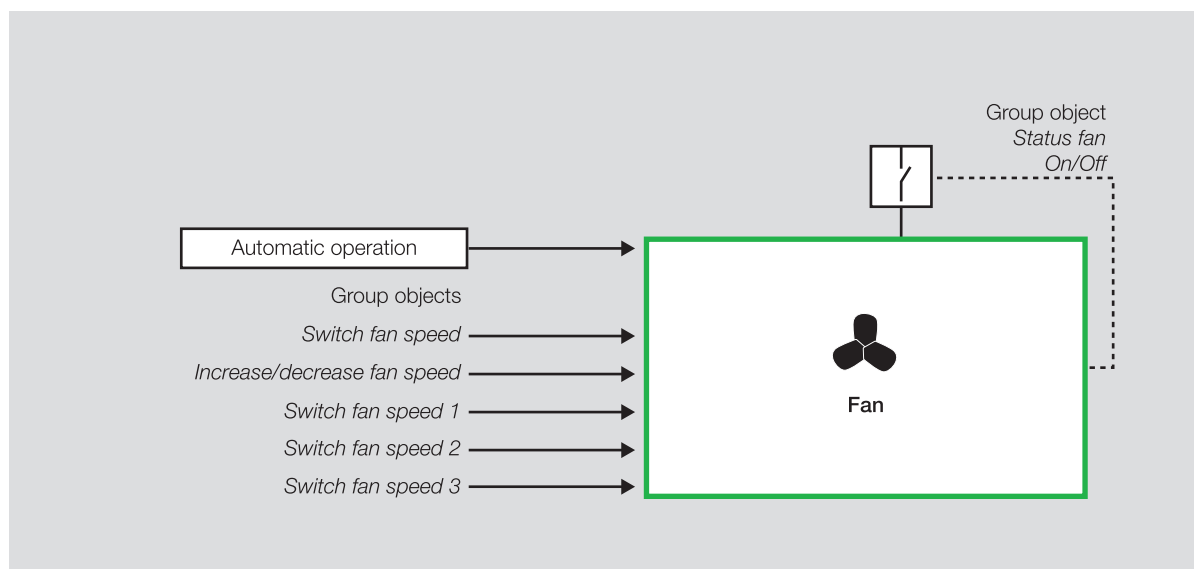


Fig. 28: Fan activation

The fan speed follows the valve control value in automatic operation (→ [Automatic operation, Page 85](#)).

In direct operation (→ [Direct operation, Page 86](#)) the fan is activated via the following group objects:

- *Switch fan speed*
- *Increase/decrease fan speed*

Alternatively, the fan can be activated in direct operation via the device outputs using the following independent 1-bit group objects:

- *Switch fan speed 1*
- *Switch fan speed 2*
- *Switch fan speed 3*

In the controller mode the fan speed can be activated as part of the master/slave communication via the following group objects:

- *Request fan manually (master)*
- *Request fan speed (master)* (DPT 5.001)
- *Request fan speed (master)* (DPT 5.010)

A central main switch is additionally required for some fan variants. The main switch can be activated using the device relay output or via an external device (e.g. Switch Actuator). The relay output or the output on the external device must be linked to the group object *Status Fan On/Off*. If the fan speed is > 0, the main switch is switched on.

4.2.3.1 Function diagram of fan activation

The following illustration indicates the sequence in which the fan activation functions are processed. Group objects leading to the same box have the same priority and are processed in the sequence in which the telegrams are received.

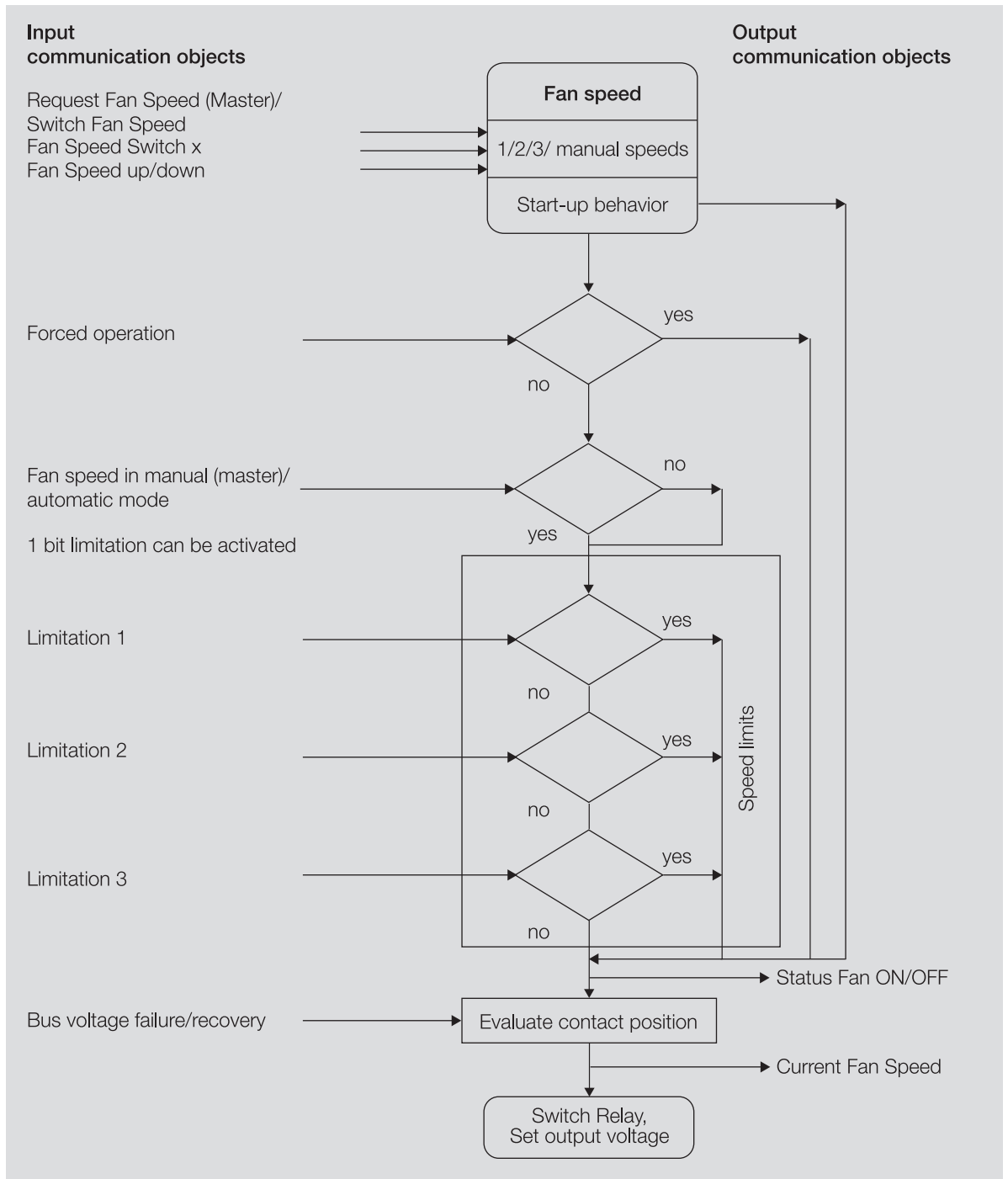


Fig. 29: Function diagram of fan activation

4.2.3.2 Discrete speed or changeover fan

Single-phase discrete speed or changeover fans are activated by means of a multiple step speed control. Several windings are tapped on the fan motor for this purpose. The speed depends on the tapped motor winding. The circuit is implemented in the device with up to three relay outputs (= steps).

During activation, a differentiation is made between the operating modes changeover or step switching → parameter *Fan operating mode*.



CAUTION

Incorrect settings can cause damage to the fan connected.

- ▶ Observe the technical data for the fan connected.

4.2.3.2.1 Step switching

With step switching, the fan speeds are activated one by one until the required fan speed is reached. The corresponding fan output relays are switched on.

The following activation results for a three-speed fan:

Fan speed	Terminal C	Terminal D	Terminal E
OFF	0	0	0
1	1	0	0
2	1	1	0
3	1	1	1

Tab. 89: Terminal assignment

A minimum dwell time can be set to prevent premature switching of the fan speed → [Minimum dwell time, Page 84](#).

4.2.3.2.2 Changeover switching

With changeover switching, only the associated fan output relay is switched to set the fan speed. A three-speed changeover switch with zero position is used to activate the fan. If a changeover switch is used, the device ensures that two contacts are not switched on at the same time.

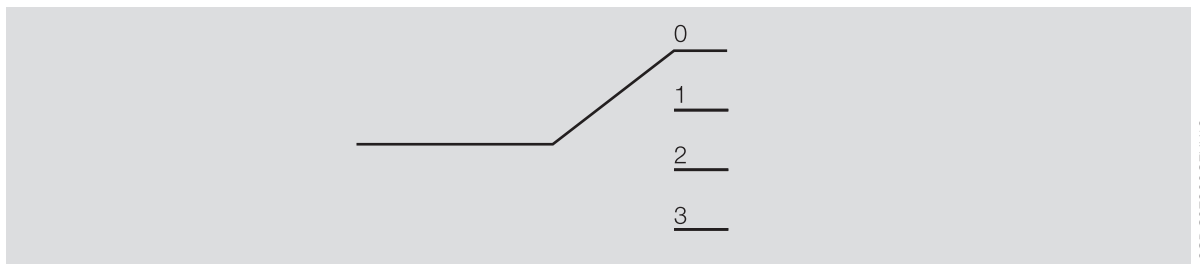


Fig. 30: Three-speed changeover switch

The following activation results for a three-speed fan:

Fan speed	Terminal C	Terminal D	Terminal E
OFF	0	0	0
1	1	0	0
2	0	1	0
3	0	0	1

Tab. 90: Terminal assignment

A minimum dwell time can be set to prevent premature switching of the fan speed → [Minimum dwell time, Page 84](#).

4.2.3.2.3 Switching the fan speeds

In automatic operation the control value for switching the fan speeds is calculated as follows:

- Increase the fan speed: Control value \geq threshold + 1/2 hysteresis
- Reduce the fan speed: Control value \leq threshold - 1/2 hysteresis

Exception: If the value 0 is selected as the switching point between 0 and 1, the fan speed is increased (0 → 1) at a control value $>$ 0 and the fan speed reduced (1 → 0) at control value 0.

Additionally:

- The highest fan speed is always switched at 100 %.
- The fan is always switched off at 0 %.

The following example explains the sequence of step switching based on the control value and the parameterized thresholds and hysteresis:

- *Threshold value fan speed 0 <-> 1 = 0 %*
- *Threshold value fan speed 1 <-> 2 = 30 %*
- *Threshold value fan speed 2 <-> 3 = 70 %*
- *Threshold values hysteresis = 10*

The following switching points apply:

Control value	Fan speed
0 %	0
1 %	1
34 %	1
35 %	2
74 %	2
75 %	3
100 %	3

Tab. 91: Fan speed increase

Control value	Fan speed
100 %	3
66 %	3
65 %	2
26 %	2
25 %	1
1 %	1
0 %	0

Tab. 92: Fan speed reduction

4.2.3.3 Continuous fans

For continuous fans the activation is via a 0-10 V signal. The fan speed is controlled depending on the fan control value via the 0-10 V signal.

4.2.3.4 Start-up behavior

The start-up behavior defines that the fan starts initially at a set fan speed during switching on.

To ensure reliable starting of the fan motor, it can be useful to start the fan motor first with a higher speed. Thus a higher torque for the startup phase of the fan is achieved.

Note
 With step switching, the fan speeds are switched on one after the other. With changeover switching, the corresponding fan speed is switched on.
 The delay between fan speed switchover (contact change) is taken into account.

Note
 The dwell times are taken into account in the automatic mode only after the start-up phase.

Note
 The start-up behavior is a technical property of the fan, and it is prioritized over a limitation or forced operation. Active forced operation is taken into account again after the start-up behavior.

4.2.3.5 Minimum dwell time

The minimum dwell time is the time a fan remains at a fan speed before the switch to the next higher/ lower fan speed.

Example

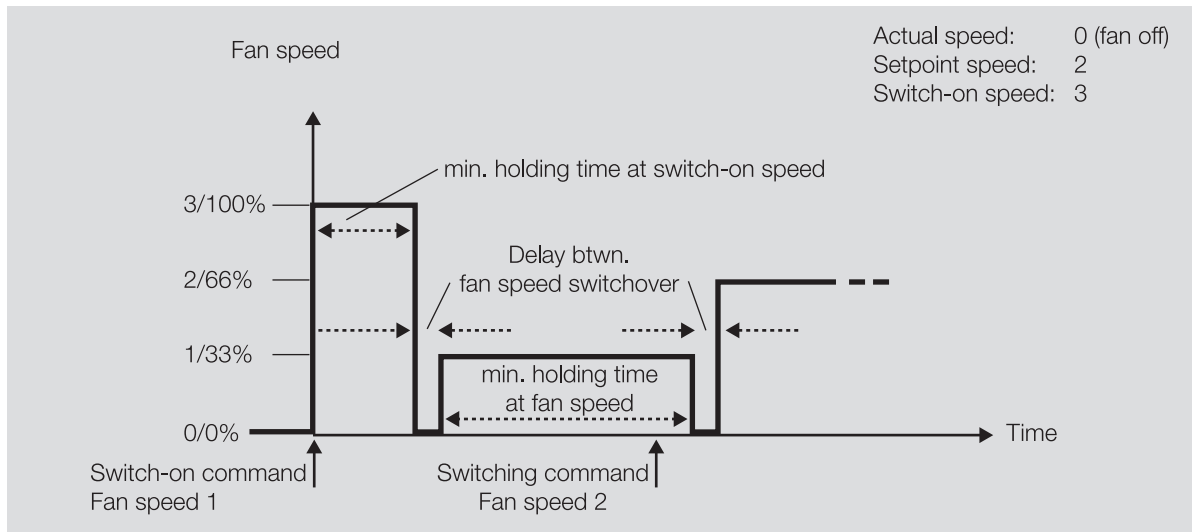


Fig. 31: Operating behavior of a 3-speed fan (changeover switching)

Minimum dwell time at switch-on speed

The fan is switched on and remains at the speed 3/100 % for the time set in the parameter *Minimum dwell time at switch-on speed*. After the time set has elapsed, the fan changes to the speed 1/33 %.

Minimum dwell time at fan speed

The fan runs at the speed 1/33 %. A change to the fan speed 2/66 % can only occur after the time set in the parameter *Minimum dwell time at fan speed*.

4.2.3.6

Automatic operation

In automatic operation, the fan speed is set based on the valve control value.

- A continuous fan follows the valve control value (e.g. control value 50 % = fan speed 50 %).
- For a discrete speed or changeover fan, the thresholds for each fan speed can be defined in the parameter window *Fan output*.

Example

Control value	Fan speed
0 ... 9 %	0 (fan off)
10 ... 39 %	1
40 ... 69 %	2
70 ... 100 %	3

Tab. 93: Fan speed based on the control value

If the device is operated as an actuator and control is via a room thermostat, automatic operation can be deactivated in the parameter window *Fan output*.

The status for automatic operation is fed back via a 1-bit value (→ group object *Status Fan automatic*).

If the fan is adjusted manually, the fan leaves automatic operation and changes to direct operation. In the parameter *Return from manual fan adjustment to automatic mode*, it can be set whether the return to automatic operation is triggered by a group object or occurs after a set time.

4.2.3.7 Direct operation

In direct operation the fan speed can be set via a slave (master/slave operation) or via the following group objects:

- [Switch fan speed](#)
- [Switch fan speed 1](#)
- [Switch fan speed 2](#)
- [Switch fan speed 3](#)

The parameter [Return from manual fan adjustment to automatic mode](#) defines when the fan changes back to automatic operation.

Discrete speed or changeover fan

With a 3-speed fan, the fan speeds are set via the following values:

- Fan Off: 0 % (0)
- Fan speed 1: 1 ... 33 % (1 ... 85)
- Fan speed 2: 34 ... 67 % (86 ... 170)
- Fan speed 3: 68 ... 100 % (171 ... 255)

With a 2-speed fan, the fan speeds are set via the following values:

- Fan Off: 0 % (0)
- Fan speed 1: 1 ... 50 % (1 ... 128)
- Fan speed 2: 51 ... 100 % (129 ... 255)

With a 1-speed fan, the fan speed is set via the following values:

- Fan Off: 0 % (0)
- Fan speed 1: 1 ... 100 % (1 ... 255)

Continuous fans

With a continuous fan, the required fan speed is set.

1-byte value	Percent	Hexadecimal	Binary	Fan speed
0	0	00	00000000	0 (fan off)
1 ... 85	1 % ... 33 %	01 ... 55	00000001 ... 01010101	Fan speed 1
86 ... 170	34 % ... 67 %	56 ... AA	01010110 ... 10101010	Fan speed 2
171 ... 255	68 % ... 100 %	AB ... FF	10101011 ... 11111111	Fan speed 3

Tab. 94: Fan speed based on the entered value

4.2.3.8 Limitation of fan speeds

The limitation can be used to limit the fan to one or more fan speeds.

The device features three limitations. The priorities correspond to the order of the individual limitations – limitation 1 has priority 1, limitation 2 has priority 2, etc.

The following properties apply to the limitations:

- The limitations can apply to a fan speed or to a range. If a range of fan speeds is limited, limited control is possible as well.
- The limitation is controlled via receipt of a telegram on group object [Limitation X](#).
- If limitation is active, the fan speed closest to the limitation is approached.

Example

- Limitation to fan speeds 2 and 3
 - Control value: Fan speed 1
- Fan speed 2 is approached.

- When limitation is active, data are still processed in the device but the outputs are not activated yet. When limitation is deactivated, the fan speed is recalculated and set.

4.3 Integration into i-bus® Tool

i-bus® Tool can be used to read the data from the connected device. It can also be used to simulate values and test the following functions:

- Setting the room thermostat
- Switching between the operating modes
- Function of the physical inputs and outputs

If there is no communication between the device and i-bus® Tool, the simulated values cannot be sent on the bus.

For more information → parameter *i-bus® Tool access*.

i-bus® Tool can be downloaded free of charge from the company homepage (www.abb.com/knx).

4.4 Special operating states

The device's reaction if there is a bus voltage failure, after bus voltage recovery and after ETS download can be set in the device parameters.

4.4.1 Reaction on bus voltage failure (BSA)

Bus voltage failure describes the failure of the bus voltage, e.g. due to a power failure.

4.4.2 Reaction after bus voltage recovery (BSW)

Bus voltage recovery is the state that exists after the bus voltage is restored. The device will restart after bus voltage recovery.

The time set in the parameter *Sending and switching delay after bus voltage recovery* elapses before the device performs an action.

4.4.3 Reaction on ETS reset

ETS reset designates device reset via ETS. An ETS reset restarts the ETS application in the device. ETS reset can be performed in ETS using the Commissioning menu item, in the function *Reset device*.

Note

After an ETS reset the *Comfort* operating mode is always set.

4.4.4 Reaction on download (DL)

Downloading describes loading a modified or updated ETS application onto the device. The device is not ready to operate during a download.

i Note

The device will no longer operate after the application is uninstalled or the download is canceled.

- ▶ Download again.

5 Mounting and installation

5.1 Information about mounting



DANGER – Severe injuries due to touch voltage

Feedback from differing phase conductors can produce touch voltages and lead to severe injuries.

- ▶ Operate the device only in a closed housing (distribution board).
- ▶ Disconnect all phases before working on the electrical connection.

The device can be mounted in any position as required on a 35 mm mounting rail.

The electrical connection to the loads is made using screw terminals. The connection to the bus (ABB i-bus® KNX) is made using the bus connection terminal supplied. The terminal assignment is located on the housing.

i Note

The maximum permissible current consumption on a KNX line must not be exceeded.

- ▶ During planning and installation, ensure that the KNX line is correctly dimensioned. The device has a maximum current consumption of 12 mA.

5.2 Mounting on mounting rail

i Note

No additional tools are required for mounting on a mounting rail.

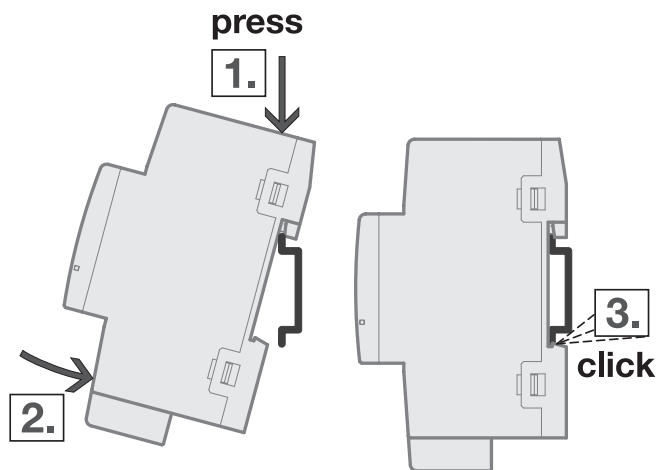


Fig. 32: Mounting on mounting rail

1. Place the mounting rail holder on the upper edge of the mounting rail and push down.
2. Push the lower part of the device toward the mounting rail until the mounting rail holder engages.
 - ⇒ The device is now mounted on the mounting rail.
3. Relieve the pressure on the top of the housing.

5.3 Connecting analog room control unit

1. Connect analog room control unit to input a.
2. Connect temperature sensor to a different input (recommendation: input b).
3. Parametrize the temperature-sensor input as follows:
 - Temperature sensor type: NTC
 - NTC type: NTC10-02

6 Commissioning

6.1 Prerequisites for commissioning

A PC with ETS and a connection to the bus (ABB i-bus® KNX), e.g. via a KNX interface, are required to commission the device.

- Required ETS version: 4.0 or higher
 - from application V1.1: 5.0 or higher
- Product-specific application: installed

6.2 Commissioning overview

After the bus voltage is activated for the first time, the following factory settings will be selected automatically:

- Physical address of the device: 15.15.255
- ETS application: preloaded
- Manual operation: enabled

The device can be programmed only using ETS.

Note

The complete ETS application can be downloaded again if required. Downloads may take longer after an application is uninstalled or when changing applications.

6.3 Putting device into operation



CAUTION

Setting a reversing time that is too short can damage the connected drive.

- ▶ Observe the technical data of the connected drive.

1. Connect the device to the bus (ABB i-bus® KNX).
2. Switch on bus voltage.
 - ⇒ All switching contacts are open.
3. Switch on power supply of the connected loads.
 - ⇒ Device is ready for operation.

6.4 Assignment of the physical address

Note

If it is set in ETS that the application is to be downloaded during programming, the download will begin after assignment of the physical address.

Triggering assignment of the physical address via ETS:

1. Press *Programming* button.
 - ⇒ Programming mode active. *Programming* LED lights up.
2. Start programming process in ETS.
 - ⇒ Physical address is assigned. Device restarts.

Note

The device performs an ETS reset during assignment of the physical address. All states are reset.

6.5 Software/application

6.5.1 Download reaction

Depending on the PC, it can take up to 90 seconds for the progress bar to appear during a download.

Using an interface that supports download via "long frames" (e.g. USB/S 1.2 or IPR/S 3.5.1) can greatly shorten the download time.

6.5.2 Copying, exchanging and converting

The following functions can be performed with the ETS application *ABBUpdate Copy Convert*:

- *Update*: Changes the application program to a higher or lower version while retaining the current configurations
- *Convert*: Transfers/adopts a configuration from an identical or compatible source device
- *Copy channel*: Copies a channel configuration to other channels on a multichannel device
- *Channel exchange*: Exchanges configurations between two channels on a multichannel device
- *Import/export*: Saves and reads device configurations as external files

The ETS application *ABBUpdate Copy Convert* can be downloaded free of charge from the KNX Shop → www.KNX.org.

7 Parameters

7.1 General

Note

ETS (Engineering Tool Software) is used to parameterize the device.

The following sections describe the device parameters based on the parameter windows. The parameter windows have a dynamic design. Parameters are shown or hidden depending on the outputs' parameterization and function.

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

No (checkbox cleared)

Yes (checkbox ticked)

Note

The default values in the ETS application can vary from the values stated in the product manual depending on the product variant.

Note

The screenshots show an application for devices with manual operation.

7.2 Parameter window

7.2.1 Parameter window Basic settings

The basic settings for operating the device can be made in this parameter window.

Basic settings	Sending and switching delay after bus voltage recovery	2 s
+ Manual operation	Value after sending and switching delay has expired	<input checked="" type="radio"/> Last value received <input type="radio"/> Ignore received values
+ Application	Limit number of telegrams	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Temperature controller	Enable group object "In operation"	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Setpoint manager	i-bus Tool access	
+ Monitoring and safety	Full access	

Fig. 33: Parameter window Basic settings

This parameter window includes the following parameters:

- [Sending and switching delay after bus voltage recovery, Page 205](#)
- [Value after sending and switching delay has expired, Page 250](#)
- [Limit number of telegrams, Page 129](#)
 - [Maximum number of telegrams, Page 179](#)
 - [In period \(0 = deactivated\), Page 170](#)
- [Enable group object "In operation", Page 171](#)
 - [Send value group object "In operation", Page 249](#)
 - [Sending cycle, Page 205](#)
- [I-bus® Tool access, Page 253](#)

Prerequisites for visibility

- The parameter window is always visible.

7.2.2 Parameter window Manual operation

The following settings can be made in this parameter window:

- Enable operating state *Manual operation*
- Automatically reset the device to operating state *KNX operation*

More information: → [Manual operation, Page 291](#).

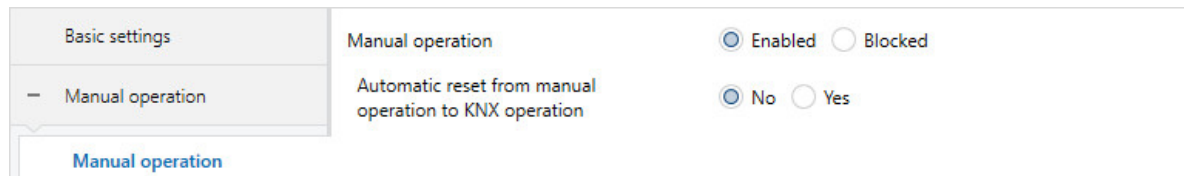


Fig. 34: Parameter window Manual operation

This parameter window includes the following parameters:

→ [Manual operation, Page 176](#)

→ [Automatic reset from manual operation to KNX operation, Page 138](#)

→ [Time for automatic reset to KNX operation, Page 135](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.2.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.2.1

7.2.3 Parameter window Application

7.2.3.1 Parameter window Application parameters

The basic device settings can be made in this parameter window.

Basic settings	Device function <input checked="" type="radio"/> Controller <input type="radio"/> Actuator device
+ Manual operation	The device is used with an internal controller that can control the fan coil unit and other heating/cooling systems in the same room. KNX analog room control units in Slave mode can be used for operation.
- Application	
Application parameters	
Device function	
+ Temperature controller	Basic-stage heating Fan coil unit: Water heating coil ▼
+ Setpoint manager	Additional-stage heating Deactivated ▼
+ Monitoring and safety	Basic-stage cooling Fan coil unit: Water cooling coil ▼
+ Valve A	Additional-stage cooling Deactivated ▼
+ Valve B	Type of heating/cooling system <input type="radio"/> 2-pipe <input checked="" type="radio"/> 4-pipe
+ Fan output	Heating/cooling changeover Automatic ▼
+ Relay output	Caution! A change to the parameterization in this section will result in an ETS reset after download
+ Setpoint adjustment	Activate basic-stage heating via Internal output A (valve) ▼
+ Input a	Activate basic-stage cooling via <input checked="" type="radio"/> Internal output B (valve) <input type="radio"/> Group object
+ Input b	Window status receipt Deactivated ▼
+ Input c	Dew point status receipt Deactivated ▼
+ Input d	Fill level status receipt Deactivated ▼
	Actual temperature receipt Via physical device input ▼
	Note: Configure in "Input" parameter window

Fig. 35: Parameter window Application parameters

This parameter window includes the following parameters:

- [Device function, Page 159](#)
 - [Basic-stage heating \[controller\], Page 161](#)
 - [Additional-stage heating, Page 255](#)
 - [Activate additional-stage heating via, Page 126](#)
 - [Switch relay output independently of fan speed \(including when fan = 0\), Page 199](#)
 - [Automatic reset of manual relay override to controller operation after, Page 138](#)
 - [Type of heating/cooling system, Page 134](#)
 - [Use of 6-way valve, Page 314](#)
 - [Heating/cooling changeover, Page 241](#)
 - [Activate basic-stage heating via, Page 124](#)
 - [Switch relay output independently of fan speed \(including when fan = 0\), Page 199](#)
 - [Basic-stage cooling \[controller\], Page 164](#)
 - [Additional-stage cooling, Page 257](#)
 - [Activate additional-stage cooling via, Page 127](#)
 - [Type of heating/cooling system, Page 134](#)
 - [Heating/cooling changeover, Page 241](#)
 - [Activate basic-stage cooling via, Page 125](#)
 - [Window status receipt, Page 155](#)
 - [Window open if \[controller\], Page 158](#)
 - [Dew point status receipt, Page 156](#)
 - [Dew point reached if \[controller\], Page 231](#)
 - [Fill level status receipt, Page 155](#)
 - [Fill level reached if \[controller\], Page 159](#)
 - [Actual temperature receipt, Page 156](#)
 - [Number of group objects Actual temperature, Page 129](#)
 - [Weighting of external measurement 1, Page 160](#)
 - [Weighting of external measurement 2, Page 160](#)
 - [Weighting of internal measurement, Page 160](#)
 - [Weighting of external measurement 1, Page 160](#)
 - [Basic-stage heating \[actuator\], Page 161](#)
 - [Type of heating/cooling system, Page 134](#)
 - [Heating/cooling changeover, Page 241](#)
 - [Activate basic-stage heating via, Page 124](#)
 - [Basic-stage cooling \[actuator\], Page 163](#)
 - [Type of heating/cooling system, Page 134](#)
 - [Heating/cooling changeover, Page 241](#)
 - [Activate basic-stage cooling via, Page 125](#)

Prerequisites for visibility

- The parameter window is in the parameter window [Application](#).

7.2.3.2 Parameter window Device function

The following settings can be made in this parameter window:

- Reaction on bus voltage failure
- Reaction after bus voltage recovery
- Reaction after ETS download/reset

Basic settings	Fan behavior on bus voltage failure	<input checked="" type="radio"/> Unchanged <input type="radio"/> Off
+ Manual operation	Switching reaction of relay output on bus voltage failure	Unchanged ▼
- Application	Operating mode after bus voltage recovery	As before bus voltage failure ▼
Application parameters	Control value after bus voltage recovery	<input checked="" type="radio"/> As before bus voltage failure <input type="radio"/> Selection
Device function	Fan speed after bus voltage recovery	Unchanged ▼
+ Temperature controller	Switching behavior of relay output after bus voltage recovery	Unchanged ▼
+ Setpoint manager	Operating mode after ETS download/reset	<input checked="" type="radio"/> Heating <input type="radio"/> Cooling
+ Monitoring and safety	Control value after ETS download	<input checked="" type="radio"/> Unchanged <input type="radio"/> Selection
+ Valve A	Fan speed after ETS download	Unchanged ▼
+ Valve B	Switching behavior of relay output after ETS download	Unchanged ▼
+ Fan output		

Fig. 36: Parameter window Device function

This parameter window includes the following parameters:

- [Fan behavior on bus voltage failure, Page 176](#)
- [Switching reaction of relay output on bus voltage failure, Page 200](#)
- [Operating mode after bus voltage recovery, Page 145](#)
- [Control value after bus voltage recovery, Page 228](#)
 - [Control value, Page 225](#)
- [Fan speed after bus voltage recovery, Page 175](#)
- [Switching behavior of relay output after bus voltage recovery, Page 203](#)
- [Operating mode after ETS download/reset, Page 145](#)
- [Control value after ETS download, Page 229](#)
- [Fan speed after ETS download, Page 175](#)
- [Switching behavior of relay output after ETS download, Page 203](#)

Prerequisites for visibility

- The parameter window is in the parameter window [Application](#).

7.2.4 Parameter window Temperature controller

7.2.4.1 Parameter window Temperature controller

The following settings can be made in this parameter window:

- Parameterizing basic load
- Send behavior of control values for the inactive operating mode
- Sending behavior of the current room temperature (actual temperature)

Basic settings	Controller options	
+ Manual operation	Minimum control value for basic load > 0	<input type="radio"/> Activate via group object <input checked="" type="radio"/> Always active
+ Application	Basic load active when controller off	<input checked="" type="radio"/> No <input type="radio"/> Yes
- Temperature controller	Send inactive control values cyclically	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Temperature controller	Cycle for sending the room temperature (0 = deactivated)	<input type="text" value="15"/> Min
+ Setpoint manager	Temperature change for sending current room temperature	<input type="text" value="0,5"/> K

Fig. 37: Parameter window Temperature controller

This parameter window includes the following parameters:

- [Minimum control value for basic load > 0, Page 185](#)
- [Basic load active when controller off, Page 161](#)
- [Send inactive control values cyclically, Page 259](#)
- [Cycle for sending the room temperature \(0 = deactivated\), Page 260](#)
- [Temperature change for sending current room temperature, Page 232](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)

7.2.4.1.1 Parameter window Basic-stage heating

The following settings can be made in this parameter window:

- Control type
- Limitation of the control range
- Sending behavior of the control value
- Activation and setting of temperature limitation

Basic settings	Type of control value Basic-stage heating	PI continuous (0...100%)
+ Manual operation	P-proportion	1,5 K
+ Application	I-proportion	100 Min
- Temperature controller	Use control value for fan automatic	<input type="radio"/> No <input checked="" type="radio"/> Yes
- Temperature controller	Extended settings	<input checked="" type="radio"/> No <input type="radio"/> Yes
Basic-stage heating		

Fig. 38: Basic-stage heating parameter window

This parameter window includes the following parameters:

- [Type of control value Basic-stage heating, Page 130](#)
 - [P-proportion, Page 191](#)
 - [I-proportion, Page 168](#)
 - [Use control value for fan automatic, Page 248](#)
- [Extended settings, Page 157](#)
 - [Control value direction, Page 252](#)
 - [Hysteresis, Page 164](#)
 - [Control value difference for sending the control value, Page 230](#)
 - [Cycle for sending the control value \(0 = deactivated\), Page 261](#)
 - [PWM cycle X, Page 192](#)
 - [Maximum control value, Page 182](#)
 - [Min. control value \(basic load\), Page 184](#)
 - [Activate temperature limitation, Page 233](#)
 - [\[Heating\] limit temperature, Page 142](#)
 - [Limit temperature hysteresis, Page 166](#)
 - [I-proportion at temperature limitation, Page 169](#)
 - [Input for temperature limit sensor, Page 154](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- The parameter window is in the parameter window [Temperature controller](#).

7.2.4.1.2 Parameter window Basic-stage cooling

The following settings can be made in this parameter window:

- Control type
- Limitation of the control range
- Sending behavior of the control value
- Activation and setting of temperature limitation

Basic settings	Type of control value Basic-stage cooling	PI continuous (0...100%)
+ Manual operation	P-proportion	2 K
+ Application	I-proportion	100 Min
- Temperature controller	Use control value for fan automatic	<input type="radio"/> No <input checked="" type="radio"/> Yes
- Temperature controller	Extended settings	<input checked="" type="radio"/> No <input type="radio"/> Yes
- Temperature controller		
Basic-stage heating		
Additional-stage heating		
Basic-stage cooling		

Fig. 39: Basic-stage cooling parameter window

This parameter window includes the following parameters:

- [Type of control value Basic-stage cooling, Page 131](#)
 - [P-proportion, Page 191](#)
 - [I-proportion, Page 168](#)
- [Use control value for fan automatic, Page 248](#)
- [Extended settings, Page 157](#)
 - [Control value direction, Page 252](#)
 - [Hysteresis, Page 164](#)
 - [Control value difference for sending the control value, Page 230](#)
 - [Cycle for sending the control value \(0 = deactivated\), Page 261](#)
 - [PWM cycle X, Page 192](#)
 - [Maximum control value, Page 182](#)
 - [Min. control value \(basic load\), Page 184](#)
 - [Activate temperature limitation, Page 233](#)
 - [Limit temperature \[cooling\], Page 142](#)
 - [Limit temperature hysteresis, Page 166](#)
 - [I-proportion at temperature limitation, Page 169](#)
 - [Input for temperature limit sensor, Page 154](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- The parameter window is in the parameter window [Temperature controller](#).

7.2.4.1.3 Parameter window Additional-stage heating

The following settings can be made in this parameter window:

- Control type
- Limitation of the control range
- Sending behavior of the control value
- Activation and setting of temperature limitation
- Temperature difference from basic-stage heating

Basic settings	Type of control value Additional-stage heating	PI continuous (0...100%)
+ Manual operation	Temperature difference from basic-stage heating	2 K
+ Application	P-proportion	1,5 K
- Temperature controller	I-proportion	100 Min
- Temperature controller	Use control value for fan automatic	<input checked="" type="radio"/> No <input type="radio"/> Yes
Basic-stage heating	Extended settings	<input checked="" type="radio"/> No <input type="radio"/> Yes
Additional-stage heating		

Fig. 40: Additional-stage heating parameter window

This parameter window includes the following parameters:

- [Type of control value Additional-stage heating, Page 132](#)
 - [P-proportion, Page 191](#)
 - [I-proportion, Page 168](#)
- [Temperature difference from basic-stage heating, Page 233](#)
- [Use control value for fan automatic, Page 248](#)
- [Extended settings, Page 157](#)
 - [Control value direction, Page 252](#)
 - [Hysteresis, Page 164](#)
 - [Control value difference for sending the control value, Page 230](#)
 - [Cycle for sending the control value \(0 = deactivated\), Page 261](#)
 - [PWM cycle X, Page 192](#)
 - [Maximum control value, Page 182](#)
 - [Min. control value \(basic load\), Page 184](#)
 - [Activate temperature limitation, Page 233](#)
 - [Limit temperature \[cooling\], Page 142](#)
 - [Limit temperature hysteresis, Page 166](#)
 - [I-proportion at temperature limitation, Page 169](#)
 - [Input for temperature limit sensor, Page 154](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- The parameter window is in the parameter window [Temperature controller](#).

7.2.4.1.4 Parameter window Additional-stage cooling

The following settings can be made in this parameter window:

- Control type
- Limitation of the control range
- Sending behavior of the control value
- Activation and setting of temperature limitation
- Temperature difference from basic-stage heating

Basic settings	Type of control value Additional-stage cooling	PI continuous (0...100%)
+ Manual operation	Temperature difference from basic-stage cooling	2 K
+ Application	P-proportion	2 K
- Temperature controller	I-proportion	100 Min
- Temperature controller	Use control value for fan automatic	<input checked="" type="radio"/> No <input type="radio"/> Yes
Basic-stage heating	Extended settings	<input checked="" type="radio"/> No <input type="radio"/> Yes
Additional-stage heating		
Basic-stage cooling		
Additional-stage cooling		

Fig. 41: Additional-stage cooling parameter window

This parameter window includes the following parameters:

- [Type of control value Additional-stage cooling, Page 133](#)
 - [P-proportion, Page 191](#)
 - [I-proportion, Page 168](#)
- [Temperature difference from basic-stage cooling, Page 234](#)
- [Use control value for fan automatic, Page 248](#)
- [Extended settings, Page 157](#)
 - [Control value direction, Page 252](#)
 - [Hysteresis, Page 164](#)
 - [Control value difference for sending the control value, Page 230](#)
 - [Cycle for sending the control value \(0 = deactivated\), Page 261](#)
 - [PWM cycle X, Page 192](#)
 - [Maximum control value, Page 182](#)
 - [Min. control value \(basic load\), Page 184](#)
 - [Activate temperature limitation, Page 233](#)
 - [Limit temperature \[cooling\], Page 142](#)
 - [Limit temperature hysteresis, Page 166](#)
 - [I-proportion at temperature limitation, Page 169](#)
 - [Input for temperature limit sensor, Page 154](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- The parameter window is in the parameter window [Temperature controller](#).

7.2.5 Parameter window Setpoint manager

7.2.5.1 Parameter window Setpoint manager

The following settings can be made in this parameter window:

- Operating mode
- Setpoint specification
- Activating and setting summer compensation

Basic settings	Operating modes	Comfort, Standby, Economy, Building Protection
+ Manual operation	Operating mode after bus voltage recovery or ETS download	Comfort
+ Application	i Operating mode after ETS reset is always "Comfort"	
+ Temperature controller	Comfort heating setpoint = Comfort cooling setpoint	<input checked="" type="radio"/> No <input type="radio"/> Yes
- Setpoint manager	Setpoint specification and adjustment	<input type="radio"/> Absolute <input checked="" type="radio"/> Relative
Setpoint manager	Comfort heating setpoint	21 °C
+ Monitoring and safety	Standby heating reduction	2 K
+ Valve A	Economy heating reduction	4 K
+ Valve B	Comfort cooling setpoint	25 °C
+ Fan output	Standby cooling increase	2 K
+ Relay output	Economy cooling increase	4 K
+ Setpoint adjustment	Setpoint for frost protection (Building Protection heating)	7 °C
+ Input a	Setpoint for heat protection (Building Protection cooling)	35 °C
+ Input b	Send current setpoint	<input type="radio"/> After change or cyclically <input checked="" type="radio"/> After change
+ Input c	Base setpoint is	Comfort heating setpoint
+ Input d	Activate summer compensation	<input checked="" type="radio"/> No <input type="radio"/> Yes

Fig. 42: Setpoint manager parameter window

This parameter window includes the following parameters:

- [Operating modes, Page 145](#)
- [Operating mode after bus voltage recovery or ETS download, Page 146](#)
- [Comfort heating setpoint = Comfort cooling setpoint, Page 210](#)
 - [Comfort heating setpoint, Page 207](#)
 - [Comfort cooling setpoint, Page 209](#)
 - [Hysteresis for Heating/cooling changeover, Page 166](#)
 - [Comfort heating and cooling setpoint, Page 208](#)
- [Setpoint specification and adjustment, Page 212](#)
 - [Standby heating setpoint, Page 207](#)
 - [Economy heating setpoint, Page 206](#)
 - [Standby cooling setpoint, Page 210](#)
 - [Economy cooling setpoint, Page 209](#)
 - [Standby heating reduction, Page 120](#)
 - [Economy heating reduction, Page 120](#)
 - [Standby cooling increase, Page 123](#)
 - [Economy cooling increase, Page 123](#)
 - [Base setpoint is, Page 139](#)
- [Setpoint for frost protection \(building protection, heating\), Page 206](#)
- [Heat protection setpoint \(building protection, cooling\), Page 208](#)
- [Send current setpoint, Page 121](#)
 - [Cycle for sending the setpoint, Page 262](#)
- [Activate summer compensation, Page 213](#)
 - [Starting temperature for summer compensation, Page 153](#)
 - [Setpoint temperature offset when summer compensation starts, Page 190](#)
 - [Ending temperature for summer compensation, Page 134](#)
 - [Setpoint temperature offset when summer compensation ends, Page 190](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)

7.2.6 Parameter window Monitoring and safety

The following settings can be made in this parameter window:

- Forced operation
- Cyclical monitoring

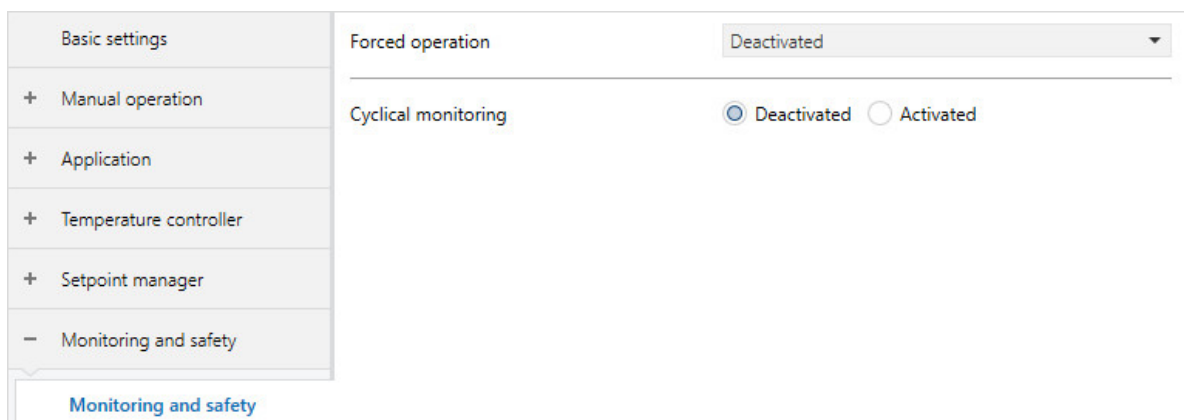


Fig. 43: Monitoring and safety parameter window

This parameter window includes the following parameters:

- [Forced operation, Page 258](#)
 - [Control value on forced operation, Page 226](#)
 - [Fan speed during forced operation, Page 173](#)
 - [Switching reaction of relay output on forced operation, Page 201](#)
 - [Control value on forced operation active "ON", Page 228](#)
 - [Fan speed during forced operation active "ON", Page 174](#)
 - [Switching reaction of relay output on forced operation active "ON", Page 202](#)
 - [Control value on forced operation active "OFF", Page 227](#)
 - [Fan speed during forced operation active "OFF", Page 174](#)
 - [Switching reaction of relay output on forced operation active "OFF", Page 202](#)
- [Cyclical monitoring, Page 259](#)
 - [Temperature input monitoring, Page 240](#)
 - [Control value on input fault, Page 225](#)
 - [Time interval for cyclical monitoring, Page 259](#)
 - [Control value after exceeding monitoring time, Page 225](#)
 - [Monitor receipt of group object "Operating mode normal \(master\)", Page 237](#)
 - [Operating mode after exceeding monitoring time, Page 146](#)
 - [Monitor receipt of group object "Heating/cooling changeover", Page 239](#)
 - [Heating/cooling mode when monitoring time exceeded, Page 144](#)
 - [Monitor receipt of group object "Window contact", Page 237](#)
 - [Monitor receipt of group object "Dew point alarm", Page 238](#)
 - [Monitor receipt of group object "Fill level alarm", Page 238](#)
 - [Monitor receipt of "Control value heating/cooling" group objects, Page 239](#)
 - [Control value after exceeding monitoring time, Page 225](#)

Prerequisites for visibility

- The parameter window is always visible.

7.2.7 Parameter window Valve X

7.2.7.1 Parameter window Valve output X

The basic settings of this valve output can be specified in this parameter window.

Basic settings	Valve output	Thermoelectric (PWM)
+ Manual operation	Valve drive operating principle, de-energized	<input checked="" type="radio"/> Closed <input type="radio"/> Open
+ Application	PWM cycle time	180 s
+ Temperature controller	Valve drive opening/closing time	180 s
+ Setpoint manager	Send status values	After change or on request
+ Monitoring and safety	Enable manual valve override	<input checked="" type="radio"/> No <input type="radio"/> Yes
- Valve A	Valve purge	Automatic or via group object
Valve output A	Purge cycle in weeks	4
+ Valve B	Reset purge cycle from control value greater than or equal to	99 %
+ Fan output	Send value of group object "Status Valve purge"	No, update only
+ Relay output		

Fig. 44: Parameter window Valve output X

This parameter window includes the following parameters:

- [Valve output, Page 243](#)
 - [Valve drive operating principle, de-energized, Page 253](#)
 - [PWM cycle time, Page 262](#)
 - [Open if control value greater than or equal to, Page 189](#)
 - [Valve drive opening/closing time, Page 189](#)
 - [Reversing time, Page 240](#)
 - [Switch on time for valve drive from 0 to 100 %, Page 153](#)
 - [Automatic adjustment of valve drive, Page 135](#)
 - [Number of changes until adjustment, Page 128](#)
 - [Send status values \[valve output\], Page 224](#)
 - [Send cyclically every, Page 258](#)
 - [Enable manual valve override, Page 177](#)
- [Valve purge, Page 245](#)
 - [Purge cycle in weeks, Page 217](#)
 - [Reset purge cycle from control value greater than or equal to, Page 218](#)
 - [Send value of group object "Status valve purge", Page 250](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1

7.2.7.2 Parameter window Valve output X (0 ... 10 V)

The basic settings of this valve output can be specified in this parameter window.

Basic settings	Valve output	Activated
+ Manual operation	Voltage range valve control value	0 - 10 V
+ Application	Valve drive opening/closing time	180 s
+ Temperature controller	Send status values	After change or on request
+ Setpoint manager	Fault Reset valve output	<input checked="" type="radio"/> Via group object <input type="radio"/> Automatic or via group object
+ Monitoring and safety	Enable manual valve override	<input checked="" type="radio"/> No <input type="radio"/> Yes
- Valve A	Valve purge	Automatic or via group object
Valve output A (0 ... 10V)	Purge cycle in weeks	4
+ Valve B	Reset purge cycle from control value greater than or equal to	99 %
+ Fan output	Send value of group object "Status Valve purge"	No, update only
+ Relay output		

Fig. 45: Parameter window Valve output X (0 ... 10 V)

This parameter window includes the following parameters:

- [Valve output \[0 ... 10 V\], Page 244](#)
 - [Voltage range valve control value, Page 216](#)
 - [Voltage range for VAV damper control value, Page 215](#)
 - [Voltage for control value cooling = 100 %, Page 215](#)
 - [Voltage for control value cooling = 0 %, Page 214](#)
 - [Voltage for control value heating = 0 %, Page 213](#)
 - [Voltage for control value heating = 100 %, Page 214](#)
 - [Valve drive opening/closing time, Page 189](#)
 - [VAV damper output after bus voltage recovery, ETS download and ETS reset, Page 242](#)
 - [Control value, Page 225](#)
 - [Send status values \[valve output\], Page 224](#)
 - [Send status values \[VAV damper output\], Page 223](#)
 - [Send cyclically every, Page 258](#)
 - [Fault Reset valve output, Page 231](#)
 - [Enable manual valve override, Page 177](#)
 - [Valve purge, Page 245](#)
 - [Purge cycle in weeks, Page 217](#)
 - [Reset purge cycle from control value greater than or equal to, Page 218](#)
 - [Send value of group object "Status valve purge", Page 250](#)
 - [Send cyclically every, Page 258](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1

7.2.8 Parameter window Fan output

7.2.8.1 Parameter window Fan output

The following settings can be made in this parameter window:

- Fan settings and operating mode
- Thresholds
- Limitation of fan speeds
- Fan speed switching reaction
- Status value sending reaction

Basic settings	Number of fan speeds	3
+ Manual operation	Fan operating mode	<input checked="" type="radio"/> Changeover switch <input type="radio"/> Step switch
+ Application	i Important: Observe the technical data for the fan!	
+ Temperature controller	Delay between fan speed switchover	500 ms
+ Setpoint manager	Enable automatic mode based on control value	Yes
+ Monitoring and safety	Threshold value fan speed 0 <-> 1	1 %
+ Valve A	Threshold value fan speed 1 <-> 2	30 %
+ Valve B	Threshold value fan speed 2 <-> 3	70 %
- Fan output	Threshold values hysteresis	5 %
+ Fan output	Minimum dwell time at fan speed	5 s
+ Relay output	Return from manual fan adjustment to automatic mode	Via group object
+ Setpoint adjustment	Start-up behavior	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Input a	Run-on reaction	<input checked="" type="radio"/> No <input type="radio"/> Yes
+ Input b	Limitation of fan speed	<input checked="" type="radio"/> Deactivated <input type="radio"/> Activated
+ Input c	Switch fan speed via 1-bit group objects	Deactivated
+ Input d	Send status values	After change or on request

Fig. 46: Parameter window Fan output

This parameter window includes the following parameters:

- [Number of fan speeds, Page 129](#)
- [Fan operating mode, Page 144](#)
 - [Delay between fan speed switchover, Page 248](#)
- [Enable automatic mode based on control value \[discrete speed fan\], Page 137](#)
 - [Threshold value fan speed 0 <-> 1, Page 204](#)
 - [Threshold value fan speed 1 <-> 2, Page 204](#)
 - [Threshold value fan speed 2 <-> 3, Page 205](#)
 - [Threshold values hysteresis, Page 167](#)
 - [Minimum dwell time at fan speed, Page 186](#)
 - [Return from manual fan adjustment to automatic mode, Page 197](#)
 - [Reset time, Page 198](#)
- [Start-up behavior, Page 124](#)
 - [Switch on at fan speed, Page 152](#)
 - [Minimum dwell time at switch-on speed, Page 185](#)
- [Run-on behavior \[discrete speed fan\], Page 187](#)
 - [Run-on speed x, Page 188](#)
- [Limitation of fan speed \[continuous fan\], Page 139](#)
 - [Limitation x, Page 140](#)
- [Switch fan speed via 1-bit group objects, Page 199](#)
- [Send status values \[fan output\], Page 220](#)
 - [Send cyclically every, Page 258](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1

7.2.8.2 Parameter window Fan output (0 ... 10 V)

The following settings can be made in this parameter window:

- Fan settings
- Limitation of fan speeds
- Fan speed switching reaction
- Status value sending reaction

Basic settings	Minimum output voltage for fan control	0	V
+ Manual operation	Maximum output voltage for fan control	10	V
+ Application	Start-up behavior	<input checked="" type="radio"/> No <input type="radio"/> Yes	
+ Temperature controller	Enable automatic mode based on control value	Yes	
+ Setpoint manager	Return from manual fan adjustment to automatic mode	Via group object	
+ Monitoring and safety	Run-on reaction	<input checked="" type="radio"/> No <input type="radio"/> Yes	
+ Valve A	Limitation of fan speed	<input checked="" type="radio"/> Deactivated <input type="radio"/> Activated	
+ Valve B	Switch fan speed via 1-bit group objects	Deactivated	
- Fan output	Send status values	After change or on request	

Fan output (0-10V)

Fig. 47: Parameter window Fan output

This parameter window includes the following parameters:

- [Minimum output voltage for fan control, Page 183](#)
- [Maximum output voltage for fan control, Page 180](#)
- [Start-up behavior, Page 124](#)
 - [Switch on at fan speed, Page 152](#)
 - [Minimum dwell time at switch-on speed, Page 185](#)
- [Enable automatic mode based on control value \[continuous fan\], Page 136](#)
 - [Return from manual fan adjustment to automatic mode, Page 197](#)
 - [Reset time, Page 198](#)
- [Run-on behavior \[continuous fan\], Page 186](#)
 - [Run-on time at fan speed 20 %, Page 187](#)
- [Limitation of fan speed \[continuous fan\], Page 139](#)
 - [Limitation x lower limit, Page 141](#)
 - [Limitation x upper limit, Page 141](#)
- [Switch fan speed via 1-bit group objects, Page 199](#)
- [Send status values \[VAV damper output\], Page 223](#)
 - [Send cyclically every, Page 258](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1

7.2.9 Parameter window Relay output

The following settings can be made in this parameter window:

- Reaction of relay output

Basic settings	Relay used internally as additional-stage heating output
+ Manual operation	Relay output <input type="radio"/> Deactivated <input checked="" type="radio"/> Activated
+ Application	Reaction of output <input type="radio"/> NC contact <input checked="" type="radio"/> NO contact
+ Temperature controller	Value of group object "Status Relay" <input checked="" type="radio"/> 1: closed, 0: open <input type="radio"/> 0: closed; 1: open
+ Setpoint manager	Send status values <input type="text" value="After change or on request"/>
+ Monitoring and safety	
+ Valve A	
+ Valve B	
+ Fan output	
- Relay output	
Relay output	

Fig. 48: Parameter window Relay output

This parameter window includes the following parameters:

- [Relay output, Page 195](#)
- [Reaction of output, Page 246](#)
- [Value of group object "Status Relay", Page 249](#)
- [Send status values \[relay output\], Page 221](#)
- [Send cyclically every, Page 258](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1

7.2.10 Parameter window Setpoint adjustment

The following settings can be made in this parameter window:

- Setting setpoint adjustment
- Defining data point types for setpoint and fan adjustment

The depiction of the parameter window and the parameters depends on the setting made in the parameter *Device function*.

Basic settings	Connect analog room control unit to physical device input <input checked="" type="radio"/> No <input type="radio"/> Yes
+ Manual operation	
+ Application	Max. manual increase in heating mode via KNX <input type="text" value="3"/> K
+ Temperature controller	Max. manual reduction in heating mode via KNX <input type="text" value="3"/> K
+ Setpoint manager	Max. manual increase in cooling mode via KNX <input type="text" value="3"/> K
+ Monitoring and safety	Max. manual reduction in cooling mode via KNX <input type="text" value="3"/> K
+ Valve A	Data point type, manual setpoint adjustment <input type="text" value="DPT 9.001 (absolute temperature value)"/>
+ Valve B	Caution: This type of setpoint adjustment works only with devices that support the ClimaECO master/slave concept
+ Fan output	
+ Relay output	Data point type, manual fan adjustment <input checked="" type="radio"/> DPT 5.001 (percentage value) <input type="radio"/> DPT 5.010 (meter pulses)
- Setpoint adjustment	Caution: This type of fan speed adjustment works only with devices that support the ClimaECO master/slave concept
Setpoint adjustment	
+ Input a	Reset manual setpoint adjustment via KNX when base setpoint received <input type="radio"/> No <input checked="" type="radio"/> Yes
+ Input b	Reset manual setpoint adjustment via KNX when operating mode changes <input type="radio"/> No <input checked="" type="radio"/> Yes
+ Input c	Reset manual setpoint adjustment via KNX using group object <input type="radio"/> No <input checked="" type="radio"/> Yes
+ Input d	
	Setpoint indication on slave display <input checked="" type="radio"/> Absolute <input type="radio"/> Relative

Fig. 49: Parameter window Setpoint adjustment

This parameter window includes the following parameters:

- [Connect analog room control unit to physical device input a, Page 121](#)
- [Max. manual increase in heating mode via KNX, Page 179](#)
- [Max. manual reduction in heating mode via KNX, Page 178](#)
- [Max. manual increase in cooling mode via KNX, Page 179](#)
- [Max. manual reduction in cooling mode via KNX, Page 178](#)
- [Data point type, manual setpoint adjustment, Page 148](#)
- [Data point type, manual fan adjustment, Page 147](#)
- [Reset manual setpoint adjustment when base setpoint received, Page 253](#)
- [Reset manual setpoint adjustment when operating mode changes, Page 254](#)
- [Reset manual setpoint adjustment via group object, Page 255](#)
- [Setpoint indication on slave display, Page 211](#)
- [Maximum setpoint increase, Page 180](#)
- [Maximum setpoint reduction, Page 181](#)

Prerequisites for visibility

- The parameter window is always visible.

7.2.11 Parameter window Input x

The following settings can be made in this parameter window:

- Configuring device inputs

i Note

In the following, the possible settings for inputs a ... d are explained using input a as an example. The setting options are identical for all inputs.

i Note

If input a is used to connect an analog room control unit, the input is configured in the parameter window [Setpoint adjustment](#).

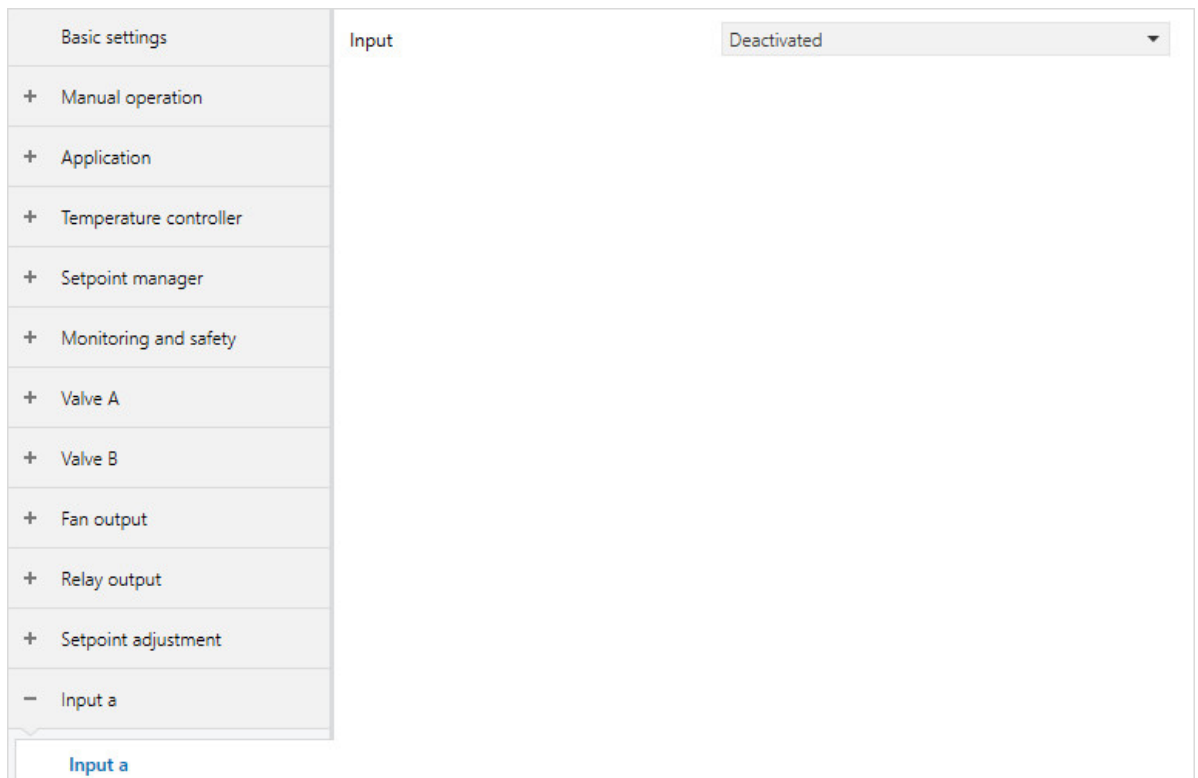


Fig. 50: Parameter window Input x

This parameter window includes the following parameters:

- [Input, Page 149](#)
 - [Window open if \[input x\], Page 157](#)
 - [Send status values \[window contact\], Page 219](#)
 - [Send cyclically every, Page 258](#)
 - [Dew point reached if \[input x\], Page 231](#)
 - [Send status values \[dew point alarm\], Page 222](#)
 - [Fill level reached if \[input x\], Page 158](#)
 - [Send status values \[fill level alarm\], Page 220](#)
 - [Temperature sensor type, Page 235](#)
 - [NTC type, Page 188](#)
 - [KTY type, Page 171](#)
 - [Resistance in ohms at x °C, Page 251](#)
 - [Temperature offset, Page 235](#)
 - [Cable error compensation, Page 172](#)
 - [Cable length, single distance, Page 172](#)
 - [Cross-section of conductor, value* 0.01 mm², Page 194](#)
 - [Cable resistance \(total of fwd and rtn conductor\), Page 173](#)
 - [Filter, Page 158](#)
 - [Send temperature value, Page 236](#)
 - [Value is sent from a change of, Page 251](#)
 - [Distinction between long and short operation, Page 241](#)
 - [Input on operation, Page 151](#)
 - [Long operation after, Page 172](#)
 - [Activate minimum signal duration, Page 183](#)
 - [When opening the contact, Page 143](#)
 - [When closing the contact, Page 143](#)
 - [Enable group object "Block input", Page 171](#)
 - [Reaction on event x, Page 195](#)
 - [Internal connection, Page 170](#)
 - [Send status values \[binary input\], Page 219](#)
 - [On group object value, Page 143](#)
 - [Scan input after download, ETS reset or bus voltage recovery, Page 151](#)

Prerequisites for visibility

- The parameter window is always visible.

7.3 Overview of parameters

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- [Activate additional-stage heating via, Page 126](#)
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- [Basic-stage heating \[controller\], Page 161](#)
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- [Cable length, single distance, Page 172](#)
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- [Comfort heating setpoint, Page 207](#)
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7.4 Parameter descriptions

7.4.1 Economy heating reduction

This parameter is used to define the value by which the temperature is to be reduced in the *Economy heating* operating mode. The value is specified as a difference from the parameter [Comfort heating setpoint](#).

More information: → [Explanation of the operating modes, Page 296](#).

Note

The controller ensures that the setpoint temperature is not exceeded when the actual temperature increases. The operating mode is not changed.

Option

0 ... 4 ... 15 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
- Parameter window [Setpoint manager](#)
 - Parameter [Operating modes](#) \ Option *Comfort, Standby, Economy, Building Protection*
 - Parameter [Setpoint specification and adjustment](#) \ Option *Relative*
- The parameter is in the parameter window [Setpoint manager](#).

7.4.2 Standby heating reduction

This parameter is used to define the value by which the temperature is to be reduced in the *Standby heating* operating mode. The value is specified as a difference from the parameter [Comfort heating setpoint](#).

More information: → [Explanation of the operating modes, Page 296](#).

Note

The controller ensures that the setpoint temperature is not exceeded when the actual temperature increases. The operating mode is not changed.

Option

0 ... 2 ... 15 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
- Parameter window [Setpoint manager](#)
 - Parameter [Operating modes](#) \ Options *Comfort, Standby, Economy, Building Protection / Comfort, Standby, Building Protection*
 - Parameter [Setpoint specification and adjustment](#) \ Option *Relative*
- The parameter is in the parameter window [Setpoint manager](#).

7.4.3 Send current setpoint

This parameter is used to define when the setpoint currently valid is sent via the group object [Current setpoint](#).

Option	
<i>After change or cyclically</i>	The value is sent after a change or cyclically. The cycle time can be set. The following dependent parameters are shown: <ul style="list-style-type: none"> • Cycle for sending the setpoint
<i>After change</i>	The value is sent if there is a change.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.4 Connect analog room control unit to physical device input a

This parameter is used to define whether an analog room control unit is connected to input a.

Depending on the setting in the parameter *Device function*, different dependent parameters and group objects are displayed.

For basic information on using an analog room control unit: → [Use of an analog room control unit, Page 314](#).

Note

If an analog room control unit is connected in actuator mode, setpoint adjustment cannot be performed via a KNX room control unit.

Note

Actuators cannot evaluate the values received from the analog room control unit. The group objects for confirmation will be hidden.

Option

<i>No</i>	An analog room control unit is not connected to input a.
	<p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Max. manual increase in heating mode via KNX</i> • <i>Max. manual reduction in heating mode via KNX</i> • <i>Max. manual increase in cooling mode via KNX</i> • <i>Max. manual reduction in cooling mode via KNX</i> • <i>Data point type, manual setpoint adjustment</i> • <i>Data point type, manual fan adjustment</i> • <i>Reset manual setpoint adjustment when base setpoint received</i> • <i>Reset manual setpoint adjustment when operating mode changes</i> • <i>Reset manual setpoint adjustment via group object</i> • <i>Setpoint indication on slave display</i>
<i>Yes</i>	<p>An analog room control unit is connected to input a.</p> <p>In controller mode, device input a is set to the option <i>Analog room control unit</i>. The analog room control unit sends the setpoint adjustment to the internal controller in the device. Setpoint adjustment is performed via the group objects shown in the actuator mode.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Maximum setpoint increase</i> • <i>Maximum setpoint reduction</i> • <i>Data point type, manual setpoint adjustment</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Error Input</i> • <i>Request setpoint adjustment (slave)</i> (DPT 6.010) • <i>Request setpoint adjustment (slave)</i> (DPT 9.002) • <i>Request fan speed (slave)</i> (DPT 5.001) • <i>Request fan speed (slave)</i> (DPT 5.010) • <i>Request fan manually (slave)</i> • <i>Confirm fan manually (slave)</i>

Prerequisites for visibility

- The parameter is in the parameter window *Setpoint adjustment*.

7.4.5 Economy cooling increase

This parameter is used to define the value by which the temperature is to be increased in the *Economy cooling* operating mode. The value is specified as a difference from the parameter *Comfort cooling setpoint*.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The controller ensures that the setpoint temperature is not fallen below when the actual temperature decreases. The operating mode is not changed.

Option

0 ... 4 ... 15 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager*
 - Parameter *Operating modes* \ Option *Comfort, Standby, Economy, Building Protection*
 - Parameter *Setpoint specification and adjustment* \ Option *Relative*
- The parameter is in the parameter window *Setpoint manager*.

7.4.6 Standby cooling increase

This parameter is used to define the value by which the temperature is to be increased in the *Standby cooling* operating mode. The value is specified as a difference from the parameter *Comfort cooling setpoint*.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The controller ensures that the setpoint temperature is not fallen below when the actual temperature decreases. The operating mode is not changed.

Option

0 ... 2 ... 15 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager*
 - Parameter *Operating modes* \ Options *Comfort, Standby, Economy, Building Protection / Comfort, Standby, Building Protection*
 - Parameter *Setpoint specification and adjustment* \ Option *Relative*
- The parameter is in the parameter window *Setpoint manager*.

7.4.7 Start-up behavior

This parameter is used to define whether the fan starts at a preset fan speed from the Off state.

i Note

The start-up behavior is a technical property of the fan, and it is prioritized over a limitation or forced operation. Active forced operation is taken into account again after the start-up behavior.

i Note

The fan switches off if an Off command is received during the start-up time.

Option

No	The fan does not start with a preset fan speed.
Yes	The following dependent parameters are shown: <ul style="list-style-type: none"> • Switch on at fan speed • Minimum dwell time at switch-on speed

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
 - The parameter is in the parameter window [Fan output](#).
- or
- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.8 Activate basic-stage heating via

This parameter is used to define whether the control value for activating basic-stage heating is output via an internal output or a group object.



CAUTION

To ensure that the device functions properly, a reset must be performed each time the assignment of the outputs is changed.

Note

The possible options and the standard option depend on the selection made in the parameter *Basic-stage heating [controller]*.

Note

Only FCC/S 1.2.X.1 & 1.3.X.1: If, in the parameter *Use of 6-way valve*, the option *Yes* is selected, this parameter is permanently set to the option *Valve output A*.

Note

The options *Valve output A* and *Valve output B* are used to activate valve drives. The option *Relay output* is used to activate an electric heater.

Option	
<i>Valve output A</i>	The control value is output on output A. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 1.001) • <i>Status Control value basic-stage heating</i> (DPT 5.001)
<i>Valve output B</i>	The control value is output on output B. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 1.001) • <i>Status Control value basic-stage heating</i> (DPT 5.001)
<i>Relay output</i>	The control value is output on the relay output. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 1.001) • <i>Status Control value basic-stage heating</i> (DPT 5.001) <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Switch relay output independently of fan speed (including when fan = 0)</i>
<i>Group object</i>	The control value is output via one of the following group objects: <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 1.001) • <i>Status Control value basic-stage heating</i> (DPT 5.001)

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.
- or
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Actuator device*
 - Parameter *Basic-stage heating [actuator]* \ Option *Fan coil unit*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.9 Activate basic-stage cooling via

This parameter is used to define whether the control value for activating basic-stage cooling is output via an internal output or a group object.



CAUTION

To ensure that the device functions properly, a reset must be performed each time the assignment of the outputs is changed.

Note

The possible options and the standard option depend on the selection made in the parameter [Activate basic-stage heating via](#).

Note

Only FCC/S 1.2.X.1 & 1.3.X.1: If, in the parameter [Use of 6-way valve](#), the option *Yes* is selected, this parameter is permanently set to the option *Valve output A*.

Option	
Valve output A	The control value is output on output A. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value basic-stage cooling (DPT 1.001) • Status Control value basic-stage cooling (DPT 5.001)
Valve output B	The control value is output on output B. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value basic-stage cooling (DPT 1.001) • Status Control value basic-stage cooling (DPT 5.001)
Group object	The control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value basic-stage cooling (DPT 1.001) • Status Control value basic-stage cooling (DPT 5.001)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Actuator device*
 - Parameter [Basic-stage cooling \[actuator\]](#) \ Option *Fan coil unit*
 - The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.10 Activate additional-stage heating via

This parameter is used to define whether the control value for activating additional-stage heating is output via an internal output or a group object.

**CAUTION**

To ensure that the device functions properly, a reset must be performed each time the assignment of the outputs is changed.

Note

The possible options and the standard option depend on the selection made in the following parameters:

- [Additional-stage heating](#)
- [Activate basic-stage heating via](#)
- [Activate basic-stage cooling via](#)

Note

The options *Valve output A* and *Valve output B* are used to activate valve drives. The option *Relay output* is used to activate an electric heater.

Option	
<i>Valve output A</i>	The control value is output on output A. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage heating (DPT 1.001) • Status Control value additional-stage heating (DPT 5.001)
<i>Valve output B</i>	The control value is output on output B. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage heating (DPT 1.001) • Status Control value additional-stage heating (DPT 5.001)
<i>Relay output</i>	The control value is output on the relay output. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage heating (DPT 1.001) • Status Control value additional-stage heating (DPT 5.001)
<i>Group object</i>	The control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage heating (DPT 1.001) • Status Control value additional-stage heating (DPT 5.001)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage heating](#) \ all options except *Deactivated*
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.11**Activate additional-stage cooling via**

This parameter is used to define whether the control value for activating additional-stage cooling is output via an internal output or a group object.



CAUTION

To ensure that the device functions properly, a reset must be performed each time the assignment of the outputs is changed.

Note

The possible options and the standard option depend on the selection made in the following parameters:

- [Activate basic-stage heating via](#)
- [Activate basic-stage cooling via](#)
- [Activate additional-stage heating via](#)

Option

<i>Valve output A</i>	The control value is output on output A. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 1.001) • Status Control value additional-stage cooling (DPT 5.001)
<i>Valve output B</i>	The control value is output on output B. In addition, the control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 1.001) • Status Control value additional-stage cooling (DPT 5.001)
<i>Group object</i>	The control value is output via one of the following group objects: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 1.001) • Status Control value additional-stage cooling (DPT 5.001)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.12 Number of changes until adjustment

This parameter is used to define the number of drive position changes after which automatic adjustment is performed.

The adjustment counter is incremented by 1 after every change.

Note

The following events trigger an additional adjustment:

- Bus voltage recovery
- ETS reset
- Download
- Reset of a corrected fault (via the [Reset](#) button or via the group object [Fault Reset valve output X](#))

Option

30 ... 500 ... 65,535

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Valve X](#) \ Parameter window [Valve output X](#)
 - Parameter [Valve output](#) \ Option [Motor-driven \(3-point\)](#)
 - Parameter [Automatic adjustment of valve drive](#) \ Option [Yes](#)
- The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X](#).

7.4.13 Number of group objects Actual temperature

This parameter is used to define the number of group objects via which an actual temperature value is received via the bus (ABB i-bus® KNX).

Option	
<u>1</u>	The actual temperature is received via one group object. The following dependent group objects are displayed: <ul style="list-style-type: none"> • External temperature 1
<u>2</u>	The actual temperature is received via two group objects. The received values are weighted. The following dependent parameters are shown: <ul style="list-style-type: none"> • Weighting of external measurement 2 The following dependent group objects are displayed: <ul style="list-style-type: none"> • External temperature 1 • External temperature 2

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Actual temperature receipt](#) \ Options [Via group object](#) / [Via phys. device input or group object](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.14 Number of fan speeds

This parameter is used to define the number of fan speeds for the activated fan. Accordingly, only the required relays on the fan output are used to output the control value.

Option	
<u>1</u>	
<u>2</u>	The following dependent parameters are shown: <ul style="list-style-type: none"> • Threshold value fan speed 1 <-> 2 • Threshold values hysteresis • Minimum dwell time at fan speed
<u>3</u>	The following dependent parameters are shown: <ul style="list-style-type: none"> • Threshold value fan speed 1 <-> 2 • Threshold value fan speed 2 <-> 3 • Threshold values hysteresis • Minimum dwell time at fan speed

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- The parameter is in the parameter window [Fan output](#).

7.4.15 Limit number of telegrams

This parameter is used to define whether the number of telegrams sent by the device will be limited. The fewer telegrams sent, the lower the bus load will be.

More information: → [Telegram rate limit, Page 312](#).

Option	
<i>No</i>	The number of telegrams is not limited.
<i>Yes</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Maximum number of telegrams</i> • <i>In period (0 = deactivated)</i>

Prerequisites for visibility

- The parameter is in the parameter window *Basic settings*.

7.4.16

Type of control value Basic-stage heating

This parameter is used to specify the control and control value type for the basic-stage heating.

i Note

The parameter can be changed only if, in the parameter *Basic-stage heating [controller]*, the option *Free configuration* is selected.

i Note

For a detailed description: → [Control types, Page 303](#).

Option	
<i>2-point 1 bit (On/Off)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 1.001)
<i>2-point 1 byte (0/100 %)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 5.001)
<i>PI continuous (0 ... 100 %)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 5.001)
<i>PI PWM (On/Off)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 1.001)
<i>PI continuous (0 ... 100 %) for fan coil</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Status Control value basic-stage heating</i> (DPT 5.001)

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Basic-stage heating*.

7.4.17 Type of control value Basic-stage cooling

This parameter is used to specify the control and control value type for the basic-stage cooling.

i Note

The parameter can be changed only if, in the parameter *Basic-stage cooling [controller]*, the option *Free configuration* is selected.

i Note

For a detailed description: → [Control types, Page 303](#).

Option	
<i>2-point 1 bit (On/Off)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage cooling</i> (DPT 1.001)
<i>2-point 1 byte (0/100 %)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage cooling</i> (DPT 5.001)
<i>PI continuous (0 ... 100 %)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage cooling</i> (DPT 5.001)
<i>PI PWM (On/Off)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage cooling</i> (DPT 1.001)
<i>PI continuous (0 ... 100 %) for fan coil</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value basic-stage cooling</i> (DPT 5.001)

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- The parameter window is in the parameter window *Temperature controller* \ Parameter window *Basic-stage cooling*.

7.4.18 Type of control value Additional-stage heating

This parameter is used to specify the control and control value type for the additional-stage heating.

i Note

The parameter can be changed only if, in the parameter *Additional-stage heating*, the option *Free configuration* is selected.

i Note

For a detailed description: → [Control types, Page 303](#).

Option	
<i>2-point 1 bit (On/Off)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value additional-stage heating</i> (DPT 1.001)
<i>2-point 1 byte (0/100 %)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Status Control value additional-stage heating</i> (DPT 5.001)
<i>PI continuous (0 ... 100 %)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Status Control value additional-stage heating</i> (DPT 5.001)
<i>PI PWM (On/Off)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Status Control value additional-stage heating</i> (DPT 1.001)
<i>PI continuous (0 ... 100 %) for fan coil</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>P-proportion</i> • <i>I-proportion</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Status Control value additional-stage heating</i> (DPT 5.001)

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Additional-stage heating* \ all options except *Deactivated*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Additional-stage heating*.

7.4.19 Type of control value Additional-stage cooling

This parameter is used to specify the control and control value type for the additional-stage cooling.

i Note

The parameter can be changed only if, in the parameter *Additional-stage cooling*, the option *Free configuration* is selected.

i Note

For a detailed description: → [Control types, Page 303](#).

Option	
<i>2-point 1 bit (On/Off)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 1.001)
<i>2-point 1 byte (0/100 %)</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 5.001)
<i>PI continuous (0 ... 100 %)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • P-proportion • I-proportion The following dependent group objects are displayed: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 5.001)
<i>PI PWM (On/Off)</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • P-proportion • I-proportion The following dependent group objects are displayed: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 1.001)
<i>PI continuous (0 ... 100 %) for fan coil</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • P-proportion • I-proportion The following dependent group objects are displayed: <ul style="list-style-type: none"> • Status Control value additional-stage cooling (DPT 5.001)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.20 Type of heating/cooling system

This parameter is used to define the type of heating/cooling system used. The selection affects the changeover behavior of the device between heating and cooling.

More information: → [2-pipe and 4-pipe systems, Page 295](#).

Option	
<i>2-pipe</i>	The activated heating and cooling devices are in a 2-pipe system. The parameter <i>Heating/cooling changeover</i> is permanently set to the option <i>Via group object</i> .
<i>4-pipe</i>	The activated heating and cooling devices are in a 4-pipe system. The parameter <i>Heating/cooling changeover</i> is set to the option <i>Automatic</i> .
	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Use of 6-way valve</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.
- or
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Actuator device*
 - Parameter *Basic-stage heating [actuator]* \ Option *Fan coil unit*
 - Parameter *Basic-stage cooling [actuator]* \ Option *Fan coil unit*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.21 Ending temperature for summer compensation

This parameter is used to define the temperature at which summer compensation is deactivated.

More information: → [Summer compensation, Page 310](#).

Option
<i>10 ... 32 ... 50 °C</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager* \ Parameter *Activate summer compensation* \ Option *Yes*
- The parameter is in the parameter window *Setpoint manager*.

7.4.22 Time for automatic reset to KNX operation

This parameter is used to define the time after which the device is automatically reset to the operating state *KNX operation*.

After the *Manual operation* button is pressed, the device remains in the operating state *Manual operation* until the button is pressed again or the set time expires.

Option

00:00:30 ... 00:05:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.2.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.2.1
- Parameter window *Manual operation*
 - Parameter *Manual operation* \ Option *Enabled*
 - Parameter *Automatic reset from manual operation to KNX operation* \ Option *Yes*
- The parameter is in the parameter window *Manual operation*.

7.4.23 Automatic adjustment of valve drive

This parameter is used to define whether automatic adjustment of the valve drive is used.

Option

No Automatic adjustment is not used.

Yes Automatic adjustment is used.

The following dependent parameters are shown:

- *Number of changes until adjustment*
-

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Option *Motor-driven (3-point)*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

7.4.24 Enable automatic mode based on control value [continuous fan]

This parameter is used to define automatic fan operation based on the control value.

i Note

To ensure correct function, the automatic mode cannot be deactivated in the controller mode.

i Note

If the basic and additional stages are operated in a fan coil unit in actuator mode, only the control values of the basic stage will be processed.

In order to be able to process the additional-stage control values, the additional stage must be operated in a separate fan coil unit. Automatic mode must be activated in the control unit for this fan coil unit.

Option

<i>No</i>	Automatic mode is deactivated. The fan reacts only to control via the fan group objects.
<i>Yes</i>	Automatic mode is activated.

The following dependent parameters are shown:

- [Return from manual fan adjustment to automatic mode](#)

The following dependent group objects are displayed:

- [Activate/deactivate fan automatic](#)
- [Status Fan automatic](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.25 Enable automatic mode based on control value [discrete speed fan]

This parameter is used to define automatic fan operation based on the control value.

i Note

To ensure correct function, the automatic mode cannot be deactivated in the controller mode.

i Note

If the basic and additional stages are operated in a fan coil unit in actuator mode, only the control values of the basic stage will be processed.

In order to be able to process the additional-stage control values, the additional stage must be operated in a separate fan coil unit. Automatic mode must be activated in the control unit for this fan coil unit.

Option

<i>No</i>	Automatic mode is deactivated. The fan reacts only to control via the fan group objects.
<i>Yes</i>	Automatic mode is activated.

The following dependent parameters are shown:

- [Threshold value fan speed 0 <-> 1](#)
- [Threshold value fan speed 1 <-> 2](#)
- [Threshold value fan speed 2 <-> 3](#)
- [Threshold values hysteresis](#)
- [Minimum dwell time at fan speed](#)
- [Return from manual fan adjustment to automatic mode](#)
- [Reset time](#)

The following dependent group objects are displayed:

- [Activate/deactivate fan automatic](#)
- [Status Fan automatic](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- The parameter is in the parameter window [Fan output](#).

7.4.26 Automatic reset of manual relay override to controller operation after

This parameter is used to define the time after which manual switching of the relay output is reset.

The timer starts when a telegram is received on the group object *Switch*. Controller mode becomes active after the set time expires. The relay switches to the position specified by the controller.

i Note

Changing from heating mode to cooling mode resets manual relay override.

Option

00:00:30 ... 00:05:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ Options *Electric heater (in room) / Free configuration / Electric heater (in fan coil unit)*
 - Parameter *Activate basic-stage heating via* \ Option *Relay output*
 - Parameter *Switch relay output independently of fan speed (including when fan = 0)* \ Option *Yes*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.
- or
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Actuator device*
 - Parameter *Basic-stage heating [actuator]* \ Option *Fan coil unit*
 - Parameter *Basic-stage cooling [actuator]* \ Option *Deactivated*
 - Parameter *Activate basic-stage heating via* \ Option *Relay output*
 - Parameter *Switch relay output independently of fan speed (including when fan = 0)* \ Option *Yes*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.27 Automatic reset from manual operation to KNX operation

This parameter is used to define whether the device is reset from the operating state *Manual operation* to the operating state *KNX operation* after an adjustable time.

Option

<i>No</i>	Automatic reset is deactivated. The operating state can be changed only using the <i>Manual operation</i> button.
<i>Yes</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Time for automatic reset to KNX operation</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.2.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.2.1
- Parameter window *Manual operation* \ Parameter *Manual operation* \ Option *Enabled*
- The parameter is in the parameter window *Manual operation*.

7.4.28 Base setpoint is

This parameter is used to define which value corresponds to the base setpoint.

More information: → [Basic setpoint, Page 295](#).

i Note

If only the *Heating* operating mode or *Cooling* operating mode is configured, the base setpoint corresponds to the respective *Comfort* setpoint.

Option

<i>Comfort heating setpoint</i>	The base setpoint corresponds to the setpoint for Comfort heating. If the base setpoint is changed via the group object <i>Basic setpoint</i> , the setpoint for Comfort cooling shifts as well. The relative distances between the two Comfort values remain unchanged.
<i>Comfort cooling setpoint</i>	The base setpoint corresponds to the setpoint for Comfort cooling. If the base setpoint is changed via the group object <i>Basic setpoint</i> , the setpoint for Comfort heating shifts as well. The relative distances between the two Comfort values remain unchanged.
<i>Mean value between Comfort heating and cooling</i>	A mean value is calculated from the setpoints for Comfort heating and Comfort cooling. This mean value is adopted as the base setpoint.

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter window *Setpoint manager* \ Parameter *Setpoint specification and adjustment* \ Option *Relative*
 - The parameter is in the parameter window *Setpoint manager*.
- or
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter window *Setpoint manager* \ Parameter *Setpoint specification and adjustment* \ Option *Relative*
 - The parameter is in the parameter window *Setpoint manager*.

7.4.29 Limitation of fan speed [continuous fan]

This parameter is used to define the fan speed limitation.

More information: → [Limitation of fan speeds, Page 86](#).

i Note

In order to ensure limitation, the lower limit value must be less than or equal to the upper limit value. If the same value is selected for the upper and lower limits, the fan will be permanently set to this speed.

Option

<i>Deactivated</i>	The fan speed limitation is deactivated.
<i>Activated</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Limitation x lower limit</i> • <i>Limitation x upper limit</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window *Fan output (0 ... 10 V)*.

7.4.30 Limitation of fan speed [discrete speed fan]

This parameter is used to define the fan speed limitation.

More information: → [Limitation of fan speeds, Page 86](#).

Option	
<i>Deactivated</i>	The fan speed limitation is deactivated.
<i>Activated</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • Limitation x

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- The parameter is in the parameter window [Fan output](#).

7.4.31 Limitation x

This parameter is used to define the selectable fan speeds when limitation is active. The limitations apply in manual and automatic modes.

i Note

The fan start-up behavior takes priority over limitation of the fan speed. Despite active limitation, the fan speed set in the parameter [Switch on at fan speed](#) is set at first.

Example:

- Start-up behavior: Fan speed 3
- Limitation: Fan speed 2
- Control value: Fan speed 1

When the fan is switched on, fan speed 3 is set at first. Fan speed 2 is set after the minimum dwell time expires. The requested fan speed 1 will not be set due to the limitation.

i Note

The limitation priorities correspond to the listed order. In other words, limitation 1 has the highest priority and limitation 3 the lowest.

i Note

The following points apply to all limitations:

- If a range of fan speeds is limited, limited control is possible as well.
- Limitation will be activated when a telegram with the value 1 is received on group object [Limitation X](#). Limitation remains active until a telegram with the value 0 is received.
- When limitation is active, the fan will run at the fan speed set in this parameter, irrespective of the control value. When the speed is limited to a range, the fan will run at the fan speed closest to the control value.
- After deactivation of limitation, the control value will be recalculated and the corresponding fan speed will be set.

Option	
<i>Unchanged</i>	The fan is blocked at the current fan speed.
<i>Off</i>	The fan is switched off. The fan cannot be switched on while limitation is active.
<i>Off, 1</i>	The fan is limited to fan speed 1 and the Off state.
<i>Off, 1, 2</i>	The fan is limited to the fan speeds 1, 2 and the Off state.
<i>Off, 1, 2, 3</i>	If limitation is active, all fan speeds can still be set.
<i>1</i>	The fan is limited to fan speed 1.
<i>1, 2</i>	The fan is limited to fan speeds 1 and 2.
<i>1, 2, 3</i>	The fan is limited to the fan speeds 1, 2 and 3.
<i>2</i>	The fan is limited to fan speed 2.
<i>2, 3</i>	The fan is limited to fan speeds 2 and 3.
<i>3</i>	The fan is limited to fan speed 3

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output* \ Parameter *Limitation of fan speed [discrete speed fan]* \ Option *Activated*
- The parameter is in the parameter window *Fan output*.

7.4.32 Limitation x upper limit

This parameter is used to define the fan speed that must not be exceeded with limitation active.

Option
<i>0 ... 100 %</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Fan output (0 ... 10 V)* \ Parameter *Limitation of fan speed [continuous fan]* \ Option *Activated*
- The parameter is in the parameter window *Fan output (0 ... 10 V)*.

7.4.33 Limitation x lower limit

This parameter is used to define the fan speed that must not be fallen below with limitation active.

Option
<i>0 ... 100 %</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Fan output (0 ... 10 V)* \ Parameter *Limitation of fan speed [continuous fan]* \ Option *Activated*
- The parameter is in the parameter window *Fan output (0 ... 10 V)*.

7.4.34 [Heating] limit temperature

This parameter is used to define the limit temperature for the *Heating* operating mode. When the temperature reaches the set value, the controller sets the control value to 0.

Setting for receipt of the temperature value → parameter [Input for temperature limit sensor](#).

Option

20 ... 30 ... 50 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- \ Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

7.4.35 Limit temperature [cooling]

This parameter is used to define the limit temperature for the *Cooling* operating mode. When the temperature reaches the set value, the controller sets the control value to 0.

Setting for receipt of the temperature value → parameter [Input for temperature limit sensor](#).

Option

1 ... 10 ... 30 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.36 On group object value

This parameter is used to define when the value of the group object is sent cyclically.

Option	
0	If the value of the group object is 0, this value is sent cyclically after an adjustable time has elapsed.
1	If the value of the group object is 1, this value is sent cyclically after an adjustable time has elapsed.
<u>0 or 1</u>	The value of the group object is sent cyclically after an adjustable time has elapsed.

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Binary input*
 - Parameter *Send status values [binary input]* \ Option *After change or cyclically*
- The parameter is in the parameter window *Input x*.

7.4.37 When opening the contact

This parameter is used to define how long the contact must be open as a minimum before a reaction is triggered.

Option	
<u>0.0 ... 1.0 ... 100.0 s</u>	

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Binary input*
 - Parameter *Distinction between long and short operation* \ Option *No*
 - Parameter *Activate minimum signal duration* \ Option *Yes*
- The parameter is in the parameter window *Input x*.

7.4.38 When closing the contact

This parameter is used to define how long the contact must be closed as a minimum before a reaction is triggered.

Option	
<u>0.0 ... 1.0 ... 100.0 s</u>	

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Binary input*
 - Parameter *Distinction between long and short operation* \ Option *No*
 - Parameter *Activate minimum signal duration* \ Option *Yes*
- The parameter is in the parameter window *Input x*.

7.4.39 Heating/cooling mode when monitoring time exceeded

This parameter is used to define which operating mode is activated when the monitoring time is exceeded.

The operating mode remains active until a new value is received on one of the following group objects:

- [Heating/cooling changeover](#) (Controller mode)
- [Heating/cooling changeover](#) (Actuator mode)

Option

[Unchanged](#)

[Heating](#)

[Cooling](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Heating/cooling changeover](#) \ all options except *Automatic*
- Parameter window [Monitoring and safety](#)
 - Parameter [Cyclical monitoring](#) \ Option *Activated*
 - Parameter [Monitor receipt of group object "Heating/cooling changeover"](#) \ Option *Activated*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.40 Fan operating mode



CAUTION

Incorrect settings can cause damage to the fan connected.

- ▶ Observe the technical data for the fan connected.

This parameter is used to set the fan operating mode.

Option

[Changeover switch](#)

Changeover switch operating mode, further information → [Changeover switching, Page 83](#).

The following dependent parameters are shown:

- [Delay between fan speed switchover](#)

[Step switch](#)

Step switch operating mode, further information → [Step switching, Page 83](#).

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- The parameter is in the parameter window [Fan output](#).

7.4.41 Operating mode after bus voltage recovery

This parameter is used to define which operating mode is activated after bus voltage recovery.

Option

As before bus voltage failure

Heating

Cooling

Prerequisites for visibility

- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.42 Operating mode after ETS download/reset

This parameter is used to define which operating mode is activated after ETS download or reset.

Option

Heating

Cooling

Prerequisites for visibility

- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.43 Operating modes

This parameter is used to define which operating modes are used.

 **Note**

If the device is requested to change to an unused operating mode via a group object, it changes to *Comfort* mode instead.

For an explanation of the individual operating modes → [Explanation of the operating modes, Page 296](#)

Option

Comfort, Standby, Economy, Building Protection

Comfort, Standby, Building Protection

Comfort, Building Protection

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.44 Operating mode after exceeding monitoring time

This parameter is used to define which operating mode is activated if no value is received on group object *Operating mode normal (master)* during the specified period. This operating mode remains active until a new value is received on group object *Operating mode normal (master)*.

Option

Building Protection

Comfort

Standby

Economy

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Monitoring and safety*
 - Parameter *Cyclical monitoring* \ Option *Activated*
 - Parameter *Monitor receipt of group object "Operating mode normal (master)"* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.45 Operating mode after bus voltage recovery or ETS download

This parameter is used to define which operating mode is activated after bus voltage recovery or ETS download. The operating mode remains active until a new operating mode is set.

Note

After an ETS reset the *Comfort* operating mode is always set.

Note

The operating mode should be defined during the planning phase. If the operating mode is defined incorrectly, this might reduce comfort or increase energy consumption.

For an explanation of the individual operating modes → [Explanation of the operating modes, Page 296](#).

Option

Comfort

Standby

Economy

Building Protection

As before bus voltage failure/download

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- The parameter is in the parameter window *Setpoint manager*.

7.4.46 Data point type, manual fan adjustment

This parameter is used to define the data point type (DPT) for fan speed adjustment.

i Note

DPT 5.010 must be selected for existing systems and for older ABB devices that do not use the current controller version (ClimaECO master/slave concept) yet. With this method, the fan speed adjustment is transmitted incrementally.

With newer devices, DPT 5.001 can be selected and the fan speed can be transmitted as a percentage. All ABB devices still support adjustment via DPT 5.010.

i Note

If DPT 5.010 is used, the setpoint adjustment cannot be sent to additionally connected devices (e.g. visualization system).

The current fan speed must be read via the group object *Status Fan speed*.

i Note

The fan speed can be adjusted via the group object *Switch fan speed* as well.

Option

<i>DPT 5.001 (percentage value)</i>	<p>The fan speed is adjusted via DPT 5.001.</p> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Request fan speed (master)</i> (DPT 5.001) • <i>Confirm fan speed (master)</i> (DPT 5.001)
<i>DPT 5.010 (meter pulses)</i>	<p>The fan speed is adjusted via DPT 5.010.</p> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Request fan speed (master)</i> (DPT 5.010) • <i>Confirm fan speed (master)</i> (DPT 5.010)

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
 - Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
 - The parameter is in the parameter window *Setpoint adjustment*.
- or
- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Actuator device*
 - Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *Yes*
 - The parameter is in the parameter window *Setpoint adjustment*.

7.4.47 Data point type, manual setpoint adjustment

This parameter is used to define the data point type (DPT) for manual setpoint adjustment.

i Note

DPT 6.010 must be selected for existing systems and for older ABB devices that do not use the current controller version (ClimaECO master/slave concept) yet. With this method, the temperature is converted to an integer value and the adjustment is transmitted incrementally.

With newer devices, DPT 9.001 or 9.002 can be selected and absolute or relative setpoint adjustment can be performed via temperature values.

All ABB devices still support adjustment via DPT 6.010.

i Note

If DPT 6.010 is used, the setpoint adjustment cannot be processed by additionally connected devices (e.g. visualization system).

The current setpoint temperature must be read via the group object [Current setpoint](#).

i Note

If setpoint adjustment is performed using a room control unit, refer to the technical data of the room control unit for the setpoint adjustment format.

i Note

Permanent setpoint adjustment can be performed via one of the following group objects:

- [Basic setpoint](#)
- [Comfort heating setpoint](#)
- [Comfort cooling setpoint](#)
- [Setpoint Comfort heating/cooling](#)

Option	
DPT 6.010 (meter pulses)	<p>Manual setpoint adjustment is performed via DPT 6.010.</p> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Request setpoint adjustment (master) (DPT 6.010) • Request setpoint adjustment (slave) (DPT 6.010) • Confirm setpoint adjustment (master) (DPT 6.010)
DPT 9.001 (absolute temperature value)	<p>Manual setpoint adjustment is performed via DPT 9.001. This option is only available in the controller mode.</p> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Request setpoint adjustment (master) (DPT 9.001) • Confirm setpoint adjustment (master) (DPT 9.001)
DPT 9.002 (relative temperature value)	<p>Manual setpoint adjustment is performed via DPT 9.002.</p> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Request setpoint adjustment (master) (DPT 9.002) • Request setpoint adjustment (slave) (DPT 9.002) • Confirm setpoint adjustment (master) (DPT 9.002)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
 - Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option [No](#)
 - The parameter is in the parameter window [Setpoint adjustment](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Actuator device](#)
 - Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option [Yes](#)
 - The parameter is in the parameter window [Setpoint adjustment](#).

7.4.48 Input

This parameter is used to define the use of the input.

i Note

If, in the parameter *Connect analog room control unit to physical device input a*, the option *Yes* is selected, the option *Analog room control unit* is set for this input and cannot be changed.

i Note

The inputs are scanned after bus voltage recovery, download or ETS reset. Scanning takes place once the device functions properly again after download, ETS reset or bus voltage recovery. This can take up to 2 seconds. The current status is sent on the bus (ABB i-bus® KNX) after the end of the sending and switching delay.

For binary inputs, the scanning can be defined in the parameter *Scan input after download, ETS reset or bus voltage recovery*.

Option	
<u>Deactivated</u>	The input is deactivated.
<u>Window contact</u>	<p>A floating window monitoring contact is connected to the input. If, in the parameter <i>Window status receipt</i>, the option <i>Via physical device input</i> is selected, the window status is included in room temperature control.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Window open if [input x] • Send status values [window contact] <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Window contact
<u>Dew point sensor</u>	<p>A dew point monitoring sensor is connected to the input. If, in the parameter <i>Dew point status receipt</i>, the option <i>Via physical device input</i> is selected, the dew point status is included in room temperature control.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Dew point reached if [input x] • Send status values [dew point alarm] <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Dew point alarm
<u>Fill level sensor</u>	<p>A sensor for monitoring the fill level in a condensate drain pan is connected to the input. If, in the parameter <i>Fill level status receipt</i>, the option <i>Via physical device input</i> is selected, the fill level status is included in room temperature control.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Fill level reached if [input x] • Send status values [fill level alarm] <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Fill level alarm
<u>Temperature sensor</u>	<p>A temperature measuring sensor is connected to the input. If, in the parameter <i>Actual temperature receipt</i>, the option <i>Via physical device input</i> or the option <i>Via phys. device input or group object</i> is selected, the temperature value measured is included in room temperature control. If several inputs are parameterized as temperature sensors and the measured values are included as the actual temperature in control, a mean value is determined from the temperature values. The temperature value measured can also be used for the temperature limitation → Parameter Input for temperature limit sensor. Two separate temperature sensors must be used to measure the room temperature and the limit temperature. Each temperature sensor must be connected to a separate input.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Temperature sensor type • Temperature offset • Cable error compensation • Filter • Send temperature value • Value is sent from a change of <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Temperature • Error Input
<u>Binary input</u>	<p>The input is used as the binary input.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Distinction between long and short operation • Activate minimum signal duration • Enable group object "Block input" • Reaction on event x • Internal connection • Send status values [binary input] • Scan input after download, ETS reset or bus voltage recovery <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Contact position binary input
<u>Analog room control unit</u>	An analog room control unit is connected to the input. Parameterization is performed in the parameter window Setpoint adjustment .

Prerequisites for visibility

- The parameter is in the parameter window [Input x](#).

7.4.49 Scan input after download, ETS reset or bus voltage recovery

This parameter is used to define whether the state of the input is scanned after download, ETS reset or bus voltage recovery.

i Note

Scanning takes place once the device functions properly again after download, ETS reset or bus voltage recovery. This can take up to 2 seconds. The current status is sent on the bus (ABB i-bus® KNX) after the end of the sending and switching delay.

Option

No

Yes

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Binary input*
- The parameter is in the parameter window *Input x*.

7.4.50 Input on operation

This parameter is used to define which state the input assumes when a connected contact is operated.

Option

Open

Closed

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Binary input*
 - Parameter *Distinction between long and short operation* \ Option *Yes*
- The parameter is in the parameter window *Input x*.

7.4.51 Switch on at fan speed

This parameter is used to define the start-up speed for the fans.

i Note

High torque is required to ensure that the fan starts up. To ensure high torque, the fan must be started with a high fan speed.

i Note

The preset fan speed is set directly with a changeover switch. The fan speeds are set one by one with a step switch.

i Note

The dwell time at a fan speed is taken into account only after the start-up phase.

i Note

The possible options depend on the product variant.

Option

1	Fan speed 1 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
2	Fan speed 2 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
3	Fan speed 3 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
0 ... 30 ... 100 %	Fan speed freely adjustable (FCC/S 1.3.X.1, 1.5.X.1)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
 - Parameter window [Fan output](#) \ Parameter [Start-up behavior](#) \ Option [Yes](#)
 - The parameter is in the parameter window [Fan output](#).
- or
- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window [Fan output \(0 ... 10 V\)](#) \ Parameter [Start-up behavior](#) \ Option [Yes](#)
 - The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.52 Switch on time for valve drive from 0 to 100 %

This parameter is used to set the time the valve drive requires to open the valve completely (from position 0 % to position 100 %).

i Note

The time is listed in the technical data for the valve drive and corresponds to the total run time.

Option

10 ... 120 ... 6000 s

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Option *Motor-driven (3-point)*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

7.4.53 Starting temperature for summer compensation

This parameter is used to define the temperature from which summer compensation is activated.

More information: → [Summer compensation, Page 310](#).

Option

10 ... 21 ... 50 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager* \ Parameter *Activate summer compensation* \ Option *Yes*
- The parameter is in the parameter window *Setpoint manager*.

7.4.54 Input for temperature limit sensor

This parameter is used to define how the controller receives the temperature to be limited.

i Note

If a physical device input is selected, a temperature sensor must be connected to this input. Two separate temperature sensors must be used to measure the room temperature and the limit temperature. Each temperature sensor must be connected to a separate input.

Option

Via group object

The temperature is received via a dedicated group object.

The following dependent group objects are displayed:

- [Basic-stage heating limit temperature](#)
- [Basic-stage cooling limit temperature](#)
- [Additional-stage heating limit temperature](#)
- [Additional-stage cooling limit temperature](#)

Via physical device input x

The temperature is measured via a connected temperature sensor.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.55 Window status receipt

This parameter is used to define how the controller receives the window status.

i Note

If no input is set as the window contact, the controller interprets the function as being deactivated. If several inputs are set as window contacts, they are logically OR-linked. The controller reacts as soon as one of the inputs sends the status "Window open".

Option	
<u>Deactivated</u>	The controller ignores the window status.
<u>Via physical device input</u>	The controller checks which device input is parameterized as a window contact. The status of the connected window contact is included in control. The input is configured in the parameter window <i>Input x</i> .
<u>Via group object</u>	The window status is received via group object <i>Window contact (master/slave)</i> . The following dependent parameters are shown: <ul style="list-style-type: none"> <i>Window open if [controller]</i> The following dependent group objects are displayed: <ul style="list-style-type: none"> <i>Window contact (master/slave)</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.56 Fill level status receipt

This parameter is used to define how the controller receives the fill level status of a condensate pan.

i Note

If no input is set as the fill level sensor, the controller interprets the function as being deactivated. If several inputs are set as fill level sensors, they are logically OR-linked. The controller reacts as soon as one of the inputs sends the status "Fill level reached".

Option	
<u>Deactivated</u>	The controller ignores the fill level status.
<u>Via physical device input</u>	The controller checks which device input is parameterized as a fill level sensor. The status of the connected fill level sensor is included in control.
<u>Via group object</u>	The fill level status is received via the group object <i>Fill level alarm</i> . The following dependent parameters are shown: <ul style="list-style-type: none"> <i>Fill level reached if [controller]</i> The following dependent group objects are displayed: <ul style="list-style-type: none"> <i>Fill level alarm</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.57 Actual temperature receipt

This parameter is used to define how the controller receives the actual temperature.

i Note

If a temperature sensor is not connected to any of the inputs, the controller changes to safety mode. If several inputs are set as temperature sensors, a mean value is formed from the measured values and is used as the actual temperature value.

Option

<i>Via physical device input</i>	The controller checks which device input is parameterized as a temperature sensor. The measured actual temperature is included in control.
<i>Via group object</i>	The actual temperature is received via max. two group objects. The received values are weighted. The following dependent parameters are shown: <ul style="list-style-type: none"> • Number of group objects Actual temperature
<i>Via phys. device input or group object</i>	The actual temperature can be received via a device input and/or via group objects. The values measured on the inputs and received via the bus (ABB i-bus® KNX) are weighted. The following dependent parameters are shown: <ul style="list-style-type: none"> • Number of group objects Actual temperature • Weighting of internal measurement • Weighting of external measurement 1

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.58 Dew point status receipt

This parameter is used to define how the controller receives the dew point status.

i Note

If no input is set as the dew point sensor, the controller interprets the function as being deactivated. If several inputs are set as dew point sensors, they are logically OR-linked. The controller reacts as soon as one of the inputs sends the status "Dew point reached".

Option

<i>Deactivated</i>	The controller ignores the dew point status.
<i>Via physical device input</i>	The controller checks which device input is parameterized as a dew point sensor. The status of the connected dew point sensor is included in control.
<i>Via group object</i>	The dew point status is received via the group object Dew point alarm . The following dependent parameters are shown: <ul style="list-style-type: none"> • Dew point reached if [controller] The following dependent group objects are displayed: <ul style="list-style-type: none"> • Dew point alarm

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.59 Extended settings

This parameter is used to display the extended settings for the parameter window.

Option	
<u>No</u>	The extended settings are not shown. The corresponding parameters are used with the standard values.
Yes	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Control value direction</i> • <i>Control value difference for sending the control value</i> • <i>Hysteresis</i> • <i>Cycle for sending the control value (0 = deactivated)</i> • <i>PWM cycle X</i> • <i>Maximum control value</i> • <i>Min. control value (basic load)</i> • <i>Activate temperature limitation</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Basic-stage heating*.

or

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Additional-stage heating* \ all options except *Deactivated*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Additional-stage heating*.

or

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- The parameter window is in the parameter window *Temperature controller* \ Parameter window *Basic-stage cooling*.

or

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Additional-stage cooling* \ all options except *Deactivated*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Additional-stage cooling*.

7.4.60 Window open if [input x]

This parameter is used to define the sensor contact position that is interpreted as the status "Window open".

Option
<u>Contact open</u>
<i>Contact closed</i>

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Window contact*
- The parameter is in the parameter window *Input x*.

7.4.61 Window open if [controller]

This parameter is used to define the value of the group object *Window contact (master/slave)* that is interpreted as the status "Window open".

When the status "Window open" is received, the controller switches to the operating mode *Building Protection* (Building Protection heating = frost protection, Building Protection cooling = heat protection).

Option
<i>Value 0</i>
<i>Value 1</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Window status receipt* \ Option *Via group object*
- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.62 Filter

This parameter is used to set a floating mean value filter.

More information: → [Floating mean value, Page 300](#).

Option	
<i>Deactivated</i>	The floating mean value filter is deactivated.
<i>Low (floating mean value over 30 seconds)</i>	The mean value filter is active. The mean value is determined over a time of 30 seconds.
<i>Medium (floating mean value over 60 seconds)</i>	The mean value filter is active. The mean value is determined over a time of 60 seconds.
<i>High (floating mean value over 120 seconds)</i>	The mean value filter is active. The mean value is determined over a time of 120 seconds.

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Temperature sensor*
- The parameter is in the parameter window *Input x*.

7.4.63 Fill level reached if [input x]

This parameter is used to define the sensor contact position that is interpreted as the status "Fill level alarm".

Option
<i>Contact open</i>
<i>Contact closed</i>

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Fill level sensor*
- The parameter is in the parameter window *Input x*.

7.4.64 Fill level reached if [controller]

This parameter is used to define the value of the group object *Fill level alarm* that is interpreted as the status "Fill level alarm".

i Note

When the controller receives the status "Fill level alarm", cooling is interrupted and the operating mode *Building Protection* is activated. Building Protection remains active until the controller receives the status "No fill level alarm".

The fill level alarm acts only on the *Cooling* operating mode, and the operating mode can therefore be switched to *Heating* (if available) at any time.

Option

Value 0

Value 1

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Fill level status receipt* \ Option *Via group object*
- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.65 Device function

This parameter is used to define the function of the device.

Option

Controller

The internal controller is active and is used for controlling the outputs. The device acts as the master and can control KNX room control units acting as slaves.

The following dependent parameter windows are shown:

- *Temperature controller*
- *Setpoint manager*

The following dependent parameters are shown:

- *Basic-stage heating [controller]*
- *Basic-stage cooling [controller]*
- *Window status receipt*
- *Actual temperature receipt*

Actuator device

The device is used as an actuator and receives its control values from an external controller.

The following dependent parameters are shown:

- *Basic-stage heating [actuator]*
 - *Basic-stage cooling [actuator]*
-

Prerequisites for visibility

- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.66 Weighting of external measurement 1

This parameter is used to define the weighting with which the external measurement is included in the calculation of the actual temperature.

More information: → [Weighting of the temperature inputs, Page 299](#).

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Actual temperature receipt](#) \ Options *Via group object / Via phys. device input or group object*
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.67 Weighting of external measurement 2

This parameter is used to define the weighting with which the external measurement is included in the calculation of the actual temperature.

More information: → [Weighting of the temperature inputs, Page 299](#).

i Note

If only external measurements are included in the calculation and a weighting of 0 % is selected for both measurements, the value received as external temperature 1 is used as the actual temperature.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Actual temperature receipt](#) \ Options *Via group object / Via phys. device input or group object*
 - Parameter [Number of group objects Actual temperature](#) \ Option 2
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.68 Weighting of internal measurement

This parameter is used to define the weighting with which the internal measurement is included in the calculation of the actual temperature.

More information: → [Weighting of the temperature inputs, Page 299](#).

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Actual temperature receipt](#) \ Option *Via phys. device input or group object*
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.69 Basic load active when controller off

This parameter is used to define whether the basic load is to be active even if the controller has been switched off via the group object [Request On/Off \(master\)](#).

Option

[No](#)

[Yes](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Temperature controller](#).

7.4.70 Basic-stage heating [actuator]

This parameter is used to define how basic-stage heating is used.

Option

[Deactivated](#)

Basic-stage heating is deactivated.

[Fan coil unit](#)

The following dependent parameters are shown:

- [Type of heating/cooling system](#)
- [Heating/cooling changeover](#)
- [Activate basic-stage heating via](#)

The following dependent group objects are displayed:

- [Control value Heating](#)
-

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Actuator device](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.71 Basic-stage heating [controller]

This parameter is used to define how basic-stage heating is used. The controller is preset based on the selected option.

Note

If one of the following options is selected, the valve control value is used to activate the fan in automatic mode:

- [Electric heater \(in fan coil unit\)](#)
- [Water heating coil \(in fan coil unit\)](#)

Note

Whether the valve control value is used to activate the fan in automatic mode if the option [Free configuration](#) is selected is set in the parameter [Use control value for fan automatic](#).

Option	
<i>Deactivated</i>	Basic-stage heating is deactivated.
<i>Convector (e.g. radiator)</i>	<p>Basic-stage heating is set for the use of a convector. The parameter <i>Type of control value Basic-stage heating</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Basic-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating • Activate basic-stage heating via <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Heating
<i>Area heating (e.g. floor)</i>	<p>Basic-stage heating is set for the use of area heating. The parameter <i>Type of control value Basic-stage heating</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Basic-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating • Activate basic-stage heating via <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Heating
<i>Electric heater (in room)</i>	<p>Basic-stage heating is set for the use of an electric heater in the room. The operation of the electric heater is not coupled to the fan in the fan coil unit. The parameter <i>Type of control value Basic-stage heating</i> is set to the option <i>2-point 1 bit (On/Off)</i>.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Basic-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating • Activate basic-stage heating via <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Heating
<i>Free configuration</i>	<p>Basic-stage heating can be configured as required. The parameter <i>Type of control value Basic-stage heating</i> is preset to the option <i>PI continuous (0 ... 100 %)</i> but can be changed.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Basic-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating • Activate basic-stage heating via <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Heating
<i>Electric heater (in fan coil unit)</i>	<p>Basic-stage heating is set for the use of an electric heater in the fan coil unit. The operation of the electric heater is coupled to the fan in the fan coil unit. If the electric heater is switched on, the fan in the fan coil unit is also switched on. The parameter <i>Type of control value Basic-stage heating</i> is set to the option <i>2-point 1 bit (On/Off)</i>.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Basic-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating • Activate basic-stage heating via <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Heating
<i><u>Water heating coil (in fan coil unit)</u></i>	<p>Basic-stage heating is set for the use of a water heating coil in the fan coil unit. The parameter <i>Type of control value Basic-stage heating</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Basic-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating • Activate basic-stage heating via <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Heating

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.72**Basic-stage cooling [actuator]**

This parameter is used to define how basic-stage cooling is used.

Option	
<i>Deactivated</i>	Basic-stage cooling is deactivated.
<i>Fan coil unit</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • Type of heating/cooling system • Heating/cooling changeover • Activate basic-stage cooling via The following dependent group objects are displayed: <ul style="list-style-type: none"> • Control value Cooling

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Actuator device](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.73 Basic-stage cooling [controller]

This parameter is used to define how basic-stage cooling is used. The controller is preset based on the selected option.

i Note

If the option *Water cooling coil (in fan coil unit)* is selected, the valve control value is used to activate the fan in the automatic mode.

i Note

Whether the valve control value is used to activate the fan in automatic mode if the option *Free configuration* is selected is set in the parameter [Use control value for fan automatic](#).

Option	
<i>Deactivated</i>	Basic-stage cooling is deactivated.
<i>Area cooling (e.g. cooling ceiling)</i>	<p>Basic-stage cooling is set for the use of area cooling. The parameter Type of control value Basic-stage cooling is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> Basic-stage cooling <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> Activate basic-stage cooling via Additional-stage cooling Dew point status receipt Fill level status receipt <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> Status Cooling
<i>Free configuration</i>	<p>Additional-stage cooling can be configured as required. The parameter Type of control value Basic-stage cooling is preset to the option <i>PI continuous (0 ... 100 %)</i> but can be changed.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> Basic-stage cooling <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> Activate basic-stage cooling via Additional-stage cooling Dew point status receipt Fill level status receipt <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> Status Cooling
<i>Water cooling coil (in fan coil unit)</i>	<p>Basic-stage cooling is set for the use of a water cooling coil in the fan coil unit. The parameter Type of control value Basic-stage cooling is set to the option <i>PI continuous (0 ... 100 %)</i> for a fan coil unit with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> Basic-stage cooling <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> Activate basic-stage cooling via Additional-stage cooling Dew point status receipt Fill level status receipt <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> Status Cooling

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.74 Hysteresis

This parameter is used to define the hysteresis that is to apply above and below the setpoint to prevent continuous switching of the controller.

	Heating	Cooling
Actual temperature > (setpoint + hysteresis/upper switching point)	Controller Off	Controller On
Actual temperature < (setpoint – hysteresis/lower switching point)	Controller On	Controller Off

Tab. 95: Dependency of hysteresis on the operating mode

Option

0.3 ... 0.5 ... 25.5 K

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Type of control value Basic-stage heating](#) \ Options [2-point 1 bit \(On/Off\)](#) / [2-point 1 byte \(0/100 %\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Type of control value Additional-stage heating](#) \ Options [2-point 1 bit \(On/Off\)](#) / [2-point 1 byte \(0/100 %\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Type of control value Basic-stage cooling](#) \ Options [2-point 1 bit \(On/Off\)](#) / [2-point 1 byte \(0/100 %\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [2-point 1 bit \(On/Off\)](#) / [2-point 1 byte \(0/100 %\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.75 Limit temperature hysteresis

This parameter is used to define the limit temperature hysteresis. The hysteresis specifies the value by which the limit temperature must be dropped below (*heating*) or exceeded (*cooling*) before the controller becomes active again.

Option

0.5 ... 1.0 ... 5.0 K

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Extended settings](#) \ Option *Yes*
 - Parameter [Activate temperature limitation](#) \ Option *Yes*
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage heating](#) \ all options except *Deactivated*
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Extended settings](#) \ Option *Yes*
 - Parameter [Activate temperature limitation](#) \ Option *Yes*
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Extended settings](#) \ Option *Yes*
 - Parameter [Activate temperature limitation](#) \ Option *Yes*
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage cooling](#) \ all options except *Deactivated*
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Extended settings](#) \ Option *Yes*
 - Parameter [Activate temperature limitation](#) \ Option *Yes*
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.76 Hysteresis for Heating/cooling changeover

This parameter is used to define the hysteresis for changeover between heating and cooling if a common setpoint is used for *Comfort heating* and *Comfort cooling*.

i Note

Changeover between heating and cooling only occurs if the option *Automatic* is set in the parameter [Heating/cooling changeover](#).

	Operating mode
Actual temperature > (setpoint + hysteresis)	Cooling
Actual temperature < (setpoint – hysteresis)	Heating

Tab. 96: Changing over heating/cooling

Note

Changeover between heating and cooling is possible only in *Comfort* operating mode.

Option

0.5 ... 2.0 ... 10.0 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager* \ Parameter *Comfort heating setpoint = Comfort cooling setpoint* \ Option *Yes*
- The parameter is in the parameter window *Setpoint manager*.

7.4.77**Threshold values hysteresis**

This parameter is used to define the hysteresis for the threshold values between the fan speeds.

Note

The hysteresis does not apply to the threshold for switching between fan speeds 0 and 1.

Option

0 ... 5 ... 20 %

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output*
 - Parameter *Number of fan speeds* \ Options 2 / 3
 - Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option *Yes*
- The parameter is in the parameter window *Fan output*.

7.4.78 I-proportion

This parameter is used to define the I-proportion for the PI control.

More information: → [Basics of PI control, Page 300](#).

Option

0 ... 100 ... 255 min

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#) \ Parameter [Type of control value Basic-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#) \ Parameter [Type of control value Additional-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#) \ Parameter [Type of control value Basic-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.79 I-proportion at temperature limitation

This parameter is used to define what happens with the I-proportion when the limit temperature is reached.

More information: → [Basics of PI control, Page 300](#).

Option	
<i>Freeze</i>	The current value of the I-proportion is saved. When the controller becomes active again, the saved value is used for control.
<i>Reset</i>	The I-proportion is reset to 0. When the controller becomes active, the I-proportion starts at 0.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Type of control value Basic-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Type of control value Additional-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Type of control value Basic-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
 - Parameter [Activate temperature limitation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.80 In period (0 = deactivated)

This parameter is used to define the period during which the device sends telegrams. The telegrams are sent as quickly as possible at the start of a period.

More information: → [Telegram rate limit, Page 312](#).

Option
<i>1 s</i>
<i>2 s</i>
<i>5 s</i>
<i>10 s</i>
<i>30 s</i>
<i>1 min</i>

Prerequisites for visibility

- Parameter window *Basic settings* \ Parameter *Limit number of telegrams* \ Option *Yes*
- The parameter is in the parameter window *Basic settings*.

7.4.81 Internal connection



CAUTION – Device damage due to great heat

If an internal connection exists between the binary input and the relay output, the heater can be switched on even though the fan is switched off. Heated air accumulates in the heater if the fan is not switched on. This can result in device damage or a fire.

- ▶ To avoid overheating the heater, install a temperature monitoring system with mechanical shut-off device.

This parameter is used to define whether a direct (internal) connection exists between the binary input and the relay output. It is not necessary to assign a group address if an internal connection exists.

Option	
<i>No</i>	There is no internal connection.
<i>Relay output</i>	The relay output can be activated directly via the input signal. The switching behavior is defined in the parameter <i>Reaction on event x</i> .

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Input x* \ Parameter *Input* \ Option *Binary input*
- The parameter is in the parameter window *Input x*.

7.4.82 Enable group object "Block input"

This parameter enables the group object *Block input*.

Option	
<i>No</i>	The group object is not enabled.
<i>Yes</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Block input</i>

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Binary input*
- The parameter is in the parameter window *Input x*.

7.4.83 Enable group object "In operation"

This parameter enables the group object *In operation*.

Option	
<i>No</i>	The group object is not enabled.
<i>Yes</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Send value group object "In operation"</i> • <i>Sending cycle</i> The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>In operation</i>

Prerequisites for visibility

- The parameter is in the parameter window *Basic settings*.

7.4.84 KTY type

This parameter is used to set the KTY subtype.

Note

To ensure trouble-free function of the temperature input, the resistance values in the user-defined entry must increase according to the temperature values.
An incorrect entry results in incorrect output values.

Option	
<i>KTY X</i>	The temperature sensor type KTY X is used. The resistance characteristic is predefined to suit the temperature sensor type selected.
<i>User-defined</i>	The resistance values for the temperature sensor connected can be entered to suit the data sheet for the temperature sensor. The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Resistance in ohms at x °C</i>

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Temperature sensor*
 - Parameter *Temperature sensor type* \ Option *KTY [-15...+110]*
- The parameter is in the parameter window *Input x*.

7.4.85 Long operation after

This parameter is used to define the time from which actuation of a connected contact (e.g. button/switch) is interpreted as long operation.

Option

1.0 ... 10.0 s

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Binary input*
 - Parameter *Distinction between long and short operation* \ Option *Yes*
- The parameter is in the parameter window *Input x*.

7.4.86 Cable length, single distance

This parameter is used to set the one-way cable length between sensor and device input.

Option

1.0 ... 10.0 ... 100.0 m

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Temperature sensor*
 - Parameter *Cable error compensation* \ Option *Via cable length*
- The parameter is in the parameter window *Input x*.

7.4.87 Cable error compensation

This parameter is used to define how cable errors that occur are compensated.

Note

Cable error compensation based on the cable length is possible only for cables with copper conductors.

Option

None

Cable error compensation is not used.

Via cable length

The following dependent parameters are shown:

- *Cable length, single distance*
- *Cross-section of conductor, value* 0.01 mm²*

Via cable resistance

The following dependent parameters are shown:

- *Cable resistance (total of fwd and rtn conductor)*
-

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Temperature sensor*
- The parameter is in the parameter window *Input x*.

7.4.88 Cable resistance (total of fwd and rtn conductor)

This parameter is used to set the cable resistance of the temperature sensor connected.

i Note

To measure the cable resistance correctly, the conductors must be shorted together at the cable end and must not be connected to the input.

Option

0 ... 500 ... 10,000 mohms

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Temperature sensor*
 - Parameter *Cable error compensation* \ Option *Via cable resistance*
- The parameter is in the parameter window *Input x*.

7.4.89 Fan speed during forced operation

This parameter is used to define the fan speed set if 1-bit forced operation is activated.

More information: → [Forced operation, Page 316](#).

i Note

The option *Adopts control value* is available only if the option *Yes* is selected in one of the following parameters (depending on device type):

- [Enable automatic mode based on control value \[discrete speed fan\]](#)
- [Enable automatic mode based on control value \[continuous fan\]](#)

i Note

The fan changes to automatic mode after forced operation is canceled. The control values calculated by the controller are valid.

i Note

The possible options depend on the product variant.

Option

<i>Unchanged</i>	The set fan speed is not changed. The operating mode (manual mode or automatic mode) remains unchanged. The fan speed depends on the valve control value in automatic mode.
<i>Adopts control value</i>	The current valve control value for the active operating mode (heating/cooling) is adopted.
<i>1</i>	Fan speed 1 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
<i>2</i>	Fan speed 2 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
<i>3</i>	Fan speed 3 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
<i>33 %</i>	Fan speed 33 % (FCC/S 1.3.X.1, 1.5.X.1)
<i>66 %</i>	Fan speed 66 % (FCC/S 1.3.X.1, 1.5.X.1)
<i>100 %</i>	Fan speed 100 % (FCC/S 1.3.X.1, 1.5.X.1)

Prerequisites for visibility

- Parameter window *Monitoring and safety* \ Parameter *Forced operation* \ Options *Activated 1 bit – 1 active / Activated 1 bit – 0 active*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.90 Fan speed during forced operation active "OFF"

This parameter is used to define the fan speed set if 2-bit forced operation "OFF" is activated.

More information: → [Forced operation, Page 316](#).

i Note

The fan changes to automatic mode after forced operation is canceled. The control values calculated by the controller are valid.

i Note

The option *Adopts control value* is available only if the option *Yes* is selected in one of the following parameters (depending on device type):

- [Enable automatic mode based on control value \[discrete speed fan\]](#)
- [Enable automatic mode based on control value \[continuous fan\]](#)

i Note

The possible options depend on the product variant.

Option	
<i>Unchanged</i>	The set fan speed is not changed. The operating mode (manual mode or automatic mode) remains unchanged. The fan speed depends on the valve control value in automatic mode.
<i>Adopts control value</i>	The current valve control value for the active operating mode (heating/cooling) is adopted.
1	Fan speed 1 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
2	Fan speed 2 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
3	Fan speed 3 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
33 %	Fan speed 33 % (FCC/S 1.3.X.1, 1.5.X.1)
66 %	Fan speed 66 % (FCC/S 1.3.X.1, 1.5.X.1)
100 %	Fan speed 100 % (FCC/S 1.3.X.1, 1.5.X.1)

Prerequisites for visibility

- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Option *Activated 2 bit*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.91 Fan speed during forced operation active "ON"

This parameter is used to define the fan speed set if 2-bit forced operation "ON" is activated.

More information: → [Forced operation, Page 316](#).

i Note

The fan changes to automatic mode after forced operation is canceled. The control values calculated by the controller are valid.

i Note

The option *Adopts control value* is available only if the option *Yes* is selected in one of the following parameters (depending on device type):

- [Enable automatic mode based on control value \[discrete speed fan\]](#)
- [Enable automatic mode based on control value \[continuous fan\]](#)

i Note

The possible options depend on the product variant.

Option	
<u>Unchanged</u>	The set fan speed is not changed. The operating mode (manual mode or automatic mode) remains unchanged. The fan speed depends on the valve control value in automatic mode.
<i>Adopts control value</i>	The current valve control value for the active operating mode (heating/cooling) is adopted.
1	Fan speed 1 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
2	Fan speed 2 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
3	Fan speed 3 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
33 %	Fan speed 33 % (FCC/S 1.3.X.1, 1.5.X.1)
66 %	Fan speed 66 % (FCC/S 1.3.X.1, 1.5.X.1)
100 %	Fan speed 100 % (FCC/S 1.3.X.1, 1.5.X.1)

Prerequisites for visibility

- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Option [Activated 2 bit](#)
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.92 Fan speed after bus voltage recovery

This parameter is used to define the fan speed after bus voltage recovery.

Note

The possible options depend on the product variant.

Option	
<u>Unchanged</u>	Fan speed and operating mode (manual mode or automatic mode) before the bus voltage failure or ETS download are applied. The fan speed depends on the valve control value in automatic mode.
<i>Adopts control value</i>	The current valve control value for the active operating mode (heating/cooling) is adopted.
1	Fan speed 1 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
2	Fan speed 2 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
3	Fan speed 3 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
33 %	Fan speed 33 % (FCC/S 1.3.X.1, 1.5.X.1)
66 %	Fan speed 66 % (FCC/S 1.3.X.1, 1.5.X.1)
100 %	Fan speed 100 % (FCC/S 1.3.X.1, 1.5.X.1)

Prerequisites for visibility

- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.93 Fan speed after ETS download

This parameter is used to define the fan speed after ETS download.

Note

The possible options depend on the product variant.

Note

The option *Adopts control value* is available only if the option *Yes* is selected in one of the following parameters (depending on device type):

- [Enable automatic mode based on control value \[discrete speed fan\]](#)
- [Enable automatic mode based on control value \[continuous fan\]](#)

Option	
<u>Unchanged</u>	Fan speed and operating mode (manual mode or automatic mode) before the bus voltage failure or ETS download are applied. The fan speed depends on the valve control value in automatic mode.
<i>Adopts control value</i>	The current valve control value for the active operating mode (heating/cooling) is adopted.
1	Fan speed 1 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
2	Fan speed 2 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
3	Fan speed 3 (FCC/S 1.1.X.1, 1.2.X.1, 1.4.1.1)
33 %	Fan speed 33 % (FCC/S 1.3.X.1, 1.5.X.1)
66 %	Fan speed 66 % (FCC/S 1.3.X.1, 1.5.X.1)
100 %	Fan speed 100 % (FCC/S 1.3.X.1, 1.5.X.1)

Prerequisites for visibility

- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.94 Fan behavior on bus voltage failure

This parameter is used to define the reaction of the fan on bus voltage failure.

Option	
<u>Unchanged</u>	
Off	

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.95 Manual operation

This parameter is used to enable or block manual operation of the device.

Option	
<u>Enabled</u>	<p>The operating states <i>Manual operation</i> and <i>KNX operation</i> can be switched via the <i>Manual operation</i> button or via group object Enable/block manual operation. The device can be operated using the membrane keypad.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Automatic reset from manual operation to KNX operation <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Manual operation • Enable/block manual operation
<u>Blocked</u>	Manual operation of the device is blocked.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.2.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window [Manual operation](#).

7.4.96 Enable manual valve override

This parameter is used to define whether manual valve override can be enabled via a group object.

More information: → [Manual valve override, Page 302](#).

i Note

The value of group object *Override valve control value X* becomes active only when manual valve override has been enabled via group object *Enable/block manual valve override X*.

Option

<i>No</i>	Manual valve override cannot be enabled via a group object.
<i>Yes</i>	Manual valve override can be enabled.

The following dependent group objects are displayed:

- *Enable/block manual valve override X*
- *Override valve control value X*

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ all options except *Deactivated*
 - The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
 - The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.97 Max. manual reduction in heating mode via KNX

This parameter is used to define the value by which the setpoint *Comfort heating* can be reduced as a maximum. The reduction is made via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Request setpoint adjustment (master)* (DPT 6.010)
- *Request setpoint adjustment (master)* (DPT 9.001)
- *Request setpoint adjustment (master)* (DPT 9.002)

The limitation will become active when the device receives a value that is larger than the value set here. If the limitation is active, the maximum reduction is confirmed via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Confirm setpoint adjustment (master)* (DPT 6.010)
- *Confirm setpoint adjustment (master)* (DPT 9.001)
- *Confirm setpoint adjustment (master)* (DPT 9.002)

Option

0 ... 3 ... 9 K

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
- The parameter is in the parameter window *Setpoint adjustment*.

7.4.98 Max. manual reduction in cooling mode via KNX

This parameter is used to define the value by which the setpoint *Comfort cooling* can be reduced as a maximum. The reduction is made via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Request setpoint adjustment (master)* (DPT 6.010)
- *Request setpoint adjustment (master)* (DPT 9.001)
- *Request setpoint adjustment (master)* (DPT 9.002)

The limitation will become active when the device receives a value that is larger than the value set here. If the limitation is active, the maximum reduction is confirmed via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Confirm setpoint adjustment (master)* (DPT 6.010)
- *Confirm setpoint adjustment (master)* (DPT 9.001)
- *Confirm setpoint adjustment (master)* (DPT 9.002)

Option

0 ... 3 ... 9 K

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
- The parameter is in the parameter window *Setpoint adjustment*.

7.4.99 Max. manual increase in heating mode via KNX

This parameter is used to define the value by which the setpoint *Comfort heating* can be increased as a maximum. The increase is made via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Request setpoint adjustment (master)* (DPT 6.010)
- *Request setpoint adjustment (master)* (DPT 9.001)
- *Request setpoint adjustment (master)* (DPT 9.002)

The limitation will become active when the device receives a value that is larger than the value set here. If the limitation is active, the maximum increase is confirmed via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Confirm setpoint adjustment (master)* (DPT 6.010)
- *Confirm setpoint adjustment (master)* (DPT 9.001)
- *Confirm setpoint adjustment (master)* (DPT 9.002)

Option

0 ... 3 ... 9 K

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
- The parameter is in the parameter window *Setpoint adjustment*.

7.4.100 Max. manual increase in cooling mode via KNX

This parameter is used to define the value by which the setpoint *Comfort cooling* can be increased as a maximum. The increase is made via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Request setpoint adjustment (master)* (DPT 6.010)
- *Request setpoint adjustment (master)* (DPT 9.001)
- *Request setpoint adjustment (master)* (DPT 9.002)

The limitation will become active when the device receives a value that is larger than the value set here. If the limitation is active, the maximum increase is confirmed via one of the following group objects, depending on the selection in the parameter *Data point type, manual setpoint adjustment*:

- *Confirm setpoint adjustment (master)* (DPT 6.010)
- *Confirm setpoint adjustment (master)* (DPT 9.001)
- *Confirm setpoint adjustment (master)* (DPT 9.002)

Option

0 ... 3 ... 9 K

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
- The parameter is in the parameter window *Setpoint adjustment*.

7.4.101 Maximum number of telegrams

This parameter is used to define the number of telegrams sent within a period that can be set.

The period is defined in the parameter *In period* (0 = deactivated).

More information: → [Telegram rate limit, Page 312](#).

Option

1 ... 20 ... 50

Prerequisites for visibility

- Parameter window [Basic settings](#) \ Parameter [Limit number of telegrams](#) \ Option Yes
- The parameter is in the parameter window [Basic settings](#).

7.4.102

Maximum output voltage for fan control

This parameter is used to define the maximum output voltage for activating the fan. The maximum output voltage determines the maximum fan speed.

i Note

Observe the technical data of the fan.

Option

0 ... 10 V

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.103

Maximum setpoint increase

This parameter is used to define the permissible value of the maximum setpoint increase via the analog room control unit. The setpoint adjustment only applies to the *Comfort* operating mode.

i Note

Beginning from the center position of the rotary knob, the temperature value set is distributed over the range in the clockwise direction. The right stop of the rotary knob corresponds to the maximum value set (e.g. 3 K).

Option

0 ... 3 ... 5 K

Prerequisites for visibility

- Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option Yes
- The parameter is in the parameter window [Setpoint adjustment](#).

7.4.104 Maximum setpoint reduction

This parameter is used to define the permissible value of the maximum setpoint reduction via the analog room control unit. The setpoint adjustment only applies to the *Comfort* operating mode.

i Note

Beginning from the center position of the rotary knob, the temperature value set is distributed over the range in the counterclockwise direction. The left stop of the rotary knob corresponds to the maximum value set (e.g. 3 K).

Option

0... 3... 5 K

Prerequisites for visibility

- Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option *Yes*
- The parameter is in the parameter window [Setpoint adjustment](#).

7.4.105 Maximum control value

This parameter is used to define the maximum control value. The maximum control value is not allowed to be exceeded by the control, even if the controller calculates a higher control value.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Type of control value Basic-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Type of control value Additional-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Type of control value Basic-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.106 Activate minimum signal duration

This parameter is used to define whether the minimum signal duration is activated.

i Note

The minimum signal duration indicates the minimum time a contact (e.g. button/switch) must be operated to trigger a reaction. The minimum signal duration prevents unintentional operation from triggering a reaction.

Option

No	The minimum signal duration is not activated.
Yes	The following dependent parameters are shown: <ul style="list-style-type: none"> • When opening the contact • When closing the contact

Prerequisites for visibility

- Parameter window [Input x](#)
 - Parameter [Input](#) \ Option [Binary input](#)
 - Parameter [Distinction between long and short operation](#) \ Option [No](#)
- The parameter is in the parameter window [Input x](#).

7.4.107 Minimum output voltage for fan control

This parameter is used to define the minimum output voltage for activating the fan. The minimum output voltage determines the minimum fan speed. The fan is off (fan speed 0 %) when the output voltage is 0 V.

i Note

The minimum output voltage must not be higher than the maximum output voltage.

Option

[0 ... 10 V](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.108 Min. control value (basic load)

This parameter is used to define the minimum control value (basic load) for the controller.

More information: → [Basic load, Page 300](#).

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Type of control value Basic-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Type of control value Additional-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Type of control value Basic-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.109 Minimum control value for basic load > 0

This parameter is used to define whether the basic load of the heating and cooling stages is always active or whether it is activated via a group object.

More information: → [Basic load, Page 300](#).

i Note

The basic load is activated for all stages, but it applies only to the active operating mode (*Heating* or *Cooling*). The basic load remains active during the operating mode change.

The basic load is set individually for each stage in the corresponding parameter windows → Parameter [Min. control value \(basic load\)](#).

Option

<i>Activate via group object</i>	The basic load can be activated (1) or deactivated (0) via the group object Activate minimum control value (basic load) .
----------------------------------	---

The following dependent group objects are displayed:

- [Activate minimum control value \(basic load\)](#)

<i>Always active</i>	The basic load is always active.
----------------------	----------------------------------

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Temperature controller](#).

7.4.110 Minimum dwell time at switch-on speed

This parameter is used to define the time that the fan dwells at the switch-on speed.

Option

<i>0 ... 5 ... 600 s</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Fan output \(0 ... 10 V\)](#) \ Parameter [Start-up behavior](#) \ Option [Yes](#)
- The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.111 Minimum dwell time at fan speed

This parameter is used to define the time that the fan dwells at each fan speed. If the value 0 is set, the minimum dwell time is deactivated.

Note

The minimum dwell time is taken into account only in automatic operation.

Note

Observe minimum switching times of the relay → Technical data.

Option

0 ... 5 ... 600 s

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output*
 - Parameter *Number of fan speeds* \ Options 2 / 3
 - Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option Yes
- The parameter is in the parameter window *Fan output*.

7.4.112 Run-on behavior [continuous fan]

This parameter is used to define whether the fan run-on time is activated at switch-off. The run-on time is defined in the parameter *Run-on time at fan speed 20 %*.

Note

If the fan is running at a fan speed higher than 20 % when it is switched off, the run-on behavior can be activated to transport the remaining heat out of the fan coil unit. The fan then continues to run at a fan speed of 20 % for the set run-on time.

Note

Run-on occurs independently of how the fan speed was changed (automatic operation, direct operation, manual specification, fan switch-off).

Option

<i>No</i>	The run-on behavior at switch-off is not enabled.
<i>Yes</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Run-on time at fan speed 20 %</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window *Fan output (0 ... 10 V)*.

7.4.113 Run-on behavior [discrete speed fan]

This parameter is used to define whether the fan run-on time is activated if the fan speed is reduced.

i Note

When several fan speeds are changed, all run-on times are passed through one by one.

i Note

Run-on occurs independently of how the fan speed was changed (automatic operation, direct operation, manual specification, fan switch-off).

Option

No	The fan run-on behavior is inactive.
Yes	The fan run-on behavior is active. If the fan is changed to a lower fan speed, it will remain at the previous speed for the set time. Only afterward will it slow down by one speed. The following dependent parameters are shown: <ul style="list-style-type: none"> Run-on speed x

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- The parameter is in the parameter window [Fan output](#).

7.4.114 Run-on time at fan speed 20 %

This parameter is used to define the run-on time after switching off the fan. The fan runs at 20 % fan speed during the run-on time.

i Note

A run-on time of 0 second means that run-on is deactivated.

Option

0 ... 20 ... 600 s

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Fan output \(0 ... 10 V\)](#) \ Parameter [Run-on behavior \[continuous fan\]](#) \ Option Yes
- The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.115 Run-on speed x

This parameter is used to define the run-on time if the individual fan speeds are reduced.

The description applies to the following parameters:

- Run-on speed 1
- Run-on speed 2
- Run-on speed 3

Note

A run-on time of 0 second means that run-on is deactivated.

Option

0 ... 20 ... 600 s

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output* \ Parameter *Run-on behavior [discrete speed fan]* \ Option Yes
- The parameter is in the parameter window *Fan output*.

7.4.116 NTC type

This parameter is used to define the NTC type used.

Note

The resistance value of an NTC20 sensor is 20 kohm at 25 °C. The resistance value of NTC10 sensors is 10 kohm at 25 °C. The individual types differ in the further course of the resistance curves.

Option

NTC10-01 [-15...+100°C]

NTC10-02 [-15...+100°C]

NTC10-03 [-15...+100°C]

NTC20 [0...+100°C]

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Temperature sensor*
 - Parameter *Temperature sensor type* \ Option *NTC*
- The parameter is in the parameter window *Input x*.

7.4.117 Open if control value greater than or equal to

This parameter is used to define the control value as of which an On signal is sent to the valve drive. If the control value is less than the value set here, an Off signal is sent.

Option

1 ... 100 %

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Option *Open/close signal*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

7.4.118 Valve drive opening/closing time

This parameter is used to set the time the valve drive requires to open the valve completely (from position 0 % to position 100 %) or close it completely.

i Note

The time is listed in the technical data for the valve drive and corresponds to the total run time.

Option

10 ... 180 ... 900 s

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Options *Thermoelectric (PWM) / Open/close signal*
 - The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
 - The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.119 Setpoint temperature offset when summer compensation ends

This parameter is used to define the setpoint temperature offset when summer compensation ends.

More information: → [Summer compensation, Page 310](#).

Option

0.0 ... 6.0... 12.7 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Setpoint manager](#) \ Parameter [Activate summer compensation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.120 Setpoint temperature offset when summer compensation starts

This parameter is used to define the setpoint temperature offset when summer compensation starts.

More information: → [Summer compensation, Page 310](#).

Option

0.0 ... 12.7 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Setpoint manager](#) \ Parameter [Activate summer compensation](#) \ Option [Yes](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.121

P-proportion

This parameter is used to define the P-proportion for the PI control.

More information: → [Basics of PI control, Page 300](#).

i Note

The default value depends on the operating mode (Heating or Cooling).

Option

1.0 ... 1.5 ... 10.0 K

1.0 ... 2.0 ... 10.0 K

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#) \ Parameter [Type of control value Basic-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#) \ Parameter [Type of control value Additional-stage heating](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#) \ Parameter [Type of control value Basic-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\)](#) / [PI PWM \(On/Off\)](#) / [PI continuous \(0 ... 100 %\) for fan coil](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.122 PWM cycle X

This parameter is used to define the cycle time (period) of the PWM signal.

The description applies to the following parameters:

- Heating PWM cycle
- Cooling PWM cycle

Depending on the PI control value calculated, the cycle time is subdivided into an On/Off signal (PWM signal).

Example

With a cycle time of 15 minutes and a PI control value of 33 %, the PWM signal is subdivided as follows:

- On signal: 5 minutes
- Off signal: 10 minutes

The PWM signal is output on the following group objects, depending on the operating mode:

- [Status Control value basic-stage heating](#)
- [Status Control value additional-stage heating](#)
- [Status Control value basic-stage cooling](#)
- [Status Control value additional-stage cooling](#)

For more information, see:

→ [Pulse width modulation \(PWM\), Page 304](#)

→ [PI controller \(PWM\), Page 307](#)

 Note

With a PI control value of 0 %, a PWM signal with the value 0 is sent one time. The next PWM signal is sent when the PI control value changes.

Option

0 ... 15 ... 60 min

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ Option [Free configuration](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Type of control value Basic-stage heating](#) \ Option [PI PWM \(On/Off\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ Option [Free configuration](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Type of control value Additional-stage heating](#) \ Option [PI PWM \(On/Off\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ Option [Free configuration](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Type of control value Basic-stage cooling](#) \ Option [PI PWM \(On/Off\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ Option [Free configuration](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Option [PI PWM \(On/Off\)](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.123**Cross-section of conductor, value* 0.01 mm²**

This parameter is used to define the cross-section of the conductor to which the temperature sensor is connected.

 Note

The option *150* corresponds to a conductor cross-section of 1.5 mm².

Option

1 ... 100 ... 150

Prerequisites for visibility

- Parameter window [Input x](#)
 - Parameter [Input](#) \ Option [Temperature sensor](#)
 - Parameter [Cable error compensation](#) \ Option [Via cable length](#)
- The parameter is in the parameter window [Input x](#).

7.4.124 Reaction on event x

This parameter is used to define which value is sent on the group object *Contact position binary input* for event 0 / event 1.

i Note

The action that triggers event 0 or event 1 depends on the option in the parameter *Distinction between long and short operation*:

- No
 - Event 0 = Opening the contact
 - Event 1 = Closing the contact
- Yes
 - Event 0 = Short operation
 - Event 1 = Long operation

i Note

If the option *Relay output* is defined in the parameter *Internal connection*, the reaction set here applies also to the switching of the relay output.

i Note

The option *End cyclic transmission* becomes effective only if, in the parameter *Send status values [binary input]*, the option *After change or cyclically* is selected.

Option	
<i>No edge evaluation</i>	The edge (1 → 0 or 0 → 1 change) is not evaluated. A value is not sent.
<i>On</i>	The value 1 is sent.
<i>Off</i>	The value 0 is sent.
<i>Toggle</i>	If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
<i>End cyclic transmission</i>	Cyclical transmission of the status value is ended.

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Binary input*
- The parameter is in the parameter window *Input x*.

7.4.125 Relay output

This parameter is used to activate/deactivate the relay output.

**CAUTION – Device damage due to great heat**

If the relay output may be switched independently of the fan speed, it is possible to switch on the heater even when the fan is switched off. Heated air accumulates in the heater if the fan is not switched on. This can result in device damage or a fire.

- ▶ To avoid overheating the heater, install a temperature monitoring system with mechanical shut-off device.

Note

To prevent the fan coil unit from overheating, relay switch-on with inactive fan can be deactivated in the parameter *Switch relay output independently of fan speed (including when fan = 0)*.

Option*Deactivated*

The output is deactivated.

Activated

The following dependent parameters are shown:

- *Reaction of output*
- *Value of group object "Status Relay"*
- *Send status values [relay output]*

The following dependent group objects are displayed:

- *Status Relay*

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window *Relay output*.

7.4.126 Return from manual fan adjustment to automatic mode

This parameter is used to define how the return to automatic mode from manual fan adjustment takes place.

Option	
<i>Via group object</i>	Return to automatic mode takes place only via group object <i>Activate/deactivate fan automatic</i> .
<i>Automatic (time)</i>	Return to automatic mode takes place automatically after the reset time set. The following dependent parameters are shown: • <i>Reset time</i>
<i>Via group object or automatic</i>	The return to automatic mode takes place via the group object <i>Activate/deactivate fan automatic</i> or automatically after the reset time set. The following dependent parameters are shown: • <i>Reset time</i>

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
 - Parameter window *Fan output* \ Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option *Yes*
 - The parameter is in the parameter window *Fan output*.
- or
- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window *Fan output (0 ... 10 V)* \ Parameter *Enable automatic mode based on control value [continuous fan]* \ Option *Yes*
 - The parameter is in the parameter window *Fan output (0 ... 10 V)*.

7.4.127 Reset time

This parameter is used to define the time for the change from manual adjustment to the automatic mode.

The reset time is restarted after each manual adjustment.

Option

00:00:30 ... 01:00:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
 - Parameter window *Fan output*
 - Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option Yes
 - Parameter *Return from manual fan adjustment to automatic mode* \ Options *Automatic (time) / Via group object or automatic*
 - The parameter is in the parameter window *Fan output*.
- or
- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window *Fan output (0 ... 10 V)*
 - Parameter *Enable automatic mode based on control value [continuous fan]* \ Option Yes
 - Parameter *Return from manual fan adjustment to automatic mode* \ Options *Automatic (time) / Via group object or automatic*
 - The parameter is in the parameter window *Fan output (0 ... 10 V)*.

7.4.128 Switch fan speed via 1-bit group objects

This parameter is used to define whether the fan speeds can be switched via 1-bit group objects.

i Note

Only the group objects for the fan speeds used are displayed → parameter [Number of fan speeds](#).

i Note

If the group object values are sent cyclically or simultaneously, the option *Switch off to any 1-bit fan speed using "0"* can lead to the fan switching on only briefly or not at all.

Option

Deactivated

Switching the fan speed via 1-bit group objects is deactivated.

Switch off to active 1-bit fan speed using "0"

The fan is switched off if a telegram with the value 0 is received on the group object for the active fan speed.

The following dependent group objects are displayed:

- [Switch fan speed 1](#)
- [Switch fan speed 2](#)
- [Switch fan speed 3](#)
- [Status Fan speed 1](#)
- [Status Fan speed 2](#)
- [Status Fan speed 3](#)

Switch off to any 1-bit fan speed using "0"

The fan is switched off if a telegram with the value 0 is received on any group object for the fan speeds.

The following dependent group objects are displayed:

- [Switch fan speed 1](#)
- [Switch fan speed 2](#)
- [Switch fan speed 3](#)
- [Status Fan speed 1](#)
- [Status Fan speed 2](#)
- [Status Fan speed 3](#)

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
 - The parameter is in the parameter window [Fan output](#).
- or
- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.129 Switch relay output independently of fan speed (including when fan = 0)

This parameter is used to define whether manual switching of the relay output is permissible independently of the fan speed. The relay output is switched via group object [Switch](#).

**CAUTION – Device damage due to great heat**

If the relay output may be switched independently of the fan speed, it is possible to switch on the heater even when the fan is switched off. Heated air accumulates in the heater if the fan is not switched on. This can result in device damage or a fire.

- ▶ To avoid overheating the heater, install a temperature monitoring system with mechanical shut-off device.

Option	
<i>No</i>	The relay output cannot be switched manually.
<i>Yes</i>	The relay output can be switched manually, even when the fan is switched off. The following dependent parameters are shown: <ul style="list-style-type: none"> • Automatic reset of manual relay override to controller operation after The following dependent group objects are displayed: <ul style="list-style-type: none"> • Switch

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ Options [Electric heater \(in room\) / Free configuration / Electric heater \(in fan coil unit\)](#)
 - Parameter [Activate basic-stage heating via](#) \ Option [Relay output](#)
 - The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Actuator device](#)
 - Parameter [Basic-stage heating \[actuator\]](#) \ Option [Fan coil unit](#)
 - Parameter [Basic-stage cooling \[actuator\]](#) \ Option [Deactivated](#)
 - Parameter [Activate basic-stage heating via](#) \ Option [Relay output](#)
 - The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.130**Switching reaction of relay output on bus voltage failure**

This parameter is used to define the position of the relay contact on bus voltage failure.

Option	
<i>Unchanged</i>	The position of the relay contact remains unchanged.
<i>Contact closed</i>	The relay contact is closed.
<i>Contact open</i>	The relay contact is opened.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.131 Switching reaction of relay output on forced operation

This parameter is used to define the position of the relay contact when 1-bit forced operation is active.

More information: → [Forced operation, Page 316](#).

i Note

Whether the relay contact is opened or closed depends on the setting in the parameter [Reaction of output](#).

Option	
<i>Unchanged</i>	The position of the relay contact remains unchanged.
<i>On</i>	Parameterization as normally closed contact: The relay contact is opened. Parameterization as normally open contact: The relay contact is closed.
<i>Off</i>	Parameterization as normally closed contact: The relay contact is closed. Parameterization as normally open contact: The relay contact is opened.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Options *Activated 1 bit – 1 active / Activated 1 bit – 0 active*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.132 Switching reaction of relay output on forced operation active "OFF"

This parameter is used to define the position of the relay contact on active 2-bit forced operation "OFF".

More information: → [Forced operation, Page 316](#).

i Note

Whether the relay contact is opened or closed depends on the setting in the parameter [Reaction of output](#).

Option

<u>Unchanged</u>	The position of the relay contact remains unchanged.
<i>On</i>	Parameterization as normally closed contact: The relay contact is opened. Parameterization as normally open contact: The relay contact is closed.
<i>Off</i>	Parameterization as normally closed contact: The relay contact is closed. Parameterization as normally open contact: The relay contact is opened.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Option *Activated 2 bit*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.133 Switching reaction of relay output on forced operation active "ON"

This parameter is used to define the position of the relay contact on active 2-bit forced operation "ON".

More information: → [Forced operation, Page 316](#).

i Note

Whether the relay contact is opened or closed depends on the setting in the parameter [Reaction of output](#).

Option

<u>Unchanged</u>	The position of the relay contact remains unchanged.
<i>On</i>	Parameterization as normally closed contact: The relay contact is opened. Parameterization as normally open contact: The relay contact is closed.
<i>Off</i>	Parameterization as normally closed contact: The relay contact is closed. Parameterization as normally open contact: The relay contact is opened.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Option *Activated 2 bit*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.134 Switching behavior of relay output after bus voltage recovery

This parameter is used to define the relay contact position after bus voltage recovery.

Option	
<i>Unchanged</i>	The position of the relay contact remains unchanged.
<i>Contact closed</i>	The relay contact is closed.
<i>Contact open</i>	The relay contact is opened.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window *Application* \ parameter window *Device function*.

7.4.135 Switching behavior of relay output after ETS download

This parameter is used to define the relay contact position after ETS download.

Option	
<i>Unchanged</i>	The position of the relay contact remains unchanged.
<i>Contact closed</i>	The relay contact is closed.
<i>Contact open</i>	The relay contact is opened.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window *Application* \ parameter window *Device function*.

7.4.136 Threshold value fan speed 0 <-> 1

This parameter is used to define the threshold for switching between fan speeds 0 and 1 in the automatic mode.

Fan speed 1 is switched on if the heating/cooling stage control value is greater than or equal to the set threshold.

The fan is only switched off if the heating/cooling stage control value is lower than the set threshold.

If the threshold 0 % is set, the fan is switched off only if the control value for activating the heating/cooling stage is 0 %.

Note

Heating/cooling without an active fan is not efficient. This is why the threshold for switching on fan speed 1 is limited to max. 10 %.

Option

0 ... 1 ... 10 %

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output* \ Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option Yes
- The parameter is in the parameter window *Fan output*.

7.4.137 Threshold value fan speed 1 <-> 2

This parameter is used to define the threshold for switching between fan speeds 1 and 2 in the automatic mode.

Fan speed 2 is switched on if the heating/cooling stage control value is greater than or equal to the set threshold.

Fan speed 1 is switched on if the heating/cooling stage control value is lower than the set threshold.

Option

1 ... 30 ... 100 %

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output*
 - Parameter *Number of fan speeds* \ Options 2 / 3
 - Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option Yes
- The parameter is in the parameter window *Fan output*.

7.4.138 Threshold value fan speed 2 <-> 3

This parameter is used to define the threshold for switching between fan speeds 2 and 3 in the automatic mode.

Fan speed 3 is switched on if the heating/cooling stage control value is greater than or equal to the set threshold.

Fan speed 2 is switched on if the heating/cooling stage control value is lower than the set threshold.

Option

1... 70... 100 %

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output*
 - Parameter *Number of fan speeds* \ Option 3
 - Parameter *Enable automatic mode based on control value [discrete speed fan]* \ Option Yes
- The parameter is in the parameter window *Fan output*.

7.4.139 Sending and switching delay after bus voltage recovery

This parameter is used to define the sending and switching delay after bus voltage recovery.

More information: → [Sending and switching delay, Page 308](#).

Note

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

Option

2... 255 s

Prerequisites for visibility

- The parameter is in the parameter window *Basic settings*.

7.4.140 Sending cycle

This parameter is used to define the cycle in which the group object *In operation* sends a telegram.

Option

00:00:01 ... 00:10:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- Parameter window *Basic settings* \ Parameter *Enable group object "In operation"* \ Option Yes
- The parameter is in the parameter window *Basic settings*.

7.4.141 Setpoint for frost protection (building protection, heating)

This parameter is used to define the setpoint temperature that must not be fallen below in the *Building Protection heating* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be lower than the value in the parameter [Economy heating setpoint](#).

If the device is in the *Heating* operating mode, the setpoint is active in the following cases:

- Controller receives the status "Window open"
- The controller is deactivated via group object [Request On/Off \(master\)](#)
- Controller is placed in the *Building Protection* operating mode via group objects [Operating mode normal \(master\)](#) or [Operating mode override \(master\)](#)

Option

5 ... 7 ... 15 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.142 Economy heating setpoint

This parameter is used to define the setpoint temperature for the *Economy heating* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be lower than the value in the parameter [Standby heating setpoint](#). A difference of at least 2 K is recommended.

i Note

The controller ensures that the setpoint temperature is not exceeded when the actual temperature increases. The operating mode is not changed.

Option

10 ... 17 ... 40 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
- Parameter window [Setpoint manager](#)
 - Parameter [Operating modes](#) \ Option *Comfort, Standby, Economy, Building Protection*
 - Parameter [Setpoint specification and adjustment](#) \ Option *Absolute*
- The parameter is in the parameter window [Setpoint manager](#).

7.4.143 Comfort heating setpoint

This parameter is used to define the setpoint temperature for the *Comfort heating* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be higher than the value in the parameter *Standby heating setpoint*. A difference of at least 2 K is recommended.

Option

10 ... 21 ... 40 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager* \ Parameter *Comfort heating setpoint = Comfort cooling setpoint* \ Option *No*
- The parameter is in the parameter window *Setpoint manager*.

7.4.144 Standby heating setpoint

This parameter is used to define the setpoint temperature for the *Standby heating* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be lower than the value in the parameters *Comfort heating setpoint* or *Comfort heating and cooling setpoint*. A difference of at least 2 K is recommended.

i Note

The controller ensures that the setpoint temperature is not exceeded when the actual temperature increases. The operating mode is not changed.

Option

10 ... 19 ... 40 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager*
 - Parameter *Operating modes* \ Options *Comfort, Standby, Economy, Building Protection / Comfort, Standby, Building Protection*
 - Parameter *Setpoint specification and adjustment* \ Option *Absolute*
- The parameter is in the parameter window *Setpoint manager*.

7.4.145 Comfort heating and cooling setpoint

This parameter is used to define the setpoint temperature for the *Comfort heating* and *Comfort cooling* operating modes.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be between the values in the parameters *Standby heating setpoint* and *Standby cooling setpoint*. A difference of at least 2 K is recommended.

Option

10 ... 21 ... 40 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager* \ Parameter *Comfort heating setpoint = Comfort cooling setpoint* \ Option *Yes*
- The parameter is in the parameter window *Setpoint manager*.

7.4.146 Heat protection setpoint (building protection, cooling)

This parameter is used to define the setpoint temperature that must not be exceeded in the *Building Protection cooling* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be higher than the value in the parameter *Economy cooling setpoint*.

If the device is in the *Cooling* operating mode, the setpoint is active in the following cases:

- Controller receives the status "Window open", "Fill level alarm" or "Dew point alarm"
- The controller is deactivated via group object *Request On/Off (master)*
- Controller is placed in the *Building Protection* operating mode via group objects *Operating mode normal (master)* or *Operating mode override (master)*

Option

27 ... 35 ... 45 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- The parameter is in the parameter window *Setpoint manager*.

7.4.147 Economy cooling setpoint

This parameter is used to define the setpoint temperature for the *Economy cooling* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be higher than the value in the parameter *Standby cooling setpoint*. A difference of at least 2 K is recommended.

i Note

The controller ensures that the setpoint temperature is not fallen below when the actual temperature decreases. The operating mode is not changed.

Option

10 ... 29 ... 40 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager*
 - Parameter *Operating modes* \ Option *Comfort, Standby, Economy, Building Protection*
 - Parameter *Setpoint specification and adjustment* \ Option *Absolute*
- The parameter is in the parameter window *Setpoint manager*.

7.4.148 Comfort cooling setpoint

This parameter is used to define the setpoint temperature for the *Comfort cooling* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be lower than the value in the parameter *Standby cooling setpoint*. A difference of at least 2 K is recommended.

Option

10 ... 25 ... 40 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Setpoint manager* \ Parameter *Comfort heating setpoint = Comfort cooling setpoint* \ Option *No*
- The parameter is in the parameter window *Setpoint manager*.

7.4.149 Standby cooling setpoint

This parameter is used to define the setpoint temperature for the *Standby cooling* operating mode.

More information: → [Explanation of the operating modes, Page 296](#).

i Note

The temperature value specified here must be higher than the value in the parameters [Comfort cooling setpoint](#) or [Comfort heating and cooling setpoint](#). A difference of at least 2 K is recommended.

i Note

The controller ensures that the setpoint temperature is not fallen below when the actual temperature decreases. The operating mode is not changed.

Option

10 ... 27 ... 40 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
- Parameter window [Setpoint manager](#)
 - Parameter [Operating modes](#) \ Options *Comfort, Standby, Economy, Building Protection / Comfort, Standby, Building Protection*
 - Parameter [Setpoint specification and adjustment](#) \ Option *Absolute*
- The parameter is in the parameter window [Setpoint manager](#).

7.4.150 Comfort heating setpoint = Comfort cooling setpoint

This parameter is used to define whether a common setpoint temperature is used for *Comfort heating* and *Comfort cooling*.

More information: → [Explanation of the operating modes, Page 296](#).

Option

No Two different setpoint temperatures (setpoints) can be set for *Comfort heating* and *Comfort cooling*.

The following dependent parameters are shown:

- [Comfort heating setpoint](#)
- [Comfort cooling setpoint](#)

Yes A common setpoint temperature is used for *Comfort heating* and *Comfort cooling*.

The following dependent parameters are shown:

- [Hysteresis for Heating/cooling changeover](#)
 - [Comfort heating and cooling setpoint](#)
-

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
- The parameter is in the parameter window [Setpoint manager](#).

7.4.151 Setpoint indication on slave display

This parameter is used to define how the setpoint is indicated on the display for a slave.

Option	
<i>Absolute</i>	The setpoint is indicated as an absolute value.
<i>Relative</i>	The setpoint is indicated as a relative value.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option [No](#)
- The parameter is in the parameter window [Setpoint adjustment](#).

7.4.152 Setpoint specification and adjustment

This parameter is used to define whether the setpoints are entered as absolute values or as differences from the respective Comfort values.

i Note

To ensure the correct function of the control and to obtain energy savings, there must be a logical relationship between the selected values of the individual operating modes.

- Comfort heating setpoint > Standby heating setpoint > Economy heating setpoint > Frost protection setpoint (Building Protection heating)
- Comfort cooling setpoint < Standby cooling setpoint < Economy cooling setpoint < Heat protection setpoint (Building Protection cooling)

Option

Absolute

The setpoints for *Standby* and *Economy* modes are entered as absolute values. The setpoints are mutually independent and are not shifted with the base setpoint. The setpoints can be adjusted via the related group objects.

The following dependent parameters are shown:

- [Standby heating setpoint](#)
- [Economy heating setpoint](#)
- [Standby cooling setpoint](#)
- [Economy cooling setpoint](#)

The following dependent group objects are displayed:

- [Comfort heating setpoint](#)
- [Standby heating setpoint](#)
- [Economy heating setpoint](#)
- [Building Protection heating setpoint](#)
- [Comfort cooling setpoint](#)
- [Standby cooling setpoint](#)
- [Economy cooling setpoint](#)
- [Building Protection cooling setpoint](#)

Relative

The setpoints for *Standby* and *Economy* modes are entered as values relative to the respective Comfort values.

The setpoint temperatures are adjusted for all operating modes via the bus (ABB i-bus® KNX) using group object [Basic setpoint](#). The values for the *Building Protection* operating mode cannot be changed via the bus (ABB i-bus® KNX).

The following dependent parameters are shown:

- [Standby heating reduction](#)
- [Economy heating reduction](#)
- [Standby cooling increase](#)
- [Economy cooling increase](#)
- [Base setpoint is](#)

The following dependent group objects are displayed:

- [Basic setpoint](#)

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.153 Activate summer compensation

This parameter is used to define whether summer compensation is activated in the device.

More information: → [Summer compensation, Page 310](#).

Option	
No	Summer compensation is not activated.
Yes	<p>The summer compensation is activated.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Starting temperature for summer compensation • Setpoint temperature offset when summer compensation starts • Ending temperature for summer compensation • Setpoint temperature offset when summer compensation ends <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Outside temperature for summer compensation • Summer compensation active/inactive

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- The parameter is in the parameter window [Setpoint manager](#).

7.4.154 Voltage for control value heating = 0 %

This parameter is used to define the voltage with which the 6-way valve is operated with the control value 0 % in the *Heating* operating mode.

More information: → [Use of 6-way valve, Page 314](#).

Option	
0.00 ... <u>7.00</u> ... 10.00 V	

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Type of heating/cooling system](#) \ Option [4-pipe](#)
 - Parameter [Use of 6-way valve](#) \ Option [Yes](#)
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option [Activated](#)
- The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.155 Voltage for control value heating = 100 %

This parameter is used to define the voltage with which the 6-way valve is operated with the control value 100 % in the *Heating* operating mode.

More information: → [Use of 6-way valve, Page 314](#).

Option

0.00 ... 10.00 V

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Type of heating/cooling system* \ Option *4-pipe*
 - Parameter *Use of 6-way valve* \ Option *Yes*
- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.156 Voltage for control value cooling = 0 %

This parameter is used to define the voltage with which the 6-way valve is operated with the control value 0 % in the *Cooling* operating mode.

More information: → [Use of 6-way valve, Page 314](#).

Option

0.00 ... 5.00 ... 10.00 V

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Type of heating/cooling system* \ Option *4-pipe*
 - Parameter *Use of 6-way valve* \ Option *Yes*
- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.157 Voltage for control value cooling = 100 %

This parameter is used to define the voltage with which the 6-way valve is operated with the control value 100 % in the *Cooling* operating mode.

More information: → [Use of 6-way valve, Page 314](#).

Option
0.00 ... 2.00 ... 10.00 V

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Type of heating/cooling system](#) \ Option *4-pipe*
 - Parameter [Use of 6-way valve](#) \ Option *Yes*
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option *Activated*
- The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.158 Voltage range for VAV damper control value

This parameter is used to define the voltage range for the VAV damper control value. The control value received is converted to a voltage value according to the option selected. The voltage value is used to operate the VAV damper drive.

Option	
0 ... 10 V	Control value 0 % = 0 V ... control value 1 % = 0.4 V ... control value 100 % = 10 V
1 ... 10 V	Control value 0 % = 0 V ... control value 1 % = 1 V ... control value 100 % = 10 V
2 ... 10 V	Control value 0 % = 0 V ... control value 1 % = 2 V ... control value 100 % = 10 V
10 ... 0 V	Control value 0 % = 10 V ... control value 100 % = 0 V

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option *Use as VAV damper output*
- The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.159 Voltage range valve control value

This parameter is used to define the voltage range for the valve control value. The control value calculated by the controller or received via the bus (ABB i-bus® KNX) is converted to a voltage value according to the selected option. The voltage value is used to operate the valve drive.

More information: → [Valve drives, Page 311](#).

Note

Observe technical data for the valve drive.

Option	
<i>0 ... 10 V</i>	Control value 0 % = 0 V ... control value 1 % = 0.4 V ... control value 100 % = 10 V
<i>1 ... 10 V</i>	Control value 0 % = 0 V ... control value 1 % = 1 V ... control value 100 % = 10 V
<i>2 ... 10 V</i>	Control value 0 % = 0 V ... control value 1 % = 2 V ... control value 100 % = 10 V
<i>10 ... 0 V</i>	Control value 0 % = 10 V ... control value 100 % = 0 V

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Type of heating/cooling system* \ Option *2-pipe*
- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.160 Purge cycle in weeks

This parameter specifies the cycle for the automatic valve purge.

More information: → [Valve purge, Page 313](#).

i Note

If the purge cycle is triggered for two valves simultaneously, purging will take place one after the other.

The following events reset the purge cycle:

- Valve purge performed
- ETS download
- Bus voltage recovery
- Exceeding the value in the parameter *Reset purge cycle from control value greater than or equal to*

Option

1 ... **4** ... 12

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window *Valve X* \ Parameter window *Valve output X*
 - Parameter *Valve output* \ all options except *Deactivated*
 - Parameter *Valve purge* \ Option *Automatic or via group object*
 - The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)*
 - Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
 - Parameter *Valve purge* \ Option *Automatic or via group object*
 - The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.161 Reset purge cycle from control value greater than or equal to

This parameter is used to define the control value as of which the purge cycle is reset.

More information: → [Valve purge, Page 313](#).

Option

1... 99 %

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X](#)
 - Parameter [Valve output](#) \ all options except *Deactivated*
 - Parameter [Valve purge](#) \ Option *Automatic or via group object*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X](#).
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#)
 - Parameter [Valve output \[0 ... 10 V\]](#) \ Option *Activated*
 - Parameter [Valve purge](#) \ Option *Automatic or via group object*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.162 Send status values [analog room control unit]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Error Input](#)

i Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option

After change

The value is sent if there is a change.

After change or cyclically

The value is sent after a change or cyclically. The cycle time can be set.

The following dependent parameters are shown:

- [Send cyclically every](#)
-

Prerequisites for visibility

- Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option *Yes*
- The parameter is in the parameter window [Input x](#).

7.4.163 Send status values [binary input]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Contact position binary input](#)

Option	
After change	The value is sent if there is a change.
After change or cyclically	The value is sent after a change or cyclically. The cycle time can be set.
The following dependent parameters are shown:	
<ul style="list-style-type: none"> • Send cyclically every • On group object value 	

Prerequisites for visibility

- Parameter window [Input x](#) \ Parameter [Input](#) \ Option [Binary input](#)
- The parameter is in the parameter window [Input x](#).

7.4.164 Send status values [window contact]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Window contact](#)

Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
After change	The value is sent if there is a change.
After change or cyclically	The value is sent after a change or cyclically. The cycle time can be set.
The following dependent parameters are shown:	
<ul style="list-style-type: none"> • Send cyclically every 	

Prerequisites for visibility

- Parameter window [Input x](#) \ Parameter [Input](#) \ Option [Window contact](#)
- The parameter is in the parameter window [Input x](#).

7.4.165 Send status values [fill level alarm]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Fill level alarm](#)

i Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option

After change	The value is sent if there is a change.
After change or cyclically	The value is sent after a change or cyclically. The cycle time can be set. The following dependent parameters are shown: <ul style="list-style-type: none"> • Send cyclically every

Prerequisites for visibility

- Parameter window [Input x](#) \ Parameter [Input](#) \ Option [Fill level sensor](#)
- The parameter is in the parameter window [Input x](#).

7.4.166 Send status values [fan output]

This parameter is used to define when the values of the following group objects are sent on the bus (ABB i-bus® KNX):

- [Status Fan On/Off](#)
- [Status Fan speed](#)
- [Status Fan speed 1](#)
- [Status Fan speed 2](#)
- [Status Fan speed 3](#)
- [Status Fan automatic](#)
- [Fault fan output](#)

i Note

The following group objects are hidden when the parameter [Switch fan speed via 1-bit group objects](#) is deactivated:

- [Status Fan speed 1](#)
- [Status Fan speed 2](#)
- [Status Fan speed 3](#)

i Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<i>After change</i>	The value is sent if there is a change.
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>After change or cyclically</i>	The value is sent after a change or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>On request</i>	The value is sent on request.
<i>After change or on request</i>	The value is sent after a change or on request.
<i>On request or cyclically</i>	The value is sent on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>After change, on request or cyclically</i>	The value is sent after a change, on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
 - The parameter is in the parameter window [Fan output](#).
- or
- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - The parameter is in the parameter window [Fan output \(0 ... 10 V\)](#).

7.4.167

Send status values [relay output]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Status Relay](#)

i Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<u>After change</u>	The value is sent if there is a change.
<u>Cyclically</u>	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<u>After change or cyclically</u>	The value is sent after a change or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<u>On request</u>	The value is sent on request.
<u>After change or on request</u>	The value is sent after a change or on request.
<u>On request or cyclically</u>	The value is sent on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<u>After change, on request or cyclically</u>	The value is sent after a change, on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Relay output](#) \ Parameter [Relay output](#) \ Option *Activated*
- The parameter is in the parameter window [Relay output](#).

7.4.168 Send status values [dew point alarm]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Dew point alarm](#)

Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<u>After change</u>	The value is sent if there is a change.
<u>After change or cyclically</u>	The value is sent after a change or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every

Prerequisites for visibility

- Parameter window [Input x](#) \ Parameter [Input](#) \ Option *Dew point sensor*
- The parameter is in the parameter window [Input x](#).

7.4.169 Send status values [VAV damper output]

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Status Control value valve X](#)

Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<i>After change</i>	The value is sent if there is a change.
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>On request</i>	The value is sent on request.
<i>After change or on request</i>	The value is sent after a change or on request.
<i>After change, on request or cyclically</i>	The value is sent after a change, on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option [Use as VAV damper output](#)
- The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.170 Send status values [valve output]

This parameter is used to define when the values of the following group objects are sent on the bus (ABB i-bus® KNX):

- [Status byte Valve X](#)
- [Fault Valve output X](#)
- [Fault Valve output X](#)
- [Status Control value valve X](#)

Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<i>After change</i>	The value is sent if there is a change.
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: <ul style="list-style-type: none"> • Send cyclically every
<i>On request</i>	The value is sent on request.
<i>After change or on request</i>	The value is sent after a change or on request.
<i>After change, on request or cyclically</i>	The value is sent after a change, on request or cyclically. The cycle time can be set. The following dependent parameters are shown: <ul style="list-style-type: none"> • Send cyclically every

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X](#) \ Parameter [Valve output](#) \ all options except *Deactivated*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X](#).
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option *Activated*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.171 Control value

This parameter is used to define the control value after bus voltage recovery or ETS download. The set control value is valid until a new control value is calculated by the controller in the controller mode or a new control value is received via the bus (ABB i-bus® KNX) in the actuator mode.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Device function](#)
 - Parameter [Control value after bus voltage recovery](#) \ Option *Selection*
 - or
 - Parameter [Control value after ETS download](#) \ Option *Selection*
- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.172 Control value on input fault

This parameter is used to define the control value set if there is an error on the monitored temperature input. The control value applies only to the active operating mode. The control value is valid until the error is corrected.

Option

0 ... 25 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- Parameter window [Monitoring and safety](#)
 - Parameter [Cyclical monitoring](#) \ Option *Activated*
 - Parameter [Temperature input monitoring](#) \ Option *On physical device input x*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.173 Control value after exceeding monitoring time

This parameter is used to define the control value set if the monitoring time is exceeded. The control value applies only to the active operating mode.

Option

0 ... 25 ... 100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- Parameter window [Monitoring and safety](#)
 - Parameter [Cyclical monitoring](#) \ Option *Activated*
 - Parameter [Temperature input monitoring](#) \ Option *On group object*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.174 Control value on forced operation

This parameter is used to define the control value set if 1-bit forced operation is activated. The control value applies only to the active operating mode. The control value is valid until the forced operation is canceled.

More information: → [Forced operation, Page 316](#).

i Note

If basic stage and additional stage are activated via the valve outputs in controller mode, the control value for forced operation is a combined value of the control values for basic stage and additional stage.

Only the basic stage is activated up to a control value of 50 %. With a control value higher than 50 %, the basic stage is 100 % activated and the additional stage is activated as well.

Example

Control value Forced operation	Control value Basic stage	Control value Additional stage
0 %	0 %	0 %
1 %	2 %	0 %
25 %	50 %	0 %
50 %	100 %	0 %
51 %	100 %	2 %
75 %	100 %	50 %
100 %	100 %	100 %

Tab. 97: Control values

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Options *Activated 1 bit – 1 active / Activated 1 bit – 0 active*
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.175 Control value on forced operation active "OFF"

This parameter is used to define the control value if 2-bit forced operation "OFF" is activated. The control value applies only to the active operating mode. The control value is valid until the forced operation is canceled.

More information: → [Forced operation, Page 316](#).

i Note

If basic stage and additional stage are activated via the valve outputs in controller mode, the control value for forced operation is a combined value of the control values for basic stage and additional stage.

Only the basic stage is activated up to a control value of 50 %. With a control value higher than 50 %, the basic stage is 100 % activated and the additional stage is activated as well.

Example

Control value Forced operation	Control value Basic stage	Control value Additional stage
0 %	0 %	0 %
1 %	2 %	0 %
25 %	50 %	0 %
50 %	100 %	0 %
51 %	100 %	2 %
75 %	100 %	50 %
100 %	100 %	100 %

Tab. 98: Control values

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window *Monitoring and safety* \ Parameter *Forced operation* \ Option *Activated 2 bit*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.176 Control value on forced operation active "ON"

This parameter is used to define the control value set if 2-bit forced operation "ON" is activated. The control value applies only to the active operating mode. The control value is valid until the forced operation is canceled.

More information: → [Forced operation, Page 316](#).

i Note

If basic stage and additional stage are activated via the valve outputs in controller mode, the control value for forced operation is a combined value of the control values for basic stage and additional stage.

Only the basic stage is activated up to a control value of 50 %. With a control value higher than 50 %, the basic stage is 100 % activated and the additional stage is activated as well.

Example

Control value Forced operation	Control value Basic stage	Control value Additional stage
0 %	0 %	0 %
1 %	2 %	0 %
25 %	50 %	0 %
50 %	100 %	0 %
51 %	100 %	2 %
75 %	100 %	50 %
100 %	100 %	100 %

Tab. 99: Control values

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Monitoring and safety](#) \ Parameter [Forced operation](#) \ Option [Activated 2 bit](#)
- The parameter is in the parameter window [Monitoring and safety](#).

7.4.177 Control value after bus voltage recovery

This parameter is used to define the control value set after bus voltage recovery. The set control value is valid until a new control value is calculated by the controller in the controller mode or a new control value is received via the bus (ABB i-bus® KNX) in the actuator mode.

i Note

The reaction set here applies during the sending and switching delay as well.

After bus voltage recovery, it can take up to 2 seconds until the device has started and the outputs can be activated.

Option

As before bus voltage failure The last control value before bus voltage failure is applied.

Selection The control value can be set.

The following dependent parameters are shown:

- [Control value](#)

Prerequisites for visibility

- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.178 Control value after ETS download

This parameter is used to define the control value set after ETS download. The set control value is valid until a new control value is calculated by the controller in the controller mode or a new control value is received via the bus (ABB i-bus® KNX) in the actuator mode.

Option	
<u>Unchanged</u>	The last control value before ETS download is applied.
<u>Selection</u>	The control value can be set. The following dependent parameters are shown: <ul style="list-style-type: none">• Control value

Prerequisites for visibility

- The parameter is in the parameter window [Application](#) \ parameter window [Device function](#).

7.4.179 Control value difference for sending the control value

This parameter is used to define the difference for sending the control value. The calculated control value is sent only if it differs by the set difference from the last control value sent.

Option
2 %
5 %
10 %
Only send cyclically

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#)
 - Parameter [Type of control value Basic-stage heating](#) \ Options [PI continuous \(0 ... 100 %\) / PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#)
 - Parameter [Type of control value Additional-stage heating](#) \ Options [PI continuous \(0 ... 100 %\) / PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#)
 - Parameter [Type of control value Basic-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\) / PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
- Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#)
 - Parameter [Type of control value Additional-stage cooling](#) \ Options [PI continuous \(0 ... 100 %\) / PI continuous \(0 ... 100 %\) for fan coil](#)
 - Parameter [Extended settings](#) \ Option [Yes](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.180 Fault Reset valve output

This parameter is used to define how a fault on the valve output is reset.

Option	
<i>Via group object</i>	If there is a fault, the valve output is switched off. The fault can be reset only via group object <i>Fault Reset valve output X</i> .
<i>Automatic or via group object</i>	If there is a fault, output of the control value continues. The fault message remains active and can be reset only via the group object <i>Fault Reset valve output X</i> .

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.181 Dew point reached if [input x]

This parameter is used to define the sensor contact position that is interpreted as the status "Dew point alarm".

Option	
<i>Contact open</i>	
<i>Contact closed</i>	

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Dew point sensor*
- The parameter is in the parameter window *Input x*.

7.4.182 Dew point reached if [controller]

This parameter is used to define the value of group object *Dew point alarm* that is interpreted as the status "Dew point alarm".

Note

When the controller receives the status "Dew point alarm," cooling is interrupted and operating mode *Building Protection* is activated. Building Protection remains active until the controller receives the status "No dew point alarm."

The dew point alarm acts only on the *Cooling* operating mode, and the operating mode can therefore be switched to *Heating* (if available) at any time.

Option	
<i>Value 0</i>	
<i>Value 1</i>	

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Dew point status receipt* \ Option *Via group object*
- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.183 Temperature change for sending current room temperature

This parameter is used to define the temperature change from which the current value of group object *Actual temperature* is sent on the bus.

Note

Depending on the setting in the parameter *Actual temperature receipt*, the current room temperature can comprise the following values:

- Values measured at the physical device inputs (internal temperature)
- Values received via the group object (*External temperature 1* or *External temperature 2*)

Option

0.1 ... 0.5 ... 10.0 K

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- The parameter is in the parameter window *Temperature controller*.

7.4.184 Activate temperature limitation

This parameter is used to define whether the temperature limitation is activated. When the limit temperature set is reached, the controller sets the control value to 0.

Option	
No	The temperature limitation is not activated.
Yes	The following dependent parameters are shown: <ul style="list-style-type: none"> • [Heating] limit temperature • Limit temperature [cooling] • Limit temperature hysteresis • I-proportion at temperature limitation • Input for temperature limit sensor

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#) \ Parameter [Extended settings](#) \ Option [Yes](#)
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
 - \ Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#) \ Parameter [Extended settings](#) \ Option [yes](#)
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#) \ Parameter [Extended settings](#) \ Option [Yes](#)
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ all options except [Deactivated](#)
 - Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#) \ Parameter [Extended settings](#) \ Option [Yes](#)
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.185 Temperature difference from basic-stage heating

This parameter is used to define the actual temperature up to which additional-stage heating is active. The temperature value is specified as a difference from the setpoint temperature.

Additional-stage heating is switched on when the difference between the setpoint temperature and actual temperature is greater than or equal to the value set here.

Example**Example 1:**

Temperature difference from basic-stage heating: 2 K

Setpoint temperature: 23 °C

Actual temperature: 19 °C

Additional stage is active until the actual temperature reaches 21 °C.

Example 2:

Temperature difference from basic-stage heating: 2 K

Setpoint temperature: 23 °C

Actual temperature: 22 °C

Additional stage is inactive as long as the actual temperature is above 21 °C.

Option

0.0 ... 2.0 ... 25.5 K

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ all options except [Deactivated](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

7.4.186**Temperature difference from basic-stage cooling**

This parameter is used to define the actual temperature up to which additional-stage cooling is active. The temperature value is specified as a difference from the setpoint temperature.

Additional-stage cooling is switched on when the difference between the setpoint temperature and actual temperature is greater than or equal to the value set here.

Example**Example 1:**

Temperature difference from basic-stage cooling: 2 K

Setpoint temperature: 23 °C

Actual temperature: 27 °C

Additional stage is active until the actual temperature reaches 25 °C.

Example 2:

Temperature difference from basic-stage cooling: 2 K

Setpoint temperature: 23 °C

Actual temperature: 24 °C

Additional stage is inactive as long as the actual temperature is below 25 °C.

Option

0.0 ... 2.0 ... 25.5 K

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Additional-stage cooling* \ all options except *Deactivated*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Additional-stage cooling*.

7.4.187**Temperature offset**

This parameter is used to define the offset for the sensor connected to the temperature input.

Note

The temperature offset can be used to compensate sensor measuring accuracy.

Option

-10.0 ... 0.0 ... +10.0 K

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Temperature sensor*
- The parameter is in the parameter window *Input x*.

7.4.188**Temperature sensor type**

This parameter specifies which type of temperature sensor is connected. The sensor measuring range is indicated in brackets.

With sensor types NTC and KTY, the subtype must be set as well.

Option	
<i>PT1000 [-30...+110°C]</i>	The temperature sensor type PT1000 is used.
<i>PT100 [-30...+110°C]</i>	The temperature sensor type PT100 is used.
<i>NTC</i>	The temperature sensor type NTC is used. The following dependent parameters are shown: • NTC type
<i>KTY [-15...+110]</i>	The temperature sensor type KTY is used. The following dependent parameters are shown: • KTY type
<i>NI1000 - 01 [-30...+110°C]</i>	The temperature sensor type NI1000 - 01 is used.
<i>NI1000 - 02 [-30...+110°C]</i>	The temperature sensor type NI1000 - 02 is used.

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Temperature sensor*
- The parameter is in the parameter window *Input x*.

7.4.189 Send temperature value

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Temperature](#)

Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<i>After change</i>	The value is sent if there is a change. The following dependent parameters are shown: • Value is sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>After change or cyclically</i>	The value is sent after a change or cyclically. The cycle time can be set. The following dependent parameters are shown: • Value is sent from a change of • Send cyclically every
<i>On request</i>	The value is sent on request.
<i>After change or on request</i>	The value is sent after a change or on request. The following dependent parameters are shown: • Value is sent from a change of
<i>On request or cyclically</i>	The value is sent on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>After change, on request or cyclically</i>	The value is sent after a change, on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Value is sent from a change of • Send cyclically every

Prerequisites for visibility

- Parameter window *Input x* \ Parameter *Input* \ Option *Temperature sensor*
- The parameter is in the parameter window *Input x*.

7.4.190 Monitor receipt of group object "Operating mode normal (master)"

This parameter is used to define whether the monitoring of group object *Operating mode normal (master)* is activated.

i Note

If no value is received on group object *Operating mode normal (master)* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Operating mode" receipt* is set to "Error"
- Value in the parameter *Operating mode after exceeding monitoring time* becomes valid

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>Activated</i>	Monitoring is activated.
	The following dependent parameters are shown:
	<ul style="list-style-type: none"> • <i>Time interval for cyclical monitoring</i> • <i>Operating mode after exceeding monitoring time</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.191 Monitor receipt of group object "Window contact"

This parameter is used to define whether the monitoring of group object *Window contact (master/slave)* is activated.

i Note

If no value is received on group object *Window contact (master/slave)* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Window contact" receipt* is set to "Error"
- Until a new value is received on group object *Window contact (master/slave)*, the controller is in *Building Protection* operating mode

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>Activated</i>	Monitoring is activated.
	The following dependent parameters are shown:
	<ul style="list-style-type: none"> • <i>Time interval for cyclical monitoring</i>
	The following dependent group objects are displayed:
	<ul style="list-style-type: none"> • <i>Error "Window contact" receipt</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Window status receipt* \ Option *Via group object*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.192 Monitor receipt of group object "Fill level alarm"

This parameter is used to define whether the monitoring of group object *Fill level alarm* is activated.

i Note

If no value is received on group object *Fill level alarm* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Fill level alarm" receipt* is set to "Error"
- Until a new value is received on group object *Fill level alarm*, the controller sets the control value for cooling to 0

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>Activated</i>	Monitoring is activated.
	The following dependent parameters are shown:
	• <i>Time interval for cyclical monitoring</i>
	The following dependent group objects are displayed:
	• <i>Error "Fill level alarm" receipt</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Fill level status receipt* \ Option *Via group object*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.193 Monitor receipt of group object "Dew point alarm"

This parameter is used to define whether the monitoring of group object *Dew point alarm* is activated.

i Note

If no value is received on group object *Dew point alarm* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Dew point alarm" receipt* is set to "Error"
- Until a new value is received on group object *Dew point alarm*, the controller is in *Building Protection* operating mode

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>Activated</i>	Monitoring is activated.
	The following dependent parameters are shown:
	• <i>Time interval for cyclical monitoring</i>
	The following dependent group objects are displayed:
	• <i>Error "Dew point alarm" receipt</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Dew point status receipt* \ Option *Via group object*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.194 Monitor receipt of group object "Heating/cooling changeover"

This parameter is used to define whether the monitoring of group object *Heating/cooling changeover* is activated.

Note

If no value is received on group object *Heating/cooling changeover* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Heating/cooling changeover" receipt* is set to "Error"
- Value in the parameter *Heating/cooling mode when monitoring time exceeded* becomes valid

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>Activated</i>	Monitoring is activated.
	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Time interval for cyclical monitoring</i> • <i>Heating/cooling mode when monitoring time exceeded</i>
	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Error "Heating/cooling changeover" receipt</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Heating/cooling changeover* \ all options except *Automatic*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.195 Monitor receipt of "Control value heating/cooling" group objects

This parameter is used to define whether the monitoring of the following group objects is activated:

- *Control value Heating*
- *Control value Cooling*

Note

If no value is received on the group object *Control value Heating* or *Control value Cooling* during the set time interval (→ parameter *Time interval for cyclical monitoring*), the following actions are carried out:

- Group object *Error "Control value" receipt* is set to "Error"
- Value in the parameter *Control value after exceeding monitoring time* becomes valid

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>Activated</i>	Monitoring is activated.
	The following dependent parameters are shown: <ul style="list-style-type: none"> • <i>Time interval for cyclical monitoring</i> • <i>Control value after exceeding monitoring time</i>
	The following dependent group objects are displayed: <ul style="list-style-type: none"> • <i>Error "Control value" receipt</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Actuator device*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.196 Temperature input monitoring

This parameter is used to define whether the reception of a temperature value is monitored.

i Note

For the monitoring of a physical device input to function, a temperature sensor must be connected and the corresponding input must be set for the connection of a temperature sensor. The following settings must be made:

- Parameter *Input* \ Option *Temperature sensor*
- Parameter *Actual temperature receipt* \ all options except *Via group object*

Option	
<i>Deactivated</i>	Monitoring is deactivated.
<i>On physical device input x</i>	<p>The reception of a temperature value on the physical device input x (x = a, b, c, d) is monitored. The following actions will be performed if no valid temperature is measured at the input for longer than one minute:</p> <ul style="list-style-type: none"> • Group object <i>Fault Actual temperature (master)</i> is set to "Error" • Value in the parameter <i>Control value on input fault</i> becomes valid <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Control value on input fault</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Fault Actual temperature (master)</i>
<i>On group object</i>	<p>The following group objects are monitored:</p> <ul style="list-style-type: none"> • <i>External temperature 1</i> • <i>External temperature 2</i> <p>The set time interval applies to both group objects. If a value is received on one of the group objects, only the time interval of the affected group object restarts.</p> <p>If a value is not received on one of the two group objects, the following actions are carried out:</p> <ul style="list-style-type: none"> • Group object <i>Fault Actual temperature (master)</i> is set to "Error" • Value in the parameter <i>Control value after exceeding monitoring time</i> becomes valid <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Time interval for cyclical monitoring</i> • <i>Control value after exceeding monitoring time</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Fault Actual temperature (master)</i>
<i>On active physical temperature inputs</i>	<p>The receipt of a temperature value on all physical device inputs parameterized as a temperature input is monitored.</p> <p>If a temperature input is used for the temperature limitation (→ parameter <i>Input for temperature limit sensor</i>), this input is not monitored.</p> <p>If a valid temperature value is not measured on all physical device inputs parameterized as temperature input for longer than one minute, the following actions are performed:</p> <ul style="list-style-type: none"> • Group object <i>Fault Actual temperature (master)</i> is set to "Error" • Value in the parameter <i>Control value on input fault</i> becomes valid <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Control value on input fault</i> <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • <i>Fault Actual temperature (master)</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Monitoring and safety* \ Parameter *Cyclical monitoring* \ Option *Activated*
- The parameter is in the parameter window *Monitoring and safety*.

7.4.197

Reversing time



CAUTION

Setting a reversing time that is too short can damage the connected drive.

- ▶ Observe the technical data of the connected drive.

This parameter is used to define the duration of the reversing time for the valve drive.

Option
50 ... 500 ... 1000 ms

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Option *Motor-driven (3-point)*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

7.4.198

Heating/cooling changeover

This parameter is used to define how the change between operating modes takes place.

i Note

This parameter is set to the option *Via group object* in the following applications and cannot be changed:

- Actuator mode
- Controller mode and usage of 2-pipe system → parameter *Type of heating/cooling system*

Option	
<i>Automatic</i>	The change between the operating modes takes place automatically depending on the difference between the actual and setpoint temperature. The automatic change between the operating modes is possible only in the Comfort operating mode.
<i>Via group object</i>	The change between the operating modes takes place via the following group objects: <ul style="list-style-type: none"> • <i>Heating/cooling changeover</i> (Controller mode) • <i>Heating/cooling changeover</i> (Actuator mode)
<i>Via group object or via slave</i>	The change between the operating modes takes place via the following group objects: <ul style="list-style-type: none"> • <i>Heating/cooling changeover</i> (Controller mode) • <i>Request heating/cooling (master)</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.
- or
- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Actuator device*
 - Parameter *Basic-stage heating [actuator]* \ Option *Fan coil unit*
 - Parameter *Basic-stage cooling [actuator]* \ Option *Fan coil unit*
 - The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.199

Distinction between long and short operation

This parameter is used to define whether a distinction is made between short and long operation of the connected contact (e.g. button).

The following figure shows the distinction:

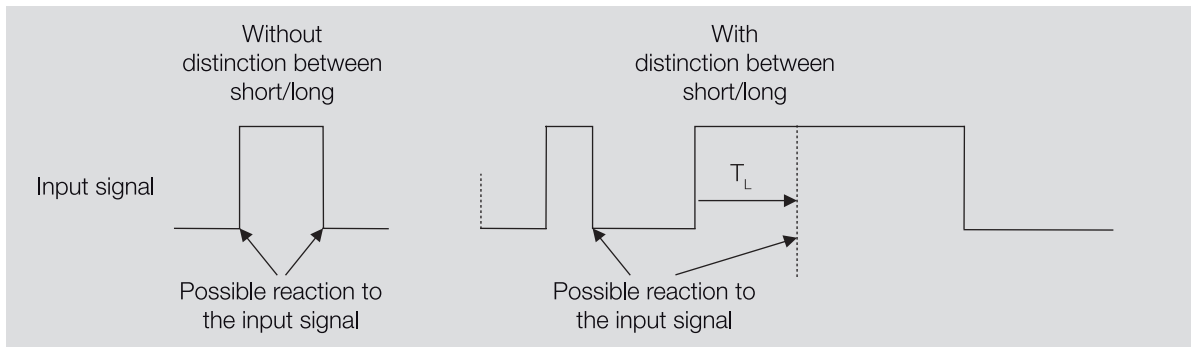


Fig. 51: Distinguishing between short/long operation

Note

T_L is the time from which a long operation is detected.

Option	
No	The following dependent parameters are shown: <ul style="list-style-type: none"> • Activate minimum signal duration
Yes	The following dependent parameters are shown: <ul style="list-style-type: none"> • Input on operation • Long operation after

Prerequisites for visibility

- Parameter window [Input x](#) \ Parameter [Input](#) \ Option [Binary input](#)
- The parameter is in the parameter window [Input x](#).

7.4.200

VAV damper output after bus voltage recovery, ETS download and ETS reset

This parameter is used to define the reaction of the VAV damper output after bus voltage recovery, ETS download and ETS reset.

Option	
Unchanged	The output voltage value from before bus voltage failure, ETS download and ETS reset is applied.
Selection	The output voltage value after bus voltage recovery, ETS download and ETS reset can be set. <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Control value

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option [Use as VAV damper output](#)
- The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.201 Valve output

This parameter is used to define how the valve output is used.

Depending on the valve drive parameterized, the control values received from the internal controller or via the bus (ABB i-bus® KNX) are converted into the corresponding output signal.

More information: → [Valve drives, Page 311](#).

i Note

The controller control value to be output on the respective valve output is specified in the parameter window [Application parameters](#).

i Note

The possible options depend on the product variant.

Option	
<i>Thermoelectric (PWM)</i>	<p>The control value is converted to a PWM signal.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Valve drive operating principle, de-energized • PWM cycle time • Valve drive opening/closing time • Send status values [valve output] • Enable manual valve override • Valve purge <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status byte Valve X • Status Control value valve X • Fault Valve output X • Fault Reset valve output X
<i>Motor-driven (3-point)</i>	<p>The control value is converted to an activation signal for a 3-point drive. Valve outputs A and B are interconnected for activation of the valve drive. Valve A outputs the opening signal and valve B the closing signal.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Reversing time • Switch on time for valve drive from 0 to 100 % • Automatic adjustment of valve drive • Send status values [valve output] • Enable manual valve override • Valve purge <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status byte Valve X • Status Control value valve X • Fault Valve output X • Fault Reset valve output X
<i>Open/close signal</i>	<p>The control value is converted to an On/Off signal. If the value set in the parameter Open if control value greater than or equal to is reached, an On signal is output.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Valve drive operating principle, de-energized • Open if control value greater than or equal to • Valve drive opening/closing time • Send status values [valve output] • Enable manual valve override • Valve purge <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status byte Valve X • Status Control value valve X • Fault Valve output X • Fault Reset valve output X
<i>Deactivated</i>	The valve output is deactivated.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

7.4.202**Valve output [0 ... 10 V]**

This parameter is used to define how the valve output is used.

More information: → [Valve drives, Page 311](#).

Option	
<i>Activated</i>	<p>The valve output is used as the control value output for a 0 ... 10 V valve drive.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Voltage range valve control value • Valve drive opening/closing time • Send status values [valve output] • Enable manual valve override • Valve purge <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status byte Valve X • Status Control value valve X • Fault Valve output X • Fault Reset valve output X
<i>Deactivated</i>	<p>The valve output is deactivated.</p>
<i>Use as VAV damper output</i>	<p>The valve output is used to activate a damper drive. The control value received via the bus (ABB i-bus® KNX) is output without influence by the controller on the selected voltage range.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Voltage range for VAV damper control value • VAV damper output after bus voltage recovery, ETS download and ETS reset • Send status values [valve output] <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Control value VAV damper control X • Status Control value valve X

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X (0 ... 10 V)*.

7.4.203 Valve purge

This parameter is used to define how the valve purge is activated.

More information: → [Valve purge, Page 313](#).

Option	
<i>Deactivated</i>	Valve purge is deactivated.
<i>Automatic or via group object</i>	<p>Valve purge takes place automatically in a set cycle. Valve purge can be triggered via a group object as well.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Purge cycle in weeks • Reset purge cycle from control value greater than or equal to • Send value of group object "Status valve purge" <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Valve purge X • Activate valve purge X
<i>Via group object</i>	<p>The valve purge can be triggered via a group object.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Send value of group object "Status valve purge" <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Status Valve purge X • Activate valve purge X

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X](#) \ Parameter [Valve output](#) \ all options except *Deactivated*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X](#).
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ Option *Activated*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.204 Reaction of output

This parameter is used to define how the output reacts in the following situations:

- If activation is direct by the controller, depending on the settings in the following parameters:
 - [Activate basic-stage heating via](#)
 - [Activate basic-stage cooling via](#)
 - [Activate additional-stage heating via](#)
 - [Activate additional-stage cooling via](#)
- If a switch telegram is received on the group object [Switch](#)

Option	
NC contact	The relay contact is opened with an On command (1) and closed with an Off command (0).
NO contact	The relay contact is closed with an On command (1) and opened with an Off command (0).

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window [Relay output](#) \ Parameter [Relay output](#) \ Option *Activated*
- The parameter is in the parameter window [Relay output](#).

7.4.205 Use of 6-way valve

This parameter is used to define whether a 6-way valve is used.

More information: → [Use of 6-way valve, Page 314](#).

Option	
<i>No</i>	The following parameters can be set: <ul style="list-style-type: none"> • Activate basic-stage heating via • Activate basic-stage cooling via
<i>Yes</i>	The following parameters are set to the option <i>Valve output A</i> and cannot be changed: <ul style="list-style-type: none"> • Activate basic-stage heating via • Activate basic-stage cooling via

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Type of heating/cooling system](#) \ Option *4-pipe*
 - The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Actuator device*
 - Parameter [Basic-stage heating \[actuator\]](#) \ all options except *Deactivated*
 - Parameter [Basic-stage cooling \[actuator\]](#) \ all options except *Deactivated*
 - Parameter [Type of heating/cooling system](#) \ Option *4-pipe*
 - The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.206 Use control value for fan automatic

This parameter is used to define whether the heating/cooling stage control value is used to activate the fan in automatic mode.

i Note

If the heating/cooling stage is set with the option *Free configuration*, the option *Yes* must be selected in this parameter, otherwise fan automatic cannot be used for this heating/cooling stage.

Option

No

Yes

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ Option [Free configuration](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage heating](#) \ Option [Free configuration](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ Option [Free configuration](#)
- The parameter window is in the parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#).

or

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except [Deactivated](#)
 - Parameter [Additional-stage cooling](#) \ Option [Free configuration](#)
- The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.207 Delay between fan speed switchover

This parameter is used to define a delay for switching the fan speeds. The delay time is a fan-specific value and is always taken into account.

**CAUTION**

Incorrect settings can cause damage to the fan connected.

- ▶ Observe the technical data for the fan connected.

Option

50 ... 500 ... 5,000 ms

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.4.1.1
- Parameter window *Fan output* \ Parameter *Fan operating mode* \ Option *Changeover switch*
- The parameter is in the parameter window *Fan output*.

7.4.208**Send value group object "In operation"**

This parameter is used to define the value that the group object *In operation* sends.

Option

Value 0

Value 1

Prerequisites for visibility

- Parameter window *Basic settings* \ Parameter *Enable group object "In operation"* \ Option *Yes*
- The parameter is in the parameter window *Basic settings*.

7.4.209**Value of group object "Status Relay"**

This parameter is used to define the value adopted by the group object *Status Relay* depending on the position of the relay contact.

Option

1: closed, 0: open

The group object has the value 1 when the relay contact is closed.

The group object has the value 0 when the relay contact is open.

0: closed, 1: open

The group object has the value 0 when the relay contact is closed.

The group object has the value 1 when the relay contact is open.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Relay output* \ Parameter *Relay output* \ Option *Activated*
- The parameter is in the parameter window *Relay output*.

7.4.210 Send value of group object "Status valve purge"

This parameter is used to define when the value of the following group object is sent on the bus (ABB i-bus® KNX):

- [Status Valve purge X](#)

i Note

Sending on request can be triggered by the reception of a telegram with the value 0 or 1 on group object [Request status values](#).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>After change</i>	The value is sent if there is a change.
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every
<i>On request</i>	The value is sent on request.
<i>After change or on request</i>	The value is sent after a change or on request.
<i>After change, on request or cyclically</i>	The value is sent after a change, on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • Send cyclically every

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X](#)
 - Parameter [Valve output](#) \ all options except *Deactivated*
 - Parameter [Valve purge](#) \ all options except *Deactivated*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X](#).
- or
- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#)
 - Parameter [Valve output \[0 ... 10 V\]](#) \ Option *Activated*
 - Parameter [Valve purge](#) \ all options except *Deactivated*
 - The parameter is in the parameter window [Valve X](#) \ parameter window [Valve output X \(0 ... 10 V\)](#).

7.4.211 Value after sending and switching delay has expired

This parameter is used to define the values that are applicable at the inputs and outputs after expiration of the sending and switching delay.

Option	
<i>Last value received</i>	The inputs and outputs react to the last value received.
<i>Ignore received values</i>	The state of the inputs and outputs remains unchanged until a new value is received after the sending and switching delays have elapsed.

Prerequisites for visibility

- The parameter is in the parameter window [Basic settings](#).

7.4.212 Value is sent from a change of

This parameter is used to define the minimum change in the input value for sending the output value on the bus (ABB i-bus® KNX).

Option

0.2 ... 1.0 ... 10.0 K

Prerequisites for visibility

- The parameter appears at various points in the application. The visibility is dependent on the application and the higher-level parameter.

7.4.213 Resistance in ohms at x °C

These parameters are used to enter the resistance values for the temperature sensor connected. The values entered are used to form a characteristic curve of resistance.

Option

650 ... 4,600 ohms

Prerequisites for visibility

- Parameter window *Input x*
 - Parameter *Input* \ Option *Temperature sensor*
 - Parameter *Temperature sensor type* \ Option *KTY [-15...+110]*
 - Parameter *KTY type* \ Option *User-defined*
- The parameter is in the parameter window *Input x*.

7.4.214 Control value direction

This parameter is used to define the control value for the heating/cooling stage.

More information: → [Control value direction, Page 307](#).

Option	
<i>Normal</i>	The control value is output normally. <ul style="list-style-type: none"> Control value On/100 % ⇒ Telegram value On/100 % Control value Off/0 % ⇒ Telegram value Off/0 %
<i>Inverted</i>	The control value is output inverted. <ul style="list-style-type: none"> Control value On/100 % ⇒ Telegram value Off/0 % Control value Off/0 % ⇒ Telegram value On/100 %

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ Option *Free configuration*
 - Parameter [Activate basic-stage heating via](#) \ Option *Group object*
 - Parameter window [Temperature controller](#) \ Parameter window [Basic-stage heating](#) \ Parameter [Extended settings](#) \ Option *Yes*
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage heating](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage heating](#) \ Option *Free configuration*
 - Parameter [Activate additional-stage heating via](#) \ Option *Group object*
 - Parameter window [Temperature controller](#) \ Parameter window [Additional-stage heating](#) \ Parameter [Extended settings](#) \ Option *Yes*
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage heating](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ Option *Free configuration*
 - Parameter [Activate basic-stage cooling via](#) \ Option *Group object*
 - Parameter window [Temperature controller](#) \ Parameter window [Basic-stage cooling](#) \ Parameter [Extended settings](#) \ Option *Yes*
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Basic-stage cooling](#).
- or
- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage cooling](#) \ Option *Free configuration*
 - Parameter [Activate additional-stage cooling via](#) \ Option *Group object*
 - Parameter window [Temperature controller](#) \ Parameter window [Additional-stage cooling](#) \ Parameter [Extended settings](#) \ Option *Yes*
 - The parameter is in the parameter window [Temperature controller](#) \ parameter window [Additional-stage cooling](#).

7.4.215 Valve drive operating principle, de-energized

This parameter is used to define the operating principle of the valve drive connected.

Option	
<i>Closed</i>	The valve is closed if no current flows through the valve drive. The valve is opened if current flows through the valve drive.
<i>Open</i>	The valve is opened if no current flows through the valve drive. The valve is closed if current flows through the valve drive.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Options *Thermoelectric (PWM) / Open/close signal*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

7.4.216 I-bus® Tool access

This parameter is used to define whether the device can be accessed via the i-bus® Tool.

More information: → [Integration into i-bus® Tool, Page 87](#).

Option	
<i>Deactivated</i>	Access via the i-bus® Tool is deactivated.
<i>Value display only</i>	Values can be displayed via the i-bus® Tool.
<i>Full access</i>	Values can be displayed and changed i-bus® Tool.

Prerequisites for visibility

- The parameter is in the parameter window *Basic settings*.

7.4.217 Reset manual setpoint adjustment when base setpoint received

Note

This parameter only has an effect if the option *Relative* is set in the parameter *Setpoint specification and adjustment*.

This parameter is used to define whether manual setpoint adjustment is reset when a new value is received on group object *Basic setpoint*.

Example

- Old base setpoint: 21 °C
- Manual adjustment: 1.5 K
- Old temperature setpoint: 22.5 °C

New value is received via group object *Basic setpoint*:

- New base setpoint: 18 °C
- New temperature setpoint
 - Without manual adjustment reset: 19.5 °C
 - With manual adjustment reset: 18 °C

Option

<i>No</i>	Manual adjustment is not reset. The new temperature setpoint is calculated from the value in group object <i>Basic setpoint</i> and the manual adjustment.
<i>Yes</i>	Manual adjustment is reset. The new temperature setpoint corresponds to the value in group object <i>Basic setpoint</i> .

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
- The parameter is in the parameter window *Setpoint adjustment*.

7.4.218**Reset manual setpoint adjustment when operating mode changes**

This parameter is used to define whether manual setpoint adjustment is reset when the operating mode changes.

Example

- Comfort setpoint: 21 °C
- Manual adjustment: 1.5 K
- Temperature setpoint: 22.5 °C

Change in operating mode (e.g. Economy)

Change the operating mode to comfort

- New temperature setpoint
 - Without manual adjustment reset: 22.5 °C
 - With manual adjustment reset: 21 °C

Option

<i>No</i>	Manual adjustment is not reset. The new temperature setpoint is calculated from the setpoint set for the operating mode and the manual adjustment.
<i>Yes</i>	Manual adjustment is reset. The new temperature setpoint corresponds to the setpoint of the active operating mode (plus any shift via group object <i>Basic setpoint</i>).

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment* \ Parameter *Connect analog room control unit to physical device input a* \ Option *No*
- The parameter is in the parameter window *Setpoint adjustment*.

7.4.219 Reset manual setpoint adjustment via group object

This parameter is used to define whether manual setpoint adjustment can be reset via the group object [Reset manual setpoint adjustment](#).

Option	
<i>No</i>	Manual setpoint adjustment cannot be reset via a group object.
<i>Yes</i>	The following dependent group objects are displayed: <ul style="list-style-type: none"> • Reset manual setpoint adjustment

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option [Controller](#)
- Parameter window [Setpoint adjustment](#) \ Parameter [Connect analog room control unit to physical device input a](#) \ Option [No](#)
- The parameter is in the parameter window [Setpoint adjustment](#).

7.4.220 Additional-stage heating

This parameter is used to define how the additional-stage heating is used. The controller is preset based on the selected option.

Note

If one of the following options is selected, the valve control value is used to activate the fan in automatic mode:

- *Electric heater (in fan coil unit)*
- *Water heating coil (in fan coil unit)*

Note

Whether the valve control value is used to activate the fan in automatic mode if the option *Free configuration* is selected is set in the parameter [Use control value for fan automatic](#).

Option	
<i>Deactivated</i>	Additional-stage heating is deactivated.
<i>Convector (e.g. radiator)</i>	<p>Additional-stage heating is set for the use of a convector. The parameter <i>Type of control value Additional-stage heating</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Activate additional-stage heating via
<i>Area heating (e.g. floor)</i>	<p>Additional-stage heating is set for the use of area heating. The parameter <i>Type of control value Additional-stage heating</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Activate additional-stage heating via
<i>Electric heater (in room)</i>	<p>Additional-stage heating is set for the use of an electric heater in the room. The operation of the electric heater is not coupled to the fan in the fan coil unit. The parameter <i>Type of control value Additional-stage heating</i> is set to the option <i>2-point 1 bit (On/Off)</i>.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Activate additional-stage heating via
<i>Free configuration</i>	<p>The additional-stage heating can be configured as required. The parameter <i>Type of control value Additional-stage heating</i> is preset to the option <i>PI continuous (0 ... 100 %)</i> but can be changed.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Activate additional-stage heating via
<i>Electric heater (in fan coil unit)</i>	<p>Additional-stage heating is set for the use of an electric heater in the fan coil unit. The operation of the electric heater is coupled to the fan in the fan coil unit. If the electric heater is switched on, the fan in the fan coil unit is also switched on. The parameter <i>Type of control value Additional-stage heating</i> is set to the option <i>2-point 1 bit (On/Off)</i>.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Activate additional-stage heating via
<i>Water heating coil (in fan coil unit)</i>	<p>Additional-stage heating is set for the use of a water heating coil in the fan coil unit. The parameter <i>Type of control value Additional-stage heating</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • Additional-stage heating <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Activate additional-stage heating via

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option [Controller](#)
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except [Deactivated](#)
- The parameter is in the parameter window [Application](#) \ parameter window [Application parameters](#).

7.4.221 Additional-stage cooling

This parameter is used to define how the additional-stage cooling is used. The controller is preset based on the selected option.

i Note

If the option *Water cooling coil (in fan coil unit)* is selected, the valve control value is used to activate the fan in the automatic mode.

i Note

Whether the valve control value is used to activate the fan in automatic mode if the option *Free configuration* is selected is set in the parameter *Use control value for fan automatic*.

Option	
<i>Deactivated</i>	Additional-stage cooling is deactivated.
<i>Area cooling (e.g. cooling ceiling)</i>	<p>Additional-stage cooling is set for the use of area cooling. The parameter <i>Type of control value Additional-stage cooling</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • <i>Additional-stage cooling</i> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Activate additional-stage cooling via</i>
<i>Free configuration</i>	<p>Additional-stage cooling can be configured as required. The parameter <i>Type of control value Additional-stage cooling</i> is preset to the option <i>PI continuous (0 ... 100 %)</i> but can be changed.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • <i>Additional-stage cooling</i> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Activate additional-stage cooling via</i>
<i>Water cooling coil (in fan coil unit)</i>	<p>Additional-stage cooling is set for the use of a water cooling coil in the fan coil unit. The parameter <i>Type of control value Additional-stage cooling</i> is set to the option <i>PI continuous (0 ... 100 %)</i> with the corresponding P- and I-proportions.</p> <p>The following dependent parameter windows are shown:</p> <ul style="list-style-type: none"> • <i>Additional-stage cooling</i> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • <i>Activate additional-stage cooling via</i>

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- The parameter is in the parameter window *Application* \ parameter window *Application parameters*.

7.4.222 Forced operation

This parameter is used to activate/deactivate 1-bit or 2-bit forced operation.

More information: → [Forced operation, Page 316](#).

i Note

If forced operation is active, operation via group objects, manual operation and i-bus® Tool is blocked. Higher-priority functions continue to run → [Priorities, Page 294](#).

Option	
<i>Deactivated</i>	Forced operation is deactivated.
<i>Activated 1 bit – 1 active</i>	<p>Forced operation is activated by the reception of a telegram with the value 1.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Control value on forced operation • Fan speed during forced operation • Switching reaction of relay output on forced operation <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Forced operation, 1-bit
<i>Activated 1 bit – 0 active</i>	<p>Forced operation is activated by the reception of a telegram with the value 0.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Control value on forced operation • Fan speed during forced operation • Switching reaction of relay output on forced operation <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Forced operation, 1-bit
<i>Activated 2 bit</i>	<p>2-bit forced operation is used.</p> <p>The following dependent parameters are shown:</p> <ul style="list-style-type: none"> • Control value on forced operation active "ON" • Fan speed during forced operation active "ON" • Switching reaction of relay output on forced operation active "ON" • Control value on forced operation active "OFF" • Fan speed during forced operation active "OFF" • Switching reaction of relay output on forced operation active "OFF" <p>The following dependent group objects are displayed:</p> <ul style="list-style-type: none"> • Forced operation, 2-bit

Prerequisites for visibility

- The parameter is in the parameter window [Monitoring and safety](#).

7.4.223 Send cyclically every

This parameter is used to define the cycle in which the value of the group object is sent.

i Note

The possible options and default values depend on the higher-level parameter.

Option
00:00:30 ... 00:05:00 ... 18:12:15 hh:mm:ss
00:00:30 ... 00:01:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- The parameter appears at various points in the application. The visibility is dependent on the application and the higher-level parameter.

7.4.224 Cyclical monitoring

The cyclical monitoring is activated/deactivated with this parameter.

More information: → [Cyclical monitoring, Page 316](#).

Option	
<i>Deactivated</i>	The cyclical monitoring is deactivated.
<i>Activated</i>	The following dependent parameters are shown: <ul style="list-style-type: none"> • Temperature input monitoring • Monitor receipt of group object "Operating mode normal (master)" • Monitor receipt of group object "Heating/cooling changeover" • Monitor receipt of group object "Window contact" • Monitor receipt of group object "Dew point alarm" • Monitor receipt of group object "Fill level alarm" • Monitor receipt of "Control value heating/cooling" group objects

Prerequisites for visibility

- The parameter is in the parameter window [Monitoring and safety](#).

7.4.225 Time interval for cyclical monitoring

This parameter is used to define the time interval during which a value must be received on the monitored group object.

More information: → [Cyclical monitoring, Page 316](#).

Note

The monitoring cycle in the device should be at least quadruple the cyclical sending time of the sending device. As a result, the reactions set will not be triggered immediately if a signal is missing, e.g. due to high bus load.

Option
<i>00:00:30 ... 01:00:00 ... 18:12:15 hh:mm:ss</i>

Prerequisites for visibility

- The parameter appears at various points in the application. The visibility is dependent on the application and the higher-level parameter.

7.4.226 Send inactive control values cyclically

This parameter is used to define whether the control value for the inactive operating mode is sent cyclically.

Note

On systems with only one control value input for heating and cooling, the group objects [Status Control value basic-stage heating](#) and [Status Control value basic-stage cooling](#) must be connected to the same input group object. If the *Yes* option is selected in this parameter, the control values for the active and inactive operating mode overwrite each other.

Example

Active type of operation: *Heating*

Control value Heating: 50 %

Control value Cooling: 0 %

Sending cycle: 5 minutes (for both types of operation)

Valve drive actuator: 2-pipe system for *Heating* and *Cooling* (only one control value input)

Send control value *Heating* ⇒ control value received: 50 %

⇒ Valve drive actuator output control value: 50 %

Send control value *Cooling* ⇒ control value received: 0 %

⇒ Valve drive actuator output control value: 0 %

Note

The cycle times can be set in the parameter window of the respective heating/cooling stage → parameter [Cycle for sending the control value \(0 = deactivated\)](#).

Option

No

Yes

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
- The parameter is in the parameter window [Application](#) \ parameter window [Temperature controller](#).

7.4.227**Cycle for sending the room temperature (0 = deactivated)**

This parameter is used to define the cycle in which the current room temperature is to be sent via group object [Actual temperature](#).

Note

Depending on the setting in the parameter [Actual temperature receipt](#), the current room temperature can comprise the following values:

- Values measured at the physical device inputs (internal temperature)
- Values received via the group object ([External temperature 1](#) or [External temperature 2](#))

Option

0 ... 15 ... 255 min

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- The parameter is in the parameter window [Temperature controller](#).

7.4.228 Cycle for sending the control value (0 = deactivated)

This parameter is used to define the cycle for sending the control value.

i Note

Sending cyclically should not be deactivated to ensure that the actuator receives its control value. If, in the parameter *Control value difference for sending the control value*, the option *Only send cyclically* is selected, a value > 0 must be selected.

Option

0 ... 15 ... 60 min

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
- Parameter window *Temperature controller* \ Parameter window *Basic-stage heating*
 - Parameter *Type of control value Basic-stage heating* \ all options except *PI PWM (On/Off)*
 - Parameter *Extended settings* \ Option *Yes*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Basic-stage heating*.

or

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Additional-stage heating* \ all options except *Deactivated*
- Parameter window *Temperature controller* \ Parameter window *Additional-stage heating*
 - Parameter *Type of control value Additional-stage heating* \ all options except *PI PWM (On/Off)*
 - Parameter *Extended settings* \ Option *Yes*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Additional-stage heating*.

or

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
- Parameter window *Temperature controller* \ Parameter window *Basic-stage cooling*
 - Parameter *Type of control value Basic-stage cooling* \ all options except *PI PWM (On/Off)*
 - Parameter *Extended settings* \ Option *Yes*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Basic-stage cooling*.

or

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Additional-stage cooling* \ all options except *Deactivated*
- Parameter window *Temperature controller* \ Parameter window *Additional-stage cooling*
 - Parameter *Type of control value Additional-stage cooling* \ all options except *PI PWM (On/Off)*
 - Parameter *Extended settings* \ Option *Yes*
- The parameter is in the parameter window *Temperature controller* \ parameter window *Additional-stage cooling*.

7.4.229 Cycle for sending the setpoint

This parameter is used to define the cycle in which the group object *Current setpoint* sends the setpoint.

Option

5 ... 15 ... 240 min

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint manager* \ Parameter *Send current setpoint* \ Option *After change or cyclically*
- The parameter is in the parameter window *Setpoint manager*.

7.4.230 PWM cycle time

This parameter is used to define the cycle time for the pulse width modulation on the valve output.

Option

10 ... 180 ... 900 s

Prerequisites for visibility

- Product variants:
 - FCC/S 1.1.1.1
 - FCC/S 1.1.2.1
 - FCC/S 1.4.1.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X* \ Parameter *Valve output* \ Option *Thermoelectric (PWM)*
- The parameter is in the parameter window *Valve X* \ parameter window *Valve output X*.

8 Group objects

8.1 Overview of group objects

Function	Group object name	Data point type	Length	Flags
Activate minimum control value (basic load)	Channel – Controller	DPT 1.003	1 bit	C W
Activate valve purge X	Channel – Valve X	DPT 1.017	1 bit	C W
Activate/deactivate fan automatic	Channel – Fan	DPT 1.003	1 bit	C W
Actual temperature	Channel – Controller	DPT 9.001	2 bytes	C R T
Additional-stage cooling limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
Additional-stage heating limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
Basic setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Basic-stage cooling limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
Basic-stage heating limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
Block input	Channel – Input x	DPT 1.003	1 bit	C W
Building Protection cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Building Protection heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Comfort heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Comfort setpoint reached	Channel – Controller	DPT 1.002	1 bit	C R T
Comfort cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Confirm fan manually (master)	Channel – Controller	DPT 1.001	1 bit	C R T
Confirm fan speed (master)	Channel – Controller	DPT 5.001	1 byte	C R T
Confirm fan speed (master)	Channel – Controller	DPT 5.010	1 byte	C R T
Confirm fan manually (slave)	Channel – Actuator	DPT 1.001	1 bit	C W
Confirm On/Off (master)	Channel – Controller	DPT 1.001	1 bit	C R T
Confirm setpoint adjustment (master)	Channel – Controller	DPT 9.001	2 bytes	C R T
Confirm setpoint adjustment (master)	Channel – Controller	DPT 9.002	2 bytes	C R T
Confirm setpoint adjustment (master)	Channel – Controller	DPT 6.010	1 byte	C R T
Contact position binary input	Channel – Input x	DPT 1.001	1 bit	C R T
Control value Cooling	Channel – Actuator	DPT 5.001	1 byte	C W T U
Control value Heating	Channel – Actuator	DPT 5.001	1 byte	C W T U
Control value VAV damper control X	Channel – Valve A	DPT 5.001	1 byte	C W T U
Controller Status HVAC (master)	Channel – Controller	DPT 5.001	1 byte	C R T
Current HVAC operating mode	Channel – Controller	DPT 20.102	1 byte	C R T
Current setpoint	Channel – Controller	DPT 9.001	2 bytes	C R T
Dew point alarm	Channel – Controller	DPT 1.005	1 bit	C W T U
Dew point alarm	Channel – Input x	DPT 1.005	1 bit	C R T
Economy cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Economy heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Enable/block manual operation	General	DPT 1.003	1 bit	C W
Enable/block manual valve override X	Channel – Valve X	DPT 1.003	1 bit	C W
Error "Control value" receipt	Channel – General	DPT 1.005	1 bit	C R T
Error "Dew point alarm" receipt	Channel – General	DPT 1.005	1 bit	C R T
Error "Fill level alarm" receipt	Channel – General	DPT 1.005	1 bit	C R T
Error "Heating/cooling changeover" receipt	Channel – General	DPT 1.005	1 bit	C R T
Error "Operating mode" receipt	Channel – General	DPT 1.005	1 bit	C R T
Error "Window contact" receipt	Channel – General	DPT 1.005	1 bit	C R T
Error Input	Channel – Input x	DPT 1.005	1 bit	C R T
External temperature 1	Channel – Controller	DPT 9.001	2 bytes	C W T U
External temperature 2	Channel – Controller	DPT 9.001	2 bytes	C W T U
Fault Actual temperature (master)	Channel – Controller	DPT 1.005	1 bit	C R T
Fault fan output	Channel – Fan	DPT 1.005	1 bit	C R T
Fault Reset valve output X	Channel – Valve X	DPT 1.015	1 bit	C W
Fault Reset valve output X	Channel – Valve X	DPT 1.015	1 bit	C W
Fault Valve output X	Channel – Valve X	DPT 1.005	1 bit	C R T
Fault Valve output X	Channel – Valve X	DPT 1.005	1 bit	C R T
Fill level alarm	Channel – Controller	DPT 1.005	1 bit	C W T U
Fill level alarm	Channel – Input x	DPT 1.005	1 bit	C R T
Forced operation, 1-bit	Channel – General	DPT 1.002	1 bit	C W
Forced operation, 2-bit	Channel – General	DPT 2.001	2 bit	C W
Heating/cooling changeover	Channel – Actuator	DPT 1.100	1 bit	C W T U
Heating/cooling changeover	Channel – Controller	DPT 1.100	1 bit	C W T U
In operation	General	DPT 1.002	1 bit	C R T
Increase/decrease fan speed	Channel – Fan	DPT 1.007	1 bit	C W
Limitation X	Channel – Fan	DPT 1.003	1 bit	C W
Operating mode normal (master)	Channel – Controller	DPT 20.102	1 byte	C W T U
Operating mode override (master)	Channel – Controller	DPT 20.102	1 byte	C W T U

Function	Group object name	Data point type	Length	Flags
Outside temperature for summer compensation	Channel – Controller	DPT 9.001	2 bytes	C W
Override valve control value X	Channel – Valve X	DPT 5.001	1 byte	C W
Presence detector (master/slave)	Channel – Controller	DPT 1.018	1 bit	C W
Request fan speed (master)	Channel – Controller	DPT 5.001	1 byte	C W
Request fan speed (master)	Channel – Controller	DPT 5.010	1 byte	C W
Request fan speed (slave)	Channel – Actuator	DPT 5.001	1 byte	C R T
Request fan speed (slave)	Channel – Actuator	DPT 5.010	1 byte	C R T
Request fan manually (slave)	Channel – Actuator	DPT 1.001	1 bit	C R T
Request fan manually (master)	Channel – Controller	DPT 1.001	1 bit	C W
Request heating/cooling (master)	Channel – Controller	DPT 1.100	1 bit	C W
Request On/Off (master)	Channel – Controller	DPT 1.001	1 bit	C W
Request setpoint adjustment (master)	Channel – Controller	DPT 9.001	2 bytes	C W
Request setpoint adjustment (master)	Channel – Controller	DPT 9.002	2 bytes	C W
Request setpoint adjustment (master)	Channel – Controller	DPT 6.010	1 byte	C W
Request setpoint adjustment (slave)	Channel – Actuator	DPT 9.002	2 bytes	C R T
Request setpoint adjustment (slave)	Channel – Actuator	DPT 6.010	1 byte	C R T
Request status values	General	DPT 1.017	1 bit	C W
Reset manual setpoint adjustment	Channel – Controller	DPT 1.017	1 bit	C W
Setpoint Comfort heating/cooling	Channel – Controller	DPT 9.001	2 bytes	C W
Setpoint display (master)	Channel – Controller	DPT 9.002	2 bytes	C R T
Standby cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Standby heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
Status byte Device	General	Non DPT	1 byte	C R T
Status byte Fan	Channel – Fan	Non DPT	1 byte	C R T
Status byte Valve X	Channel – Valve X	Non DPT	1 byte	C R T
Status Control value additional-stage cooling	Channel – Controller	DPT 5.001	1 byte	C R T
Status Control value additional-stage cooling	Channel – Controller	DPT 1.001	1 bit	C R T
Status Control value additional-stage heating	Channel – Controller	DPT 5.001	1 byte	C R T
Status Control value additional-stage heating	Channel – Controller	DPT 1.001	1 bit	C R T
Status Control value basic-stage cooling	Channel – Controller	DPT 5.001	1 byte	C R T
Status Control value basic-stage cooling	Channel – Controller	DPT 1.001	1 bit	C R T
Status Control value basic-stage heating	Channel – Controller	DPT 5.001	1 byte	C R T
Status Control value basic-stage heating	Channel – Controller	DPT 1.001	1 bit	C R T
Status Controller RHCC	Channel – Controller	DPT 22.101	2 bytes	C R T
Status Fan automatic	Channel – Fan	DPT 1.011	1 bit	C R T
Status Fan On/Off	Channel – Fan	DPT 1.001	1 bit	C R T
Status Fan speed 1	Channel – Fan	DPT 1.001	1 bit	C R T
Status Fan speed 2	Channel – Fan	DPT 1.001	1 bit	C R T
Status Fan speed 3	Channel – Fan	DPT 1.001	1 bit	C R T
Status Fan speed	Channel – Fan	DPT 5.001	1 byte	C R T
Status Heating/cooling	Channel – Controller	DPT 1.100	1 bit	C R T
Status Manual operation	General	DPT 1.011	1 bit	C R T
Status Control value valve X	Channel – Valve X	DPT 5.001	1 byte	C R T
Status Cooling	Channel – Controller	DPT 1.001	1 bit	C R T
Status Heating	Channel – Controller	DPT 1.001	1 bit	C R T
Status Relay	Channel – Relay	DPT 1.009	1 bit	C R T
Status Valve purge X	Channel – Valve X	DPT 1.011	1 bit	C R T
Summer compensation active/inactive	Channel – Controller	DPT 1.002	1 bit	C R T
Switch fan speed 1	Channel – Fan	DPT 1.001	1 bit	C W
Switch fan speed 2	Channel – Fan	DPT 1.001	1 bit	C W
Switch fan speed 3	Channel – Fan	DPT 1.001	1 bit	C W
Switch fan speed	Channel – Fan	DPT 5.001	1 byte	C W
Switch	Channel – Relay	DPT 1.001	1 bit	C W
Temperature	Channel – Input x	DPT 9.001	2 bytes	C R T
Window contact (master/slave)	Channel – Controller	DPT 1.019	1 bit	C W
Window contact	Channel – Input x	DPT 1.005	1 bit	C R T

8.2 Group objects, general

Function	Group object name	Data point type	Length	Flags
In operation	General	DPT 1.002	1 bit	C R T

This group object cyclically sends an In operation telegram on the bus (ABB i-bus® KNX). The sending cycle is set in parameter [Sending cycle](#). The telegram value depends on the setting in the parameter [Send value group object "In operation"](#).

Telegram value:

- 1 = Device in operation
- 0 = Device in operation

Note

Readiness can be monitored by another KNX device using this group object. If a telegram is not received, the sending device could be faulty or the bus cable to the transmitting device could be interrupted.

Prerequisites for visibility

- Parameter window [Basic settings](#) \ Parameter [Enable group object "In operation"](#) \ Option *Yes*

Status byte Device	General	Non DPT	1 byte	C R T

This group object sends the following status information on the bus (ABB i-bus® KNX):

- Bit 7: Unused
- Bit 6: Unused
- Bit 5: Safety mode (→ [Safety mode, Page 79](#))
 - 1 = Active
 - 0 = Inactive
- Bit 4: Manual operation
 - 1 = Active
 - 0 = Inactive
- Bit 3: Manual valve override
 - 1 = Active
 - 0 = Inactive
- Bit 2: Forced operation
 - 1 = Active
 - 0 = Inactive
- Bit 1: Building Protection (→ [Explanation of the operating modes, Page 296](#))
This bit is always 0 for an actuator device (→ [Device function, Page 159](#)).
 - 1 = Active
 - 0 = Inactive
- Bit 0: Operating mode override
This bit is always 0 for an actuator device (→ [Device function, Page 159](#)).
 - 1 = Active
 - 0 = Inactive

Note

The device is in safety mode after starting, because the controller has not yet received a valid temperature value.

Prerequisites for visibility

- This group object is always visible.

Request status values	General	DPT 1.017	1 bit	C W

If a telegram is received on this group object, the values of the status group objects are sent on the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Send status values
- 0 = Send status values

Note

The values of the status group objects are sent only if sending on request is set in the related parameters.

Prerequisites for visibility

- This group object is always visible.

Enable/block manual operation	General	DPT 1.003	1 bit	C W

The *Manual operation* mode is enabled/blocked using this group object.

If *Manual operation* mode is active, it will be ended and blocked with telegram value 0.

Telegram value:

- 1 = Enable manual operation
- 0 = End manual operation and block

Prerequisites for visibility

- Parameter window [Manual operation](#) \ Parameter [Manual operation](#) \ Option *Enabled*

Status Manual operation	General	DPT 1.011	1 bit	C R T

This group object sends the status of the *Manual operation* mode on the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Manual operation active
- 0 = Manual operation inactive

Prerequisites for visibility

- Parameter window [Manual operation](#) \ Parameter [Manual operation](#) \ Option *Enabled*

8.3 Group objects Channel – Fan

Function	Group object name	Data point type	Length	Flags
Status Fan On/Off	Channel – Fan	DPT 1.001	1 bit	C R T
<p>This group object sends the fan status on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Send status values [fan output]. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Fan On • 0 = Fan Off <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • This group object is always visible. 				
Status byte Fan	Channel – Fan	Non DPT	1 byte	C R T
<p>This group object sends the following status information on the bus (ABB i-bus® KNX):</p> <ul style="list-style-type: none"> • Bit 7: Unused • Bit 6: Automatic operation <ul style="list-style-type: none"> – 1 = Active – 0 = Inactive • Bit 5: Fan speed limited by limitation 3 <ul style="list-style-type: none"> – 1 = Active – 0 = Inactive • Bit 4: Fan speed limited by limitation 2 <ul style="list-style-type: none"> – 1 = Active – 0 = Inactive • Bit 3: Fan speed limited by limitation 1 <ul style="list-style-type: none"> – 1 = Active – 0 = Inactive • Bit 2: Forced operation <ul style="list-style-type: none"> – 1 = Active – 0 = Inactive • Bit 1: Fault on analog fan output (short circuit or overload). This bit is always 0 for devices with fan activation via relay output. <ul style="list-style-type: none"> – 1 = Error – 0 = No error • Bit 0: Status Fan <ul style="list-style-type: none"> – 1 = On – 0 = Off <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • This group object is always visible. 				
Status Fan automatic	Channel – Fan	DPT 1.011	1 bit	C R T
<p>This group object sends the status of fan automatic on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Send status values [fan output]. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Fan automatic active • 0 = Fan automatic inactive <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output <ul style="list-style-type: none"> – Parameter window Fan output (0 ... 10 V) \ Parameter Enable automatic mode based on control value [discrete speed fan] \ Option Yes or – Parameter window Fan output \ Parameter Enable automatic mode based on control value [discrete speed fan] \ Option Yes 				
Status Fan speed	Channel – Fan	DPT 5.001	1 byte	C R T
<p>This group object sends the fan speed status on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Send status values [fan output]. Telegram value for 3-speed fan:</p> <ul style="list-style-type: none"> • 0 % = Fan Off (0) • 33 % = Fan speed 1 (85) • 66 % = Fan speed 2 (170) • 100 % = Fan speed 3 (255) <p>Telegram value for 2-speed fan:</p> <ul style="list-style-type: none"> • 0 % = Fan Off (0) • 50 % = Fan speed 1 (128) • 100 % = Fan speed 2 (255) <p>Telegram value for 1-speed fan:</p> <ul style="list-style-type: none"> • 0 % = Fan Off (0) • 100 % = Fan speed 1 (255) <p>Telegram value for analog/continuous fan (corresponds to actual fan speed):</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • This group object is always visible. 				

Function	Group object name	Data point type	Length	Flags
Status Fan speed 1	Channel – Fan	DPT 1.001	1 bit	C R T
<p>This group object sends the status of fan speed 1 on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Send status values [fan output]. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Fan speed 1 On • 0 = Fan speed 1 Off 				
<p>Note If an analog fan output is used, fan speed 1 corresponds to an actual fan speed of 1 ... 33 %.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Switch fan speed via 1-bit group objects \ all options except <i>Deactivated</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output \ Parameter Switch fan speed via 1-bit group objects \ all options except <i>Deactivated</i> 				
Status Fan speed 2	Channel – Fan	DPT 1.001	1 bit	C R T
<p>This group object sends the status of fan speed 2 on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Send status values [fan output]. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Fan speed 2 On • 0 = Fan speed 2 Off 				
<p>Note If an analog fan output is used, fan speed 2 corresponds to an actual fan speed of 34 ... 66 %.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Switch fan speed via 1-bit objects \ All options except <i>Deactivated</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output <ul style="list-style-type: none"> – Parameter Number of fan speeds \ Option 2 / 3 – Parameter Switch fan speed via 1-bit objects \ all options except <i>Deactivated</i> 				
Status Fan speed 3	Channel – Fan	DPT 1.001	1 bit	C R T
<p>This group object sends the status of fan speed 3 on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Send status values [fan output]. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Fan speed 3 On • 0 = Fan speed 3 Off 				
<p>Note If an analog fan output is used, fan speed 3 corresponds to an actual fan speed of 67 ... 100 %.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Switch fan speed via 1-bit objects \ All options except <i>Deactivated</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output <ul style="list-style-type: none"> – Parameter Number of fan speeds \ Option 3 – Parameter Switch fan speed via 1-bit objects \ all options except <i>Deactivated</i> 				
Activate/deactivate fan automatic	Channel – Fan	DPT 1.003	1 bit	C W
<p>This group object is used to activate/deactivate fan automatic via the bus (ABB i-bus® KNX). Telegram value</p> <ul style="list-style-type: none"> • 1 = Activate fan automatic • 0 = Deactivate fan automatic 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Fan output Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Enable automatic mode based on control value [continuous fan] \ Option <i>Yes</i> <p>or</p> <ul style="list-style-type: none"> • Fan output Fan output \ Parameter window Fan output \ Parameter Enable automatic mode based on control value [discrete speed fan] \ Option <i>Yes</i> 				
Switch fan speed 1	Channel – Fan	DPT 1.001	1 bit	C W
<p>This group object is used to receive the command for switching fan speed 1 via the bus (ABB i-bus® KNX). If telegram value 1 is received on this group object, the speed is changed to fan speed 1. The reaction when telegram value 0 is received depends on the option set in the parameter Switch fan speed via 1-bit group objects:</p> <ul style="list-style-type: none"> • If the option Switch off to active 1-bit fan speed using "0" is selected, the fan is switched off only if the fan speed is active • If the option Switch off to any 1-bit fan speed using "0" is selected, the fan is switched off independently of the active fan speed. <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Switch on fan speed 1 • 0 = Depends on the setting in the parameter Switch fan speed via 1-bit group objects. 				
<p>Note If an analog fan output is used (FCC/S 1.3.x. 1 or 1.5.x. 1), the fan speed is set to 33 % when fan speed 1 is switched.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Switch fan speed via 1-bit group objects \ all options except <i>Deactivated</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output \ Parameter Switch fan speed via 1-bit group objects \ all options except <i>Deactivated</i> 				

Function	Group object name	Data point type	Length	Flags
Switch fan speed 2	Channel – Fan	DPT 1.001	1 bit	C W
<p>This group object is used to receive the command for switching fan speed 2 via the bus (ABB i-bus® KNX). If telegram value 1 is received on this group object, the speed is changed to fan speed 2. The reaction when telegram value 0 is received depends on the option set in the parameter Switch fan speed via 1-bit group objects:</p> <ul style="list-style-type: none"> • If the option <i>Switch off to active 1-bit fan speed using "0"</i> is selected, the fan is switched off only if the fan speed is active • If the option <i>Switch off to any 1-bit fan speed using "0"</i> is selected, the fan is switched off independently of the active fan speed. <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Switch on fan speed 2 • 0 = Depends on the setting in the parameter Switch fan speed via 1-bit group objects. 				
<p>Note If an analog fan output is used (FCC/S 1.3.x. 1 or 1.5.x. 1), the fan speed is set to 66 % when fan speed 2 is switched.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Switch fan speed via 1-bit objects \ All options except <i>Deactivated</i> or • Parameter window Fan output \ Parameter window Fan output <ul style="list-style-type: none"> – Parameter Number of fan speeds \ Option 2 / 3 – Parameter Switch fan speed via 1-bit objects \ all options except <i>Deactivated</i> 				
Switch fan speed 3	Channel – Fan	DPT 1.001	1 bit	C W
<p>This group object is used to receive the command for switching fan speed 3 via the bus (ABB i-bus® KNX). If telegram value 1 is received on this group object, the speed is changed to fan speed 3. The reaction when telegram value 0 is received depends on the option set in the parameter Switch fan speed via 1-bit group objects:</p> <ul style="list-style-type: none"> • If the option <i>Switch off to active 1-bit fan speed using "0"</i> is selected, the fan is switched off only if the fan speed is active • If the option <i>Switch off to any 1-bit fan speed using "0"</i> is selected, the fan is switched off independently of the active fan speed. <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Switch on fan speed 3 • 0 = Depends on the setting in the parameter Switch fan speed via 1-bit group objects. 				
<p>Note If an analog fan output is used (FCC/S 1.3.x. 1 or 1.5.x. 1), the fan speed is set to 100 % when fan speed 3 is switched.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Switch fan speed via 1-bit objects \ All options except <i>Deactivated</i> or • Parameter window Fan output \ Parameter window Fan output <ul style="list-style-type: none"> – Parameter Number of fan speeds \ Option 3 – Parameter Switch fan speed via 1-bit objects \ all options except <i>Deactivated</i> 				
Switch fan speed	Channel – Fan	DPT 5.001	1 byte	C W
<p>This group object is used to receive the fan speed to be set via the bus (ABB i-bus® KNX). Telegram value for 3-speed fan:</p> <ul style="list-style-type: none"> • 0 % = Fan Off (0) • 1 ... 33 % = Fan speed 1 (1 ... 85) • 34 ... 66 % = Fan speed 2 (86 ... 170) • 67 ... 100 % = Fan speed 3 (171 ... 255) <p>Telegram value for 2-speed fan:</p> <ul style="list-style-type: none"> • 0 % = Fan Off (0) • 1 ... 50 % = Fan speed 1 (1 ... 128) • 51 ... 100 % = Fan speed 2 (129 ... 255) <p>Telegram value for 1-speed fan:</p> <ul style="list-style-type: none"> • 0 % = Fan Off (0) • 1 ... 100 % = Fan speed 1 (1 ... 255) <p>Telegram value for analog/continuous fan (corresponds to actual fan speed):</p> <ul style="list-style-type: none"> • 0 ... 100 % 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • This group object is always visible. 				
Increase/decrease fan speed	Channel – Fan	DPT 1.007	1 bit	C W
<p>This group object is used to receive the command for increasing or decreasing the fan speed via the bus (ABB i-bus® KNX). When the maximum/minimum fan speed is reached, the corresponding telegrams are ignored. Limitations in the parameter Limitation of fan speed [discrete speed fan] are taken into account.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Increase fan speed • 0 = Decrease fan speed 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • This group object is always visible. 				
Limitation X	Channel – Fan	DPT 1.003	1 bit	C W
<p>These group objects are used to receive the limitation of the fan speed via the bus (ABB i-bus® KNX). If limitations are active, only the fan speed permitted in the parameter Limitation x (x = 1, 2, 3) can be set.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Activate limitation x • 0 = Cancel limitation x 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Fan output \ Parameter window Fan output (0 ... 10 V) \ Parameter Limitation of fan speed [discrete speed fan] \ Option <i>Activated</i> or • Parameter window Fan output \ Parameter window Fan output \ Parameter Limitation of fan speed [continuous fan] \ Option <i>Activated</i> 				

Function	Group object name	Data point type	Length	Flags
Fault fan output	Channel – Fan	DPT 1.005	1 bit	C R T

This group object sends a fan output fault message on the bus (ABB i-bus® KNX).
The send behavior depends on the setting in the parameter [Send status values \[fan output\]](#).
If there is a fault, output of the control value continues. The fault message remains active until the fault is rectified.
Telegram value:

- 1 = Fault
- 0 = No fault

Prerequisites for visibility

- Product variants:
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
 - FCC/S 1.5.1.1
 - FCC/S 1.5.2.1

8.4 Group objects Channel – Valve X

Function	Group object name	Data point type	Length	Flags
Status byte Valve X	Channel – Valve X	Non DPT	1 byte	C R T

This group object sends the following status information on the bus (ABB i-bus® KNX):

- Bit 7: Unused
- Bit 6: Unused
- Bit 5: Unused
- Bit 4: Unused
- Bit 3: Valve purge
 - 1 = Active
 - 0 = Inactive
- Bit 2: Forced operation
 - 1 = Active
 - 0 = Inactive
- Bit 1: Fault Valve output
 - 1 = Fault
 - 0 = No fault
- Bit 0: Setpoint/control value
 - 1 = Setpoint/control value not received
 - 0 = Setpoint/control value received

Note

If the *Deactivated* option is selected for one of the following parameters, bit 0 always has the value 0:

- [Monitor receipt of group object "Operating mode normal \(master\)"](#)
- [Monitor receipt of "Control value heating/cooling" group objects](#)

Prerequisites for visibility

- Parameter window [Valve X](#) \ Parameter window [Valve output X](#) \ Parameter [Valve output](#) \ all options except *Deactivated*
- or
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ all options except *Deactivated*

Function	Group object name	Data point type	Length	Flags
Status Control value valve X	Channel – Valve X	DPT 5.001	1 byte	C R T

This group object sends the valve status (active valve control value) on the bus (ABB i-bus® KNX).

The send behavior depends on the setting in the parameter [Send status values \[valve output\]](#).

Telegram value:

- 0 ... 100 %

Note

If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (e.g. 0x0001) or by changing to a different DPT (e.g. DPT 5.005) in the ETS.

Prerequisites for visibility

- Parameter window [Valve X](#) \ Parameter window [Valve output X](#) \ Parameter [Valve output](#) \ all options except *Deactivated*
- or
- Parameter window [Valve X](#) \ Parameter window [Valve output X \(0 ... 10 V\)](#) \ Parameter [Valve output \[0 ... 10 V\]](#) \ all options except *Deactivated*

Function	Group object name	Data point type	Length	Flags
Fault Valve output X	Channel – Valve X	DPT 1.005	1 bit	C R T

This group object sends a fault messages of the valve output on the bus (ABB i-bus® KNX).

The send behavior depends on the setting in the parameter [Send status values \[valve output\]](#).

If there is a fault, the output is switched off. The fault can be reset only via group object [Fault Reset valve output X](#).

Telegram value:

- 1 = Fault
- 0 = No fault

Note

If there is a fault on the valve output, on devices with manual operation via membrane keypad the following LEDs flash:

- *Switch valve output*
- *Open valve output* (if channel selected)

Prerequisites for visibility

- Parameter window [Valve X](#) \ Parameter window [Valve output X](#) \ Parameter [Valve output](#) \ all options except *Deactivated*

Function	Group object name	Data point type	Length	Flags
Status Valve purge X	Channel – Valve X	DPT 1.011	1 bit	C R T
<p>This group object sends the valve purge status on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter <i>Send value of group object "Status valve purge"</i>. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Valve purge active • 0 = Valve purge inactive <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X</i> \ Parameter <i>Valve output</i> \ all options except <i>Deactivated</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X (0 ... 10 V)</i> \ Parameter <i>Valve output [0 ... 10 V]</i> \ all options except <i>Deactivated</i> 				
Fault Reset valve output X	Channel – Valve X	DPT 1.015	1 bit	C W
<p>This group object is used to reset a fault on the valve output via the bus (ABB i-bus® KNX) (reset). Resetting is successful only if the fault has been rectified. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Reset fault • 0 = No reaction <p>Note A fault can be reset by restarting the device or by means of ETS reset as well.</p> <p>Note On devices with manual operation, a successful reset is indicated on the membrane keypad. More information → operating and display elements, corresponding sub-chapter of the individual product variant.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X</i> \ Parameter <i>Valve output</i> \ all options except <i>Deactivated</i> 				
Activate valve purge X	Channel – Valve X	DPT 1.017	1 bit	C W
<p>This group object is used to trigger a valve purge. More information: → Valve purge, Page 313. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Trigger valve purge • 0 = Trigger valve purge <p>Note If the valve purge is not performed due to a higher-priority function, the valve purge must be triggered again.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X</i> \ Parameter <i>Valve output</i> \ all options except <i>Deactivated</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X (0 ... 10 V)</i> \ Parameter <i>Valve output [0 ... 10 V]</i> \ all options except <i>Deactivated</i> 				
Enable/block manual valve override X	Channel – Valve X	DPT 1.003	1 bit	C W
<p>This group object is used to enable/block manual valve override via the bus (ABB i-bus® KNX). If manual valve override is enabled, the active valve control value is overridden with the value of group object <i>Override valve control value X</i>. If manual valve override is blocked, the following active valve control value applies. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Manual valve override enabled • 0 = Manual valve override blocked <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X</i> <ul style="list-style-type: none"> – Parameter <i>Valve output</i> \ all options except <i>Deactivated</i> – Parameter <i>Enable manual valve override</i> \ Option <i>Yes</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X (0 ... 10 V)</i> <ul style="list-style-type: none"> – Parameter <i>Valve output [0 ... 10 V]</i> \ all options except <i>Deactivated</i> – Parameter <i>Enable manual valve override</i> \ Option <i>Yes</i> 				
Override valve control value X	Channel – Valve X	DPT 5.001	1 byte	C W
<p>This group object is used to receive the setpoint for the manual valve override via the bus (ABB i-bus® KNX). The value in this group object becomes active only if the override has been enabled by the <i>Enable/block manual valve override X</i> group object. Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X</i> <ul style="list-style-type: none"> – Parameter <i>Valve output</i> \ all options except <i>Deactivated</i> – Parameter <i>Enable manual valve override</i> \ Option <i>Yes</i> <p>or</p> <ul style="list-style-type: none"> • Parameter window <i>Valve X</i> \ Parameter window <i>Valve output X (0 ... 10 V)</i> <ul style="list-style-type: none"> – Parameter <i>Valve output [0 ... 10 V]</i> \ all options except <i>Deactivated</i> – Parameter <i>Enable manual valve override</i> \ Option <i>Yes</i> 				

Function	Group object name	Data point type	Length	Flags
Control value VAV damper control X	Channel – Valve A	DPT 5.001	1 byte	C W T U

This group object sends the control value defined in the parameter *Voltage range for VAV damper control value* on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %



Note

If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (e.g. 0x0001) or by changing to a different DPT (e.g. 5.005) in the ETS.

Prerequisites for visibility

- Product variants:
 - FCC/S 1.2.1.1
 - FCC/S 1.2.2.1
 - FCC/S 1.3.1.1
 - FCC/S 1.3.2.1
- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Use as VAV damper output*

Function	Group object name	Data point type	Length	Flags
Fault Reset valve output X	Channel – Valve X	DPT 1.015	1 bit	C W

This group object is used to reset a fault on the valve output via the bus (ABB i-bus® KNX) (reset). Resetting is successful only if the fault has been rectified.

Telegram value:

- 1 = Reset fault
- 0 = No reaction



Note

A fault can be reset by restarting the device or by means of ETS reset as well.



Note

On devices with manual operation, a successful reset is indicated on the membrane keypad.
More information → operating and display elements, corresponding sub-chapter of the individual product variant.

Prerequisites for visibility

- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*

Function	Group object name	Data point type	Length	Flags
Fault Valve output X	Channel – Valve X	DPT 1.005	1 bit	C R T

This group object sends a fault messages of the valve output on the bus (ABB i-bus® KNX).

The send behavior depends on the setting in the parameter *Send status values [valve output]*.

The reaction during a fault depends on the setting in the parameter *Fault Reset valve output*:

- *Via group object*: If there is a fault, the valve output is switched off. The fault can be reset only via group object *Fault Reset valve output X*.
- *Automatic or via group object*: If there is a fault, output of the control value continues. The fault message remains active and can be reset only via group object *Fault Reset valve output X*.

Telegram value:

- 1 = Fault
- 0 = No fault



Note

If the option *Automatic or via group object* has been selected in the parameter *Fault Reset valve output*, the telegram value 1 does not necessarily mean that there is currently a fault. The fault message must be reset in all circumstances via group object *Fault Reset valve output X*. If a fault message occurs again after resetting, the installation should be checked.



Note

If there is a fault on the valve output, on devices with manual operation via membrane keypad the following LEDs flash:

- *Switch valve output*
- *Open valve output* (if channel selected)

Prerequisites for visibility

- Parameter window *Valve X* \ Parameter window *Valve output X (0 ... 10 V)* \ Parameter *Valve output [0 ... 10 V]* \ Option *Activated*

8.5 Group objects Channel – Relay

Function	Group object name	Data point type	Length	Flags
Status Relay	Channel – Relay	DPT 1.009	1 bit	C R T

This group object sends the status of the switching relay on the bus (ABB i-bus® KNX).

The send behavior depends on the setting in the parameter *Send status values [relay output]*.

Telegram value:

- Depends on the setting in the parameter *Value of group object "Status Relay"*

Prerequisites for visibility

- Parameter window *Relay output* \ Parameter *Relay output* \ Option *Activated*

Function	Group object name	Data point type	Length	Flags
Switch	Channel – Relay	DPT 1.001	1 bit	C W
<p>This group object is used to receive, via the bus (ABB i-bus® KNX), a switching command. The switching behavior depends on the setting in the parameter Reaction of output.</p> <p>NO contact telegram value:</p> <ul style="list-style-type: none"> • 1 = Close relay contact • 0 = Open relay contact <p>NC contact telegram value:</p> <ul style="list-style-type: none"> • 1 = Open relay contact • 0 = Close relay contact <p>Note To prevent the fan coil unit from overheating, relay switch-on with inactive fan can be deactivated in the parameter Switch relay output independently of fan speed (including when fan = 0).</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Switch relay output independently of fan speed (including when fan = 0) \ Option Yes • Parameter window Relay output \ Parameter Relay output \ Option Activated 				

8.6 Group objects Channel – General

Function	Group object name	Data point type	Length	Flags
Forced operation, 2-bit	Channel – General	DPT 2.001	2 bit	C W
<p>This group object is used to activate/deactivate 2-bit forced operation via the bus (ABB i-bus® KNX). Forced operation is activated/deactivated with bit 1. Bit 0 is used to toggle between the states <i>Forced operation active "ON"</i> and <i>Forced operation active "OFF"</i>. Valve and fan control values and the relay output cannot be controlled via KNX commands while forced operation is active.</p> <p>Telegram value (bit 1 bit 0):</p> <ul style="list-style-type: none"> • 0 0 = Forced operation inactive • 0 1 = Forced operation inactive • 1 0 = Forced operation active "OFF" • 1 1 = Forced operation active "ON" <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Monitoring and safety \ Parameter Forced operation \ Option Activated 2 bit 				
Forced operation, 1-bit	Channel – General	DPT 1.002	1 bit	C W
<p>This group object is used to activate/deactivate 1-bit forced operation via the bus (ABB i-bus® KNX). Valve and fan control values and the relay output cannot be controlled via KNX commands while forced operation is active.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • Depends on the setting in the parameter Forced operation <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Monitoring and safety \ Parameter Forced operation \ Option Activated 1 bit – 0 active / Activated 1 bit – 1 active 				
Error "Heating/cooling changeover" receipt	Channel – General	DPT 1.005	1 bit	C R T
<p>The group object sends the error status for the cyclical monitoring of the following group objects on the bus (ABB i-bus® KNX):</p> <ul style="list-style-type: none"> • Heating/cooling changeover • Heating/cooling changeover <p>The monitoring cycle is set in the parameter Time interval for cyclical monitoring.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Heating/cooling changeover \ Option Via group object / Via group object or via slave • Parameter window Monitoring and safety <ul style="list-style-type: none"> – Parameter Cyclical monitoring \ Option Activated – Parameter Monitor receipt of group object "Heating/cooling changeover" \ Option Activated 				
Error "Window contact" receipt	Channel – General	DPT 1.005	1 bit	C R T
<p>The group object sends the error status for the cyclical monitoring of the group object Window contact on the bus (ABB i-bus® KNX). The monitoring cycle is set in the parameter Time interval for cyclical monitoring.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option Controller – Parameter Window status receipt \ Option Via group object • Parameter window Monitoring and safety <ul style="list-style-type: none"> – Parameter Cyclical monitoring \ Option Activated – Parameter Monitor receipt of group object "Window contact" \ Option Activated 				

Function	Group object name	Data point type	Length	Flags
Error "Dew point alarm" receipt	Channel – General	DPT 1.005	1 bit	C R T
<p>The group object sends the error status for the cyclical monitoring of the group object <i>Dew point alarm</i> on the bus (ABB i-bus® KNX). The monitoring cycle is set in the parameter <i>Time interval for cyclical monitoring</i>. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Dew point status receipt</i> \ Option <i>Via group object</i> • Parameter window <i>Monitoring and safety</i> <ul style="list-style-type: none"> – Parameter <i>Cyclical monitoring</i> \ Option <i>Activated</i> – Parameter <i>Monitor receipt of group object "Dew point alarm"</i> \ Option <i>Activated</i> 				
Error "Fill level alarm" receipt	Channel – General	DPT 1.005	1 bit	C R T
<p>The group object sends the error status for the cyclical monitoring of the group object <i>Fill level alarm</i> on the bus (ABB i-bus® KNX). The monitoring cycle is set in the parameter <i>Time interval for cyclical monitoring</i>. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Fill level status receipt</i> \ Option <i>Via group object</i> • Parameter window <i>Monitoring and safety</i> <ul style="list-style-type: none"> – Parameter <i>Cyclical monitoring</i> \ Option <i>Activated</i> – Parameter <i>Monitor receipt of group object "Fill level alarm"</i> \ Option <i>Activated</i> 				
Error "Control value" receipt	Channel – General	DPT 1.005	1 bit	C R T
<p>The group object sends the error status for the cyclical monitoring of the following group objects on the bus (ABB i-bus® KNX):</p> <ul style="list-style-type: none"> • <i>Control value Heating</i> • <i>Control value Cooling</i> <p>The monitoring cycle is set in the parameter <i>Time interval for cyclical monitoring</i>. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Actuator device</i> • Parameter window <i>Monitoring and safety</i> <ul style="list-style-type: none"> – Parameter <i>Cyclical monitoring</i> \ Option <i>Activated</i> – Parameter <i>Monitor receipt of "Control value heating/cooling" group objects</i> \ Option <i>Activated</i> 				
Error "Operating mode" receipt	Channel – General	DPT 1.005	1 bit	C R T
<p>The group object sends the error status for the cyclical monitoring of the group object <i>Operating mode normal (master)</i> on the bus (ABB i-bus® KNX). The monitoring cycle is set in the parameter <i>Time interval for cyclical monitoring</i>. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> • Parameter window <i>Monitoring and safety</i> <ul style="list-style-type: none"> – Parameter <i>Cyclical monitoring</i> \ Option <i>Activated</i> – Parameter <i>Monitor receipt of group object "Operating mode normal (master)"</i> \ Option <i>Activated</i> 				

8.7 Group objects Channel – Input x

Function	Group object name	Data point type	Length	Flags
Temperature	Channel – Input x	DPT 9.001	2 bytes	C R T
<p>This group object sends the temperature value measured at the input on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter <i>Send temperature value</i>. Telegram value:</p> <ul style="list-style-type: none"> • -30 ... 110 °C <p>Note If an analog room control unit is connected to device input a, this group object is not available for device input a → <i>Connect analog room control unit to physical device input a</i>.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Input x</i> \ Parameter <i>Input</i> \ Option <i>Temperature sensor</i> 				

Function	Group object name	Data point type	Length	Flags
Error Input	Channel – Input x	DPT 1.005	1 bit	C R T
<p>This group object monitors receipt of a temperature value at the input and sends a message on the bus (ABB i-bus® KNX). Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Setpoint adjustment</i> \ Parameter <i>Connect analog room control unit to physical device input a</i> \ Option <i>Yes</i> or • Parameter window <i>Input x</i> \ Parameter <i>Input</i> \ Option <i>Temperature sensor</i> 				
Contact position binary input	Channel – Input x	DPT 1.001	1 bit	C R T
<p>This group object sends the contact position of the sensor connected to the binary input on the bus (ABB i-bus® KNX). Telegram value:</p> <ul style="list-style-type: none"> • Depends on the setting in the following parameters: <ul style="list-style-type: none"> – <i>Distinction between long and short operation</i> – <i>Input on operation</i> <p>Note If an analog room control unit is connected to device input a, this group object is not available for device input a → Connect analog room control unit to physical device input a.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Input x</i> \ Parameter <i>Input</i> \ Option <i>Binary input</i> 				
Window contact	Channel – Input x	DPT 1.005	1 bit	C R T
<p>This group object sends the contact position of the connected sensor on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter <i>Send status values [window contact]</i>. Telegram value:</p> <ul style="list-style-type: none"> • Depends on the setting in the parameter <i>Window open if [input x]</i> <p>Note If an analog room control unit is connected to device input a, this group object is not available for device input a → Connect analog room control unit to physical device input a.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Input x</i> \ Parameter <i>Input</i> \ Option <i>Window contact</i> 				
Dew point alarm	Channel – Input x	DPT 1.005	1 bit	C R T
<p>This group object sends the contact position of the connected sensor on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter <i>Send status values [dew point alarm]</i>. Telegram value:</p> <ul style="list-style-type: none"> • Depends on the setting in the parameter <i>Dew point reached if [input x]</i> <p>Note If an analog room control unit is connected to device input a, this group object is not available for device input a → Connect analog room control unit to physical device input a.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Input x</i> \ Parameter <i>Input</i> \ Option <i>Dew point sensor</i> 				
Fill level alarm	Channel – Input x	DPT 1.005	1 bit	C R T
<p>This group object sends the contact position of the connected sensor on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter <i>Send status values [fill level alarm]</i>. Telegram value:</p> <ul style="list-style-type: none"> • Depends on the setting in the parameter <i>Fill level reached if [input x]</i> <p>Note If an analog room control unit is connected to device input a, this group object is not available for device input a → Connect analog room control unit to physical device input a.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Input x</i> \ Parameter <i>Input</i> \ Option <i>Fill level sensor</i> 				
Block input	Channel – Input x	DPT 1.003	1 bit	C W
<p>This group object is used to block the physical input x. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Block input • 0 = Enable input <p>Note The block on the input is canceled after ETS reset, bus voltage recovery or download.</p> <p>Note If an analog room control unit is connected to device input a, this group object is not available for device input a → Connect analog room control unit to physical device input a.</p> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Input x</i> <ul style="list-style-type: none"> – Parameter <i>Input</i> \ Option <i>Binary input</i> – Parameter <i>Enable group object "Block input"</i> \ Option <i>Yes</i> 				

8.8 Group objects Channel – Controller

Function	Group object name	Data point type	Length	Flags
Status Heating/cooling	Channel – Controller	DPT 1.100	1 bit	C R T
<p>This group object sends the status <i>Heating/cooling</i> on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Heating • 0 = Cooling 				
<p>Note</p> <p>If the device is operated as a controller (master) and controls an actuator (slave), the actuator (slave) is switched between <i>Heating</i> and <i>Cooling</i> via this group object.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Type of heating/cooling system</i> \ Option <i>4-pipe</i> – Parameter <i>Heating/cooling changeover</i> \ Options <i>Automatic / Via group object or via slave</i> 				
Status Control value basic-stage heating	Channel – Controller	DPT 5.001	1 byte	C R T
<p>This group object sends the control value for basic-stage heating on the bus (ABB i-bus® KNX).</p> <p>The data point type depends on the option selected in the parameter <i>Basic-stage heating [controller]</i> and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option <i>Free configuration</i> is selected.</p> <p>Output is via a 1-byte value (DPT 5.001) with the following control types:</p> <ul style="list-style-type: none"> • 2-point 1 byte (0/100 %) • PI continuous (0 ... 100 %) • PI continuous (0 ... 100 %) for fan coil <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % 				
<p>Note</p> <p>If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (e.g. 0x0001) or by changing to a different DPT (e.g. DPT 5.005) in the ETS.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ Option <i>Convactor (e.g. radiator) / Area heating (e.g. floor) / Free configuration / Water heating coil (in fan coil unit)</i> 				
Status Control value basic-stage heating	Channel – Controller	DPT 1.001	1 bit	C R T
<p>This group object sends the control value for basic-stage heating on the bus (ABB i-bus® KNX).</p> <p>The data point type depends on the option selected in the parameter <i>Basic-stage heating [controller]</i> and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option <i>Free configuration</i> is selected.</p> <p>Output is via a 1-bit value (DPT 1.001) for the following control types:</p> <ul style="list-style-type: none"> • 2-point 1 bit (On/Off) • PI PWM (On/Off) <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = On • 0 = Off 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ Option <i>Electric heater (in room) / Free configuration / Electric heater (in fan coil unit)</i> 				
Status Control value additional-stage heating	Channel – Controller	DPT 5.001	1 byte	C R T
<p>This group object sends the control value for additional-stage heating on the bus (ABB i-bus® KNX).</p> <p>The data point type depends on the option selected in the parameter <i>Additional-stage heating</i> and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option <i>Free configuration</i> is selected.</p> <p>Output is via a 1-byte value (DPT 5.001) with the following control types:</p> <ul style="list-style-type: none"> • 2-point 1 byte (0/100 %) • PI continuous (0 ... 100 %) • PI continuous (0 ... 100 %) for fan coil <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % 				
<p>Note</p> <p>If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (e.g. 0x0001) or by changing to a different DPT (e.g. DPT 5.005) in the ETS.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Additional-stage heating</i> \ Option <i>Convactor (e.g. radiator) / Area heating (e.g. floor) / Free configuration / Water heating coil (in fan coil unit)</i> 				

Function	Group object name	Data point type	Length	Flags
Status Control value additional-stage heating	Channel – Controller	DPT 1.001	1 bit	C R T

This group object sends the control value for additional-stage heating on the bus (ABB i-bus® KNX).

The data point type depends on the option selected in the parameter [Additional-stage heating](#) and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option *Free configuration* is selected.

Output is via a 1-bit value (DPT 1.001) for the following control types:

- 2-point 1 bit (On/Off)
- PI PWM (On/Off)

Telegram value:

- 1 = On
- 0 = Off

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage heating \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage heating](#) \ Option *Electric heater (in room) / Free configuration / Electric heater (in fan coil unit)*

Status Control value basic-stage cooling	Channel – Controller	DPT 5.001	1 byte	C R T
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This group object sends the control value for basic-stage cooling on the bus (ABB i-bus® KNX).

The data point type depends on the option selected in the parameter [Basic-stage cooling \[controller\]](#) and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option *Free configuration* is selected.

Output is via a 1-byte value (DPT 5.001) with the following control types:

- 2-point 1 byte (0/100 %)
- PI continuous (0 ... 100 %)
- PI continuous (0 ... 100 %) for fan coil

Telegram value:

- 0 ... 100 %



Note

If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (e.g. 0x0001) or by changing to a different DPT (e.g. DPT 5.005) in the ETS.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ Option *Area cooling (e.g. cooling ceiling) / Free configuration / Water cooling coil (in fan coil unit)*

Status Control value basic-stage cooling	Channel – Controller	DPT 1.001	1 bit	C R T
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This group object sends the control value for basic-stage cooling on the bus (ABB i-bus® KNX).

The data point type depends on the option selected in the parameter [Basic-stage cooling \[controller\]](#) and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option *Free configuration* is selected.

Output is via a 1-bit value (DPT 1.001) for the following control types:

- 2-point 1 bit (On/Off)
- PI PWM (On/Off)

Telegram value:

- 1 = On
- 0 = Off

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ Option *Free configuration*

Status Control value additional-stage cooling	Channel – Controller	DPT 5.001	1 byte	C R T
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This group object sends the control value for additional-stage cooling on the bus (ABB i-bus® KNX).

The data point type depends on the option selected in the parameter [Additional-stage cooling](#) and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option *Free configuration* is selected.

Output is via a 1-byte value (DPT 5.001) with the following control types:

- 2-point 1 byte (0/100 %)
- PI continuous (0 ... 100 %)
- PI continuous (0 ... 100 %) for fan coil

Telegram value:

- 0 ... 100 %



Note

If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (e.g. 0x0001) or by changing to a different DPT (e.g. DPT 5.005) in the ETS.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Controller*
 - Parameter [Basic-stage cooling \[controller\]](#) \ all options except *Deactivated*
 - Parameter [Additional-stage cooling](#) \ Option *Area cooling (e.g. cooling ceiling) / Free configuration / Water cooling coil (in fan coil unit)*

Function	Group object name	Data point type	Length	Flags
Status Control value additional-stage cooling	Channel – Controller	DPT 1.001	1 bit	C R T
<p>This group object sends the control value for additional-stage cooling on the bus (ABB i-bus® KNX). The data point type depends on the option selected in the parameter Additional-stage cooling and the associated control type. A control type is preset depending on the option. Any control type can be selected if the option <i>Free configuration</i> is selected. Output is via a 1-bit value (DPT 1.001) for the following control types:</p> <ul style="list-style-type: none"> • 2-point 1 bit (On/Off) • PI PWM (On/Off) <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = On • 0 = Off <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option <i>Controller</i> – Parameter Basic-stage cooling [controller] \ all options except <i>Deactivated</i> – Parameter Additional-stage cooling \ Option <i>Free configuration</i> 				
Actual temperature	Channel – Controller	DPT 9.001	2 bytes	C R T
<p>This group object sends the actual temperature value of the controller on the bus (ABB i-bus® KNX). The send behavior depends on the setting in the parameter Cycle for sending the room temperature (0 = deactivated). The actual temperature value is determined from the following values:</p> <ul style="list-style-type: none"> • Average of the values measured over the physical device inputs • Values received on the group objects External temperature 1 and External temperature 2. These values can be weighted with the parameters Weighting of external measurement 1 and Weighting of external measurement 2. <p>Telegram value:</p> <ul style="list-style-type: none"> • -30 ... 110 °C <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note This group object can also be used for display on control units and visual display systems.</p> </div> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> 				
External temperature 1	Channel – Controller	DPT 9.001	2 bytes	C W T U
<p>This group object is used to receive a temperature value via the bus (ABB i-bus® KNX). This value is included in the determination of the actual temperature (room temperature). Telegram value:</p> <ul style="list-style-type: none"> • -273 ... 670760 °C <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note The value of this group object is evaluated each time the device is restarted.</p> </div> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option <i>Controller</i> – Parameter Actual temperature receipt \ Option <i>Via group object / Via phys. device input or group object</i> 				
External temperature 2	Channel – Controller	DPT 9.001	2 bytes	C W T U
<p>This group object is used to receive a temperature value via the bus (ABB i-bus® KNX). This value is included in the determination of the actual temperature (room temperature). Telegram value:</p> <ul style="list-style-type: none"> • -273 ... 670760 °C <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note The value of this group object is evaluated each time the device is restarted.</p> </div> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option <i>Controller</i> – Parameter Actual temperature receipt \ Option <i>Via group object / Via phys. device input or group object</i> – Parameter Number of group objects Actual temperature \ Option <i>2</i> 				
Fault Actual temperature (master)	Channel – Controller	DPT 1.005	1 bit	C R T
<p>This group object sends the error status of the cyclical monitoring of the temperature input (physical device input or group object) on the bus (ABB i-bus® KNX). The telegram with the current status is sent after every change. Telegram value:</p> <ul style="list-style-type: none"> • 1 = Error • 0 = No error <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p> </div> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> • Parameter window Monitoring and safety <ul style="list-style-type: none"> – Parameter Cyclical monitoring \ Option <i>Activated</i> – Parameter Temperature input monitoring \ all options except <i>Deactivated</i> 				

Function	Group object name	Data point type	Length	Flags
Current setpoint	Channel – Controller	DPT 9.001	2 bytes	C R T

This group object sends the current setpoint temperature for the active operating mode (*heating/cooling*) on the bus (ABB i-bus® KNX).

The setpoint temperature value consists of the following values:

- Current operating mode
- Manual setpoint adjustment

The following settings influence this group object:

- Manual setpoint adjustment
- Operating mode changes
- Basic setpoint temperature change
- Change of the setpoint temperature of the operating modes

Telegram value:

- 5 ... 45 °C

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*

Function	Group object name	Data point type	Length	Flags
Operating mode normal (master)	Channel – Controller	DPT 20.102	1 byte	C W T U

This group object is used to receive the operating mode to be set via the bus (ABB i-bus® KNX).

More information: → [Explanation of the operating modes, Page 296](#)

Telegram value:

- 1 = Comfort
- 2 = Standby
- 3 = Economy
- 4 = Building Protection

Note

The controller's setpoint temperature value is influenced by the following factors (listed in descending order of priority):

- Manual setpoint adjustment
- Overriding of basic setpoint
- Overriding of operating mode
- Fill level alarm
- Dew point alarm
- Window contact
- Control On/Off
- Presence detector
- Operating mode

Note

If a slave is used:

This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*

Function	Group object name	Data point type	Length	Flags
Operating mode override (master)	Channel – Controller	DPT 20.102	1 byte	C W T U

This group object is used to receive the override of the operating mode via the bus (ABB i-bus® KNX). All other priorities, except for the reaction on bus voltage failure, are overridden as well.

Telegram value:

- 0 = Automatic/no override
- 1 = Comfort
- 2 = Standby
- 3 = Economy
- 4 = Building Protection

Note

This group object can be used to override a malfunction in the connected sensor (e.g. faulty window contact) that would cause the operating mode to change.

Note

For the device to react to adjustment by the user, this group object must be set to telegram value 0 (Automatic/no override).

Note

The controller's setpoint temperature value is influenced by the following factors (listed in descending order of priority):

- Manual setpoint adjustment
- Overriding of basic setpoint
- Overriding of operating mode
- Fill level alarm
- Dew point alarm
- Window contact
- Control On/Off
- Presence detector
- Operating mode

Note

If a slave is used:

This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*

Function	Group object name	Data point type	Length	Flags
Window contact (master/slave)	Channel – Controller	DPT 1.019	1 bit	C W
<p>This group object is used to receive the window status via the bus (ABB i-bus® KNX). Operating mode <i>Building Protection</i> is activated when telegram value 1 is received. A higher-priority group object can override the operating mode.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Window open • 0 = Window closed 				
<p>Note The controller's setpoint temperature value is influenced by the following factors (listed in descending order of priority):</p> <ul style="list-style-type: none"> • Manual setpoint adjustment • Overriding of basic setpoint • Overriding of operating mode • Fill level alarm • Dew point alarm • Window contact • Control On/Off • Presence detector • Operating mode 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Window status receipt</i> \ Option <i>Via group object</i> 				
Presence detector (master/slave)	Channel – Controller	DPT 1.018	1 bit	C W
<p>This group object is used to receive the presence status (person in the room) via the bus (ABB i-bus® KNX). Operating mode <i>Comfort</i> is activated when telegram value 1 is received. The operating mode set via group object <i>Operating mode normal (master)</i> is activated when telegram value 0 is received. A higher-priority group object can override the operating mode.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Room occupied • 0 = Room vacant 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> 				
Status Heating	Channel – Controller	DPT 1.001	1 bit	C R T
<p>This group object sends the status of the control value Heating on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Control value Heating > 0 • 0 = Control value Heating = 0 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> 				
Status Cooling	Channel – Controller	DPT 1.001	1 bit	C R T
<p>This group object sends the status of the control value Cooling on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Control value Cooling > 0 • 0 = Control value Cooling = 0 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> 				
Activate minimum control value (basic load)	Channel – Controller	DPT 1.003	1 bit	C W
<p>This group object is used to receive the activation of the basic load via the bus (ABB i-bus® KNX). The basic load is defined in the parameter <i>Min. control value (basic load)</i> and it can be parametrized individually for each heating and cooling stage if the control value for the respective control type is output as a percentage.</p> <p>The basic load is always activated jointly for all stages, but it is applicable only to the active operating mode <i>Heating</i> or <i>Cooling</i>.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Basic load active • 0 = Basic load inactive 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> • Parameter window <i>Temperature controller</i> \ Parameter <i>Minimum control value for basic load > 0</i> \ Option <i>Activate via group object</i> 				

Function	Group object name	Data point type	Length	Flags
Heating/cooling changeover	Channel – Controller	DPT 1.100	1 bit	C W T U

This group object is used to switch the operating mode (*heating/cooling*) via the bus (ABB i-bus® KNX).
 If, in the parameter *Heating/cooling changeover*, the option *Via group object or via slave* is set, switching can be performed via this group object or via a slave.

Telegram value:

- 1 = Heating
- 0 = Cooling

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Heating/cooling changeover* \ Option *Via group object / Via group object or via slave*

Basic setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
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This group object is used to receive the adjustment of the basic setpoint via the bus (ABB i-bus® KNX).
 The basic setpoint is defined in the parameter *Base setpoint is* and it can be changed by a temperature value received on this group object. This temperature value is limited to the valid value range (10 ... 40 °C).

More information: → [Basic setpoint, Page 295](#).

Telegram value:

- 10 ... 40 °C

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint manager* \ Parameter *Setpoint specification and adjustment* \ Option *Relative*

Reset manual setpoint adjustment	Channel – Controller	DPT 1.017	1 bit	C W
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This group object is used to reset manual setpoint adjustment via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Reset manual setpoint adjustment
- 0 = Reset manual setpoint adjustment

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters* \ Parameter *Device function* \ Option *Controller*
- Parameter window *Setpoint adjustment*
 - Parameter *Connect analog room control unit to physical device input a* \ Option *No*
 - Parameter *Reset manual setpoint adjustment via group object* \ Option *Yes*

Dew point alarm	Channel – Controller	DPT 1.005	1 bit	C W T U
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This group object is used to receive the dew point status via the bus (ABB i-bus® KNX). Operating mode *Building Protection* is activated when telegram value 1 is received.

Telegram value:

- 1 = Dew point alarm active
- 0 = Dew point alarm inactive



Note

The alarm is valid as long as the device is in *Cooling* mode or until the alarm is canceled by reception of the value 0.
 The operating mode is recalculated upon the change to *Heating* operating mode.
 A higher-priority group object can override the operating mode.
 The controller's setpoint temperature value is influenced by the following factors (listed in descending order of priority):

- Manual setpoint adjustment
- Overriding of basic setpoint
- Overriding of operating mode
- Fill level alarm
- Dew point alarm
- Window contact
- Control On/Off
- Presence detector
- Operating mode



Note

If a slave is used:
 To determine the operating mode on a slave, this group object must be connected to the corresponding group object of the slave.

Prerequisites for visibility

- Parameter window *Application* \ Parameter window *Application parameters*
 - Parameter *Device function* \ Option *Controller*
 - Parameter *Basic-stage heating [controller]* \ all options except *Deactivated*
 - Parameter *Basic-stage cooling [controller]* \ all options except *Deactivated*
 - Parameter *Dew point status receipt* \ Option *Via group object*

Function	Group object name	Data point type	Length	Flags
Fill level alarm	Channel – Controller	DPT 1.005	1 bit	C W T U
<p>This group object is used to receive the fill level status via the bus (ABB i-bus® KNX). Operating mode <i>Building Protection</i> is activated when telegram value 1 is received.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Fill level alarm active • 0 = Fill level alarm inactive 				
<p>Note</p> <p>The alarm is valid as long as the device is in <i>Cooling</i> mode or until the alarm is canceled by reception of the value 0. The operating mode is recalculated upon the change to <i>Heating</i> operating mode. A higher-priority group object can override the operating mode. The controller's setpoint temperature value is influenced by the following factors (listed in descending order of priority):</p> <ul style="list-style-type: none"> • Manual setpoint adjustment • Overriding of basic setpoint • Overriding of operating mode • Fill level alarm • Dew point alarm • Window contact • Control On/Off • Presence detector • Operating mode 				
<p>Note</p> <p>If a slave is used: To determine the operating mode on a slave, this group object must be connected to the corresponding group object of the slave.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Fill level status receipt</i> \ Option <i>Via group object</i> 				
Outside temperature for summer compensation	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive the outside temperature via the bus (ABB i-bus® KNX) in order to calculate and activate summer compensation. More information: → Summer compensation, Page 310.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • -273 ... 670760 °C 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> • Parameter window <i>Setpoint manager</i> \ Parameter <i>Activate summer compensation</i> \ Option <i>Yes</i> 				
Summer compensation active/inactive	Channel – Controller	DPT 1.002	1 bit	C R T
<p>This group object sends the status of summer compensation on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Summer compensation active • 0 = Summer compensation inactive 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> • Parameter window <i>Setpoint manager</i> \ Parameter <i>Activate summer compensation</i> \ Option <i>Yes</i> 				
Comfort setpoint reached	Channel – Controller	DPT 1.002	1 bit	C R T
<p>This group object sends the status of the setpoint Comfort on the bus (ABB i-bus® KNX). This group object sends a telegram when Comfort operating mode is activated. This group object sends telegram value 0 when the operating mode is changed or a new setpoint is set.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Comfort setpoint reached • 0 = Comfort setpoint not reached 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> 				
Request On/Off (master)	Channel – Controller	DPT 1.001	1 bit	C W
<p>This group object is used to activate/deactivate control via the bus (ABB i-bus® KNX). The controller changes to operating mode <i>Building Protection</i> when telegram value 0 is received. If the setpoints for <i>Building Protection</i> have not yet been reached, the control is shut down. All control values are set to 0. Control is activated when the setpoints for <i>Building Protection</i> are reached or when telegram value 1 is received. In master/slave mode, the slave can send the request to switch off control to the controller (master) via this group object. Confirmation is provided via the group object <i>Confirm On/Off (master)</i>.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Activate control (On) • 0 = Deactivate control (Off) 				
<p>Note</p> <p>If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> \ Parameter <i>Device function</i> \ Option <i>Controller</i> 				

Function	Group object name	Data point type	Length	Flags
Confirm On/Off (master)	Channel – Controller	DPT 1.001	1 bit	C R T
<p>This group object sends the control status on the bus (ABB i-bus® KNX). Telegram value:</p> <ul style="list-style-type: none"> • 1 = Control active (On) • 0 = Control inactive (Off) 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller 				
Setpoint display (master)	Channel – Controller	DPT 9.002	2 bytes	C R T
<p>This group object sends the current setpoint on the bus (ABB i-bus® KNX). This group object can be used for synchronization between the controller (master) and the slave as well. Telegram value:</p> <ul style="list-style-type: none"> • -273 ... 670760 K 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller 				
Request setpoint adjustment (master)	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment via the bus (ABB i-bus® KNX). The setpoint adjustment must lie within the permitted setpoint range; see following parameters:</p> <ul style="list-style-type: none"> • Max. manual increase in heating mode via KNX • Max. manual reduction in heating mode via KNX • Max. manual increase in cooling mode via KNX • Max. manual reduction in cooling mode via KNX <p>If the required temperature is outside the permitted setpoint range, the maximum/minimum possible value is set. The master device checks the value received and returns the set value via group object Confirm setpoint adjustment (master). The data point type of the group object depends on the setting in the parameter Data point type, manual setpoint adjustment. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller • Parameter window Setpoint adjustment <ul style="list-style-type: none"> – Parameter Connect analog room control unit to physical device input a \ Option No – Parameter Data point type, manual setpoint adjustment \ Option DPT 9.001 (absolute temperature value) 				
Request setpoint adjustment (master)	Channel – Controller	DPT 9.002	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment via the bus (ABB i-bus® KNX). The setpoint adjustment must lie within the permitted setpoint range; see following parameters:</p> <ul style="list-style-type: none"> • Max. manual increase in heating mode via KNX • Max. manual reduction in heating mode via KNX • Max. manual increase in cooling mode via KNX • Max. manual reduction in cooling mode via KNX <p>If the required temperature is outside the permitted setpoint range, the maximum/minimum possible value is set. The master device checks the value received and returns the set value via group object Confirm setpoint adjustment (master). The data point type of the group object depends on the setting in the parameter Data point type, manual setpoint adjustment. Telegram value:</p> <ul style="list-style-type: none"> • -9 ... 9 K 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller • Parameter window Setpoint adjustment <ul style="list-style-type: none"> – Parameter Connect analog room control unit to physical device input a \ Option No – Parameter Data point type, manual setpoint adjustment \ Option DPT 9.002 (relative temperature value) 				

Function	Group object name	Data point type	Length	Flags
Request setpoint adjustment (master)	Channel – Controller	DPT 6.010	1 byte	C W

This group object is used to receive a setpoint adjustment via the bus (ABB i-bus® KNX).

The setpoint adjustment must lie within the permitted setpoint range; see following parameters:

- [Max. manual increase in heating mode via KNX](#)
- [Max. manual reduction in heating mode via KNX](#)
- [Max. manual increase in cooling mode via KNX](#)
- [Max. manual reduction in cooling mode via KNX](#)

If the required temperature is outside the permitted setpoint range, the maximum/minimum possible value is set. The master device checks the value received and returns the set value via group object [Confirm setpoint adjustment \(master\)](#).

The data point type of the group object depends on the setting in the parameter [Data point type, manual setpoint adjustment](#).

Telegram value:

- -128 ... 127

Note

If a slave is used:

This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- Parameter window [Setpoint adjustment](#)
 - Parameter [Connect analog room control unit to physical device input a](#) \ Option *No*
 - Parameter [Data point type, manual setpoint adjustment](#) \ Option *DPT 6.010 (meter pulses)*

Confirm setpoint adjustment (master)	Channel – Controller	DPT 9.001	2 bytes	C R T
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This group object sends the confirmation of the setpoint adjustment on the bus (ABB i-bus® KNX) as was requested via group object [Request setpoint adjustment \(master\)](#).

The data point type of the group object depends on the setting in the parameter [Data point type, manual setpoint adjustment](#).

Telegram value:

- 10 ... 40 °C

Note

If a slave is used:

This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- Parameter window [Setpoint adjustment](#)
 - Parameter [Connect analog room control unit to physical device input a](#) \ Option *No*
 - Parameter [Data point type, manual setpoint adjustment](#) \ Option *DPT 9.001 (absolute temperature value)*

Confirm setpoint adjustment (master)	Channel – Controller	DPT 9.002	2 bytes	C R T
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This group object sends the confirmation of the setpoint adjustment on the bus (ABB i-bus® KNX) as was requested via group object [Request setpoint adjustment \(master\)](#).

The data point type of the group object depends on the setting in the parameter [Data point type, manual setpoint adjustment](#).

Telegram value:

- -9 ... 9 K

Note

If a slave is used:

This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- Parameter window [Setpoint adjustment](#)
 - Parameter [Connect analog room control unit to physical device input a](#) \ Option *No*
 - Parameter [Data point type, manual setpoint adjustment](#) \ Option *DPT 9.002 (relative temperature value)*

Confirm setpoint adjustment (master)	Channel – Controller	DPT 6.010	1 byte	C R T
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This group object sends the confirmation of the setpoint adjustment on the bus (ABB i-bus® KNX) as was requested via group object [Request setpoint adjustment \(master\)](#).

The data point type of the group object depends on the setting in the parameter [Data point type, manual setpoint adjustment](#).

Telegram value:

- -128 ... 127

Note

If a slave is used:

This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#) \ Parameter [Device function](#) \ Option *Controller*
- Parameter window [Setpoint adjustment](#)
 - Parameter [Connect analog room control unit to physical device input a](#) \ Option *No*
 - Parameter [Data point type, manual setpoint adjustment](#) \ Option *DPT 6.010 (meter pulses)*

Function	Group object name	Data point type	Length	Flags
Request heating/cooling (master)	Channel – Controller	DPT 1.100	1 bit	C W
This group object is used to receive the heating/cooling status via the bus (ABB i-bus® KNX) and to synchronize the controller (master) with the slave. Telegram value:				
<ul style="list-style-type: none"> • 1 = Heating • 0 = Cooling 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option Controller – Parameter Basic-stage heating [controller] \ all options except Deactivated – Parameter Basic-stage cooling [controller] \ all options except Deactivated – Parameter Heating/cooling changeover \ Option Via group object or via slave 				
Request fan manually (master)	Channel – Controller	DPT 1.001	1 bit	C W
This group object is used to receive the request to activate the manual fan adjustment via the bus (ABB i-bus® KNX). Telegram value:				
<ul style="list-style-type: none"> • 1 = Activate manual adjustment • 0 = Deactivate manual adjustment 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller • Parameter window Setpoint adjustment \ Parameter Connect analog room control unit to physical device input a \ Option No 				
Confirm fan manually (master)	Channel – Controller	DPT 1.001	1 bit	C R T
This group object sends confirmation of the completed fan adjustment on the bus (ABB i-bus® KNX). Telegram value:				
<ul style="list-style-type: none"> • 1 = Manual adjustment activated • 0 = Manual adjustment deactivated 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller • Parameter window Setpoint adjustment \ Parameter Connect analog room control unit to physical device input a \ Option No 				
Request fan speed (master)	Channel – Controller	DPT 5.001	1 byte	C W
This group object is used to receive the adjustment of the fan speed via the bus (ABB i-bus® KNX). The data point type of the group object depends on the setting in the parameter Data point type, manual fan adjustment . Telegram value:				
<ul style="list-style-type: none"> • 0 ... 100 % 				
<p>Note If limitations are active for the fan, it might not be possible to set the required fan speed.</p>				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller • Parameter window Setpoint adjustment <ul style="list-style-type: none"> – Parameter Connect analog room control unit to physical device input a \ Option No – Parameter Data point type, manual fan adjustment \ Option DPT 5.001 (percentage value) 				
Request fan speed (master)	Channel – Controller	DPT 5.010	1 byte	C W
This group object is used to receive the adjustment of the fan speed via the bus (ABB i-bus® KNX). The data point type of the group object depends on the setting in the parameter Data point type, manual fan adjustment . Telegram value:				
<ul style="list-style-type: none"> • 0 ... 255 				
<p>Note If limitations are active for the fan, it might not be possible to set the required fan speed.</p>				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Controller • Parameter window Setpoint adjustment <ul style="list-style-type: none"> – Parameter Connect analog room control unit to physical device input a \ Option No – Parameter Data point type, manual fan adjustment \ Option DPT 5.010 (meter pulses) 				

Function	Group object name	Data point type	Length	Flags
Confirm fan speed (master)	Channel – Controller	DPT 5.001	1 byte	C R T
<p>This group object sends the confirmation of the adjustment of the fan speed on the bus (ABB i-bus® KNX) as was requested via group object Request fan speed (master).</p> <p>The data point type of the group object depends on the setting in the parameter Data point type, manual fan adjustment.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> Parameter window Setpoint adjustment <ul style="list-style-type: none"> Parameter Connect analog room control unit to physical device input a \ Option <i>No</i> Parameter Data point type, manual fan adjustment \ Option <i>DPT 5.001 (percentage value)</i> 				
Confirm fan speed (master)	Channel – Controller	DPT 5.010	1 byte	C R T
<p>This group object sends the confirmation of the adjustment of the fan speed on the bus (ABB i-bus® KNX) as was requested via group object Request fan speed (master).</p> <p>The data point type of the group object depends on the setting in the parameter Data point type, manual fan adjustment.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 255 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> Parameter window Setpoint adjustment <ul style="list-style-type: none"> Parameter Connect analog room control unit to physical device input a \ Option <i>No</i> Parameter Data point type, manual fan adjustment \ Option <i>DPT 5.010 (meter pulses)</i> 				
Status Controller RHCC	Channel – Controller	DPT 22.101	2 bytes	C R T
<p>This group object sends the following items of status information (according to the specification for the RHCC status) on the bus (ABB i-bus® KNX):</p> <ul style="list-style-type: none"> Operating mode <i>Heating/cooling</i> Operation <i>active/inactive</i> Status <i>Building Protection</i> Fault (failure of actual-temperature measurement) 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> 				
Controller Status HVAC (master)	Channel – Controller	DPT 5.001	1 byte	C R T
<p>This group object sends the following status information on the bus (ABB i-bus® KNX):</p> <ul style="list-style-type: none"> Operating mode <i>Heating/cooling</i> Operation <i>active/inactive</i> Status Frost and dew point alarm Operating mode 				
<p>Note If a slave is used: This group object must be connected to the corresponding group object of the slave to ensure the functionality of master/slave operation.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> 				
Current HVAC operating mode	Channel – Controller	DPT 20.102	1 byte	C R T
<p>This group object sends the HVAC operating mode on the bus (ABB i-bus® KNX) after evaluation of all priorities and influences.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Comfort 2 = Standby 3 = Economy 4 = Building Protection 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option <i>Controller</i> 				
Comfort heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Comfort heating</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter Comfort heating setpoint. The overridden setpoint is limited to the valid value range (10 ... 40 °C). Manual setpoint adjustment acts on the overridden setpoint.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 10 ... 40 °C 				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> Parameter Device function \ Option <i>Controller</i> Parameter Basic-stage heating [controller] \ all options except <i>Deactivated</i> Parameter window Setpoint manager \ Parameter Setpoint specification and adjustment \ Option <i>Absolute</i> 				

Function	Group object name	Data point type	Length	Flags
Setpoint Comfort heating/cooling	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Comfort heating/cooling</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Comfort heating and cooling setpoint</i>. The overridden setpoint is limited to the valid value range (10 ... 40 °C). Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> <ul style="list-style-type: none"> – Parameter <i>Comfort heating setpoint = Comfort cooling setpoint</i> \ Option <i>Yes</i> – Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Comfort cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Comfort cooling</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Comfort cooling setpoint</i>. The overridden setpoint is limited to the valid value range (10 ... 40 °C). Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> \ Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Economy heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Economy heating</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Economy heating setpoint</i>. The overridden setpoint is limited to the valid value range (10...40 °C) and limited by the value <i>Comfort heating</i>. Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> <ul style="list-style-type: none"> – Parameter <i>Operating modes</i> \ Option <i>Comfort, Standby, Economy, Building Protection</i> – Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Economy cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Economy cooling</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Economy cooling setpoint</i>. The overridden setpoint is limited to the valid value range (10...40 °C) and limited by the value <i>Comfort cooling</i>. Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> <ul style="list-style-type: none"> – Parameter <i>Operating modes</i> \ Option <i>Comfort, Standby, Economy, Building Protection</i> – Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Standby heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Standby heating</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Standby heating setpoint</i>. The overridden setpoint is limited to the valid value range (10...40 °C) and limited by the value <i>Comfort heating</i>. Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> <ul style="list-style-type: none"> – Parameter <i>Operating modes</i> \ Option <i>Comfort, Standby, Economy, Building Protection / Comfort, Standby, Building Protection</i> – Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				

Function	Group object name	Data point type	Length	Flags
Standby cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Standby cooling</i> via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Standby cooling setpoint</i>. The overridden setpoint is limited to the valid value range (10...40 °C) and limited by the value <i>Comfort cooling</i>. Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 10 ... 40 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> <ul style="list-style-type: none"> – Parameter <i>Operating modes</i> \ Option <i>Comfort, Standby, Economy, Building Protection / Comfort, Standby, Building Protection</i> – Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Building Protection heating setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Building Protection heating</i> (frost protection) via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Setpoint for frost protection (building protection, heating)</i>. The overridden setpoint is limited to the valid value range (5...15 °C) and limited by the value <i>Comfort heating</i>. Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 5 ... 15 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> \ Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Building Protection cooling setpoint	Channel – Controller	DPT 9.001	2 bytes	C W
<p>This group object is used to receive a setpoint adjustment for the operating mode <i>Building Protection cooling</i> (heat protection) via the bus (ABB i-bus® KNX). This group object overrides the value set in the parameter <i>Heat protection setpoint (building protection, cooling)</i>. The overridden setpoint is limited to the valid value range (27 ... 45 °C) and limited by the value <i>Comfort cooling</i>. Manual setpoint adjustment acts on the overridden setpoint. Telegram value:</p> <ul style="list-style-type: none"> • 27 ... 45 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage cooling [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Setpoint manager</i> \ Parameter <i>Setpoint specification and adjustment</i> \ Option <i>Absolute</i> 				
Basic-stage heating limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
<p>This group object is used to receive the limit temperature for basic-stage heating via the bus (ABB i-bus® KNX). The limitation is activated when the received temperature value exceeds the temperature set in the parameter <i>[Heating] limit temperature</i>. Telegram value:</p> <ul style="list-style-type: none"> • -273 ... 670760 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> • Parameter window <i>Temperature controller</i> \ Parameter window <i>Basic-stage heating</i> <ul style="list-style-type: none"> – Parameter <i>Extended settings</i> \ Option <i>Yes</i> – Parameter <i>Activate temperature limitation</i> \ Option <i>Yes</i> – Parameter <i>Input for temperature limit sensor</i> \ Option <i>Via group object</i> 				
Additional-stage heating limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
<p>This group object is used to receive the limit temperature for additional-stage heating via the bus (ABB i-bus® KNX). The limitation is activated when the received temperature value exceeds the temperature set in the parameter <i>[Heating] limit temperature</i>. Telegram value:</p> <ul style="list-style-type: none"> • -273 ... 670760 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window <i>Application</i> \ Parameter window <i>Application parameters</i> <ul style="list-style-type: none"> – Parameter <i>Device function</i> \ Option <i>Controller</i> – Parameter <i>Basic-stage heating [controller]</i> \ all options except <i>Deactivated</i> – Parameter <i>Additional-stage heating</i> \ all options except <i>Deactivated</i> • Parameter window <i>Temperature controller</i> \ Parameter window <i>Additional-stage heating</i> <ul style="list-style-type: none"> – Parameter <i>Extended settings</i> \ Option <i>Yes</i> – Parameter <i>Activate temperature limitation</i> \ Option <i>Yes</i> – Parameter <i>Input for temperature limit sensor</i> \ Option <i>Via group object</i> 				

Function	Group object name	Data point type	Length	Flags
Basic-stage cooling limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
<p>This group object is used to receive the limit temperature for basic-stage cooling via the bus (ABB i-bus® KNX). The limitation is activated when the received temperature value falls below the temperature set in the parameter Limit temperature [cooling]. Telegram value:</p> <ul style="list-style-type: none"> -273 ... 670760 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> Parameter Device function \ Option Controller Parameter Basic-stage cooling [controller] \ all options except Deactivated Parameter window Temperature controller \ Parameter window Basic-stage cooling <ul style="list-style-type: none"> Parameter Extended settings \ Option Yes Parameter Activate temperature limitation \ Option Yes Parameter Input for temperature limit sensor \ Option Via group object 				
Additional-stage cooling limit temperature	Channel – Controller	DPT 9.001	2 bytes	C W T U
<p>This group object is used to receive the limit temperature for additional-stage cooling via the bus (ABB i-bus® KNX). The limitation is activated when the received temperature value falls below the temperature set in the parameter Limit temperature [cooling]. Telegram value:</p> <ul style="list-style-type: none"> -273 ... 670760 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> Parameter Device function \ Option Controller Parameter Basic-stage cooling [controller] \ all options except Deactivated Parameter Additional-stage cooling \ all options except Deactivated Parameter window Temperature controller \ Parameter window Additional-stage cooling <ul style="list-style-type: none"> Parameter Extended settings \ Option Yes Parameter Activate temperature limitation \ Option Yes Parameter Input for temperature limit sensor \ Option Via group object 				

8.9 Group objects Channel –Actuator

Function	Group object name	Data point type	Length	Flags
Heating/cooling changeover	Channel – Actuator	DPT 1.100	1 bit	C W T U
<p>This group object is used to receive the change of the operating mode (<i>heating/cooling</i>) via the bus (ABB i-bus® KNX). The operating mode is switched in actuator mode exclusively via this group object. Telegram value:</p> <ul style="list-style-type: none"> 1 = Heating 0 = Cooling <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> Parameter Device function \ Option Actuator device Parameter Basic-stage heating [actuator] \ Option Water heating coil (in fan coil unit) Parameter Basic-stage cooling [actuator] \ Option Water cooling coil (in fan coil unit) 				
Request setpoint adjustment (slave)	Channel – Actuator	DPT 9.002	2 bytes	C R T
<p>This group object sends a setpoint adjustment on the bus (ABB i-bus® KNX). The data point type of the group object depends on the setting in the parameter Data point type, manual setpoint adjustment. Telegram value:</p> <ul style="list-style-type: none"> -9 ... 9 K <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note This group object must be connected to the corresponding group object of the controller (master) to ensure master/slave operation functionality.</p> </div> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Actuator device Parameter window Setpoint adjustment <ul style="list-style-type: none"> Parameter Connect analog room control unit to physical device input a \ Option Yes Parameter Data point type, manual setpoint adjustment \ Option DPT 9.002 (relative temperature value) 				
Request setpoint adjustment (slave)	Channel – Actuator	DPT 6.010	1 byte	C R T
<p>This group object sends a setpoint adjustment on the bus (ABB i-bus® KNX). The data point type of the group object depends on the setting in the parameter Data point type, manual setpoint adjustment. Telegram value:</p> <ul style="list-style-type: none"> -128 ... 127 °C <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note This group object must be connected to the corresponding group object of the controller (master) to ensure master/slave operation functionality.</p> </div> <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Actuator device Parameter window Setpoint adjustment <ul style="list-style-type: none"> Parameter Connect analog room control unit to physical device input a \ Option Yes Parameter Data point type, manual setpoint adjustment \ Option DPT 6.010 (meter pulses) 				

Function	Group object name	Data point type	Length	Flags
Request fan manually (slave)	Channel – Actuator	DPT 1.001	1 bit	C R T
<p>This group object sends the request to activate the manual fan adjustment via the bus (ABB i-bus® KNX). Telegram value:</p> <ul style="list-style-type: none"> • 1 = Activate manual adjustment • 0 = Deactivate manual adjustment 				
<p>Note This group object must be connected to the corresponding group object of the controller (master) to ensure master/slave operation functionality.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option Actuator device – Parameter Connect analog room control unit to physical device input a \ Option Yes 				
Confirm fan manually (slave)	Channel – Actuator	DPT 1.001	1 bit	C W
<p>This group object is used to receive confirmation of completed manual fan adjustment via the bus (ABB i-bus® KNX). Telegram value:</p> <ul style="list-style-type: none"> • 1 = Manual adjustment activated • 0 = Manual adjustment deactivated 				
<p>Note Because the analog control unit is used only for adjustment, feedback cannot be displayed via this group object. However, feedback is required for proper functioning of the device.</p>				
<p>Note In case of actuator mode with analog control unit connected, discrepancies between the display and the device reaction can occur. If an adjustment is made on a different KNX control unit, the change is sent to the actuator to which the analog control unit is connected. The analog control unit cannot receive this information and make the adjustment, however. The indication on the analog control unit is not updated. This problem can be avoided if the device to which the analog control unit is connected is used in the actuator mode. In this situation, there are no other KNX control units via which adjustments can be made.</p>				
<p>Note This group object must be connected to the corresponding group object of the controller (master) to ensure master/slave operation functionality.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Actuator device • Parameter window Setpoint adjustment \ Parameter Connect analog room control unit to physical device input a \ Option Yes 				
Request fan speed (slave)	Channel – Actuator	DPT 5.001	1 byte	C R T
<p>This group object sends a fan speed adjustment on the bus (ABB i-bus® KNX). The data point type of the group object depends on the setting in the parameter Data point type, manual fan adjustment. Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % 				
<p>Note This group object must be connected to the corresponding group object of the controller (master) to ensure master/slave operation functionality.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option Actuator device – Parameter Connect analog room control unit to physical device input a \ Option Yes • Parameter window Setpoint adjustment \ Parameter Data point type, manual fan adjustment \ Option DPT 5.001 (percentage value) 				
Request fan speed (slave)	Channel – Actuator	DPT 5.010	1 byte	C R T
<p>This group object sends a fan speed adjustment on the bus (ABB i-bus® KNX). The data point type of the group object depends on the setting in the parameter Data point type, manual fan adjustment. Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 255 				
<p>Note This group object must be connected to the corresponding group object of the controller (master) to ensure master/slave operation functionality.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters \ Parameter Device function \ Option Actuator device • Parameter window Setpoint adjustment <ul style="list-style-type: none"> – Parameter Connect analog room control unit to physical device input a \ Option Yes – Parameter Data point type, manual fan adjustment \ Option DPT 5.010 (meter pulses) 				
Control value Heating	Channel – Actuator	DPT 5.001	1 byte	C W T U
<p>This group object is used to receive the control value Heating via the bus (ABB i-bus® KNX). This control value is output via the selected output in operating mode <i>Heating</i>. Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % 				
<p>Note If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (this is then e.g. 0x0001) or by changing to a different DPT (e.g. 5.005) in the ETS.</p>				
<p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Application \ Parameter window Application parameters <ul style="list-style-type: none"> – Parameter Device function \ Option Actuator device – Parameter Basic-stage heating [actuator] \ Option Water heating coil (in fan coil unit) 				

Function	Group object name	Data point type	Length	Flags
Control value Cooling	Channel – Actuator	DPT 5.001	1 byte	C W T U

This group object is used to receive the control value Cooling via the bus (ABB i-bus® KNX). This control value is output via the selected output in operating mode *Cooling*.

Telegram value:

- 0 ... 100 %



Note

If DPT 5.001 (percentage) is used for the activation, the value displayed for the group object may vary from the actual value due to rounding differences. The actual value of the group object can be seen by viewing the hexadecimal value (this is then e.g. 0x0001) or by changing to a different DPT (e.g. 5.005) in the ETS.

Prerequisites for visibility

- Parameter window [Application](#) \ Parameter window [Application parameters](#)
 - Parameter [Device function](#) \ Option *Actuator device*
 - Parameter [Basic-stage cooling \[actuator\]](#) \ Option *Water cooling coil (in fan coil unit)*

9 Operation

i Note

The device cannot be operated manually.

9.1 Manual operation

i Note

Operation via the membrane keypad is available and functions identically for all devices FCC/S 1.X.2.1.

i Note

Bear the following points in mind for manual operation:

- Values calculated by the controller or received via the bus (ABB i-bus® KNX) will be overridden.
- Forced operation and safety priorities of the device cannot be overridden.
- Override of the individual function becomes active only after the function has been changed for the first time using the associated button.

Example

The fan reacts to the valve control value in automatic operation until the *Fan speed* button is pressed for the first time.

Manual operation facilitates on-site operation of the device. Manual operation is enabled as standard and can be switched on and off using the *Manual operation* button.

The group object *Status Manual operation* indicates whether manual operation is enabled/blocked.

The device is in *KNX operation* after connection to the bus, bus voltage recovery, ETS download or ETS reset. The LED is off.

Complete overview of the control elements → [Product overview, Page 12](#).

9.1.1 Activating manual operation

- ▶ Press and hold the *Manual operation* button for 5 seconds.
- ⇒ The yellow LED is lit.

9.1.2 Blocking manual operation

The *Manual operation* mode can be blocked in various ways:

- Via the parameter *Manual operation*.
- Via the group object *Enable/block manual operation*.

9.1.3 Ending manual operation

- ▶ Briefly press the *Manual operation* button.
- ⇒ The yellow LED is off.

All changes will become invalid when manual operation is deactivated.

10 Maintenance and cleaning

10.1 Maintenance

The device is maintenance-free if used properly. In the event of damage, e.g. during transport and/or storage, repairs are not allowed to be made.

10.2 Cleaning

1. Disconnect the device from the electrical power supply before cleaning.
2. Clean dirty devices using a dry cloth or a slightly damp cloth.

11 Removal and disposal

11.1 Removal

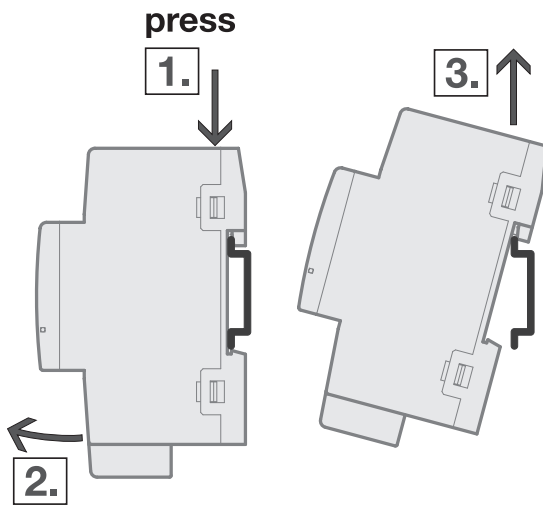


Fig. 52: Removing from the mounting rail

1. Press on the top of the device.
2. Release the bottom of the device from the mounting rail.
3. Lift the device up and off the mounting rail.

11.2 Environment

Consider environmental protection.

Electrical and electronic devices must not be disposed of as domestic waste.



The device contains valuable resources that can be recycled. Therefore, please take the device to a suitable recycling center. All packaging materials and devices are provided with markings and test seals for proper disposal. Always dispose of packaging material and electrical devices or their components at collection points or disposal companies authorized for this purpose. The products comply with the statutory requirements, particularly the law on electrical and electronic equipment and the REACH regulation. (EU directive 2012/19/EU WEEE and 2011/65/EU RoHS) (EU REACH regulation and the law implementing the regulation (EC) no.1907/2006)

12 Planning and application

12.1 Priorities

12.1.1 Priorities for controller mode

Valve

- a) Bus voltage failure
- b) Operating mode overridden
- c) Safety mode → [Safety mode, Page 79](#)
- d) Forced operation
- e) i-bus® Tool
- f) Operating mode *Manual operation* (only FCC/S 1.X.2.1)
- g) Manual valve override
- h) Controller mode via group object *Operating mode normal (master)* (optional: *Presence detector (master/slave)*)
- i) Bus voltage recovery

Fan

- a) Bus voltage failure
- b) Operating mode overridden
- c) Safety mode → [Safety mode, Page 79](#)
- d) Forced operation
- e) i-bus® Tool
- f) Operating mode *Manual operation* (only FCC/S 1.X.2.1)
- g) Manual fan adjustment (incl. limitation)
- h) Automatic mode via control value
- i) Bus voltage recovery

Relay

- a) Bus voltage failure
- b) Operating mode overridden (only if the relay is used for control; no other influence)
- c) Safety mode (only if the relay is used for control; no other influence) → [Safety mode, Page 79](#)
- d) Forced operation
- e) i-bus® Tool
- f) Operating mode *Manual operation* (only FCC/S 1.X.2.1)
- g) Manual relay control
- h) Automatic mode via control value (only if the relay is used for control; no other influence)
- i) Bus voltage recovery

12.1.2 Priorities for actuator mode

Valve

- a) Bus voltage failure
- b) Forced operation
- c) i-bus® Tool
- d) Operating mode *Manual operation* (only FCC/S 1.X.2.1)
- e) Manual valve override
- f) Actuator mode via group objects
- g) Bus voltage recovery

Fan

- a) Bus voltage failure
- b) Forced operation
- c) i-bus® Tool
- d) Operating mode *Manual operation* (only FCC/S 1.X.2.1)
- e) Manual fan adjustment (incl. limitation)
- f) Automatic mode via control value
- g) Bus voltage recovery

Relay

- a) Bus voltage failure
- b) Forced operation
- c) i-bus® Tool
- d) Operating mode *Manual operation* (only FCC/S 1.X.2.1)
- e) Manual relay control
- f) Bus voltage recovery

12.2 Basic knowledge

12.2.1 2-pipe and 4-pipe systems

2-pipe system

In a 2-pipe system, one pipe is used to supply the heating/cooling devices with warm or cold water. Only one operating mode (*Heating/Cooling*) can be active in the complete system. Switching between *Heating* and *Cooling* is performed centrally in this system. The device receives information about the current operating mode via the bus (ABB i-bus® KNX).

4-pipe system

In a 4-pipe system, two separate pipes are used to supply the heating/cooling devices with warm or cold water. The separate pipes permit switching between heating mode and cooling mode. Switching between *Heating* and *Cooling* is performed centrally via the bus (ABB i-bus® KNX) or is controlled by the controller.

12.2.2 Evaluation of the thresholds

The device evaluates the thresholds in ascending order:

- 1) *Threshold value fan speed 0 <-> 1*
- 2) *Threshold value fan speed 1 <-> 2*
- 3) *Threshold value fan speed 2 <-> 3*

To ensure that the device functions properly, the thresholds must be set as follows:

- *Threshold value fan speed 0 <-> 1* less than *Threshold value fan speed 1 <-> 2*
- *Threshold value fan speed 1 <-> 2* less than *Threshold value fan speed 2 <-> 3*

12.2.3 Basic setpoint

The basic setpoint can be used to change the operating modes *Comfort*, *Standby* and *Economy* via the bus (ABB i-bus® KNX).

The base setpoint shifts the setpoint for the *Comfort* operating mode. The value to which the base setpoint corresponds (*Comfort heating* or *Comfort cooling*) is defined in the parameter *Base setpoint is*.

By changing the base setpoint, the setpoints assigned to the *Standby* and *Economy* operating modes are also shifted. The relative distances between the setpoints remain unchanged. The setpoints for the *Building Protection* operating modes are not influenced.

The change to the base setpoint applies to both operating modes (*Heating/Cooling*).

i Note

If only the *Heating* operating mode or *Cooling* operating mode is configured, the base setpoint corresponds to the respective *Comfort* setpoint.

12.2.4 Explanation of the operating modes

The operating modes are used to adjust the setpoint temperatures to the actual room or building utilization. Switchover between the operating modes usually takes place via a central schedule or via Intelligent Building Control. The settings for the operating modes and the setpoints assigned are made in the parameter window *Setpoint manager*.

The change between the operating modes takes place via group object *Operating mode normal (master)*.

Comfort

The operating mode *Comfort* is used if the room is actively utilized (e.g. people in the room). In operating mode *Comfort*, the controller attempts to reach the specified room temperature by heating or cooling.

If a presence detector is used, the change from the current operating mode to *Comfort* can additionally be performed via group object *Presence detector (master/slave)*.

Standby

The operating mode *Standby* is used to prepare for active room utilization (e.g. before the start of lessons in schools). If the room is not utilized briefly (e.g. if the room is left or during breaks), the operating mode *Standby* can also be used. In operating mode *Standby*, the actual temperature may deviate by a set value from the Comfort temperature. This deviation is usually 2 ... 3 K. Heating or cooling is activated if the deviation is exceeded or fallen below.

i Note

The operating mode *Standby* can be used as an intermediate stage during the change from *Economy* to *Comfort*.

Example

The operating mode *Economy* is used for automatic nighttime reduction. If it can be anticipated when the Comfort temperature must be reached, the operating mode *Standby* can be used as an intermediate stage. With the intermediate stage, the Comfort temperature is reached sooner at the required time.

Economy

In the operating mode *Economy*, the actual temperature may deviate by a set value from the Comfort temperature. This deviation is usually 5 ... 6 K. Heating or cooling is activated if the deviation is exceeded or fallen below.

Unlike the operating mode *Standby*, the operating mode *Economy* is used only if there is no utilization for an extended time (e.g. on weekends).

Building Protection

The operating mode *Building Protection* is activated to save energy and nevertheless prevent damage to the building due to cooling/heating if the building is not used for an extended period. Similarly as in the operating modes *Standby* and *Economy*, the temperature may decrease/increase to a value that can be parameterized.

The operating mode *Building Protection* can be activated via the following group objects:

- *Dew point alarm*
- *Fill level alarm*
- *Window contact (master/slave)*
- *Operating mode normal (master)*

A difference of at least 2 K is recommended for the setpoint temperature levels for *Comfort*, *Standby* and *Economy*. The difference in relation to the setpoint temperatures for *Building Protection* should be greater.

Example

Operating mode	Setpoint temperature (standard values)
Heat Protection (Building Protection cooling)	35 °C
Economy Cooling	29 °C
Standby Cooling	27 °C
Comfort Cooling	25 °C
Comfort Heating	21 °C
Standby Heating	19 °C
Economy Heating	17 °C
Frost Protection (Building Protection heating)	7 °C

Tab. 100: Setpoint temperatures for the operating modes

12.2.4.1

Operating modes and influencing factors

The following diagram shows the relationship between the specified operating mode and the priorities of the influencing factors in the room that can override the operating mode set.

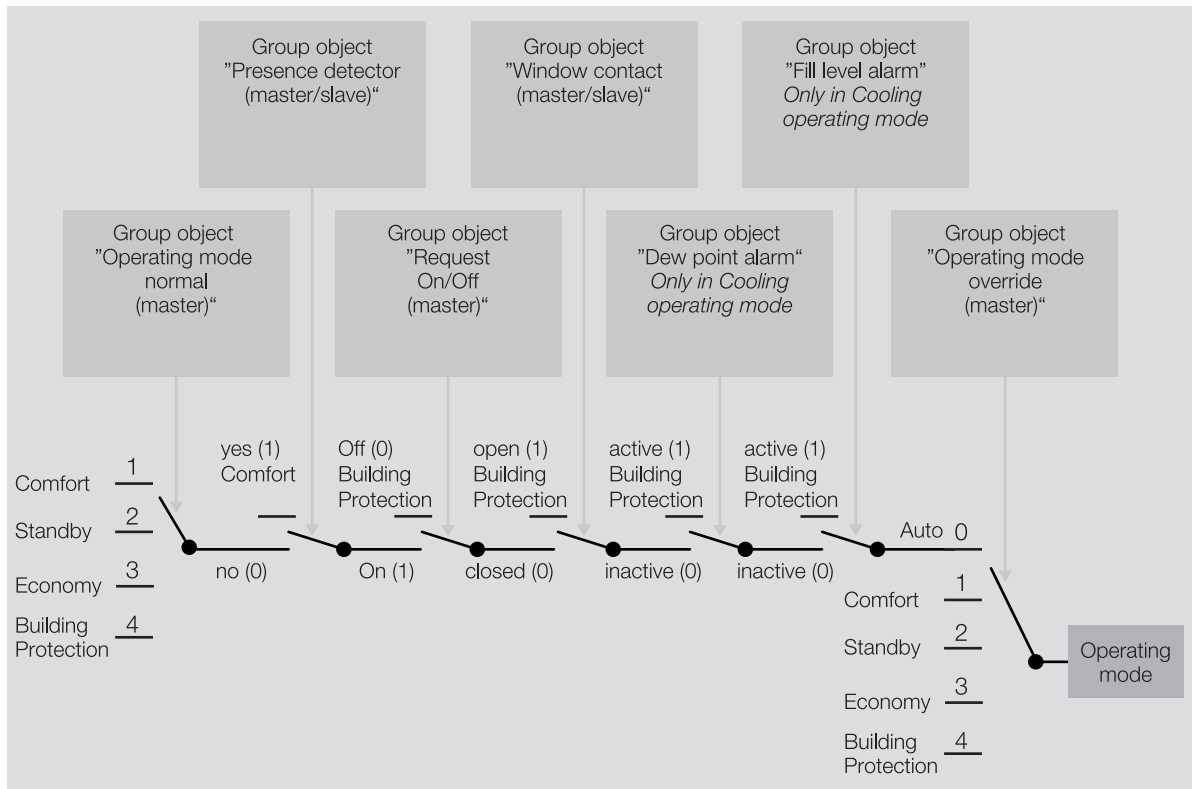


Fig. 53: Operating modes and priorities of the influencing factors

Example

The operating mode Comfort is specified in the group object *Operating mode normal (master)*.

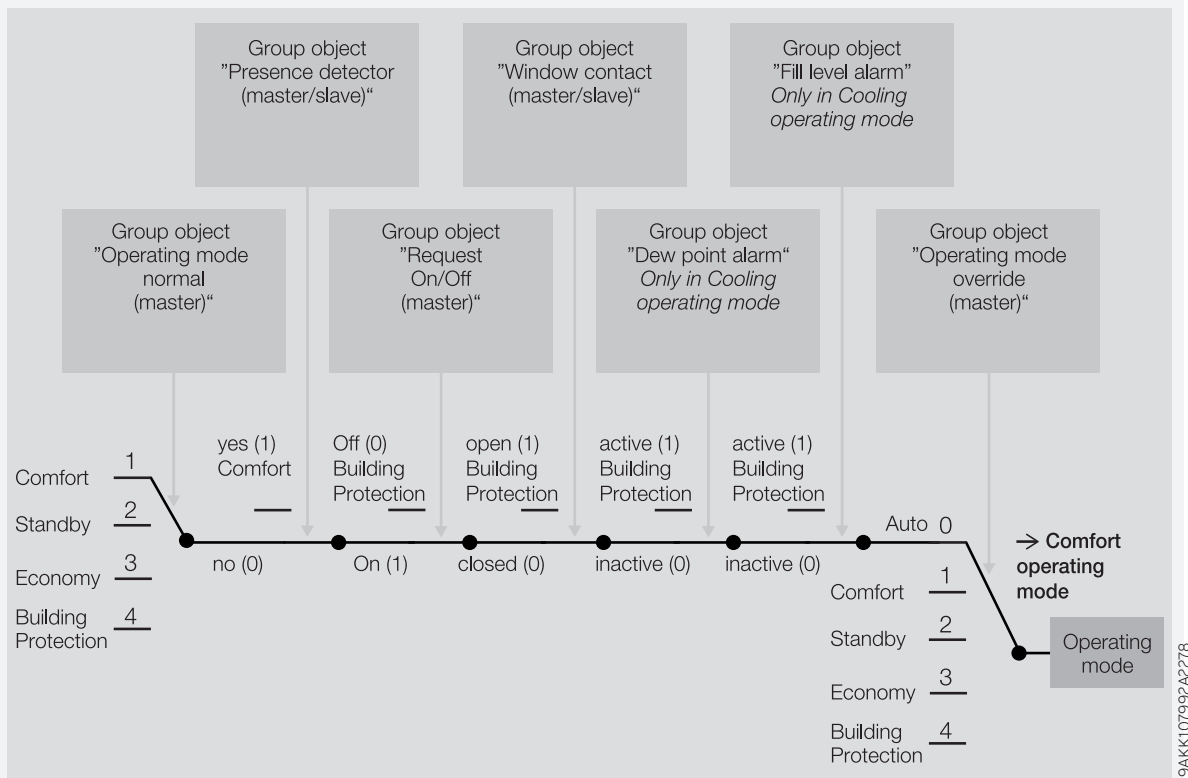


Fig. 54: Operating mode Comfort

Example

The operating mode Building Protection is set by overriding the operating mode specified via the group object *Window contact (master/slave)*.

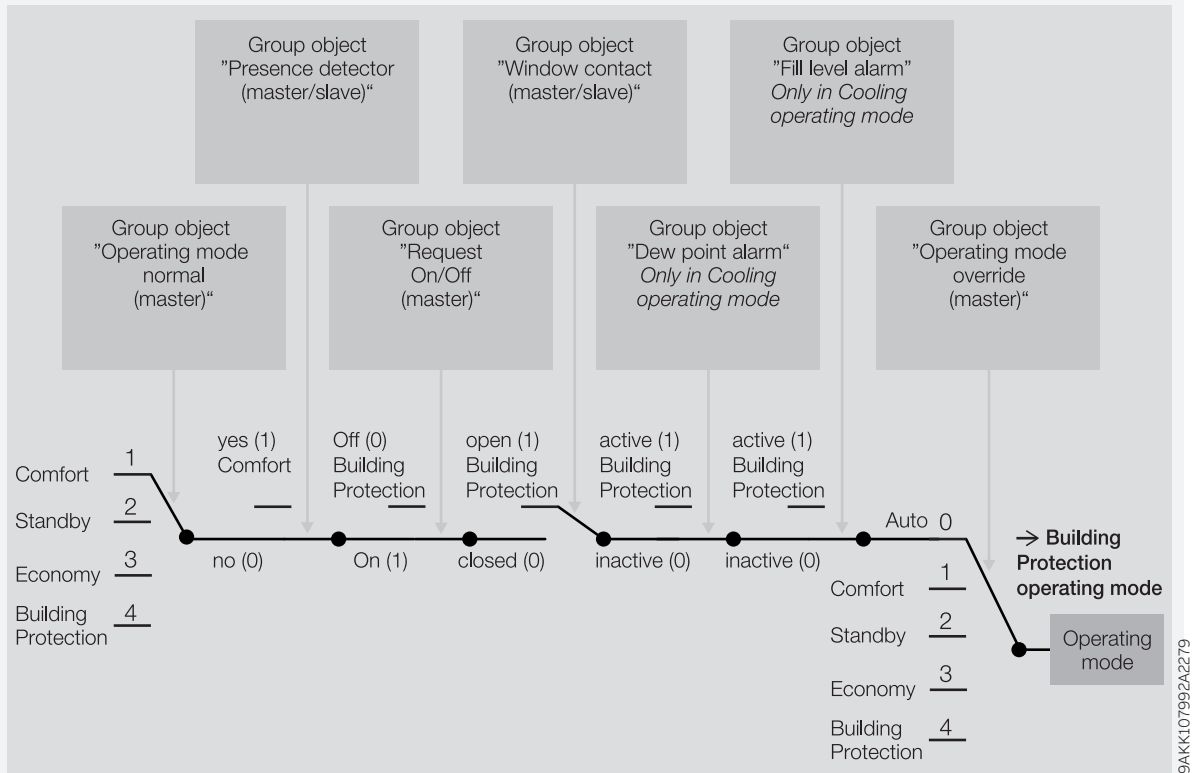


Fig. 55: Operating mode Building Protection

12.2.5

Weighting of the temperature inputs

If the actual temperature is acquired via several temperature inputs, the values acquired can have different weightings. The weighting can be set in the following parameters:

- *Weighting of internal measurement*
- *Weighting of external measurement 1*
- *Weighting of external measurement 2*

If several internal measured values are acquired (multiple temperature sensors connected to physical device inputs), the measured values are averaged automatically.

Case 1: All measured values are weighted equally.

If all measured values are weighted equally, a mean value is determined from the received temperature values. The mean value is then used as the actual temperature.

Case 2: The measured values are weighted differently – the total is 100 %

The measured values are included in the calculation of the actual temperature based on their weighting.

Example

Value 1: 21 °C; weighting 60 %
 Value 2: 24 °C; weighting 40 %
 $(21\text{ °C} \times 0.6) + (24\text{ °C} \times 0.4) = 22.2\text{ °C}$

Case 3: The measured values are weighted differently – the total is greater than 100 %

The ratio of the measured values is formed based on their weighting. The result is then used as the actual temperature.

Example

Value 1: 21 °C; weighting 80 %

Value 2: 24 °C; weighting 40 %

$$((21\text{ °C} \times 0.8) + (24\text{ °C} \times 0.4)) / (0.8 + 0.4) = 22\text{ °C}$$

12.2.6 Floating mean value

With a floating mean value filter, the output value is calculated as a mean value over a specified time interval (smoothing). The higher the degree of filtering, the smoother the result.

Example

If a time interval of 60 seconds is selected for the floating mean value filter, a mean value is formed from the values from the last 60 seconds. Temperature fluctuations are smoothed, continuous temperature changes become apparent with a delay.

12.2.7 Basics of PI control**P-proportion / xP-proportion**

The P-proportion / xP-proportion stands for the proportional range of control. The proportional range fluctuates around the setpoint, and in PI control is used to change the speed of control. The smaller the value set, the faster the control reacts. If the value is too small, there is a risk of overshooting.

I-proportion

The I-proportion (also readjustment time) represents the integral control proportion. The I-proportion causes the room temperature to reach the setpoint. In principle the following applies: the more sluggish the overall system, the larger the integral time is.

12.2.8 Basic load

The basic load is used to specify a minimum control value. The basic load is not allowed to be dropped below by the control, even if the controller calculates a lower control value.

Example

Floor heating is to be operated with the minimum control value (basic load) 5 % to protect the installation and to prevent cooling of the floor.

The parameter *Minimum control value for basic load > 0* is used to define whether the basic load is always active or can be activated via a group object.

The control value can decrease to 0 % when the basic load is inactive.

The basic load is defined in the parameter *Min. control value (basic load)* and can be parameterized individually for each heating/cooling stage if the control value for the respective control type is output as a percentage.

Note

The basic load is activated for all stages, but it applies only to the active operating mode (*Heating or Cooling*). The basic load remains active during the operating mode change.
 The basic load is set individually for each stage in the corresponding parameter windows → Parameter *Min. control value (basic load)*.

12.2.9 Heating/cooling circuit

A heating/cooling circuit is used to supply the rooms connected with warm or cold water for heating or cooling. The temperature in the heating/cooling circuit (supply flow temperature) can be adjusted depending on the requirements in the rooms.

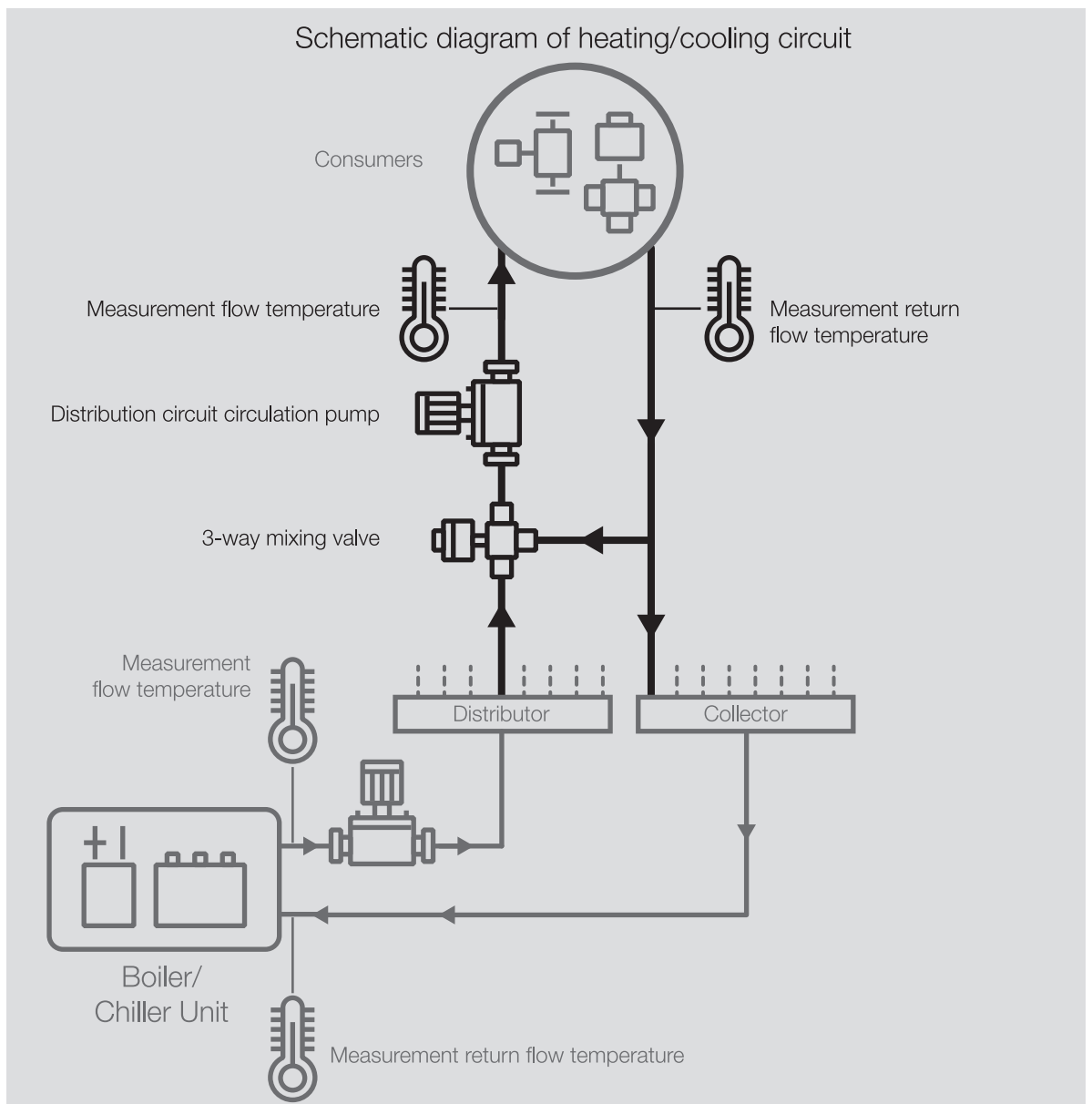


Fig. 56: Heating/cooling circuit

A heating/cooling circuit consists of the following components:

- Supply flow (from the distributor to the load)
- Loads (e.g. radiators in the room)
- Return flow (from the load to the manifold)

The supply and return flow are normally connected together by a 3-way mixing valve. The water from the supply flow is mixed with the water from the return flow to achieve the required supply flow temperature. A circulating pump ensures that the water circulates in the heating/cooling circuit.

12.2.10 Hysteresis

The hysteresis indicates the difference by which a value must change before a control operation is performed. Hysteresis prevents switching in response to minimal changes.

12.2.11 Reference adjustment

Adjustment of the valve drive serves as the basis for position activation. The "closed" valve position (control value = 0 %) is approached periodically to correct deviations between the control value and the actual valve position.

To ensure that the valve closes completely, the output is activated during a reference adjustment for 5 % longer than necessary due to the switch-on time (→ parameter *Switch on time for valve drive from 0 to 100 %*).

Example

With a switch-on time (t_{on}) of 100 s and a control value of 50 %, the theoretical movement time corresponds to 50 s. The 5 % extension causes the valve to be activated for 55 s ($t_{Adjustment}$).

$$t_{Adjustment} = 0.05 \times t_{on} + \text{control value} \times t_{on}$$

The reference adjustment cannot be interrupted.

After every reference adjustment, the control value calculated by the controller is activated and the adjustment counter is set to 0.

12.2.12 Manual valve override

During manual valve override, the active valve control value is overridden. The active valve control value is the valve control value calculated by the controller (controller mode) or received via the bus (ABB i-bus® KNX) (actuator mode).

If manual valve override is enabled (→ parameter *Enable manual valve override*), the active valve control value is overridden with the value of group object *Override valve control value X*.

If manual valve override is disabled, the active valve control value cannot be overridden.

Possible applications:

- System function test
- Specific override of the active valve control value

12.2.13 Master/slave operation

In master/slave operation, a central master takes over the control of the slaves. In master/slave operation, there can be several slaves but only one master.

Slaves send requests to the master via a "Request" telegram (e.g. manual temperature adjustments). The master checks whether the request is within the valid parameterized range, implements the request and sends the value back to the slave via a "Confirm" telegram.

12.2.14 Refreshed KNX state

If an input or an output is blocked by device-specific functions (e.g. manual operation, alarms, block, forced operation, switching delay), it will not react to telegrams received via the bus (ABB i-bus® KNX) while the block is active.

While a block is active, the device processes the telegrams received in the background. Active functions (e.g. staircase lighting, logic, position, brightness value) are executed in the background, but the results are not sent. The actual value is sent to the input or output when the block is canceled.

If the input or output has not received any telegrams via the bus (ABB i-bus® KNX) while a block is active, the input or output will assume the state it was in before the block.

12.2.15 Control types

The following control types are commonly used for activating valves in heating, ventilation and air conditioning technology.

- Continuous control
- Pulse width modulation (PWM)
- 2-point control

12.2.15.1 Overview of control and control-value types

2-point 1 bit (On/Off)

The 2-point controller switches only when the set operating points are reached. The switch-on and switch-off commands are sent as 1-bit values on the bus (ABB i-bus® KNX). The 2-point controller switches as follows:

- Switch-on at setpoint – hysteresis
- Switch-off at setpoint + hysteresis

2-point 1 byte (0/100 %)

Unlike 2-point 1 bit (On/Off), the switch-on and switch-off commands are sent as 1-byte values (0 %/100 %) on the bus (ABB i-bus® KNX).

PI continuous (0 ... 100 %)

The PI controller (continuous) adapts its output value to the difference between the actual value and the setpoint. This adaptation permits exact correction of the room temperature to the setpoint. The control value is sent as a 1-byte value (0 ... 100 %) on the bus (ABB i-bus® KNX). To reduce the bus load, the control value is sent only if it has changed by a previously specified value.

PI PWM (On/Off)

The PI controller (PWM) converts the calculated control value to a pulse-to-pause ratio. The control value is sent as a 1-bit value on the bus (ABB i-bus® KNX).

PI continuous (0 ... 100 %) for fan coil unit

The controller functions like a PI controller (continuous). The fan output is additionally activated in automatic mode, corresponding to the control value of the heating/cooling stage.

12.2.15.2 2-point controller

A two-point controller has two output states (On/Off) that change based on the actual value:

- If the actual value is higher than the parameterized setpoint, the associated control value is 0.
- If the actual value is lower than the parameterized setpoint, the associated control value is 1.

As the 2-point controller switches only between the On and Off states, the following applications are possible:

- Activation of a thermoelectric valve connected to a Switch Actuator or a valve drive actuator
- Activation of an electric heater via a relay output



CAUTION

Each change of the control value causes the relay to switch.

- ▶ Observe the maximum number of operating cycles (service life).

Example

If the control value changes 10 times per day, this corresponds to 3,650 operating cycles per year.

If the control value changes 50 times per day, this corresponds to 18,250 operating cycles per year.

Using hysteresis

A 2-point controller can quickly correct large control deviations in the command variable (setpoint temperature). As correction is a continuous process, overshooting of the system can occur (exceeding the setpoint temperature). Each 2-point controller features built-in hysteresis to avoid overshooting.

Hysteresis ensures that the control value must change by a certain value before the controller has the outputs adjusted. Hysteresis reduces the number of control value changes. Reducing the number of changes leads to smoother control and fewer relay switching operations.

Example

In heating mode, the setpoint is 21 °C and the hysteresis is 1.0 K.

The controller switches on when the temperature falls below 20.5 °C and off when it exceeds 21.5 °C.

The following factors should be considered when setting the hysteresis:

- How quickly can the heater heat the room?
- How quickly can the cooler cool the room?
- How does a person in the room perceive temperatures?

i Note

If the selected hysteresis is too small, a switching valve drive will be opened and closed constantly.

If the selected hysteresis is too large, this will lead to excessive temperature fluctuations in the room.

12.2.15.2.1 Pulse width modulation (PWM)

With pulse width modulation, the valve is operated exclusively in the completely open and completely closed positions. In contrast to 2-point control, the position is not controlled via limit values. Control is based on a calculated control value – similar to continuous control.

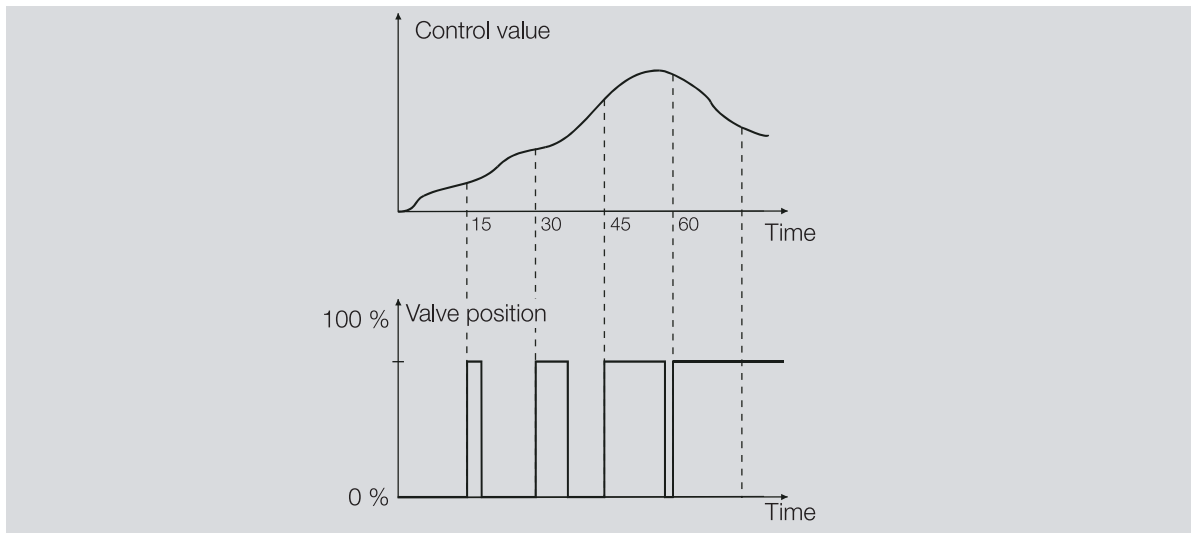


Fig. 57: Pulse width modulation (PWM)

To calculate the control value, the input signal (1-byte control value 0 ... 100 %) is converted to a 2-point signal (On/Off signal) with a parameterized cycle time. Based on this PWM calculation, valve actuation is performed via a variable pulse-to-pause ratio.

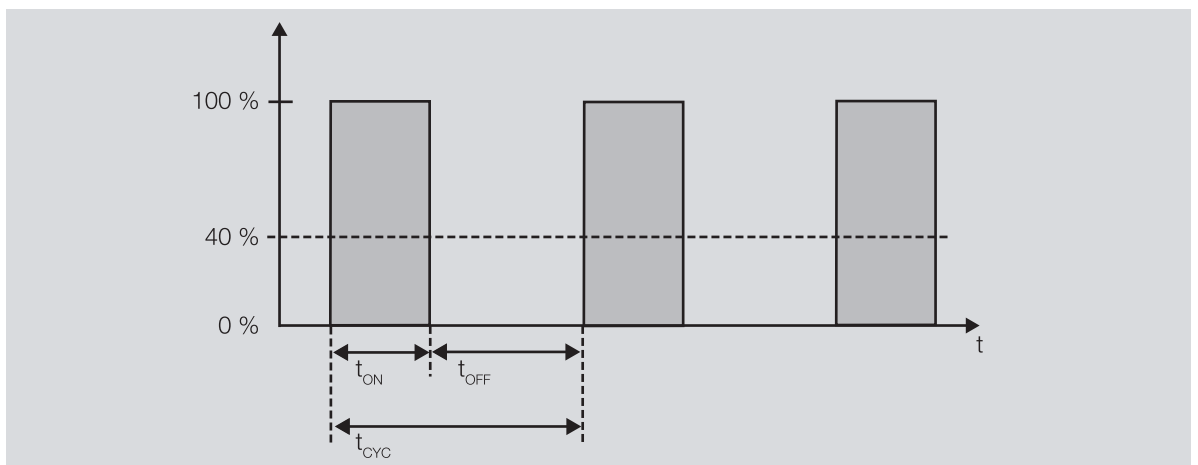


Fig. 58: Activation via a variable pulse-pause ratio

During the time t_{ON} the valve is opened. During the time t_{OFF} the valve is closed. t_{CYC} is the PWM cycle time for continuous control.

With pulse width modulation, the setpoint temperature can be set relatively accurately without pronounced overshooting of the system. However, pulse width modulation leads to frequent positioning operations of the valve drive.

Electromotor or Thermoelectric Valve Drives can be connected to the device when pulse width modulation is used.

Example

- Control value: 20 %
- Cycle time: 15 minutes

The valve is opened for 3 minutes (0.2×15) and closed for 12 minutes.

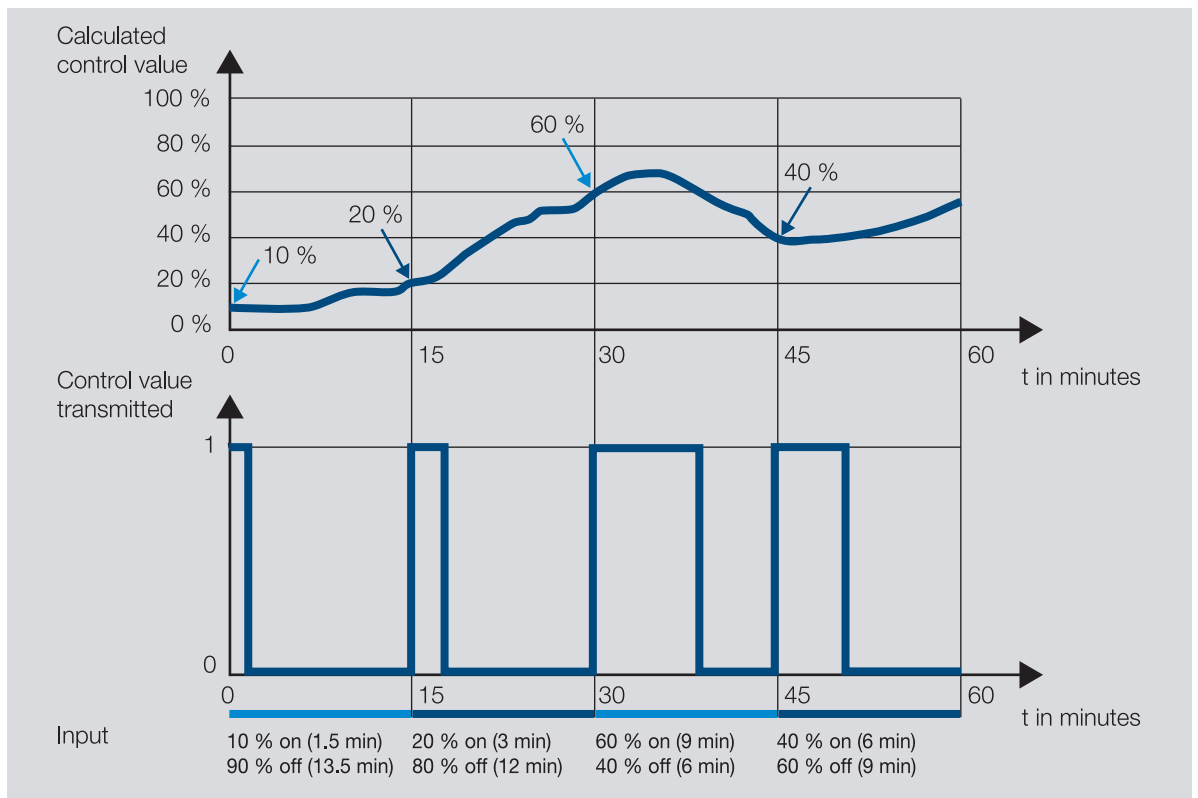


Fig. 59: Pulse width modulation – example

12.2.15.3

Continuous control

Continuous control is the most accurate type of temperature control. At the same time, the positioning frequency of the valve drive can be kept low. Continuous control can be implemented with 3-point electromotor valve drives via 1-byte activation.

i Note

With 1-byte activation, the room thermostat specifies a value of 0 ... 255 (corresponding to 0 ... 100 %). The valve is closed at 0 % and fully opened at 100 %.

With continuous control, the actual and setpoint temperatures are used to calculate a control value to set the ideal temperature. The valve is moved to a position corresponding to the calculated control value. The valve can be fully opened, fully closed or put in any intermediate position.

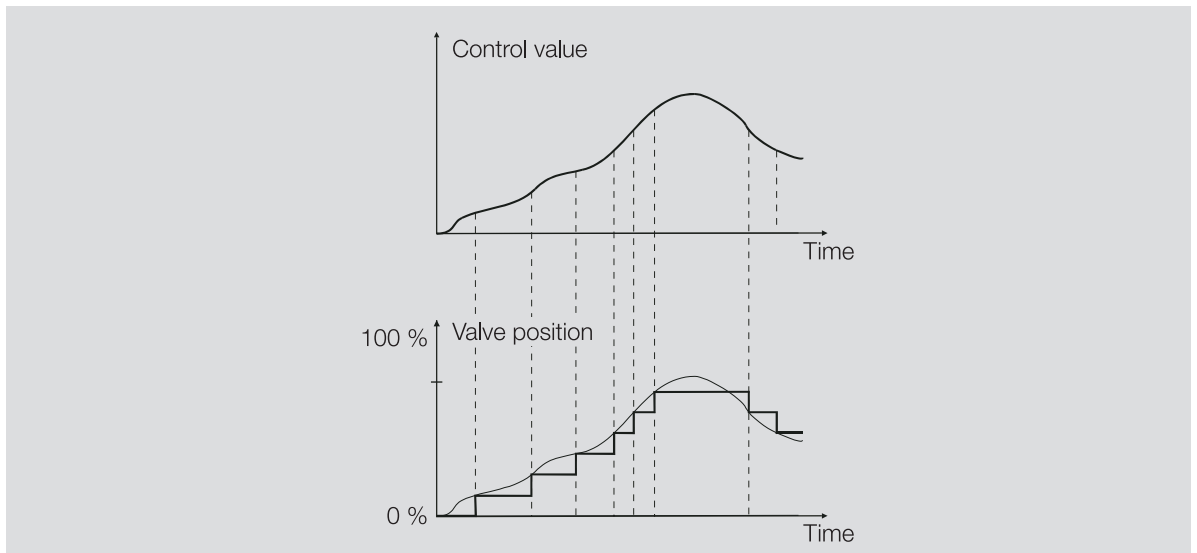


Fig. 60: Continuous control

12.2.15.3.1 PI controller (continuous) for fan coil unit

This controller functions like a PI controller (continuous). To control a fan coil unit, the fan output integrated in the device is additionally activated.

12.2.15.4 PI controller (PWM)

The PI controller (PWM) works like a PI controller (continuous) in principle. Unlike the procedure for a continuous controller, the control value is converted to a 1-bit PWM switch-on/switch-off ratio prior to output for a PI controller (PWM).

Example

With a control value of 70 % and a cycle time of 10 minutes, the switch-on time is 7 minutes and the switch-off time is 3 minutes.

Using the PI controller (PWM) the advantages offered by continuous control (precise attainment of the setpoint temperature) can be obtained with drives that are designed only for switch-on/switch-off signals (e.g. thermoelectric drives).

The cycle time of the PWM control value can be set to optimize the control properties of the heating/cooling system. The type of heating/cooling and the valve drive used must be considered when setting the cycle time. The following cycle times are recommended:

- Thermoelectric Valve Drive: 15 minutes
It takes approx. 2 ... 3 minutes to open a control valve fully with a thermoelectric drive (depending on the manufacturer). Other times must be correspondingly adapted to the heating/cooling system.
- Floor heating: 20 minutes
The time constant of a floor heater is very large (sluggish).
- Water heating: 15 minutes
A cycle time of 15 minutes produces very good control results.
- Electric convector heater: 10 ... 15 minutes
The cycle time depends on the type of electric heater and the room situation.

12.2.15.5 Control value direction

If the control value is only output via a group object, the output value can be inverted. The inversion of the output value can be necessary to actuate NC (normally closed) or NO (normally opened) valve drives correctly.

Example

- Normal: The control value is output normally.
 - Control value On 100 % => Telegram value On 100 %
 - Control value Off 0 % => Telegram value Off 0 %
- Inverted: The control value is output inverted.
 - Control value On 100 % => Telegram value Off 0 %
 - Control value Off 0 % => Telegram value On 100 %

If the control value is output via the physical device outputs, the actuation range is set in the related heating/cooling stage. The inversion of the control value in the control is not necessary in this case.

12.2.16 Sending and switching delay

No telegrams are sent on the bus during the sending and switching delay (ABB i-bus® KNX).

Telegrams received (e.g. requests from a visualization system) are sent to the outputs after the sending and switching delay expires. The state of the outputs is set according to the settings in the ETS application or the telegram values of the group objects.

Time sequences (e.g. staircase lighting time) are started immediately during the sending and switching delay. If, at the time of reception, the staircase lighting time is smaller than the remaining sending and switching delay, the staircase lighting time elapses during the sending and switching delay. After the sending and switching delay has elapsed there is no switching command, the staircase lighting is not switched on.

 **Note**

The sending and switching delay includes the device initialization time.

12.2.17 Temperature sensor types

PT100

This sensor type is precise and interchangeable, however it is susceptible to cable errors (e.g. cable resistance or heating of the cable). A terminal resistance as low as 200 milliohms causes a temperature error of 0.5 °C.

PT1000/NI

These sensor types respond just like the PT100, but the influences of cable errors are lower by a factor of 10. These sensor types should be preferred.

KT/KTY/NTC

These sensor types have a low level of accuracy, are interchangeable only under certain circumstances and can be used only for very simple applications.

Characteristic resistances of the most common temperature sensors

Temperature [°C]	PT100 Resistance [Ω]	PT1000 Resistance [Ω]	NTC10-01 Resistance [Ω]	NTC10-02 Resistance [Ω]	NTC10-03 Resistance [Ω]	NTC20 Resistance [Ω]	NI1000-01 Resistance [Ω]	NI1000-02 Resistance [Ω]
110	142.3	1423	511	758	624	818	1557	1688
100	138.5	1385	679	973	817	1114	1500	1618
90	134.7	1347	916	1266	1084	1541	1444	1549
80	130.9	1309	1255	1668	1457	2166	1390	1483
70	127.1	1271	1752	2228	1990	3098	1337	1417
65	125.2	1252	2083	2588	2338	3732	1311	1385
60	123.2	1232	2488	3020	2760	4518	1285	1353
55	121.3	1213	2986	3536	3270	5494	1260	1322
50	119.4	1194	3602	4160	3893	6718	1235	1291
45	117.5	1175	4368	4911	4655	8260	1210	1260
40	115.5	1155	5324	5827	5594	10212	1186	1230
35	113.6	1136	6532	6940	6754	12698	1162	1200
30	111.7	1117	8055	8313	8196	15886	1138	1171
29	111.3	1113	8406	8622	8525	16627	1132	1165
28	111.0	1110	8779	8944	8869	17407	1128	1159
27	110.5	1105	9165	9281	9229	18227	1123	1153
26	110.1	1101	9574	9632	9606	19090	1119	1147
25	109.7	1097	10000	10000	10000	20000	1114	1141
24	109.3	1093	10448	10380	10413	20958	1109	1136
23	109.0	1090	10924	10780	10845	21968	1105	1130
22	108.6	1086	11421	11200	11298	23033	1100	1124
21	108.2	1082	11940	11630	11773	24156	1095	1118
20	107.8	1078	12491	12090	12270	25340	1091	1112
19	107.4	1074	13073	12560	12791	26491	1086	1107
18	107.0	1070	13681	13060	13337	27912	1081	1101
17	106.6	1066	14325	13580	13910	29307	1077	1095
16	106.2	1062	15000	14120	14510	30782	1072	1089
15	105.9	1059	15710	14690	15140	32340	1068	1084
14	105.5	1055	16461	15280	15801	33982	1063	1078
13	105.1	1051	17256	15900	16494	35716	1058	1072
12	104.7	1047	18091	16560	17222	37550	1054	1067
11	104.3	1043	18970	17240	17987	39489	1049	1061
10	103.9	1039	19902	17960	18790	41540	1045	1056
9	103.5	1035	20884	18700	19633	43715	1040	1050
8	103.1	1031	21918	19480	20519	46018	1036	1044
7	102.7	1027	23015	20300	21451	48457	1031	1039
6	102.3	1023	24170	21150	22430	51041	1027	1033
5	101.9	1019	25391	22050	23460	53780	1022	1028
4	101.6	1016	26683	23000	24545	56678	1018	1022
3	101.2	1012	28051	23990	25687	59751	1013	1016
2	100.8	1008	29498	25030	26890	63011	1009	1011
1	100.4	1004	31030	26130	28156	66469	1004	1005
0	100.0	1000	32650	27280	29490	70140	1000	1000
-5	98.0	980	42327	33900	37310	92220	978	973
-10	96.1	961	55329	42470	47540	122260	956	946
-15	94.1	941	72957	53410	61020	163480	935	919
-20	92.2	922	97083	67770	78910	220600	914	893
-25	90.2	902	130422	86430	102900	300400	893	867
-30	88.2	882	176976	111300	135200	413400	872	842

Tab. 101: Characteristic resistances of the most common temperature sensors

Tolerance classes

The tolerance classes for sensor versions PT100 and PT1000 differ. The following table illustrates the individual classes to the standard IEC 60751 (status: 2008):

Designation	Tolerance
Class AA	0.10 °C + (0.0017 x t)
Class A	0.15 °C + (0.002 x t)
Class B	0.30 °C + (0.005 x t)
Class C	0.60 °C + (0.01 x t)

t = Temperature

Tab. 102: Tolerance classes

Example

Class B:

Measured-value deviations of ± 0.8 °C at 100 °C are permissible.**12.2.18 Summer compensation****12.2.18.1 Summer compensation – background and use**

"To save energy and to keep the temperature difference within comfortable limits when an air-conditioned building is entered, the room temperature should be increased based on the outdoor temperature during the summer. This is known as summer compensation." (DIN 1946)

Summer compensation increases the setpoint for the operating mode *Comfort cooling*.

Increasing the setpoint prevents the difference between the outdoor temperature and room temperature from becoming too large. Cooling is reduced or stopped entirely to reach the setpoint.

Summer compensation requires an outdoor temperature sensor. The room thermostat evaluates the measured temperature value.

12.2.18.2 Summer compensation – technical implementation

The following parameters must be set for summer compensation:

- [Starting temperature for summer compensation](#)
- [Ending temperature for summer compensation](#)
- [Setpoint temperature offset when summer compensation starts](#)
- [Setpoint temperature offset when summer compensation ends](#)

The starting temperature and ending temperature define the range in which dynamic setpoint correction occurs. Incremental adaptation within the range can additionally be adjusted by the offset values. Above the ending temperature, the difference between room temperature and outdoor temperature corresponds to the offset configured when summer compensation ends.

When summer compensation is active, dynamic adaptation begins when the starting temperature is exceeded.

Example

The following example shows dynamic adaptation of the setpoint as the outdoor temperature increases:

- Setpoint temperature: 21 °C
- Starting temperature for summer compensation: 21 °C
- Setpoint temperature offset when summer compensation starts: 00.0 °C
- Ending temperature for summer compensation: 32.0 °C
- Setpoint temperature offset when summer compensation ends: see figure

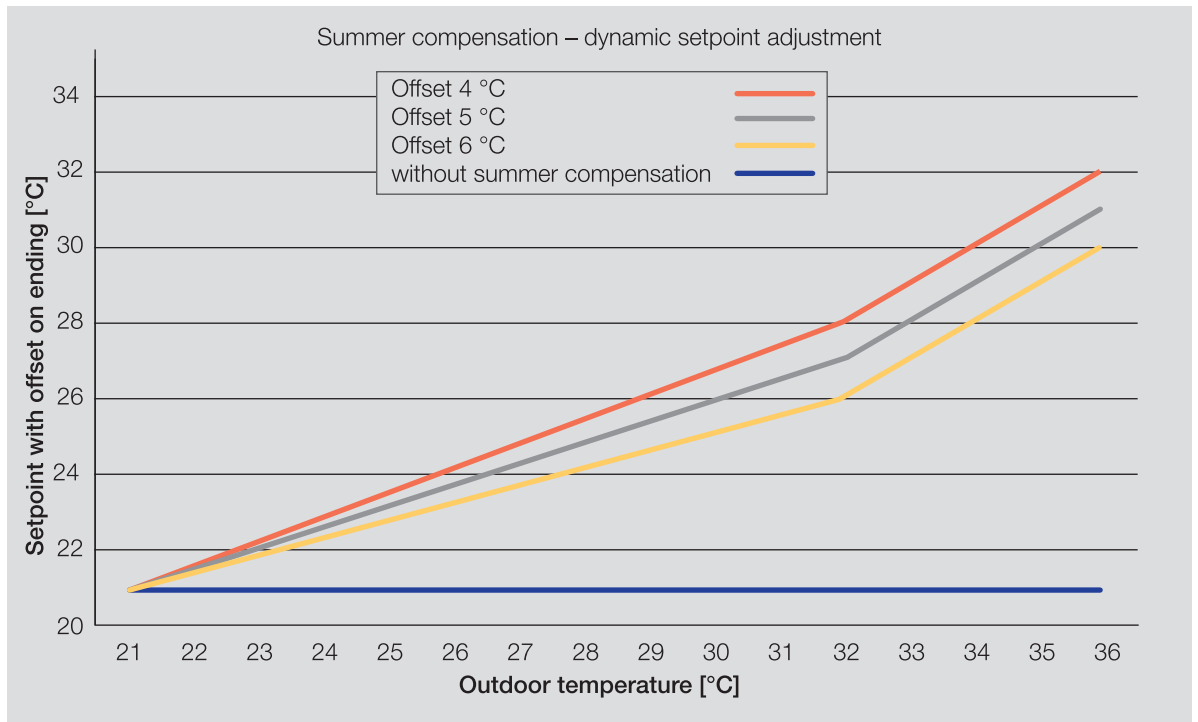


Fig. 61: Dynamic setpoint adjustment

Above the starting temperature, the setpoint temperature is increased according to the selected values until the selected ending temperature is reached. When the ending temperature is reached, the difference between room temperature and outdoor temperature corresponds to the selected offset when summer compensation ends. If the outdoor temperature continues to increase, the setpoint temperature is increased uniformly.

12.2.19

Valve drives

Magnetic/Thermoelectric 2-point Valve Drives

The valve can only be completely opened (100 %) or completely closed (0 %) with 2-point valve drives. The valve position is activated via 2-point control (open-close signal) for a magnetic valve drive or pulse width modulation (PWM) for a Thermoelectric Valve Drive.

Thermoelectric 2-point Valve Drives are adjusted by the thermal expansion of a material caused by a flow of electric current.

2-point valve drives are available in the following variants:

- Normally closed: The valve is closed if no current flows through the valve drive. The valve is opened if current flows through the valve drive.
- Normally open: The valve is opened if no current flows through the valve drive. The valve is closed if current flows through the valve drive.

Motor-driven 3-point valve drives

The valve positions between 0 % and 100 % are adopted using a motor in 3-point valve drives. A 3-point valve drive is connected to both device valve outputs. The open signal is output on valve output A, the close signal on valve output B. The valve position is activated directly based on the control value, usually in the form of continuous control.

Analog (proportional) valve drives

The valve positions between 0 % and 100 % are adopted using a motor in analog (proportional) valve drives. Analog (proportional) valve drives are controlled via a 0-10 V signal. The power for the valve drive is normally supplied via 230 V AC or 24 V AC/DC.

Due to aging processes or mechanical inaccuracies in the valve, the valve may not shut completely despite the control value 0 %. To prevent this situation arising, there are valve drives that can be activated via a 0-10 V signal or a 2-10 V signal → parameter *Voltage range valve control value*. With this activation, the output signal is restricted to the corresponding voltage range. To make sure that the valve is always closed completely, the 0 V signal is nevertheless output for the control value 0 %. If the control value is greater than 0 %, the lower limit (1 V or 2 V) is used directly for the activation.

Activation via 1-10 V signal:

- Control value 0 % = 0 V
- Control value 1 % = 1 V
- Control value 100 % = 10 V

Activation via 2-10 V signal:

- Control value 0 % = 0 V
- Control value 1 % = 2 V
- Control value 100 % = 10 V

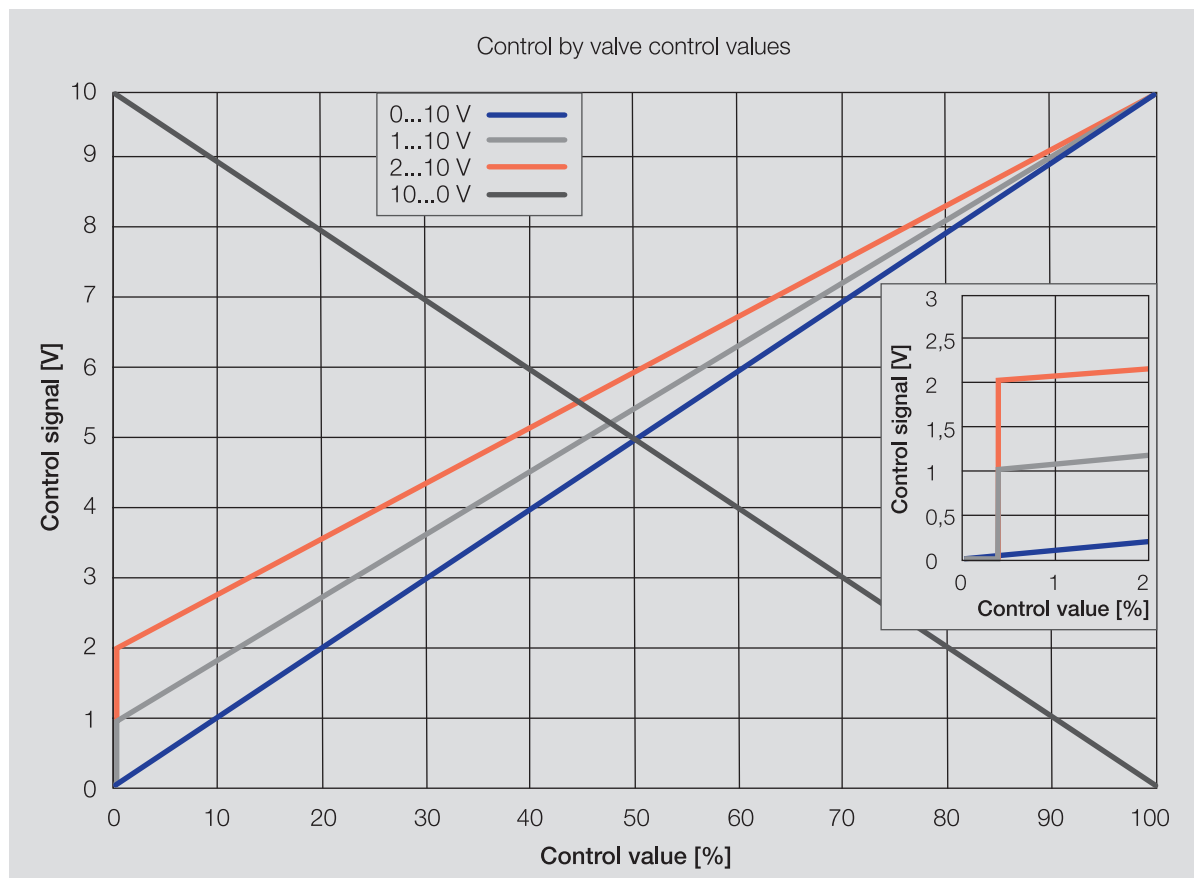


Fig. 62: Control by valve control values

12.2.20

Telegram rate limit

The bus load generated by the device can be limited using the telegram rate limit. This limit relates to all telegrams sent by the device.

The device counts the number of telegrams sent within the parameterized period. As soon as the maximum number of sent telegrams is reached, no further telegrams are sent on the bus (ABB i-bus® KNX) until the end of the period. A new period commences automatically at the end of the previous period. The telegram counter is reset to zero. Telegrams can be sent again. The group object always sends the current telegram value.

The first period (break time) is not precisely predefined. The break time can be anywhere between 0 seconds and the parameterized period. The subsequent periods correspond to the parameterized time → parameter *In period (0 = deactivated)*.

Example

- Number of telegrams = 20
- Maximum number of telegrams per period = 5
- Period = 5 s

The device immediately sends 5 telegrams. The next 5 telegrams are sent after a maximum of 5 seconds. From this point, a further 5 telegrams are sent via the bus (ABB i-bus® KNX) every 5 seconds.

12.2.21

Fan coil unit overview

Designs

A fan coil unit can be configured as a compact device or a built-in device:

- Compact devices are supplied with enclosures and are available as standing units or units for wall or ceiling mounting.
- Built-in devices have no enclosure and are mounted in the wall, ceiling or floor. The air is blown into the room through a grille.

Air supply

Fan coil units are available as recirculation units or as mixed air units.

- Recirculation units: The fan blows the room air past the heat exchangers.
- Mixed air units: The room air is mixed with fresh air. The mixing ratio of recirculated air to fresh air is adjustable.

12.2.22

Valve purge

To prevent the valve from sticking during an extended idle period, the valve is completely opened and closed one time during the valve purge.

The purge cycle time is restarted after starting the device if automatic valve purge has been activated.

The purging cycle time will be restarted at the end of the actual purging period. The parameterized duration for the valve purge is included here.

The purging cycle with an active automatic valve purge is reset and restarted if:

- A manual valve purge is triggered.
- The parameterized value (in Reset purge cycle from...) is exceeded. The purging cycle is only restarted once the parameterized value is reached or dropped below.

After bus voltage recovery and ETS download, the automatic purge cycle is restarted. The time before bus voltage failure is not considered. If the purge cycle is triggered simultaneously for two valves, purging will take place one after the other.

12.2.23 Use of 6-way valve

If a 6-way valve is used, both operating modes (*Heating/Cooling*) in a 4-pipe system are activated together on one valve output. Despite the joint activation, both operating modes can be used independent of each other.

A 6-way valve can be used only if the following prerequisites are met:

- Basic-stage heating is used for a water heating type
- Basic-stage cooling is active

The valve drive for the 6-way valve is connected to valve output A, and the control values for *heating* and *cooling* are issued at this output. The control signal for the drive is given by the two control values and is divided into a range for *heating* and a range for *cooling*. Between the two ranges there is a dead zone in which the valve is closed.

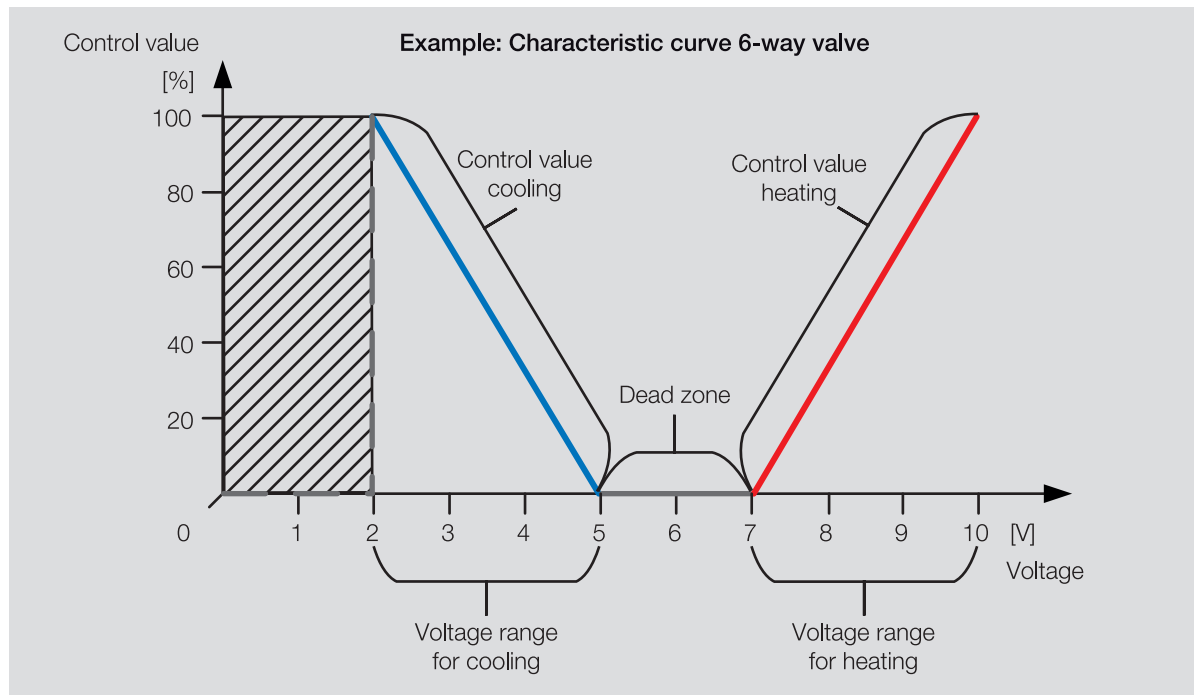


Fig. 63: 6-way valve activation

If the control value is in the voltage range for *heating*, the flow for *heating* is opened to suit the control value and the flow for *cooling* blocked.

If the control value is in the voltage range for *cooling*, the flow for *cooling* is opened to suit the control value and the flow for *heating* blocked.

If the control value is 0 %, the middle of the dead zone is activated. The flow for *heating* and *cooling* is blocked.

12.2.24 Use of an analog room control unit



CAUTION

Connecting several analog room control units will cause malfunctions when the device is operated.

The following functions can be implemented with analog room control units:

- Manual adjustment of the temperature setpoint and (depending on the analog room control unit) the fan speed
- Measurement of the room temperature with a temperature sensor

A separate output is available for each function, → [Connecting analog room control unit, Page 90](#).

The following analog room control units can be connected:

- SAR/A 1.0.1-24 Room Temperature Control Panel

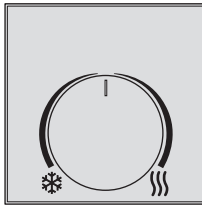


Fig. 64: SAR/A 1.0.1-24

- SAF/A 1.0.1-24 Room Temperature and Fan Coil Control Panel

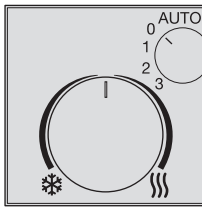


Fig. 65: SAF/A 1.0.1-24

If the SAF/A room temperature and fan coil control unit is used, the following reaction applies to the settings for the fan speed:

- Automatic: The controller takes over the control of the fan speed corresponding to the control value (fan automatic).
- Fan speed 0: If, in the active operating mode (*Heating/Cooling*), the basic stage or additional stage is used to activate a fan coil unit, the fan is overridden and switched off. All valves assigned to the fan coil unit are also overridden and control value set to 0 %. The fan and valve override has no effect on the control value output by the controller to activate the basic stage or additional stage via group objects. If the controller is in the Building Protection operating mode, there is no override. If the controller changes to the Building Protection operating mode during the override, the override is withdrawn.
- Fan speed 1 ... 3 (for continuous fans: 33 %, 66 %, 100 %): If, in the active operating mode (*Heating/Cooling*), the basic stage or additional stage is used to activate a fan coil unit, the fan is overridden to suit the speed set. The override has no effect on the control value.

12.2.24.1

Connecting an analog room control unit in actuator mode

An actuator cannot evaluate the values for setpoint adjustment, and therefore a KNX room control unit with integrated controller must be used in addition to the analog room control unit. The actuator forwards the setpoint adjustment of the analog room control unit to the KNX room control unit, which returns the control value and the fan speed.

The value that the actuator sends to the fan can deviate from the values in the analog room control unit. This deviation is due to the following control panel properties:

- Setpoint adjustments can be made mutually independently in the analog room control unit and in the KNX room control unit.
- The analog room control unit and the KNX room control unit do not communicate with each other.

Example

Hotel guests can control the fan in their room using an analog room control unit.

Hotel employees can use an additional KNX room control unit per hotel room to control all fans centrally, e.g. to implement nighttime reduction after a certain time.

12.2.25 Forced operation

The function *Forced operation* can be used to set the device outputs to a defined state and block them. Forced operation is triggered by the switching of a 1- or 2-bit group object.

The controller continues to send the control values on the bus (ABB i-bus® KNX) during forced operation.

Master/slave communication occurs despite active forced operation.

If an FCC/S is used as a controller and a further FCC/S is used as an actuator and both devices are to behave identically, the forced operation must be parameterized identically for both devices (including the same group address).

i Note

If forced operation is active, operation via group objects, manual operation and i-bus® Tool is blocked. Higher-priority functions continue to run → [Priorities, Page 294](#).

i Note

The same forced operation state as for bus voltage failure applies after bus voltage recovery. Forced operation is deactivated on an ETS reset.

Forced operation, 1-bit

A state that is set if forced operation is activated can be parameterized with 1-bit forced operation. It can additionally be defined whether activation is to take place via the value 1 or 0.

Control values and the state of the outputs can be defined in the device-specific parameters → parameter [Forced operation](#).

Forced operation, 2-bit

With 2-bit forced operation, two states are specified that are set if forced operation is activated. The states are activated via the 2-bit group object. The first bit indicates whether forced operation is active (bit 1 (High) = 1) or inactive (bit 1 (High) = 0). The second bit determines the state *Forced operation active "OFF"* (bit 0 (Low) = 0) or *Forced operation active "ON"* (bit 0 (Low) = 1).

State	Bit 1	Bit 0	Value
Inactive	0	0	0
Inactive	0	1	1
Active "OFF"	1	0	2
Active "ON"	1	1	3


Tab. 103: Forced operation states

Control values and the state of the outputs can be defined in the device-specific parameters → parameter [Forced operation](#).

12.2.26 Cyclical monitoring

The reception of a telegram on a group object can be monitored using the cyclical monitoring. If a telegram is not received on the group object within a parameterizable time (monitoring cycle), the sending device may be faulty or the bus cable to the sending device may be interrupted. The reaction to the loss of a telegram can be set in the application-specific parameters for the device.

After the receipt of a telegram, ETS download or bus voltage recovery, the monitoring cycle is restarted.

 **Note**

The monitoring cycle in the device should be at least quadruple the cyclical sending time of the sending device. As a result, the reactions set will not be triggered immediately if a signal is missing, e.g. due to high bus load.

13 Appendix

13.1 Scope of delivery

The device is supplied together with the following components:

- 1 x Fan Coil Controller
- 1 x installation and operating instructions
- 1 x bus connection terminal (red/black)
- 1x KNX connection cover cap

13.2 Status byte Device

x = value 1, applicable
 Empty = value 0, not applicable

Bit no.	7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	Unused	Unused	Safety mode	Manual operation via membrane keypad	Manual valve override	Forced operation	Building protection (Dew point/Fill level/W/indow)	Operating mode override
0	0								
1	1							x	
2	2						x		
3	3						x	x	
4	4					x			
5	5					x		x	
6	6					x	x		
7	7					x	x	x	
8	8				x				
9	9				x			x	
10	0A				x		x		
11	0B				x		x	x	
12	0C				x	x			
13	0D				x	x		x	
14	0E				x	x	x		
15	0F				x	x	x	x	
16	10			x					
17	11			x				x	
18	12			x			x		
19	13			x			x	x	
20	14			x		x			
21	15			x		x		x	
22	16			x		x	x		
23	17			x		x	x	x	
24	18			x	x				
25	19			x	x			x	
26	1A			x	x		x		
27	1B			x	x		x	x	
28	1C			x	x	x			
29	1D			x	x	x		x	
30	1E			x	x	x	x		
31	1F			x	x	x	x	x	
32	20		x						
33	21		x					x	
34	22		x				x		
35	23		x				x	x	
36	24		x			x			
37	25		x			x		x	
38	26		x			x	x		
39	27		x			x	x	x	
40	28		x		x				
41	29		x		x			x	
42	2A		x		x		x		
43	2B		x		x		x	x	
44	2C		x		x	x			
45	2D		x		x	x		x	
46	2E		x		x	x	x		
47	2F		x		x	x	x	x	
48	30		x	x					
49	31		x	x				x	
50	32		x	x			x		
51	33		x	x			x	x	
52	34		x	x		x			
53	35		x	x		x		x	
54	36		x	x		x	x		
55	37		x	x		x	x	x	
56	38		x	x	x				
57	39		x	x	x			x	
58	3A		x	x	x		x		
59	3B		x	x	x		x	x	
60	3C		x	x	x	x			
61	3D		x	x	x	x		x	
62	3E		x	x	x	x	x		
63	3F		x	x	x	x	x	x	
64	40	x							
65	41	x						x	

Bit no.	7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	Unused	Unused	Safety mode	Manual operation via membrane keypad	Manual valve override	Forced operation	Building protection (Dew point/Fill level/W/indow)	Operating mode override
66	42		x					x	
67	43		x					x	x
68	44		x				x		
69	45		x				x		x
70	46		x				x	x	
71	47		x				x	x	x
72	48		x			x			
73	49		x			x			x
74	4A		x			x		x	
75	4B		x			x		x	x
76	4C		x			x	x		
77	4D		x			x	x		x
78	4E		x			x	x	x	
79	4F		x			x	x	x	x
80	50		x		x				
81	51		x		x				x
82	52		x		x			x	
83	53		x		x			x	x
84	54		x		x		x		
85	55		x		x		x		x
86	56		x		x		x	x	
87	57		x		x		x	x	x
88	58		x		x	x			
89	59		x		x	x			x
90	5A		x		x	x		x	
91	5B		x		x	x		x	x
92	5C		x		x	x	x		
93	5D		x		x	x	x		x
94	5E		x		x	x	x	x	
95	5F		x		x	x	x	x	x
96	60		x	x					
97	61		x	x					x
98	62		x	x				x	
99	63		x	x				x	x
100	64		x	x			x		
101	65		x	x			x		x
102	66		x	x			x	x	
103	67		x	x			x	x	x
104	68		x	x		x			
105	69		x	x		x			x
106	6A		x	x		x		x	
107	6B		x	x		x		x	x
108	6C		x	x		x	x		
109	6D		x	x		x	x		x
110	6E		x	x		x	x	x	
111	6F		x	x		x	x	x	x
112	70		x	x		x			
113	71		x	x		x			x
114	72		x	x		x		x	
115	73		x	x		x		x	x
116	74		x	x		x	x		
117	75		x	x		x	x		x
118	76		x	x		x	x	x	
119	77		x	x		x	x	x	x
120	78		x	x		x	x		
121	79		x	x		x	x		x
122	7A		x	x		x	x	x	
123	7B		x	x		x	x	x	x
124	7C		x	x		x	x	x	
125	7D		x	x		x	x	x	x
126	7E		x	x		x	x	x	
127	7F		x	x		x	x	x	x
128	80	x							
129	81	x							x
130	82	x						x	
131	83	x						x	x

Bit no.	7	6	5	4	3	2	1	0
8-bit value	Unused	Unused	Safety mode	Manual operation via membrane keypad	Manual valve override	Forced operation	Building protection (Dew point/Fill level/Window)	Operating mode override
132	84	x				x		
133	85	x				x		x
134	86	x				x	x	
135	87	x				x	x	x
136	88	x			x			
137	89	x			x			x
138	8A	x			x		x	
139	8B	x			x		x	x
140	8C	x			x	x		
141	8D	x			x	x		x
142	8E	x			x	x	x	
143	8F	x			x	x	x	x
144	90	x		x				
145	91	x		x				x
146	92	x		x			x	
147	93	x		x			x	x
148	94	x		x		x		
149	95	x		x		x		x
150	96	x		x		x	x	
151	97	x		x		x	x	x
152	98	x		x	x			
153	99	x	x					x
154	9A	x		x	x		x	
155	9B	x		x	x		x	x
156	9C	x		x	x	x		
157	9D	x		x	x	x		x
158	9E	x		x	x	x	x	
159	9F	x		x	x	x	x	x
160	A0	x		x				
161	A1	x		x				x
162	A2	x		x			x	
163	A3	x		x			x	x
164	A4	x		x		x		
165	A5	x		x		x		x
166	A6	x		x		x	x	
167	A7	x		x		x	x	x
168	A8	x		x	x			
169	A9	x		x	x			x
170	AA	x		x	x		x	
171	AB	x		x	x		x	x
172	AC	x		x	x	x		
173	AD	x		x	x	x		x
174	AE	x		x	x	x	x	
175	AF	x		x	x	x	x	x
176	B0	x		x	x			
177	B1	x		x	x			x
178	B2	x		x	x		x	
179	B3	x		x	x		x	x
180	B4	x		x	x	x		
181	B5	x		x	x	x		x
182	B6	x		x	x	x	x	
183	B7	x		x	x	x	x	x
184	B8	x		x	x	x		
185	B9	x		x	x	x		x
186	BA	x		x	x	x	x	
187	BB	x		x	x	x	x	x
188	BC	x		x	x	x		
189	BD	x		x	x	x		x
190	BE	x		x	x	x	x	
191	BF	x		x	x	x	x	x
192	C0	x	x					
193	C1	x	x					x

Tab. 104: Status byte Device

Bit no.	7	6	5	4	3	2	1	0
8-bit value	Unused	Unused	Safety mode	Manual operation via membrane keypad	Manual valve override	Forced operation	Building protection (Dew point/Fill level/Window)	Operating mode override
194	C2	x	x				x	
195	C3	x	x				x	x
196	C4	x	x					
197	C5	x	x				x	x
198	C6	x	x				x	x
199	C7	x	x				x	x
200	C8	x	x					
201	C9	x	x					x
202	CA	x	x					
203	CB	x	x				x	x
204	CC	x	x				x	x
205	CD	x	x				x	x
206	CE	x	x				x	x
207	CF	x	x				x	x
208	D0	x	x					
209	D1	x	x					x
210	D2	x	x					
211	D3	x	x					x
212	D4	x	x					
213	D5	x	x					x
214	D6	x	x					
215	D7	x	x					x
216	D8	x	x					
217	D9	x	x					x
218	DA	x	x					
219	DB	x	x					x
220	DC	x	x					
221	DD	x	x					x
222	DE	x	x					
223	DF	x	x					x
224	E0	x	x	x				
225	E1	x	x	x				x
226	E2	x	x	x				
227	E3	x	x	x				x
228	E4	x	x	x				
229	E5	x	x	x				x
230	E6	x	x	x				
231	E7	x	x	x				x
232	E8	x	x	x				
233	E9	x	x	x				x
234	EA	x	x	x				
235	EB	x	x	x				x
236	EC	x	x	x				
237	ED	x	x	x				x
238	EE	x	x	x				
239	EF	x	x	x				x
240	F0	x	x	x	x			
241	F1	x	x	x	x			x
242	F2	x	x	x	x			
243	F3	x	x	x	x			x
244	F4	x	x	x	x			
245	F5	x	x	x	x			x
246	F6	x	x	x	x			
247	F7	x	x	x	x			x
248	F8	x	x	x	x	x		
249	F9	x	x	x	x	x		x
250	FA	x	x	x	x			
251	FB	x	x	x	x			x
252	FC	x	x	x	x	x		
253	FD	x	x	x	x	x		x
254	FE	x	x	x	x	x		
255	FF	x	x	x	x	x		x

13.3 Status byte Valve

x = Value 1, applicable
 Empty = Value 0, not applicable

Bit no.	7	6	5	4	3	2	1	0
8-bit value	Unused	Unused	Unused	Unused	Valve purge	Forced operation	Fault Valve output	Setpoint/control value received
0								
1								x
2							x	
3							x	x
4						x		
5						x		x
6						x	x	
7						x	x	x
8					x			
9					x			x
10					x		x	
11					x		x	x
12					x	x		
13					x	x		x
14					x	x	x	
15					x	x	x	x
16				x				
17				x				x
18				x			x	
19				x			x	x
20				x		x		
21				x		x		x
22				x		x	x	
23				x		x	x	x
24				x	x			
25				x	x			x
26				x	x		x	
27				x	x		x	x
28				x	x	x		
29				x	x	x		x
30				x	x	x	x	
31				x	x	x	x	x
32			x					
33			x					x
34			x				x	
35			x				x	x
36			x			x		
37			x			x		x
38			x			x	x	
39			x			x	x	x
40			x		x			
41			x		x			x
42			x		x		x	
43			x		x		x	x
44			x		x	x		
45			x		x	x		x
46			x		x	x	x	
47			x		x	x	x	x
48			x	x				
49			x	x				x
50			x	x			x	
51			x	x			x	x
52			x	x		x		
53			x	x		x		x
54			x	x		x	x	
55			x	x		x	x	x
56			x	x	x			
57			x	x	x			x
58			x	x	x		x	
59			x	x	x		x	x
60			x	x	x	x		
61			x	x	x	x		x
62			x	x	x	x	x	
63			x	x	x	x	x	x
64		x						
65		x						x
66		x					x	
67		x					x	x

Bit no.	7	6	5	4	3	2	1	0
8-bit value	Unused	Unused	Unused	Unused	Valve purge	Forced operation	Fault Valve output	Setpoint/control value received
68		x					x	
69		x					x	x
70		x					x	
71		x					x	x
72		x				x		
73		x				x		x
74		x				x		x
75		x				x		x
76		x				x	x	
77		x				x	x	x
78		x				x	x	x
79		x				x	x	x
80		x		x				
81		x		x				x
82		x		x				x
83		x		x				x
84		x		x				x
85		x		x				x
86		x		x				x
87		x		x				x
88		x		x				x
89		x		x				x
90		x		x				x
91		x		x				x
92		x		x				x
93		x		x				x
94		x		x				x
95		x		x				x
96		x	x					
97		x	x					x
98		x	x					x
99		x	x					x
100		x	x					x
101		x	x					x
102		x	x					x
103		x	x					x
104		x	x					x
105		x	x					x
106		x	x					x
107		x	x					x
108		x	x					x
109		x	x					x
110		x	x					x
111		x	x					x
112		x	x	x				
113		x	x	x				x
114		x	x	x				x
115		x	x	x				x
116		x	x	x				x
117		x	x	x				x
118		x	x	x				x
119		x	x	x				x
120		x	x	x				x
121		x	x	x				x
122		x	x	x				x
123		x	x	x				x
124		x	x	x				x
125		x	x	x				x
126		x	x	x				x
127		x	x	x				x
128		x						
129		x						x
130		x						x
131		x						x
132		x						x
133		x						x
134		x						x
135		x						x

Bit no.	7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	Unused	Unused	Unused	Unused	Valve purge	Forced operation	Fault Valve output	Setpoint/control value received
136	88	x				x			
137	89	x				x		x	
138	8A	x				x	x		
139	8B	x				x	x	x	
140	8C	x				x	x		
141	8D	x				x	x	x	
142	8E	x				x	x	x	
143	8F	x				x	x	x	
144	90	x			x				
145	91	x			x			x	
146	92	x			x		x		
147	93	x			x		x	x	
148	94	x			x	x			
149	95	x			x	x		x	
150	96	x			x	x	x		
151	97	x			x	x	x	x	
152	98	x			x	x			
153	99	x			x	x		x	
154	9A	x			x	x	x		
155	9B	x			x	x	x	x	
156	9C	x			x	x	x		
157	9D	x			x	x	x	x	
158	9E	x			x	x	x	x	
159	9F	x			x	x	x	x	
160	A0	x	x						
161	A1	x	x					x	
162	A2	x	x				x		
163	A3	x	x				x	x	
164	A4	x	x			x			
165	A5	x	x			x		x	
166	A6	x	x			x	x		
167	A7	x	x			x	x	x	
168	A8	x	x			x			
169	A9	x	x			x		x	
170	AA	x	x			x	x		
171	AB	x	x			x	x	x	
172	AC	x	x			x	x		
173	AD	x	x			x	x	x	
174	AE	x	x			x	x	x	
175	AF	x	x			x	x	x	
176	B0	x	x	x					
177	B1	x	x	x				x	
178	B2	x	x	x			x		
179	B3	x	x	x			x	x	
180	B4	x	x	x		x			
181	B5	x	x	x		x		x	
182	B6	x	x	x		x	x		
183	B7	x	x	x		x	x	x	
184	B8	x	x	x		x			
185	B9	x	x	x		x		x	
186	BA	x	x	x		x	x		
187	BB	x	x	x		x	x	x	
188	BC	x	x	x		x	x		
189	BD	x	x	x		x	x	x	
190	BE	x	x	x		x	x		
191	BF	x	x	x		x	x	x	
192	C0	x	x						
193	C1	x	x					x	
194	C2	x	x				x		
195	C3	x	x				x	x	

Bit no.	7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	Unused	Unused	Unused	Unused	Valve purge	Forced operation	Fault Valve output	Setpoint/control value received
196	C4	x	x				x		
197	C5	x	x				x	x	
198	C6	x	x				x	x	
199	C7	x	x				x	x	
200	C8	x	x			x			
201	C9	x	x			x		x	
202	CA	x	x			x		x	
203	CB	x	x			x		x	
204	CC	x	x			x	x		
205	CD	x	x			x	x	x	
206	CE	x	x			x	x	x	
207	CF	x	x			x	x	x	
208	D0	x	x		x				
209	D1	x	x		x			x	
210	D2	x	x		x			x	
211	D3	x	x		x			x	
212	D4	x	x		x		x		
213	D5	x	x		x		x	x	
214	D6	x	x		x		x	x	
215	D7	x	x		x		x	x	
216	D8	x	x		x	x			
217	D9	x	x		x	x		x	
218	DA	x	x		x	x		x	
219	DB	x	x		x	x		x	
220	DC	x	x		x	x	x		
221	DD	x	x		x	x	x	x	
222	DE	x	x		x	x	x	x	
223	DF	x	x		x	x	x	x	
224	E0	x	x	x					
225	E1	x	x	x				x	
226	E2	x	x	x				x	
227	E3	x	x	x				x	
228	E4	x	x	x			x		
229	E5	x	x	x			x	x	
230	E6	x	x	x			x	x	
231	E7	x	x	x			x	x	
232	E8	x	x	x		x			
233	E9	x	x	x		x		x	
234	EA	x	x	x		x		x	
235	EB	x	x	x		x		x	
236	EC	x	x	x		x	x		
237	ED	x	x	x		x	x	x	
238	EE	x	x	x		x	x	x	
239	EF	x	x	x		x	x	x	
240	F0	x	x	x	x				
241	F1	x	x	x	x			x	
242	F2	x	x	x	x			x	
243	F3	x	x	x	x			x	
244	F4	x	x	x	x		x		
245	F5	x	x	x	x		x	x	
246	F6	x	x	x	x		x	x	
247	F7	x	x	x	x		x	x	
248	F8	x	x	x	x	x			
249	F9	x	x	x	x	x		x	
250	FA	x	x	x	x	x		x	
251	FB	x	x	x	x	x		x	
252	FC	x	x	x	x	x	x		
253	FD	x	x	x	x	x	x	x	
254	FE	x	x	x	x	x	x	x	
255	FF	x	x	x	x	x	x	x	

Tab. 105: Status byte Valve

13.4 Status byte Fan

x = Value 1, applicable
 Empty = Value 0, not applicable

Bit no.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Unused	Automatic operation	Limitation 3	Limitation 2	Limitation 1	Forced operation	Output error	Fan On/Off
0	0								
1	1								x
2	2							x	
3	3							x	x
4	4						x		
5	5						x		x
6	6						x	x	
7	7						x	x	x
8	8					x			
9	9					x			x
10	0A					x		x	
11	0B					x		x	x
12	0C					x	x		
13	0D					x	x		x
14	0E					x	x	x	
15	0F					x	x	x	x
16	10				x				
17	11				x				x
18	12				x			x	
19	13				x			x	x
20	14				x		x		
21	15				x		x		x
22	16				x		x	x	
23	17				x		x	x	x
24	18				x	x			
25	19				x	x			x
26	1A				x	x		x	
27	1B				x	x		x	x
28	1C				x	x	x		
29	1D				x	x	x		x
30	1E				x	x	x	x	
31	1F				x	x	x	x	x
32	20		x						
33	21		x						x
34	22		x					x	
35	23		x					x	x
36	24		x				x		
37	25		x				x		x
38	26		x				x	x	
39	27		x				x	x	x
40	28		x			x			
41	29		x			x			x
42	2A		x			x		x	
43	2B		x			x		x	x
44	2C		x			x	x		
45	2D		x			x	x		x
46	2E		x			x	x	x	
47	2F		x			x	x	x	x
48	30		x	x					
49	31		x	x					x
50	32		x	x				x	
51	33		x	x				x	x
52	34		x	x			x		
53	35		x	x			x		x
54	36		x	x			x	x	
55	37		x	x			x	x	x
56	38		x	x	x				
57	39		x	x	x				x
58	3A		x	x	x			x	
59	3B		x	x	x			x	x
60	3C		x	x	x	x			
61	3D		x	x	x	x	x		x
62	3E		x	x	x	x	x	x	
63	3F		x	x	x	x	x	x	x
64	40		x						
65	41		x						x
66	42		x					x	
67	43		x					x	x

Bit no.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Unused	Automatic operation	Limitation 3	Limitation 2	Limitation 1	Forced operation	Output error	Fan On/Off
68	44		x				x		
69	45		x				x		x
70	46		x				x	x	
71	47		x				x	x	x
72	48		x						
73	49		x			x			x
74	4A		x			x		x	
75	4B		x			x		x	x
76	4C		x			x	x		
77	4D		x			x	x		x
78	4E		x			x	x	x	
79	4F		x			x	x	x	x
80	50		x		x				
81	51		x		x				x
82	52		x		x			x	
83	53		x		x			x	x
84	54		x		x		x		
85	55		x		x		x		x
86	56		x		x		x	x	
87	57		x		x		x	x	x
88	58		x		x	x			
89	59		x		x	x			x
90	5A		x		x	x		x	
91	5B		x		x	x		x	x
92	5C		x		x	x	x		
93	5D		x		x	x	x		x
94	5E		x		x	x	x	x	
95	5F		x		x	x	x	x	x
96	60		x	x					
97	61		x	x					x
98	62		x	x				x	
99	63		x	x				x	x
100	64		x	x			x		
101	65		x	x			x		x
102	66		x	x			x	x	
103	67		x	x			x	x	x
104	68		x	x					
105	69		x	x		x			x
106	6A		x	x		x		x	
107	6B		x	x		x		x	x
108	6C		x	x		x	x		
109	6D		x	x		x	x		x
110	6E		x	x		x	x	x	
111	6F		x	x		x	x	x	x
112	70		x	x	x				
113	71		x	x	x				x
114	72		x	x	x			x	
115	73		x	x	x			x	x
116	74		x	x	x		x		
117	75		x	x	x		x		x
118	76		x	x	x		x	x	
119	77		x	x	x		x	x	x
120	78		x	x	x	x			
121	79		x	x	x	x			x
122	7A		x	x	x	x		x	
123	7B		x	x	x	x		x	x
124	7C		x	x	x	x	x		
125	7D		x	x	x	x	x		x
126	7E		x	x	x	x	x	x	
127	7F		x	x	x	x	x	x	x
128	80	x							
129	81	x							x
130	82	x						x	
131	83	x						x	x
132	84	x					x		
133	85	x					x		x
134	86	x					x	x	
135	87	x					x	x	x

Bit no.	7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	Unused	Automatic operation	Limitation 3	Limitation 2	Limitation 1	Forced operation	Output error	Fan On/Off
136	88	x				x			
137	89	x				x			x
138	8A	x				x		x	
139	8B	x				x		x	x
140	8C	x				x	x		
141	8D	x				x	x		x
142	8E	x				x	x	x	
143	8F	x				x	x	x	x
144	90	x			x				
145	91	x			x				x
146	92	x			x			x	
147	93	x			x			x	x
148	94	x			x		x		
149	95	x			x		x		x
150	96	x			x		x	x	
151	97	x			x		x	x	x
152	98	x			x	x			
153	99	x			x	x			x
154	9A	x			x	x		x	
155	9B	x			x	x		x	x
156	9C	x			x	x	x		
157	9D	x			x	x	x		x
158	9E	x			x	x	x	x	
159	9F	x			x	x	x	x	x
160	A0	x		x					
161	A1	x		x					x
162	A2	x		x				x	
163	A3	x		x				x	x
164	A4	x		x			x		
165	A5	x		x			x		x
166	A6	x		x			x	x	
167	A7	x		x			x	x	x
168	A8	x		x			x		
169	A9	x		x			x		x
170	AA	x		x			x	x	
171	AB	x		x			x	x	x
172	AC	x		x			x		
173	AD	x		x			x	x	x
174	AE	x		x			x	x	x
175	AF	x		x			x	x	x
176	B0	x		x	x				
177	B1	x		x	x				x
178	B2	x		x	x			x	
179	B3	x		x	x			x	x
180	B4	x		x	x		x		
181	B5	x		x	x		x		x
182	B6	x		x	x		x	x	
183	B7	x		x	x		x	x	x
184	B8	x		x	x		x		
185	B9	x		x	x		x		x
186	BA	x		x	x		x	x	
187	BB	x		x	x		x	x	x
188	BC	x		x	x		x		
189	BD	x		x	x		x		x
190	BE	x		x	x		x	x	
191	BF	x		x	x		x	x	x
192	C0	x	x						
193	C1	x	x						x
194	C2	x	x					x	
195	C3	x	x					x	x

Tab. 106: Status byte Fan

Bit no.	7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	Unused	Automatic operation	Limitation 3	Limitation 2	Limitation 1	Forced operation	Output error	Fan On/Off
196	C4	x	x				x		
197	C5	x	x				x		x
198	C6	x	x				x	x	
199	C7	x	x				x	x	x
200	C8	x	x				x		
201	C9	x	x				x		x
202	CA	x	x				x		
203	CB	x	x				x		x
204	CC	x	x				x	x	
205	CD	x	x				x	x	x
206	CE	x	x				x	x	x
207	CF	x	x				x	x	x
208	D0	x	x				x		
209	D1	x	x				x		x
210	D2	x	x				x		
211	D3	x	x				x		x
212	D4	x	x				x		
213	D5	x	x				x		x
214	D6	x	x				x	x	
215	D7	x	x				x	x	x
216	D8	x	x				x	x	
217	D9	x	x				x	x	x
218	DA	x	x				x	x	
219	DB	x	x				x	x	x
220	DC	x	x				x	x	
221	DD	x	x				x	x	x
222	DE	x	x				x	x	x
223	DF	x	x				x	x	x
224	E0	x	x	x					
225	E1	x	x	x					x
226	E2	x	x	x					
227	E3	x	x	x					x
228	E4	x	x	x					
229	E5	x	x	x					x
230	E6	x	x	x					
231	E7	x	x	x					x
232	E8	x	x	x					
233	E9	x	x	x					x
234	EA	x	x	x					
235	EB	x	x	x					x
236	EC	x	x	x					
237	ED	x	x	x					x
238	EE	x	x	x					
239	EF	x	x	x					x
240	F0	x	x	x	x				
241	F1	x	x	x	x				x
242	F2	x	x	x	x				
243	F3	x	x	x	x				x
244	F4	x	x	x	x				
245	F5	x	x	x	x				x
246	F6	x	x	x	x				
247	F7	x	x	x	x				x
248	F8	x	x	x	x	x			
249	F9	x	x	x	x	x			x
250	FA	x	x	x	x	x			
251	FB	x	x	x	x	x			x
252	FC	x	x	x	x	x	x		
253	FD	x	x	x	x	x	x		x
254	FE	x	x	x	x	x	x	x	
255	FF	x	x	x	x	x	x	x	x



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