

PRODUCT MANUAL

ABB i-bus® KNX

MPG/S 8.1.1

KNX/MP-Bus Controller, MDRC



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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 2
–	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 use and operation

1.4

2D code

The packaging and the device are labeled with a 2D code. These codes are used for unique identification of the device and include the following information:

- Link to the product page
- Order number
- ABB device serial number

The 2D codes can be read using any mobile device with an appropriate 2D code reader.

By scanning the 2D codes with the [ABB Product Scanner](#), you can open additional digital services.

2 Safety

2.1 General safety instructions

- ▶ Protect the device from moisture, dirt and damage during transport, storage and operation.
- ▶ 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 KNX/MP-Bus Controller MPG/S 8.1.1 is intended to be used to integrate Belimo MP-Bus devices into a KNX system. It enables MP-Bus devices to communicate with other KNX devices.

3 Product overview

3.1 Device description

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

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

The connection to the bus (ABB i-bus® KNX) is made via a KNX bus connection terminal on the front of the housing.

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

The devices are powered by the bus (ABB i-bus® KNX) and require an additional supply voltage for the MP-Bus devices.

The connections to the supply voltage and the MP-Bus are made via screw terminals
→ terminal designation on the housing.

3.2 Product name description

The table below lists the product name descriptions of all devices in the product family.

3.3 Ordering details

Description	MB	Type	Order no.	Packaging unit [pcs.]	Weight (incl. packaging) [kg]
KNX/MP-Bus Controller		MPG/S 8.1.1	2CDG110311R0011	1	0.11

Tab. 2: Ordering details

3.4 Product family

The product family described in this document includes the following devices:

Device type	Name	Features
MPG/S 8.1.1	KNX/MP-Bus Controller	MDRC

Tab. 3: Product family

3.4.1 Dimension drawing

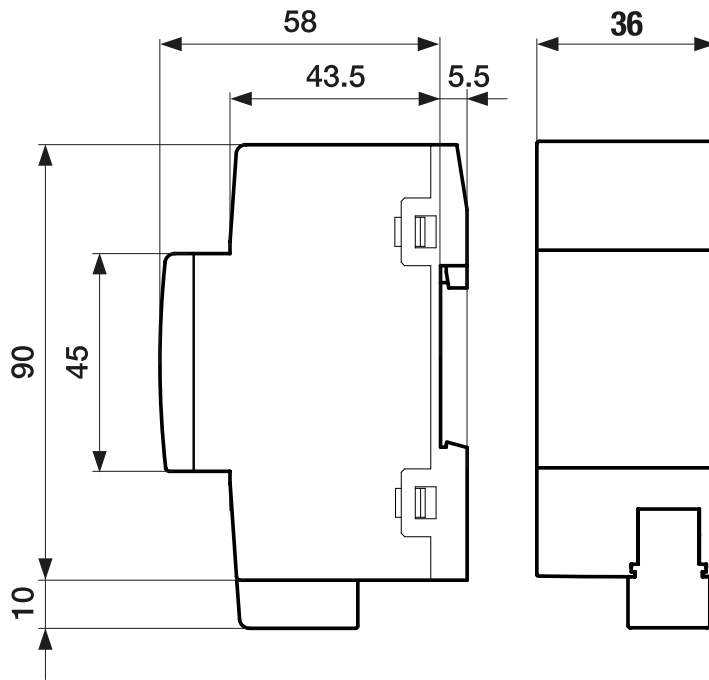


Fig. 1: Dimension drawing

2CDC072025F0017

3.4.2 Connection diagram

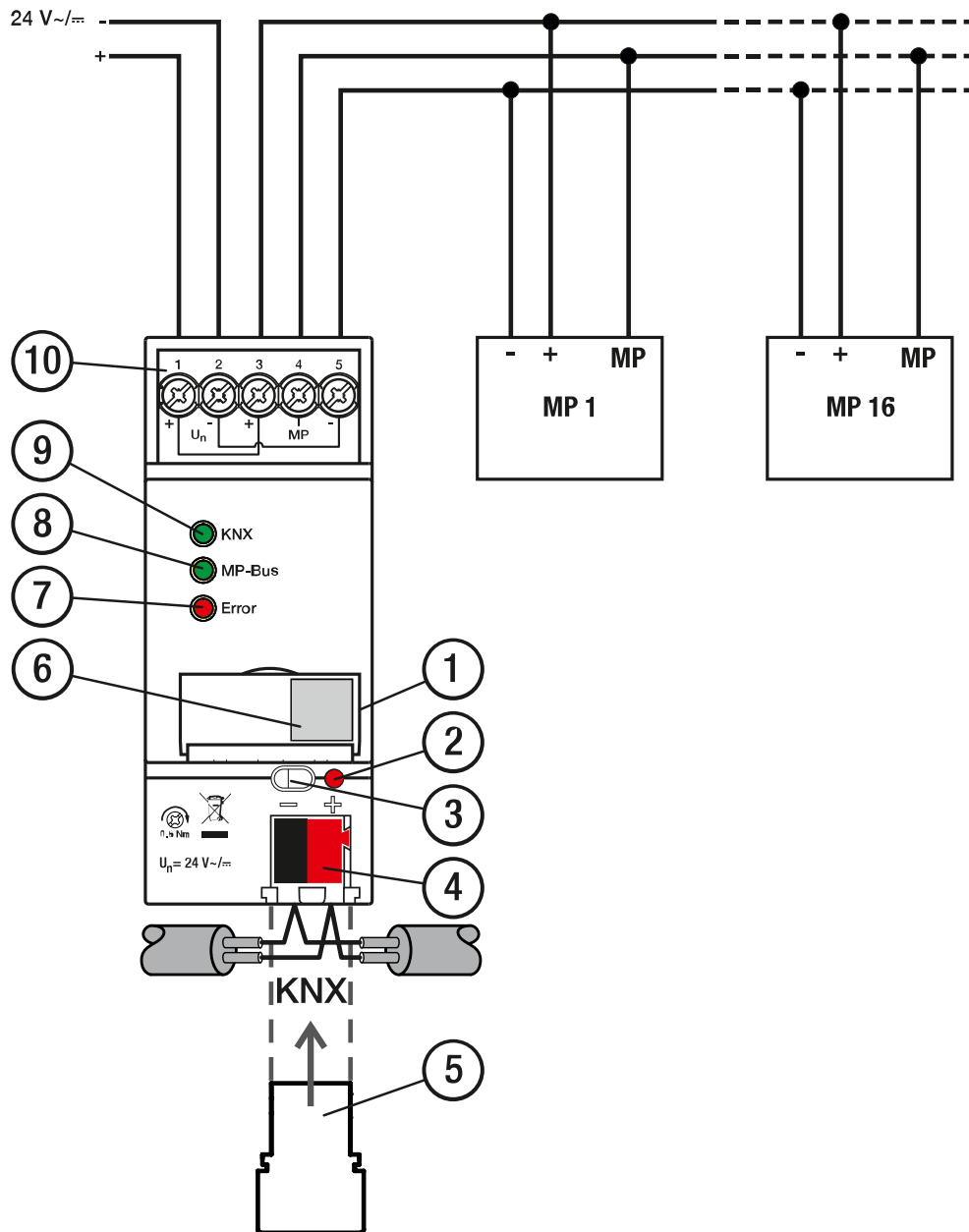


Fig. 2: 9AKK108464A1001

—
Legend

- 1 label carrier
- 2 *Programming* LED
- 3 *Programming* button
- 4 KNX bus connection terminal
- 5 Cover cap
- 6 2D code


- 7 *Error* LED
- 8 *MP-Bus status* LED
- 9 *KNX status* LED
- 10 Connection terminals for MP-Bus and supply voltage

9AKK108464A1001

3.4.3 Operating and display elements

i Note

The operating and display elements are shown with variables in the following tables for illustrative purposes only. All elements of the same type function in exactly the same way.

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

Tab. 4: Operating and display elements

3.4.3.1 Manual operation

i Note

This section is not relevant for these devices.

3.4.3.2 KNX operation

Operating control/LED	Description/function	Display
<i>KNX</i> LED	LED indicates whether the KNX application is functioning properly	LED on: Application running LED flashing: Application unloading or loading LED off: No KNX voltage, device off
<i>MP-Bus</i> LED	LED indicates whether MP-Bus communication is operating in the normal state or whether it is being accessed via the DCA	LED on: Normal operation LED flashing: DCA Control Access operation LED off: Auxiliary voltage for MP-Bus off
<i>Error</i> LED	LED indicates whether there is an MP-Bus communication error	LED on: Error on MP-Bus side Error types: <ul style="list-style-type: none"> • MP-Bus addressing error • MP-Bus configuration error • MP-Bus device failure • Device error in the response of an MP-Bus device • Too many MP-Bus devices connected (> 16) LED off: No error All LEDs off: No KNX voltage, device off

Tab. 5: Operating and display elements

3.4.4 Technical data

3.4.4.1 General technical data

		MPG/S 8.1.1
Device	Dimensions	90 × 36 × 63.5 mm (H × W × D)
	Mounting width in space units	2 modules, 18.0 mm each
	Weight	0.08 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Overload protection	Yes
	Reverse voltage protection	Yes
	Short-circuit proof	Yes
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, KNX-Bus	30 V DC
	Voltage range, KNX bus	21 ... 31 V DC
	Current consumption, KNX bus	< 6 mA
	Power loss, device	≤ 1 W
	Power loss, bus	≤ 0.25 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, MP bus	Screw terminal with universal head (PZ 1)
	Connection type, auxiliary voltage	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 ... 2.5 mm ²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 ... 4 mm ²) / 2 × (0.25 ... 0.75 mm ²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 ... 2.5 mm ²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 ... 2.5 mm ²)
	Length, wire end ferrule contact pin	8 mm
	Stripping length for KNX terminal	6 mm
Stripping length for load terminal	8 mm	
Certificates and declarations	CE declaration of conformity	→ 9AKK108471A4765
Ambient condition	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)
	Dimensions of plastic sleeve for TWIN wire end ferrule (W × D)	≤ 4.4 × 8 mm

3.4.4.2 MP-Bus

		MPG/S 8.1.1
Rated values	Number of MP-Bus devices	≤ 8 / ≤ 16 (depending on MP-Bus data profile)
	Rated voltage U _n , MP-Bus	24 V DC/AC (SELV)
	AC rated voltage tolerance	± 20%
	DC rated voltage tolerance	-10 % / +20 %
	Rated frequency	50/60 Hz

Note

For more information, visit https://www.belimo.com/de/en_GB/support-eu/support-services/apps

4 Functional overview

4.1 Device functions

The MP-Bus is a single-client/multi-server bus. Up to 8/16 MP nodes (depending on the MP-Bus device type) can be connected to a KNX/MP-Bus Controller.

The device translates the input and output data points of the MP-Bus devices into KNX Group Objects. Some settings for the reaction of the MP-Bus devices can be configured (Belimo PC Tool, ZTH, Belimo Assistant App 2).

The MP-Bus devices can be addressed using the → [DCA, Page 25](#). The device can also be used in a system with MP-Bus devices that have been pre-addressed using existing Belimo tools. The assignment of the respective device profiles, as well as error analysis or MP-Bus device identification, can also be carried out via the DCA.

4.1.1 General communication behavior

As the MP-Bus works according to the client/server principle (the *KNX/MP-Bus Controller* is the client and the MP-Bus devices are the servers), no "on event" communication is possible for the MP-Bus devices. Consequently, the *KNX/MP-Bus Controller* communicates cyclically with all the individual MP-Bus devices to query their status values and send new commands to the devices.

The *KNX/MP-Bus Controller* prioritizes its communication with the MP-Bus devices based on the data point. For example, a new relative position or override control can be sent to the MP-Bus devices in each cycle, but some information is only read in the first cycle after restarting the device, after re-detection of an MP-Bus device on the MP-Bus, or after a change in the values of the MP-Bus devices.

The duration of a cycle cannot generally be specified, as the duration depends on the number and type of connected MP-Bus devices.

4.1.2 Configuration via ETS

All parameters that are set via the ETS application are sent to the MP-Bus devices every time the MP-Bus is restarted (regardless of whether only the MP-Bus is restarted, or the whole gateway). This overwrites all parameters that can be set both via the ETS application and via Belimo tools (e.g. → [Belimo Assistant App 2, Page 17](#)).

As a rule, all settings that are required for KNX communication to work correctly are made in ETS.

i Note

Certain settings for the various MP-Bus devices can only be made via the Belimo tools, e.g. → [Belimo Assistant 2, Page 17](#) or → [Belimo Servicetool, Page 18](#).

In general, the configuration in ETS and via the Belimo tools must match. Otherwise, communication errors may occur.

i Note

With MP-Bus devices such as the → [Air "VRU-x-BAC-x" VAV universal controller \(modular\), Page 97](#), it must be ensured that the selected parameterization in ETS matches the parameterization in the device itself.

It is especially important that the correct device type and application match.

4.1.3 Configuration via Belimo tools, and configuration password

For some MP-Bus devices, it is possible to set a device configuration password via the Belimo tools (e.g. → [Belimo Assistant 2, Page 17](#)). If the password is not the default password, the MP-Bus device can no longer change the configuration of the connected KNX/MP-Bus Controller. This means that changing the MP-Bus device configuration password may cause a communication error.

4.1.4 Synchronization

Some MP-Bus devices can receive a synchronization command in order to calibrate their current position. Particularly in long operating periods during which the device does not reach the end positions, the actual device position may deviate from the calculated position due to minimal deviations. This can also happen after an auxiliary voltage failure.

During synchronization, the device moves from its current position to either the open or closed position and back to the currently valid position specified by the control value.

More information:

- [Tab. : Group Objects Air "VRU-x-BAC-x" VAV universal controller \(modular\) \[199](#) (Air "VRU-x-BAC-x" VAV universal controller (modular))
- [Tab. : Group Objects Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 \[207](#)

i Note

A sync command cannot be stopped once it has started.

4.1.5 Adjustment

Adjustment is used to calibrate the entire control range of the device. Typically, calibration is carried out during commissioning or after a change in the physical limits of the MP-Bus device.

During adjustment, the MP-Bus device moves to the end position until it reaches maximum torque.

The device should always be monitored during an adjustment run to make sure that it actually reaches the end position.

More information: [Tab. : Group Objects Air "xV-D3-MP" VAV compact controller \[177](#).

i Note

Adjustment cannot be stopped once it has started.

i Note

Not all devices support this function.

4.1.6 Test run

The test run is used to identify a device. During a test run, the device completely opens and closes once. Also, the service information is reset after a test run if the error is no longer present.

More information:

- [Tab. : Group Objects Air "xM24A-MP" rotary/damper actuator \[182](#) (Air "xM24A-MP" rotary/damper actuator)
- [Tab. : Group Objects Water "xR24A-MP" rotary actuator for ball valves \[189](#) (Water "xR24A-MP" rotary actuator for ball valves)

i Note

Not all devices support this function.

4.1.7 MP-Bus-Watchdog

i Note

The MP-Bus-Watchdog for the MP-Bus device cannot be set via ETS; it can only be set via the Belimo tools.

Some MP-Bus devices have an internal timer ("Watchdog") option for monitoring the regular receipt of a control signal or an override via the MP-Bus.

If the time set in the Watchdog is shorter than the actual cycle time of the KNX/MP-Bus Controller communication with the MP-Bus device (which varies based on the type and number of connected MP-Bus devices), this can lead to communication faults. This fault can only be rectified by adjusting the MP-Bus-Watchdog time. The general recommendation is to set cycle times of 120 seconds or more, or to leave the Watchdog deactivated.

The MP-Bus-Watchdog of the MP-Bus device can be activated if the corresponding bit is set in the following Group Objects:

- [Service information](#) (Water "22PEX-1Ux" thermal energy meter)
- [Service information](#) (Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4)
- [Service information](#) (Air "P-22RTx-1900x-2" room operation unit)
- [Service information](#) (Air "VRU-x-BAC-x" VAV universal controller (modular))
- [Service information](#) (Air "xM24A-MP" rotary/damper actuator)
- [Service information](#) (Water "xR24A-MP" rotary actuator for ball valves)
- [Service information](#) (Air "xV-D3-MP" VAV compact controller)

The reaction that can be set via → [Belimo Assistant 2, Page 17](#) in the event of KNX/MP-Bus Controller failure depends on the MP-Bus device.

4.1.8 Control via analog control value

Selecting the option *Analog input signal* for the parameter *Control via* means that the sensor inputs of the MP-Bus device will be used for the analog control value.

As a result, no other sensor can be connected to the input of the MP-Bus device as an active sensor (0-10 V input).

If the analog input signal option is selected, the parameter for selecting the sensor type on the sensor input side is set to "Analog input signal" and cannot be changed in this setting, and the corresponding Group Object of the MP-Bus device is hidden. The Group Object *Status Analog input signal* is shown instead.

i Note

The "Analog control value" option for sensor type cannot be manually selected.

i Note

Not all MP-Bus devices have the option of using a parameter to set control via an analog input signal. For some MP-Bus devices, analog control is done by wiring the device accordingly. In this case too, control is overridden via the MP-Bus.

4.1.9 Sending status values

If a configuration for sending status values includes cyclical sending, the cycle timer is retriggered when a different send behavior is executed. This means, for example, that in the configuration for sending after a change, on request, or cyclically, the cycle timer restarts after the value is sent on request on the bus (ABB i-bus® KNX) or when the value is sent after a change on the bus (ABB i-bus® KNX).

Due to this behavior and the cyclical communication with external MP-Bus devices, it is possible that target positions may not be sent to the bus (ABB i-bus® KNX) "on change" after an actuator movement.

Example

- ✓ Value sent from a change of 10 %
- 1. Actuator is moved (e.g. from 50 % to 100 %)
 - 2. During the actuator movement, the external MP-Bus device is queried cyclically
 - ⇒ Current position is sent during the movement, e.g. 95 %
 - 3. Actuator reaches target position
 - ⇒ The value change (from 95 % to 100 %) is 5 %
 - ⇒ The value change (5 %), based on the last value sent (95 %), is smaller than the change set in the send parameters (10 %). The value is not sent on change.

These percentages are an illustrative example; the same reaction applies for all values.

4.1.10 Belimo Assistant 2



Fig. 3: 9AKK108464A1383

The Belimo Assistant is an application for Android, iOS or Windows that can be used to configure Belimo MP-Bus devices. Wireless communication (NFC or BT) or wired communication can be used as an interface, depending on which platform the Assistant is used on.

Examples of settings that are only available via Belimo tools include the Pnom and Vnom values for the energy valve, or changing from flow control to position control for LMV VAV actuators.

i Note

Certain settings for the various MP-Bus devices can only be made via the Belimo tools, e.g. → [Belimo Assistant 2, Page 17](#) or → [Belimo Servicetool, Page 18](#).

In general, the configuration in ETS and via the Belimo tools must match. Otherwise, communication errors may occur.

i Note

In these cases, make sure that the associated parameters in ETS are also set correctly. Failing to do this can cause problems/errors in Group Objects and received/sent values. In most cases, this type of misconfiguration is shown via the Group Object [Tab. : Group Objects Central – General ¶175](#).

i Note

If the Belimo Assistant is connected directly to the MP-Bus and not only to an individual device (e.g. via NFC), make sure that only the Belimo Assistant is active on the bus, and no other MP client such as the MPG/S 8.1.1.

Note

For more information on Belimo tools, please visit:

https://www.belimo.com/de/en_GB/support-eu/support-services/apps

4.1.11**Belimo Servicetool**

The ZTH EU service tool makes it easier to diagnose, function check and set HVAC performance devices. When directly connected to a parameterizable or communicative Belimo actuator, the tool can be used to read off current values on site and immediately reset them.

Note

When using the ZTH to change the parameterization of MP-Bus devices, the connection to the KNX/MP-Bus Controller must be disconnected because the tool only allows one active client. If the KNX/MP-Bus Controller is still active, the ZTH can only be used in Monitor mode.

Note

For more information on Belimo tools, please visit:

https://www.belimo.com/de/en_GB/support-eu/support-services/apps

4.1.12**Field device overview**

Air	Water	Device type	Device family	Address button	NFC	Automatic addressing	Max. number of MP-Bus devices per line
X		CM24-MPL-xx	Rotary/damper actuator			X	16
X		xxM24A-MP	Rotary/damper actuator	X			8
X		P-22RTxxx-1U00xx-2	Room operation unit		X	X	16
X		xxV-D3-MP	VAV compact controller	X	X		8
x		VRU-xx-BAC-xx	VAV universal controller (modular)	X	X	X	8
	X	CQ24A-MPL	Rotary actuator for zone valves	X		X	16
	X	xxR24A-MP	Rotary actuator for ball valves	X			8
	X	EVxxR2+xxBAC EVxxR2+xxMID	Elec. 2-way PI-RKH EV V4		X	X	16
	X	22PExx-1Uxx	Thermal energy meter		X	X	16

Tab. 6: Field device overview

4.2**Applications****4.3****Special operating states****4.3.1****Reaction on KNX voltage failure**

KNX voltage failure means the failure of the KNX voltage, e.g. due to a power outage.

If the KNX voltage fails, the MP-Bus devices no longer receive new values.

With the Belimo tools (e.g. Assistant App 2) it is possible to set a specific reaction for the MP-Bus devices in the event that the KNX/MP-Bus Controller fails. These settings cannot be made via ETS.

i Note

Not every MP-Bus device supports these settings via Belimo tools.

The reaction that is set for the MP-Bus device in the event of a KNX/MP-Bus Controller failure becomes active if no (new) control value or override control has been received for a certain length of time (typically 120 seconds).

To prevent this from happening during normal operation, the MP-Bus device repeats either the control value/setpoint or, in the case of active override, the override value, to the KNX/MP-Bus Controller at regular intervals, even if the current value has not changed.

4.3.2 Reaction after KNX voltage recovery

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

After a KNX bus voltage recovery, the KNX/MP-Bus Controller can query the current value of selected Group Objects on the bus (ABB i-bus® KNX) to ensure that the Group Object values are in the correct state.

This is achieved by setting the "read-on-init" flag (I-flag) for the corresponding Group Objects in the ETS application.

By default, the "read-on-init" flag is set for all control value, setpoint, and override control Group Objects, as well as for the Heating and Cooling type of operation and the Status RTC Group Object.

i Note

To update the Group Objects after KNX voltage recovery, ETS download or ETS reset, the read flags must be set for the corresponding Group Objects of the sending device.

4.3.3 Reaction on ETS reset

ETS reset can be performed in ETS using the Commissioning menu item, in the function *Reset device* (from ETS version 6 *Restart device*).

After an ETS reset, the device restarts and the reaction after a KNX voltage recovery becomes active.

4.3.4 Reaction on ETS download

i Note

After the application is uninstalled or the ETS download is canceled, the device will no longer operate and the KNX LED will flash.

- ▶ Repeat the ETS download.

ETS download means loading a modified or updated device application onto the device. During an ETS download, the device will no longer operate and the KNX LED will flash. After the ETS download, the device restarts and the reaction after a KNX voltage recovery becomes active.

Note

Some MP-Bus devices, where applicable, may have their own startup behavior which can be set via the corresponding Belimo tools. This behavior cannot be influenced by the KNX/MP-Bus Controller. For details, please refer to the respective data sheets.

After an MP-Bus device restart, communication starts with a full readout of the data points of the MP-Bus device by the KNX/MP-Bus Controller.

When the readout of the current status values of the MP-Bus device is complete, the KNX/MP-Bus Controller sends the current control and override control values to the MP-Bus device. If other values have changed since the last communication with the MP-Bus device (e.g. Min/Max, Vmin/Vmax), these values are also sent to the MP-Bus device.

Note

If no control value/setpoint was received and transmitted to the MP-Bus device before the MP-Bus failure, the MP-Bus device moves to the 0 % position after MP-Bus voltage recovery.

4.3.4.1**Room operation unit**

After a restart, the ROU receives the Comfort type of operation one time from the MPG. This special reaction ensures that the ROU is in the correct state (e.g. to prevent it from being blocked by ETS parameterization due to the On/Off button being switched off and then removed). After that, normal bus communication takes over and the current type of operation is queried by the KNX bus and sent to the ROU after receipt.

4.3.5**Reaction on MP-Bus voltage failure**

An MP-Bus failure can be caused either by a failure of the 24 V AC/DC voltage or by a defect in an individual MP-Bus device.

An MP-Bus failure can affect one, several, or all connected devices, depending on where the error occurred, e.g. in the cabling or in the power supply.

In the event of an MP-Bus failure, the Group Object *Communication error* (central) and the Group Object *Communication error* are set to 1; also, the error LED turns red and the MP-Bus LED turns off.

No further communication takes place between the KNX/MP-Bus Controller and the MP-Bus devices.

4.3.6**Reaction after MP-Bus voltage recovery**

If the KNX/MP-Bus Controller detects that the MP-Bus is available again (typically after an MP-Bus voltage failure), the KNX/MP-Bus Controller reads out all information from the connected MP-Bus devices again after the MP-Bus is restored, including cyclical information (e.g. current position) and non-cyclical information such as type of operation (rotary or linear actuator).

Status Group Objects are also sent on the bus (ABB i-bus® KNX) unchanged after an MP-Bus voltage recovery.

The KNX/MP-Bus Controller carries out a system scan to check whether new devices were added to or removed from the MP-Bus. During the system scan, the MP-Bus LED flashes.

Due to the duration of the system scan, error Group Objects (such as Addressing error or Communication error) may remain set to 0 for a while after MP-Bus recovery – even though, for example, a device was removed from the MP-Bus – and are only set to 1 after the system scan has been completed.

The error LED on the KNX/MP-Bus Controller is switched off (if no other error is pending) and the MP-Bus LED lights up continuously again.

5 Mounting and installation

5.1 Information about mounting



DANGER – Severe injuries due to touch voltage

Electric feedback from different phase conductors can cause contact voltages and lead to serious injuries.

- ▶ Operate the device only in a closed housing.
- ▶ 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 connection to the bus (ABB i-bus® KNX) is made using the KNX bus connection terminal supplied.

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.

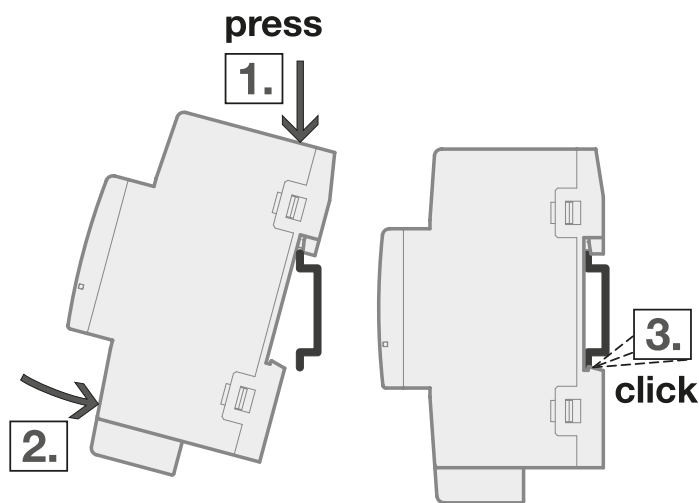


Fig. 4: Mounting on mounting rail

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.

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.

- Product-specific device application: installed

i Note

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

i Note

In order to commission or program a KNX Data Secure device in Secure mode, the interface used (e.g. USB/S 1.2 or IPS/S 3.x.1) must support "Extended/Long Frames".

6.2 Secure commissioning of KNX Secure devices

i Note

ETS version 6 or later is required when using KNX Secure. The use of the latest ETS version is recommended. Using older ETS versions can cause errors during project planning, problems during commissioning (e.g. while replacing devices), or while undertaking diagnostics on group addresses and devices.

i Note

In order to commission or program a KNX Data Secure device in Secure mode, the interface used (e.g. USB/S 1.2 or IPS/S 3.x.1) must support "Extended/Long Frames".

To commission the device securely, note the following points:

- A project password must be assigned while importing a KNX Secure device into a KNX project. By assigning the project password, the project is protected against unauthorized access.
 - If a password is not assigned, none of the devices in the project can be operated as KNX Secure devices. This means the security of the whole project will be that of a conventional KNX network (KNX Plain).
 - The project password must be kept in a safe place. Access to the project is not possible without it. Not even the KNX Association or ABB AG will be able to access it.
- A device certificate is required while commissioning a KNX Secure device. This device certificate includes the FDSK (Factory Default Setup Key) and the device's KNX serial number.
 - The device certificate is located on two detachable stickers applied to the device. The stickers should be removed from the device and kept in a safe place.
 - When adding the device from the ETS product catalog, a window opens in ETS, prompting the user to enter the device certificate. The device certificate can be entered using a webcam, a barcode scanner or manually.
 - The device certificates of all KNX Secure devices integrated in the project can be entered in advance in ETS, → Properties/Settings/"Add Device Certificate". Because the device certificate contains the FDSK and the KNX serial number of the device, ETS can automatically manage the assignment of the certificates to the correct device during commissioning.
 - If the device certificate was entered in ETS, the physical address of the device can be assigned via the KNX serial number, → Properties/Pending Operations/"Use Device Certificate".
 - The device certificate is only required for initial encryption and authentication of communication between KNX Secure devices and ETS. As it is read, the device certificate is resolved into the FDSK and KNX serial number.
 - During commissioning, ETS assigns a device key (Tool Key) to the device. The device certificate will be required again only if the device is reset to its factory settings (e.g. if the device is to be used as a KNX Secure device in a different system with a different ETS project).

6.2.1 Device certificate

The device certificate is located on two detachable stickers applied to the device. Each sticker contains the following information:

- Device certificate as QR code
- Device certificate as a 36-character combination of numbers and letters

The device certificate is required for securely commissioning the device in a KNX Secure project and contains the following information:

- KNX serial number of the device
- FDSK (Factory Default Setup Key)

For secure commissioning of the device, the device certificate must be entered in ETS (scan the QR code or enter the combination of numbers and letters directly, → Properties/Settings/"Add Device Certificate").

6.3 Commissioning overview

The following factory settings are configured in the state as supplied:

The device can be programmed only using ETS.

The external MP-Bus devices can be configured in ETS via ETS parameterization (→ [Configuration, Page 37](#)) or via the DCA (→ [Device Configuration App \(DCA\), Page 25](#)).

i Note

If access to the devices in the project is blocked by a BCU Key, this situation has no effect on this device. Data can still be read and programmed in this device.

6.4 Putting the device into operation

6.5 Assignment of the physical address

Triggering assignment of the physical address via ETS:

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

Note

If a KNX Secure device was securely commissioned, the KNX serial number of the device can be used to assign the physical address, → [Secure commissioning of KNX Secure devices, Page 23](#).

6.6 Software/device application

6.6.1 Device applications

The following device applications are available for the devices described in this document:

Device type	Device application	Max. number of group addresses	Max. number of secure group addresses	Max. number of secure partners
-------------	--------------------	--------------------------------	---------------------------------------	--------------------------------

Tab. 7: Device applications

Note

... = current version number of the application.
See software information on the website, → www.abb.com/knx.

MPG/S 8.1.1	KNX/MP-Bus Controller/...			
-------------	---------------------------	--	--	--

6.6.2 Device Configuration App (DCA)

The DCA is used for addressing MP-Bus devices, monitoring the installation/assignment of MP-Bus addresses, and troubleshooting MP-Bus profile assignment. The DCA provides an expanded view of the classic ETS configuration table. The DCA expands functionality by allowing direct communication with the KNX/MP-Bus Controller and so enabling you to detect and address MP-Bus devices.

It is not possible to change settings that were made in the ETS configuration table, except for MP addresses or empty channels.

Note

For more information, visit <https://support.knx.org/hc/en-us/articles/4402814860434-Install-ETS6-Apps>

6.6.2.1 Prerequisites for use

In order to access the device with the DCA, the connected KNX/MP-Bus Controller must be assigned a physical address.

In addition, the bus connection (ABB i-bus® KNX) must be initialized. For this purpose, communication must be initialized one time via the bus interface (e.g. by actively selecting the bus interface in the current project, initializing a download to any device in the system, or starting the bus monitor).

The bus interface (USB interface, e.g. USB/S 1.2; IP interface IPS/S; or IP router such as IPR/S 3.5.1) must support Long Frames so that the DCA can communicate with the KNX/MP-Bus Controller.

6.6.2.2

User interface

After starting the DCA, the following view is displayed:

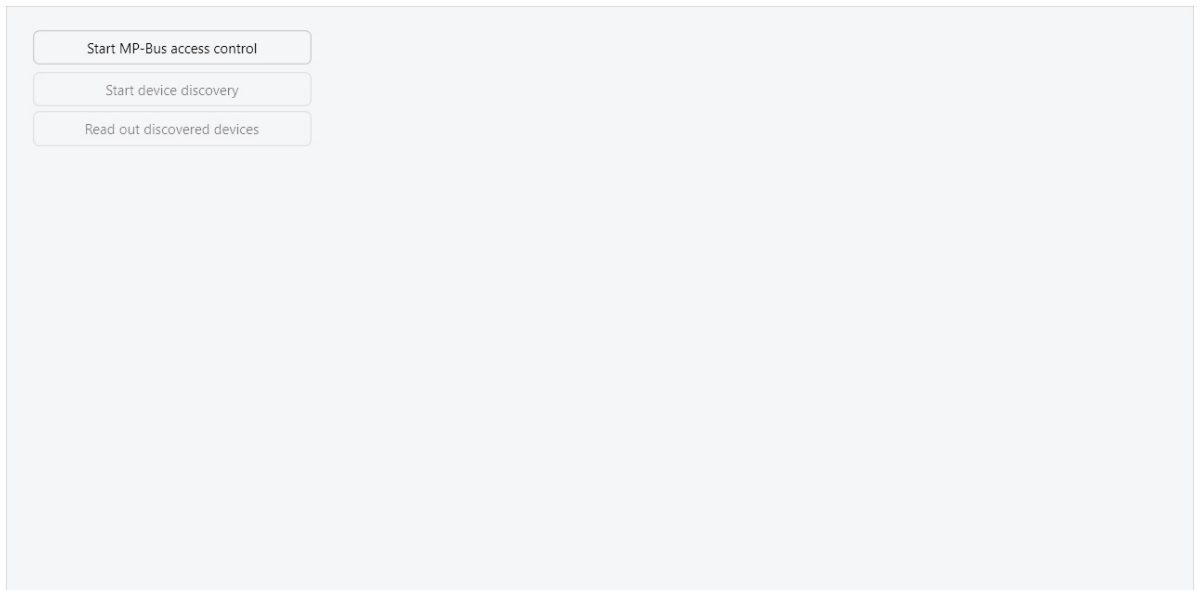


Fig. 5: Start screen

Pressing the *Start MP-Bus access control* button connects the DCA to the KNX/MP-Bus Controller and takes over control of the MP-Bus.

The MP-Bus LED of the KNX/MP-Bus Controller flashes to show that the DCA is active; the flashing continues for as long as access control is active.

Access control can be stopped by pressing the *Stop MP-Bus access control* button.

If the connection to the DCA is interrupted, access control automatically ends after 10 minutes.

When access control is active, no "normal" communication takes place between the MP-Bus and the MP-Bus devices. The MP-Bus devices receive no further control values and send no status values.

i Note

When access control is active, values received via the bus (ABB i-bus® KNX) are ignored, and are not sent to the MP-Bus devices after access control ends.

When connecting to a new KNX/MP-Bus Controller for the first time, or when re-opening the DCA after a change on the device, the device list is empty and is not shown. Pressing the *Start device discovery* button starts the scan for newly connected MP-Bus devices.

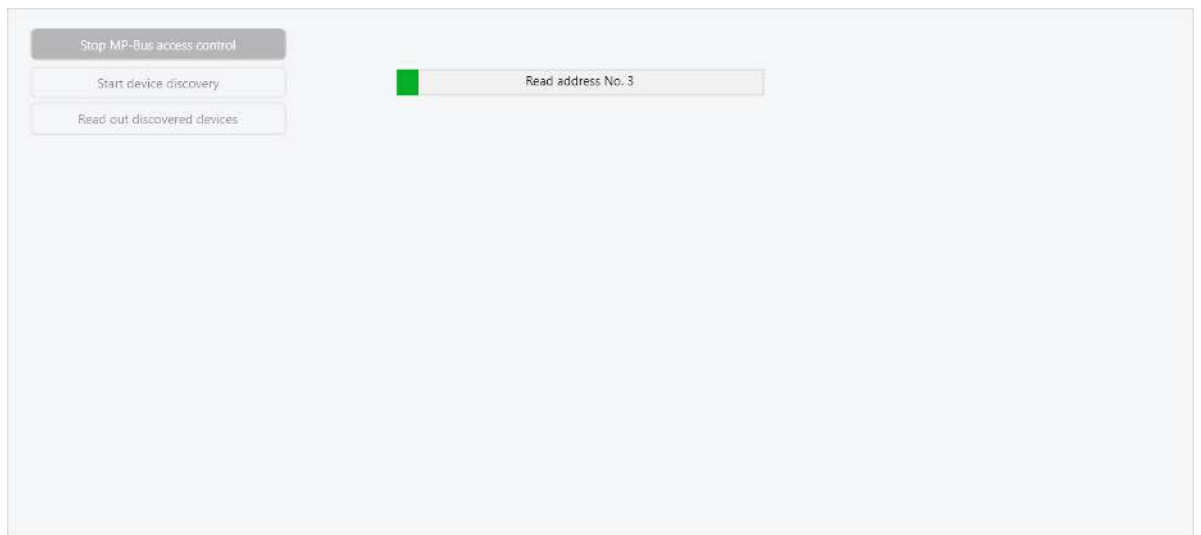


Fig. 6: Device discovery

After discovery, all newly discovered MP-Bus devices are shown at the end of the table. Devices that were already known or assigned are shown in their respective channels. If the newly discovered devices support auto-addressing or already have an MP-Bus address assigned to them (e.g. via → [Belimo Assistant 2, Page 17](#)), the MP-Bus addresses for these devices are also shown.

All newly discovered devices must be assigned to a channel by dragging them from their position at the end of the table to an empty channel. A notification at the top of the DCA informs you about the newly discovered devices and the requirement to drag and drop them to an empty channel. The notification is hidden after all devices are assigned to a channel, or when a new discovery search is carried out and finds no devices.

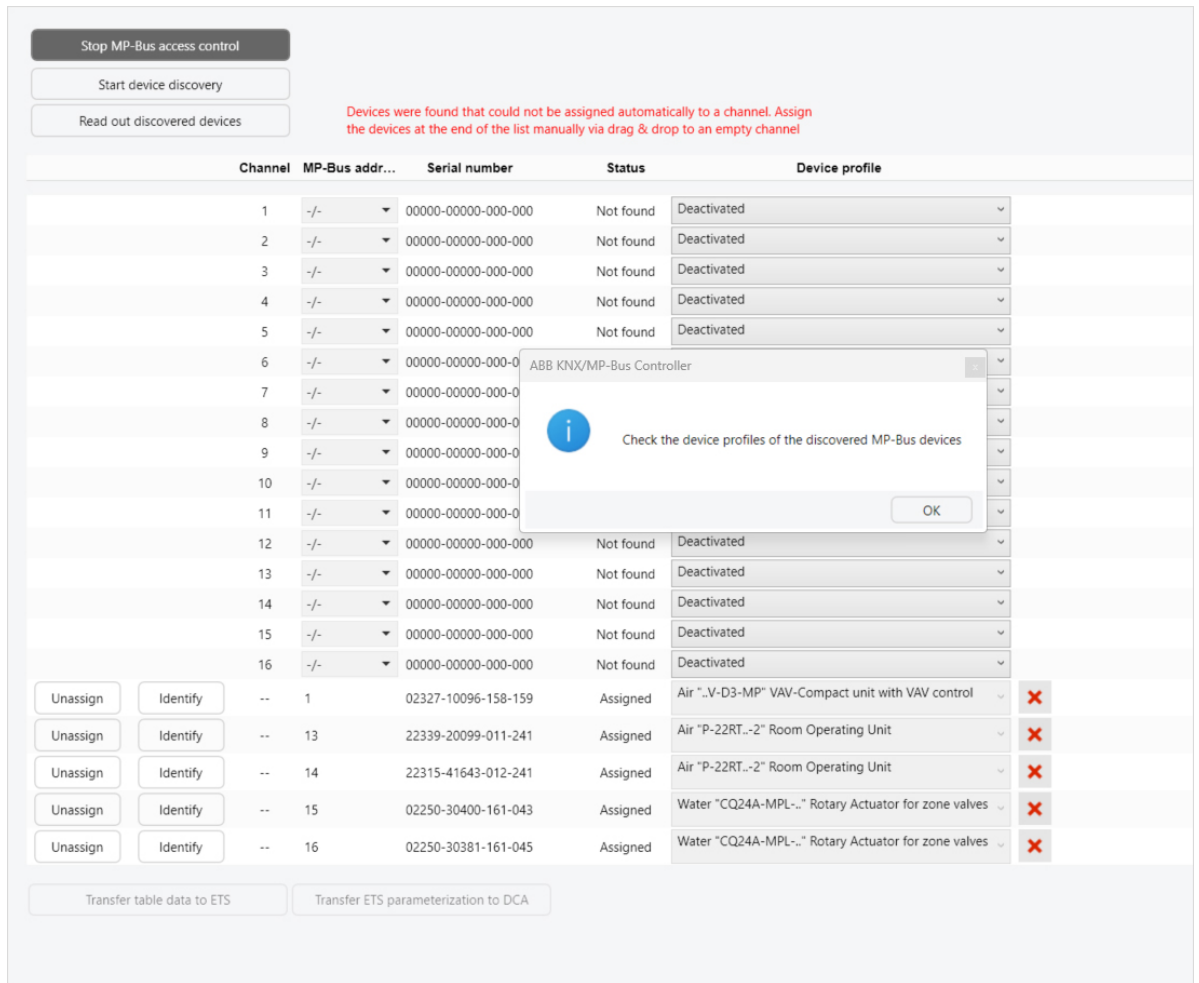


Fig. 7: Device discovery finished

If there was already an existing configuration in ETS, the devices can also be moved to a channel with the corresponding device profile.

Once the channel list has been set up, it is also possible to import the ETS parameter configuration using the *Transfer ETS parameterization to DCA* button below the table/list of discovered devices.

After moving the discovered devices to the channels, it is necessary to select the correct device profile for certain MP-Bus devices, as not all MP-Bus devices support extracting the device profile from their serial number. A pop-up notification after device detection tells you that the device profiles must be checked.

After completing the channel assignment, it is possible to assign MP-Bus addresses to any unaddressed devices.

As long as the table data have not yet been transferred back to ETS, it is possible to move a newly assigned device again to a different channel, or to move the device out of the table to change the order of the devices. Once the table data have been transferred to ETS, the device can only be removed from a channel by deleting the data in ETS and using the *Transfer ETS parameterization to DCA* button to update the channel list in the DCA.

If all channel assignments are complete and the MP-Bus devices have all been assigned an address, press the *Transfer table data to ETS* button to update the table data in ETS and continue the configuration there. All the devices will then be shown with a black border around them in the DCA, meaning they are fixed. No further changes can be made.

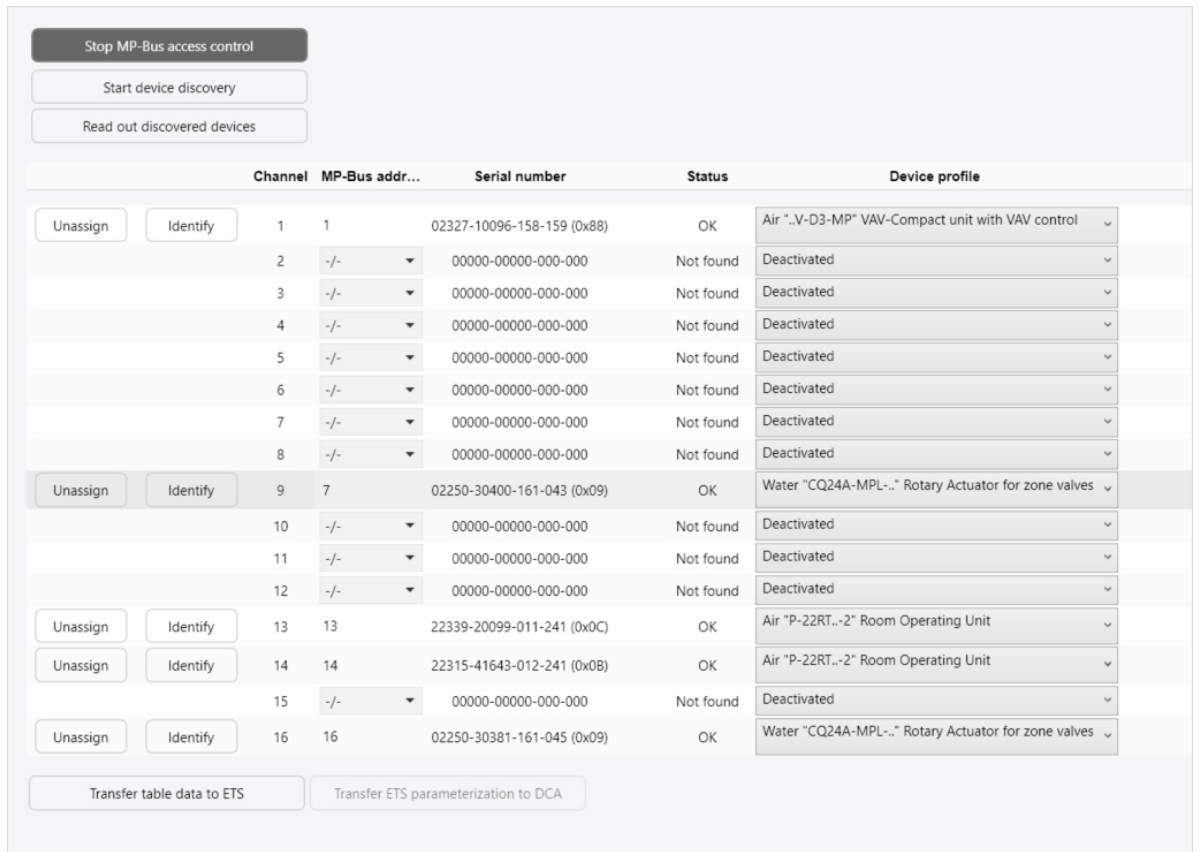


Fig. 8: Transfer table data to ETS

Once you have pressed the *Transfer table data to ETS* button, all device profiles, serial numbers and MP-Bus addresses from the channels will be written back to ETS, and the channels will be configured there according to the device profile assigned to them in the DCA.

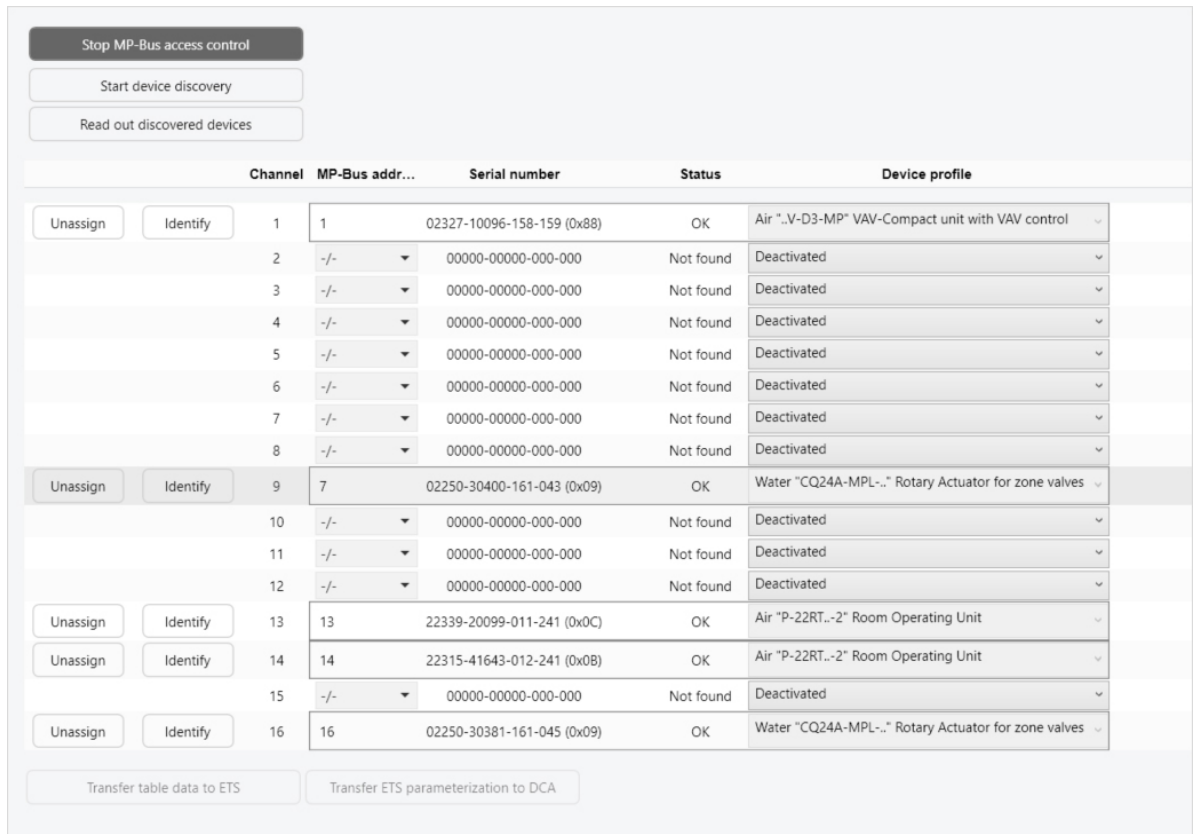


Fig. 9: Transfer table data to ETS finished

If there was already an existing parameterization in ETS, these devices cannot be removed in the DCA; they can only be removed in ETS. These channels are marked with a black border.

Note

The buttons *Transfer table data to ETS* and *Transfer ETS parameterization to DCA* are only active if there is a change to the table in either the DCA or ETS.

Note

- If a device is moved to an empty channel and saved there, it will simply be assigned to this channel.
- If a device is already assigned to this channel, the deleted device is assigned to the channel, while the device previously assigned to the channel is moved to the end of the table and its channel assignment is canceled.

6.6.2.3 Device addressing

There are several ways to address an MP-Bus device via the *KNX/MP-Bus Controller* and the DCA; some of these options depend on the methods supported by the MP-Bus device.

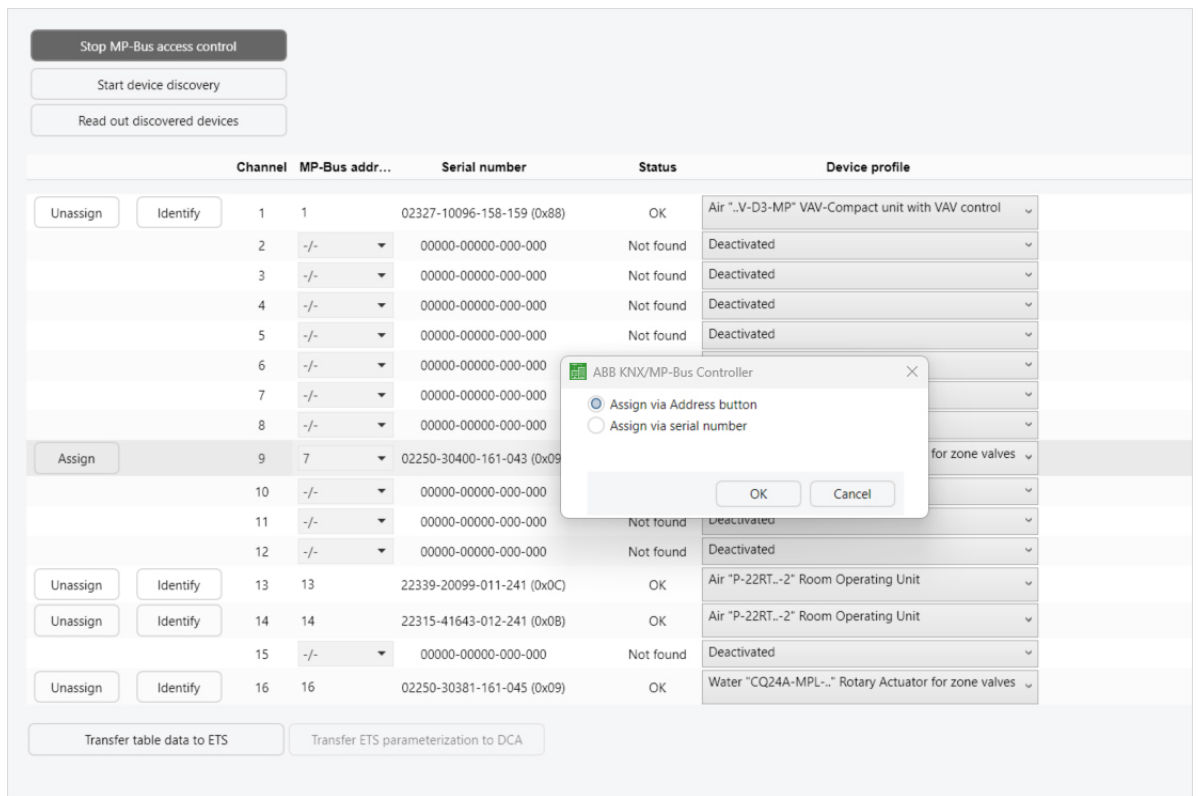


Fig. 10: Addressing

6.6.2.3.1 Address pre-assignment via Belimo tools

In this case, the address of the MP-Bus device is assigned before it is connected to the KNX/MP-Bus Controller or before running device discovery in the DCA. For information on how to perform addressing with the Belimo tools, please visit <https://www.belimo.com>.

If the serial numbers, addresses and device types are already known when the KNX/MP-Bus Controller is commissioned, it is possible to add the serial numbers, MP addresses and device profiles directly in ETS and perform a download of the KNX/MP-Bus Controller. In this case, it is not necessary to use the DCA. However, the DCA can be used to check that the channel settings are correct by running device discovery.

6.6.2.3.2 Automatic addressing of MP-Bus devices via the DCA

In this scenario, the DCA checks all devices during device discovery to see if they support automatic addressing. The DCA automatically assigns addresses to all devices that respond to the auto-address query.

The addresses are assigned based on the device type that is discovered. For devices that support MP-Bus topologies with up to 16 devices (e.g. → [Water "CQ24A-MPL-x" rotary actuator for zone valves, Page 92](#)), the highest address that has not yet been assigned is used. For devices that only support MP-Bus topologies with up to 8 devices (e.g. → [Water "xR24A-MP" rotary actuator for ball valves, Page 72](#)), the lowest MP address that has not yet been used is automatically assigned.

Once discovery is complete, the devices can be moved to the desired channels using drag and drop. In addition, for some devices that have been automatically addressed, it is necessary to assign the correct device profile to the device, as the device discovery can only recognize the entire product family, but not the exact type. A pop-up after completing device discovery indicates that devices with an unclear profile may have been found. If the correct device profile is not assigned to the channel in ETS, the Group Objects and parameters shown for the devices will be wrong.

i Note

Automatic addressing is not supported by all MP-Bus devices.

6.6.2.3.3 Addressing via the Address button

Devices that cannot use the auto-addressing function can be addressed via the *Addressing button* on the MP-Bus device itself (→ [Field device overview, Page 18](#)). In this case, the detected devices require confirmation by pressing the *Addressing button* on the MP-Bus device to confirm that the address is assigned to this device.

To do this, first assign an MP address for a channel in the DCA, then press the *Assign* button. Addressing then starts, using *Assign via Addressing button*.

i Note

Addressing via the Addressing button can be performed on all devices that have an Addressing button, even if the devices support auto-addressing (e.g. after canceling the address assignment of an automatically addressed device).

6.6.2.3.4 Addressing via the serial number

All devices can be assigned an address via their serial number.

Enter the serial numbers in the parameter window → [Device settings, Page 39](#) for the desired channel. Besides the serial number, it is also possible to select the MP address directly; alternatively, this can also be done in the DCA.

After entering the serial number, start the DCA and access control.

After the data has been transferred to the DCA (data transfer using the *Transfer ETS parameterization to DCA* button), the serial number of the device is also displayed in the DCA.

If device discovery has not yet been performed, the *Start device discovery* button must first be pressed and device discovery must be completed before the channel table is displayed in the DCA.

Once device discovery is complete, the *Assign* button is displayed next to the channel for which the serial number was entered.

i Note

The *Assign* button is only displayed if an MP-Bus address has also been selected.

After pressing the *Assign* button for the channel, the *Assign via serial number* option can be selected. After selecting *Assign via serial number* and pressing the *OK* button, the selected address is assigned to the MP-Bus device.

Note

If the device to be addressed via the serial number has already been detected during device detection and supports automatic addressing, it may already have been assigned an address. Either the device must now be moved to the desired channel using drag and drop and left at the automatically assigned address, or the assignment must be canceled and the device must be re-addressed using the serial number.

Once addressing is complete, it is recommended to run device detection again to ensure that all devices can be found and that all addresses have been assigned correctly.

6.6.2.4 Device identification

The DCA provides the option of identifying a specific device in the system (e.g. if several devices of the same type are installed but it is unclear which device has which MP address/is assigned to which channel).

Using the *Identify* button for the channels already assigned in the DCA, it is possible to identify a specific MP-Bus device using two different options.

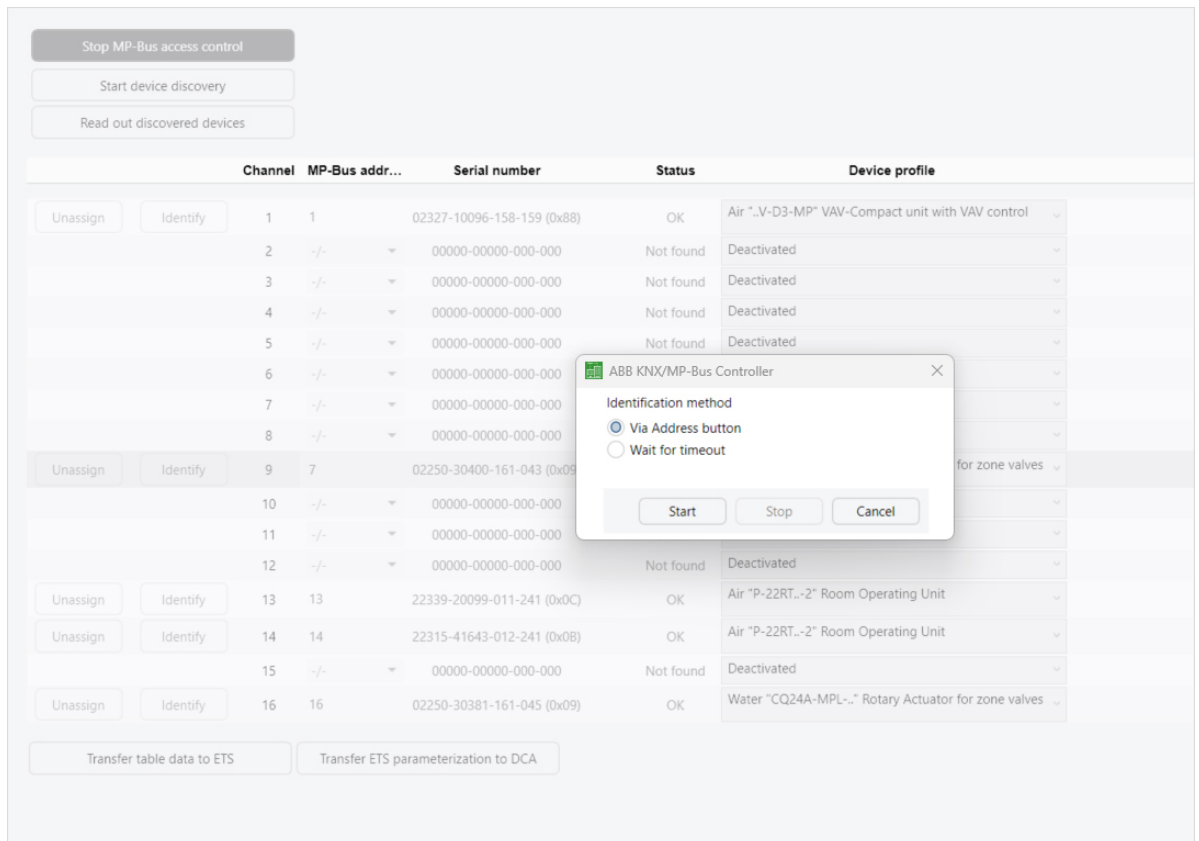


Fig. 11: Identification

Due to the communication type of the KNX/MP-Bus Controller (client-server principle), it is only possible to identify one device at a time.

- *Via Addressing button*: If the option *Via Addressing button* is selected on the *Identify* button, the *Addressing button/Address MPL button* on the MP-Bus device can then be pressed and held down to send a notification to the DCA (displayed as *Identification successful*) to identify this device.
 - If the *Addressing button* is pressed on a device for which the *Identify via Addressing button* action has not been selected, nothing is displayed.
 - If no confirmation is received a few seconds after pressing *Via Addressing button*, it is not the desired device and the button of the next device can be pressed.

Note

Not all MP-Bus devices support this option, as not all of them have an Address button.

- *Wait for timeout*: If the *Wait for timeout* option is selected on the *Identify* button, the MP-Bus device must then be disconnected from the MP-Bus to generate an event that the DCA can detect and display in the *Identification method* pop-up window. If a device is disconnected for which the *Wait for timeout* action has not been selected, nothing is displayed.

6.6.2.5

Moving an assigned MP-Bus device to another channel

To change the channel of a device that has already been addressed by the DCA and transferred to ETS, the serial number, profile and MP address (and, if necessary, the description text) must be manually copied from the original channel to the new channel in the → [Device settings, Page 39](#) parameter window and deleted from the original channel. The DCA can then be reopened and the table configuration updated by pressing the *Transfer ETS parameterization to DCA* button. If MP-Bus access control is enabled and the list of MP-Bus devices is re-checked using the *Read found device list* button, the move will also be updated in the DCA table. This updates the status from "Not found" to "OK" and enables the *Identify* button.

Channels can only be swapped in the DCA as long as newly discovered devices are moved to the channels using drag & drop but the configuration has not been transferred back to ETS using the *Transfer table data to ETS* button.

Note

Devices that have already been transferred to the ETS configuration or updated in the DCA from the ETS configuration are shown with a black border around the channel. These devices cannot be moved or changed in the DCA.

6.6.2.6 Error detection and error handling

The DCA can detect the following problems in the addressing and configuration of MP-Bus devices and alert the user with an error message in the DCA:

Error	Error description	Error handling
Multiple MP-Bus devices with the same MP-Bus address ("duplicate address")	This error occurs when the same MP address has been assigned multiple times in ETS and is only displayed directly in the DCA.	In this case, this address conflict must be resolved by selecting unique addresses for all devices in ETS or in the DCA and assigning the addresses to the devices. In this case, the DCA prevents the assignment of addresses that have been assigned multiple times until the address conflict has been resolved (the <i>Assign</i> button is hidden).
Address error – multiple devices with the same address detected	This error occurs when multiple devices respond to the same telegram. The address conflict can arise if the devices are addressed outside the ETS/DCA workflow and the same address is accidentally assigned multiple times, or if devices from different MP-Bus lines are combined in a new line.	To correct the error, all devices at the detected address must be moved to unique addresses, either by addressing via the DCA or via the Belimo tools.
Wrong serial number	This error occurs when the serial number and the device profile assigned to this serial number in ETS do not match.	To resolve the issue, either the serial number or the device profile in ETS must be corrected.
Duplicated serial number	This error occurs when the serial number has been entered multiple times in the parameter. This can occur, for example, after moving a device within the ETS parameters to a new channel. Since each serial number is unique, it cannot be assigned to multiple channels.	To resolve the issue, exit the DCA and remove all but one instance of the serial number.
Not found	This error occurs when the device found during detection has the same MP address as a device already configured in ETS. However, the detected profile does not match the device profile assigned in ETS.	To resolve the error, close the DCA and amend the device profile assigned to the affected serial number.
Too many MP-Bus devices connected to the line	The number of MP-Bus devices connected to the MP-Bus line must be reduced to 8 or 16, depending on the type of devices connected to the bus line. The only thing that can be detected is that more than 16 devices are connected to the bus line.	To correct the error, the surplus MP-Bus devices must be disconnected from the bus line. The error will only be cleared after a new scan has been performed.

6.6.2.7 Removing an MP-Bus device from the DCA

To completely remove a device from the DCA, the information (serial number, device profile and MP-Bus address) must be removed from ETS. The serial number must be replaced with 00000-00000-000-000. Then press the *Transfer ETS parameterization to DCA* button to obtain the current data from ETS. The device will then also be removed from the table in the DCA.

6.7 Unloading device or resetting to factory settings (Master-Reset)

6.7.1 Resetting device to factory settings using the Programming button

1. Disconnect the device from the bus (ABB i-bus® KNX).
 2. Wait 5 seconds, then press and hold the *Programming* button.
 3. Connect the device to the bus (ABB i-bus® KNX).
 - ⇒ *Programming* LED flashes at 1 Hz.
 4. When the *Programming* LED flashes at 5 Hz, release the *Programming* button.
 - ⇒ Device executes a Master-Reset; *Programming* LED is off.
- ⇒ Settings and physical addresses are reset to their factory settings.

- ⇒ The device application is removed.
- ⇒ The firmware version is retained.
- ⇒ The device key (Tool Key) assigned by ETS is reset. The device certificate is required for recommissioning if it is not still available in the ETS project from the original commissioning.

6.7.2 Unloading device via ETS

Note

A KNX Secure device can only be unloaded via ETS if the device certificate has been entered in the project and ETS has assigned a device key (Tool Key).

Unloading application

- The physical address is retained.
- The device application is removed.
- The device key assigned by ETS (Tool Key) is retained. The device certificate is not required for reprogramming.

Unloading physical address and application

- Settings and physical addresses are reset to their factory settings.
- The device application is removed.
- The firmware version is retained.
- The device key (Tool Key) assigned by ETS is reset. The device certificate is required for recommissioning if it is not still available in the ETS project from the original commissioning.

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 parameterization and function.

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

no (*checkbox cleared*)

yes (checkbox ticked)

Note

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

Note

The largest and most extensive device in the product family is described below as an example.

7.1.1 Prerequisites for visibility

In the "Prerequisites for visibility" the ETS settings and product variants necessary to display a parameter window/parameter/Group Object are listed. If no "Prerequisites for visibility" are specified, parameter windows/parameters/Group Objects are always shown or the prerequisites are given by the higher-level parameter window.

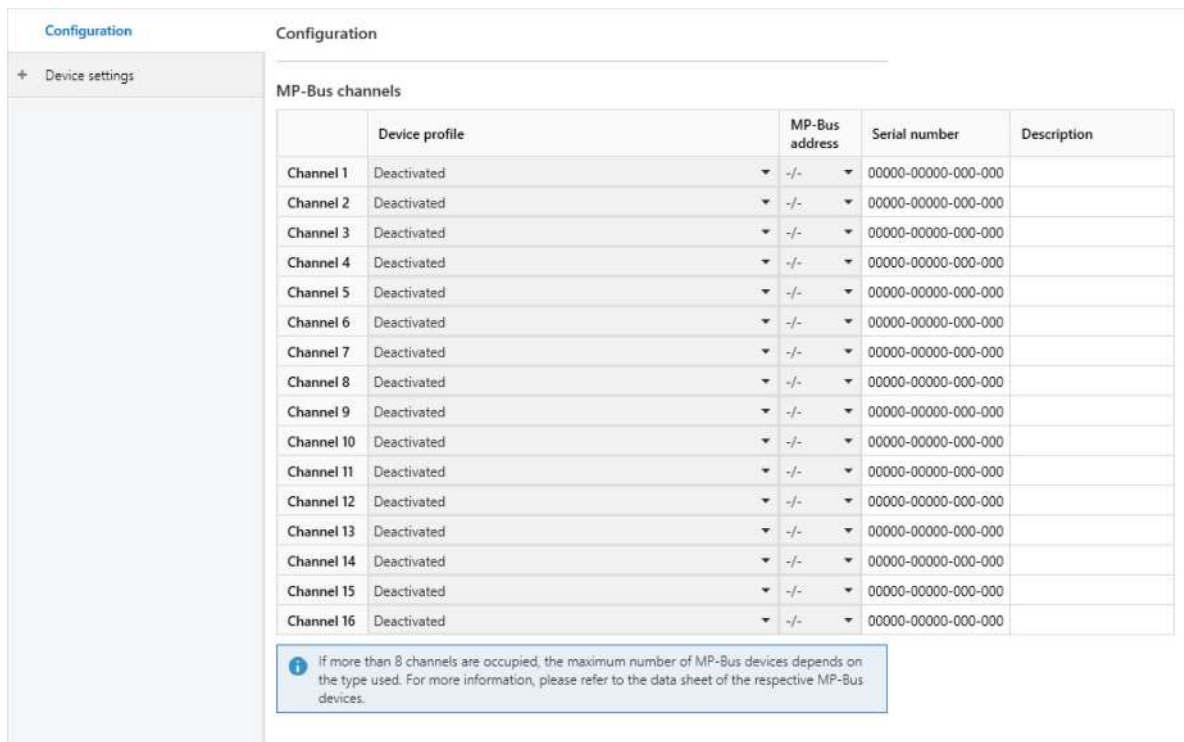
The "Prerequisites for visibility" are structured as follows:

- Parameter windows: all necessary prerequisites
- Parameters: Settings in other parameter windows, higher-level parameters, product variant required
- Group Objects: all necessary prerequisites

7.2 Parameter windows

7.2.1 Parameter windows Configuration

The following settings can be made in this parameter window:



Channel	Device profile	MP-Bus address	Serial number	Description
Channel 1	Deactivated	-/-	00000-00000-000-000	
Channel 2	Deactivated	-/-	00000-00000-000-000	
Channel 3	Deactivated	-/-	00000-00000-000-000	
Channel 4	Deactivated	-/-	00000-00000-000-000	
Channel 5	Deactivated	-/-	00000-00000-000-000	
Channel 6	Deactivated	-/-	00000-00000-000-000	
Channel 7	Deactivated	-/-	00000-00000-000-000	
Channel 8	Deactivated	-/-	00000-00000-000-000	
Channel 9	Deactivated	-/-	00000-00000-000-000	
Channel 10	Deactivated	-/-	00000-00000-000-000	
Channel 11	Deactivated	-/-	00000-00000-000-000	
Channel 12	Deactivated	-/-	00000-00000-000-000	
Channel 13	Deactivated	-/-	00000-00000-000-000	
Channel 14	Deactivated	-/-	00000-00000-000-000	
Channel 15	Deactivated	-/-	00000-00000-000-000	
Channel 16	Deactivated	-/-	00000-00000-000-000	

Fig. 12: Configuration parameter window

7.2.1.1 Channel X Device profile

This parameter is used to set the device profile of the external MP-Bus device that is connected to the channel.

Option	
<i>Deactivated</i>	The channel is deactivated.
<i>Air "CM24-MPL-x" rotary/damper actuator</i>	The device profile Air "CM24-MPL-x" rotary/damper actuator is selected.
<i>Air "xM24A-MP" rotary/damper actuator</i>	The device profile Air "xM24A-MP" rotary/damper actuator is selected.
<i>Air "P-22RTx-1900x-2" room operation unit</i>	The device profile Air "P-22RTx-1900x-2" room operation unit is selected.
<i>Air "xV-D3-MP" VAV compact controller</i>	The device profile Air "xV-D3-MP" VAV compact controller is selected.
<i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i>	The device profile Air "VRU-x-BAC-x" VAV universal controller (modular) is selected.
<i>Water "CQ24A-MPL-x" rotary actuator for zone valves</i>	The device profile Water "CQ24A-MPL-x" rotary actuator for zone valves is selected.
<i>Water "xR24A-MP" rotary actuator for ball valves</i>	The device profile Water "xR24A-MP" rotary actuator for ball valves is selected.
<i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>	The device profile Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 is selected.
<i>Water "22PEx-1Ux" thermal energy meter</i>	The device profile Water "22PEx-1Ux" thermal energy meter is selected.

7.2.1.2 Channel X MP-Bus address

Note

An MP-Bus address can only be used once per system.

This parameter is used to set the MP-Bus address of the external MP-Bus device that is connected to the channel.

Option

1... 16

7.2.1.3 Channel X Serial number

This parameter is used to set the serial number of the external MP-Bus device that is connected to the channel.

More information: → [Device Configuration App \(DCA\), Page 25](#).

Note

The serial number is located on the side of the MP-Bus devices.

Option

19 bytes

7.2.1.4 Channel X description

This parameter is used to specify an individual description for a channel. The description is displayed at the following points:

- In the name of the corresponding parameter window
- In the name of the corresponding Group Objects

Option

Free text entry

Maximum 24 ASCII characters; the maximum number of characters may vary for other character formats.

7.2.2 Parameter windows Device settings

The following settings can be made in this parameter window:

- Set sending and switching delay
- Set telegram rate limit
- Enable central and device-specific Group Objects

Fig. 13: Device Settings parameter window

This parameter window includes the following parameters:

- [Sending and switching delay after KNX voltage recovery, Page 39](#)
- [Value after sending and switching delay has expired, Page 40](#)
- [Telegram rate limit, Page 40](#)
 - [Maximum number of sent telegrams, Page 40](#)
 - [In period, Page 40](#)
- [Time between read requests after device restart, Page 41](#)
- [Enable Group Object "In operation", Page 41](#)
 - [Sending cycle, Page 41](#)
- [Time delay for querying MP-Bus devices that do not respond, Page 42](#)
- [Enable Group Object "Request status values", Page 42](#)

7.2.2.1 Sending and switching delay after KNX voltage recovery

This parameter is used to define the sending and switching delay after KNX voltage recovery.

More information: → [Sending or switching delay, Page 229](#).

Note

After KNX voltage recovery, the device waits for the sending delay time to elapse before sending telegrams on the bus (ABB i-bus® KNX).

Option

2... 60 s

7.2.2.2 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.

More information: → [Sending or switching delay, Page 229](#).

Option	
<i>Last value received</i>	The inputs and outputs react to the last value that was received during the sending and switching delay. If no value was received during the sending and switching delay, the reaction after KNX voltage recovery set in the device parameters applies.
<i>Ignore received values</i>	The state of the inputs and outputs remains unchanged until a new value is received after the delay has elapsed.

7.2.2.3 Telegram rate limit

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

More information: → [Telegram rate limit, Page 230](#).

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

7.2.2.4 Maximum number of sent 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](#).

More information: → [Telegram rate limit, Page 230](#).

Option	
<i>0 ... 20 ... 100</i>	

Prerequisites for visibility

- Parameter window [Device settings](#) \ Parameter [Telegram rate limit](#) \ Option *Yes*

7.2.2.5 In period

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 230](#).

Note

The telegram rate limit is deactivated when the value 0 is selected.

Option

0 ... 1 ... 59 s

Prerequisites for visibility

- Parameter window [Device settings](#) \ Parameter [Telegram rate limit](#) \ Option *Yes*

7.2.2.6

Time between read requests after device restart

This parameter is used to define the time delay between the read requests sent on the bus (ABB i-bus® KNX). The time delay applies to all Group Objects for which the "read-on-init" flag has been set.

Option

500 ... 5,000 ms

7.2.2.7

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, send value 0 cyclically</i>	<p>The Group Object is enabled and cyclically sends the value 0.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> In operation
<i>Yes, send value 1 cyclically</i>	<p>The Group Object is enabled and cyclically sends the value 1.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> In operation

7.2.2.8

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 [Device settings](#) \ Parameter [Enable Group Object "In operation"](#) \ Option *Yes, send value 0 cyclically* / *Yes, send value 1 cyclically*

7.2.2.9 Time delay for querying MP-Bus devices that do not respond

This parameter can be used to set a time delay for re-communication with an MP-Bus device. The time delay applies only to MP-Bus devices that did not respond to communication during the last cycle.

For more information about cyclical communication, see → [General communication behavior, Page 14](#).

Option

1 ... 30 ... 255 cycles

7.2.2.10 Enable Group Object "Request status values"

This parameter enables the following Group Object:

- [Request status values](#)

All status messages of the device can be requested using the Group Object [Request status values](#) and sent on the bus (ABB i-bus® KNX).

Option

No The Group Object is not enabled.

Yes The Group Object is enabled.

The following dependent Group Objects are displayed:

- [Request status values](#)
-

7.2.3 Parameter windows Channel X:

Note

An individual description can be added to the name of the parameter window, → parameter *Channel X description*.

7.2.3.1 Parameter windows Air "xV-D3-MP" VAV compact controller

7.2.3.1.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

Configuration

- + Device settings
- Channel 1:
- Basic settings**
- Sensor

Basic settings

Product picture

Air "xV-D3-MP" VAV compact controller

MP-Bus address: -/-

Serial number: 00000-00000-000-000

MP-Bus address and serial number are adjustable in parameter window "Configuration"

Cyclical monitoring of setpoint and override control:

Status output

The status output indicates the current position of the valve.

DPT of absolute position: Rotation angle Millimeters

Note: Please ensure that the selection for this parameter matches the installed device (linear or rotary actuator).

Send status values: On change

Value difference for sending status values: 10 %

DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate": 2 bytes (DPT 9.009) 4 bytes (DPT 14.077)

Fig. 14: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of setpoint and override control, Page 44](#)
 - [Monitoring time, Page 44](#)
 - [Actuator position after cyclical monitoring time has expired, Page 44](#)
- [DPT of absolute position, Page 45](#)
- [Send status values, Page 45](#)
 - [Values are sent from a change of, Page 46](#)
 - [Sending cycle, Page 46](#)
- [DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate", Page 47](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xV-D3-MP" VAV compact controller

7.2.3.1.1.1

Cyclical monitoring of setpoint and override control

This parameter is used to activate cyclical monitoring of the external setpoint and of override control.

Option	
<i>No</i>	Cyclical monitoring is not activated.
<i>Yes</i>	<p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Monitoring time • Actuator position after cyclical monitoring time has expired <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Error cyclical monitoring

7.2.3.1.1.2

Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option	
<i>00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.1.1.3

Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Option	
<i>Unchanged</i>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<i>Open</i>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<i>Closed</i>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.
<i>Min</i>	The set minimum value of the actuator is activated. After reaching the position, the actuator stays there until a new control value is received.
<i>Mid</i>	The center position between the set minimum and maximum values is activated. This position does not necessarily correspond to the 50 % position of the actuator. After reaching the position, the actuator stays there until a new control value is received.
<i>Max</i>	The set maximum value of the actuator is activated. After reaching the position, the actuator stays there until a new control value is received.

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Cyclical monitoring of setpoint and override control* \ Option *Yes*

7.2.3.1.1.4

DPT of absolute position

This parameter is used to define the data point type (DPT) of the current absolute position.

i Note

The setting in this parameter must match the actuator type (rotary or linear) of the external MP-Bus device, otherwise incorrect values will be shown in the Group Objects.

Option	
<i>Rotation angle (DPT 8.011)</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> <i>Status Absolute position (rotation angle)</i> <i>Status Nominal range (rotation angle)</i>
<i>Millimeters (DPT 7.011)</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> <i>Status Absolute position (millimeters)</i> <i>Status Nominal range (millimeters)</i>

7.2.3.1.1.5

Send status values

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):

- Status Relative position*
- Status Absolute position (rotation angle)*
- Status Absolute position (millimeters)*
- Status Relative flow rate*
- Status Absolute flow rate* (2 bytes)
- Status Absolute flow rate* (4 bytes)

i Note

The nominal values are sent each time there is a change.
The relative and absolute position are always sent in tandem.
The relative and absolute flow rate are always sent in tandem.
With cyclical sending, all 4 Group Objects are always sent.

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.1.1.6

Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

More information: → [Sending status values, Page 17](#).

Option
<i>0 ... <u>10</u> ... 30 %</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.1.1.7

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... <u>00:10:00</u> ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.1.1.8

DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate"

This parameter is used to define the data point type (DPT) for the Group Objects of the absolute and nominal flow rates.

Option	
<i>2 bytes (DPT 9.009)</i>	The value is output in m ³ /h. The following dependent Group Objects are displayed: <ul style="list-style-type: none">• Status Absolute flow rate• Status Nominal flow rate
<i>4 bytes (DPT 14.077)</i>	The value is output in m ³ /s. The following dependent Group Objects are displayed: <ul style="list-style-type: none">• Status Absolute flow rate• Status Nominal flow rate

7.2.3.1.2 Parameter windows Sensor

The following settings can be made in this parameter window:

Fig. 15: Sensor parameter window

This parameter window includes the following parameters:

- [Sensor type, Page 48](#)
- [Output sensor value, Page 50](#)
- [Output sensor value, Page 51](#)
- [Output sensor value, Page 51](#)
- [Minimum sensor value, Page 51](#)
- [Minimum output value, Page 51](#)
- [Maximum sensor value, Page 52](#)
- [Maximum output value, Page 52](#)
- [Send sensor values, Page 52](#)
- [Send sensor values, Page 53](#)
- [Send sensor values, Page 67](#)
- [Send sensor values, Page 54](#)
- [Send sensor values, Page 69](#)
- [Send sensor values, Page 55](#)
 - [Sensor values are sent from a change of, Page 56](#)
 - [Sensor values are sent from a change of, Page 70](#)
 - [Sensor values are sent from a change of, Page 56](#)
 - [Sensor values are sent from a change of, Page 56](#)
 - [Sensor values are sent from a change of, Page 71](#)
 - [Sending cycle, Page 56](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter

7.2.3.1.2.1

Sensor type

This parameter is used to define what type of sensor is connected to the external MP-Bus device.

The options available depend on the selected MP-Bus device → [Channel X Device profile, Page 37](#).

Option	
<i>No sensor</i>	No sensor is connected to the external MP-Bus device.
<i>Analog input signal</i>	<p>The external MP-Bus device is controlled by an analog input signal.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade not enabled (→ parameter Room pressure cascade) • Activation of the external MP-Bus device is analog (→ parameter Control via) • External MP-Bus device <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>
<i>Active sensor</i>	<p>The active sensor is an analog voltage input value that can be transmitted on the bus (ABB i-bus® KNX) as either an actual mV value or as a percentage scaled value.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade enabled (→ parameter Room pressure cascade) <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value
<i>Passive sensor 1 kohm</i>	<p>The 1 kΩ passive sensor enables connection of an ohmic resistance of up to 1 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Passive sensor 20 kohms</i>	<p>The 20 kΩ passive sensor enables connection of an ohmic resistance of up to 20 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Switch contact</i>	<p>Via the bus, (ABB i-bus® KNX), the switch sensor transmits a basic binary input signal that is connected to the external MP-Bus device.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)
<i>Temperature sensor PT 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Temperature sensor Ni 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)

Option	
<i>Temperature sensor NTC 10 kohms</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/NI1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> Air "xV-D3-MP" VAV compact controller <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (temperature)
<i>Humidity sensor</i>	<p>Selecting this option allows you to connect a humidity sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Output sensor value Send sensor values Sensor values are sent from a change of Sending cycle
<i>Air quality sensor (CO2)</i>	<p>Selecting this option allows you to connect an air quality sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (air quality)
<i>Dew point sensor</i>	<p>Via the bus, (ABB i-bus® KNX), the dew point sensor transmits a binary input signal that is connected to the external MP-Bus device.</p> <p>This option is not available for the following external MP-Bus devices:</p> <ul style="list-style-type: none"> Air "xM24A-MP" rotary/damper actuator Air "xV-D3-MP" VAV compact controller <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Output sensor value Send sensor values Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (switch)

7.2.3.1.2.2

Output sensor value

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Voltage (DPT 9.020)</i>	<p>The measured value of the sensor is output directly as a voltage value (mV).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (voltage)
<i>Percent (DPT 5.001)</i>	<p>The measured value of the sensor is output as a scaled percentage value. The measured value of the voltage is converted to a percentage value using the settings in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Minimum sensor value Minimum output value Maximum sensor value Maximum output value Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (percent)

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Active sensor*

7.2.3.1.2.3 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>DPT 9.007</i>	The measured value of the sensor is output as a 2-byte floating point value (DPT 9.007). The following dependent Group Objects are displayed: • Sensor value (humidity)
<i>DPT 5.001</i>	The measured value of the sensor is output as a 1-byte unsigned value (DPT 5.001). The following dependent Group Objects are displayed: • Sensor value (humidity)

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.1.2.4 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Normal</i>	1 = Sensor contact closed, 0 = Sensor contact open
<i>Inverted</i>	0 = Sensor contact closed, 1 = Sensor contact open

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.1.2.5 **Minimum sensor value**

This parameter is used to define the minimum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Minimum output value](#).

Option	
<i>0 ... 10,000 mV</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.1.2.6 **Minimum output value**

This parameter is used to define the minimum output value in percent that corresponds to the voltage value in the parameter [Minimum sensor value](#).

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

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.1.2.7 Maximum sensor value

This parameter is used to define the maximum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Maximum output value](#).

Option

0 ... 10,000 mV

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option *Active sensor*
 - Parameter [Output sensor value](#) \ Option *Percent (DPT 5.001)*

7.2.3.1.2.8 Maximum output value

This parameter is used to define the maximum output value in percent that corresponds to the voltage value in the parameter [Maximum sensor value](#).

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option *Active sensor*
 - Parameter [Output sensor value](#) \ Option *Percent (DPT 5.001)*

7.2.3.1.2.9 Send sensor values

This parameter is used to define when the measured value of the active sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Voltage \(DPT 9.020\)](#)

7.2.3.1.2.10

Send sensor values

This parameter is used to define when the measured value of the active sensor or the humidity sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

Or

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.1.2.11

Send sensor values

This parameter is used to define when the value of the sensor (switch contact or dew point sensor) is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On 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 cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.1.2.12

Send sensor values

This parameter is used to define when the measured value of the air quality sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Air quality sensor \(CO2\)](#)

7.2.3.1.2.13 Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 5 ... 100 %

Note

The status values are always sent when the 0 % and 100 % positions are reached. Reaching a previously received position command only results in a new status value being sent if the change value set here has been exceeded. If necessary, a smaller change value should be selected to ensure that the status values are sent.

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.1.2.14 Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 500 ppm

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.1.2.15 Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 65000 mV

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.1.2.16 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.


7.2.3.2 Parameter windows Air "xM24A-MP" rotary/damper actuator

7.2.3.2.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

Configuration	Basic settings
+ Device settings	
- Channel 1:	
Basic settings	
Sensor	

Product picture



Air "xM24A-MP" rotary/damper actuator

MP-Bus address: -/-
 Serial number: 00000-00000-000-000
 MP-Bus address and serial number are adjustable in parameter window "Configuration"

Cyclical monitoring of control value and override control:

Status output
 The status output indicates the current position of the valve.

DPT of absolute position: Rotation angle Millimeters

i Please ensure that the selection for this parameter matches the installed device (linear or rotary actuator).

Send status values: On change

Value difference for sending status values: 10 %

Fig. 16: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of control value and override control, Page 58](#)
 - [Monitoring time, Page 58](#)
 - [Actuator position after cyclical monitoring time has expired, Page 58](#)
- [DPT of absolute position, Page 59](#)
- [Send status values, Page 59](#)
 - [Values are sent from a change of, Page 60](#)
 - [Sending cycle, Page 60](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator

7.2.3.2.1.1 Cyclical monitoring of control value and override control

This parameter is used to activate cyclical monitoring of the external control value and of override control.

Option	
<i>No</i>	Cyclical monitoring is not activated.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • <i>Monitoring time</i> • <i>Actuator position after cyclical monitoring time has expired</i> The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • <i>Error cyclical monitoring</i>

7.2.3.2.1.2 Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

i Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option	
<i>00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.1.3 Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Option	
<i>Unchanged</i>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<i>Open</i>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<i>Closed</i>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.
<i>Min</i>	The set minimum value of the actuator is activated. After reaching the position, the actuator stays there until a new control value is received.
<i>Mid</i>	The center position between the set minimum and maximum values is activated. This position does not necessarily correspond to the 50 % position of the actuator. After reaching the position, the actuator stays there until a new control value is received.
<i>Max</i>	The set maximum value of the actuator is activated. After reaching the position, the actuator stays there until a new control value is received.

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Cyclical monitoring of control value and override control* \ Option *Yes*

7.2.3.2.1.4

DPT of absolute position

This parameter is used to define the data point type (DPT) of the current absolute position.

Note

The setting in this parameter must match the actuator type (rotary or linear) of the external MP-Bus device, otherwise incorrect values will be shown in the Group Objects.

Option	
<i>Rotation angle</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Absolute position (rotation angle) • Status Nominal range (rotation angle)
<i>Millimeters</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Absolute position (millimeters) • Status Nominal range (millimeters)

7.2.3.2.1.5

Send status values

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):

- [Status Relative position](#)
- [Status Absolute position \(rotation angle\)](#)
- [Status Absolute position \(millimeters\)](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.2.1.6 Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

More information: → [Sending status values, Page 17](#).

Option

0 ... 10 ... 30 %

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.1.7 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.2 Parameter windows Sensor

The following settings can be made in this parameter window:

Fig. 17: Sensor parameter window

This parameter window includes the following parameters:

- [Sensor type, Page 61](#)
- [Output sensor value, Page 63](#)
- [Output sensor value, Page 64](#)
- [Output sensor value, Page 64](#)
- [Minimum sensor value, Page 64](#)
- [Minimum output value, Page 64](#)
- [Maximum sensor value, Page 65](#)
- [Maximum output value, Page 65](#)
- [Send sensor values, Page 65](#)
- [Send sensor values, Page 66](#)
- [Send sensor values, Page 67](#)
- [Send sensor values, Page 68](#)
- [Send sensor values, Page 69](#)
- [Send sensor values, Page 69](#)
 - [Sensor values are sent from a change of, Page 70](#)
 - [Sensor values are sent from a change of, Page 70](#)
 - [Sensor values are sent from a change of, Page 71](#)
 - [Sensor values are sent from a change of, Page 71](#)
 - [Sensor values are sent from a change of, Page 71](#)
 - [Sending cycle, Page 71](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter

7.2.3.2.2.1

Sensor type

This parameter is used to define what type of sensor is connected to the external MP-Bus device.

The options available depend on the selected MP-Bus device → [Channel X Device profile, Page 37](#).

Option	
<i>No sensor</i>	No sensor is connected to the external MP-Bus device.
<i>Analog input signal</i>	<p>The external MP-Bus device is controlled by an analog input signal.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade not enabled (→ parameter Room pressure cascade) • Activation of the external MP-Bus device is analog (→ parameter Control via) • External MP-Bus device <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>
<i>Active sensor</i>	<p>The active sensor is an analog voltage input value that can be transmitted on the bus (ABB i-bus® KNX) as either an actual mV value or as a percentage scaled value.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade enabled (→ parameter Room pressure cascade) <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value
<i>Passive sensor 1 kohm</i>	<p>The 1 kΩ passive sensor enables connection of an ohmic resistance of up to 1 kΩ. This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Passive sensor 20 kohms</i>	<p>The 20 kΩ passive sensor enables connection of an ohmic resistance of up to 20 kΩ. This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Switch contact</i>	<p>Via the bus, (ABB i-bus® KNX), the switch sensor transmits a basic binary input signal that is connected to the external MP-Bus device.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)
<i>Temperature sensor PT 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Temperature sensor Ni 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)

Option	
<i>Temperature sensor NTC 10 kohms</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/NII1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Humidity sensor</i>	<p>Selecting this option allows you to connect a humidity sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sensor values are sent from a change of • Sending cycle
<i>Air quality sensor (CO2)</i>	<p>Selecting this option allows you to connect an air quality sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (air quality)
<i>Dew point sensor</i>	<p>Via the bus, (ABB i-bus® KNX), the dew point sensor transmits a binary input signal that is connected to the external MP-Bus device.</p> <p>This option is not available for the following external MP-Bus devices:</p> <ul style="list-style-type: none"> • <i>Air "xM24A-MP" rotary/damper actuator</i> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)

7.2.3.2.2.2

Output sensor value

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Voltage (DPT 9.020)</i>	<p>The measured value of the sensor is output directly as a voltage value (mV).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (voltage)
<i>Percent (DPT 5.001)</i>	<p>The measured value of the sensor is output as a scaled percentage value. The measured value of the voltage is converted to a percentage value using the settings in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Minimum sensor value • Minimum output value • Maximum sensor value • Maximum output value • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (percent)

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Active sensor*

7.2.3.2.2.3 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>DPT 9.007</i>	The measured value of the sensor is output as a 2-byte floating point value (DPT 9.007). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Sensor value (humidity)
<i>DPT 5.001</i>	The measured value of the sensor is output as a 1-byte unsigned value (DPT 5.001). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Sensor value (humidity)

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.2.2.4 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Normal</i>	1 = Sensor contact closed, 0 = Sensor contact open
<i>Inverted</i>	0 = Sensor contact closed, 1 = Sensor contact open

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.2.2.5 **Minimum sensor value**

This parameter is used to define the minimum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Minimum output value](#).

Option	
<i>0 ... 10,000 mV</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.2.2.6 **Minimum output value**

This parameter is used to define the minimum output value in percent that corresponds to the voltage value in the parameter [Minimum sensor value](#).

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

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.2.2.7 **Maximum sensor value**

This parameter is used to define the maximum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter *Maximum output value*.

Option

0 ... 10,000 mV

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.2.2.8 **Maximum output value**

This parameter is used to define the maximum output value in percent that corresponds to the voltage value in the parameter *Maximum sensor value*.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.2.2.9 **Send sensor values**

This parameter is used to define when the measured value of the active sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Voltage \(DPT 9.020\)](#)

7.2.3.2.2.10

Send sensor values

This parameter is used to define when the measured value of the active sensor or the humidity sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

Or

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.2.2.11

Send sensor values

This parameter is used to define when the measured value of the passive sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Passive sensor 1 kohm / Passive sensor 20 kohms*

7.2.3.2.2.12

Send sensor values

This parameter is used to define when the value of the sensor (switch contact or dew point sensor) is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On 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 cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Switch contact / Dew point sensor*

7.2.3.2.2.13

Send sensor values

This parameter is used to define when the measured value of the temperature sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms*

7.2.3.2.2.14

Send sensor values

This parameter is used to define when the measured value of the air quality sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Air quality sensor (CO2)*

7.2.3.2.2.15

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>1 ... 5 ... 100 %</i>	<div style="border: 1px solid gray; padding: 5px;"> <p>Note</p> <p>The status values are always sent when the 0 % and 100 % positions are reached. Reaching a previously received position command only results in a new status value being sent if the change value set here has been exceeded. If necessary, a smaller change value should be selected to ensure that the status values are sent.</p> </div>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.2.16

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>0.5 ... 10 K</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.2.17 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 500 ppm

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.2.18 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 65000 mV

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.2.19 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 65000 ohms

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.2.2.20 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3 Parameter windows Water "xR24A-MP" rotary actuator for ball valves

7.2.3.3.1 Parameter windows Basic settings

The following settings can be made in this parameter window:


<ul style="list-style-type: none"> Configuration + Device settings - Channel 1: <ul style="list-style-type: none"> Basic settings Valve Sensor 	<h4>Basic settings</h4> <hr/> <h4>Product picture</h4>  <p>Water "xR24A-MP" rotary actuator for ball valves</p> <hr/> <p>MP-Bus address -/-</p> <p>Serial number 00000-00000-000-000</p> <p>MP-Bus address and serial number are adjustable in parameter window "Configuration"</p> <hr/> <p>Cyclical monitoring of control value and override control <input type="checkbox"/></p> <hr/> <h4>Status output</h4> <p>The status output indicates the current position of the valve.</p> <p>DPT of absolute position <input checked="" type="radio"/> Rotation angle <input type="radio"/> Millimeters</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>i Please ensure that the selection for this parameter matches the installed device (linear or rotary actuator).</p> </div> <p>Send status values On change</p> <p>Value difference for sending status values 10 %</p>
--	--

Fig. 18: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of control value and override control, Page 73](#)
 - [Monitoring time, Page 73](#)
 - [Actuator position after cyclical monitoring time has expired, Page 73](#)
- [DPT of absolute position, Page 74](#)
- [Send status values, Page 74](#)
 - [Values are sent from a change of, Page 75](#)
 - [Sending cycle, Page 75](#)

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X Device profile* \ Option *Water "xR24A-MP" rotary actuator for ball valves*

7.2.3.3.1.1 Cyclical monitoring of control value and override control

This parameter is used to activate cyclical monitoring of the external control value and of override control.

Option	
<i>No</i>	Cyclical monitoring is not activated.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • <i>Monitoring time</i> • <i>Actuator position after cyclical monitoring time has expired</i> The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • <i>Error cyclical monitoring</i>

7.2.3.3.1.2 Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

i Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option	
<i>00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.1.3 Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Option	
<i>Unchanged</i>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<i>Open</i>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<i>Closed</i>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.
<i>Min</i>	The set minimum value of the actuator is activated. After reaching the position, the actuator stays there until a new control value is received.
<i>Mid</i>	The center position between the set minimum and maximum values is activated. This position does not necessarily correspond to the 50 % position of the actuator. After reaching the position, the actuator stays there until a new control value is received.
<i>Max</i>	The set maximum value of the actuator is activated. After reaching the position, the actuator stays there until a new control value is received.

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Cyclical monitoring of control value and override control* \ Option *Yes*

7.2.3.3.1.4

DPT of absolute position

This parameter is used to define the data point type (DPT) of the current absolute position.

Note

The setting in this parameter must match the actuator type (rotary or linear) of the external MP-Bus device, otherwise incorrect values will be shown in the Group Objects.

Option

<i>Rotation angle (DPT 8.011)</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Absolute position (rotation angle) • Status Nominal range (rotation angle)
<i>Millimeters (DPT 7.011)</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Absolute position (millimeters) • Status Nominal range (millimeters)

7.2.3.3.1.5

Send status values

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):

- [Status Relative position](#)
- [Status Absolute position \(rotation angle\)](#)
- [Status Absolute position \(millimeters\)](#)

Option

<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.3.1.6 Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

More information: → [Sending status values, Page 17](#).

Option

0 ... 10 ... 30 %

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.1.7 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.2 Parameter windows Valve

The following settings can be made in this parameter window:

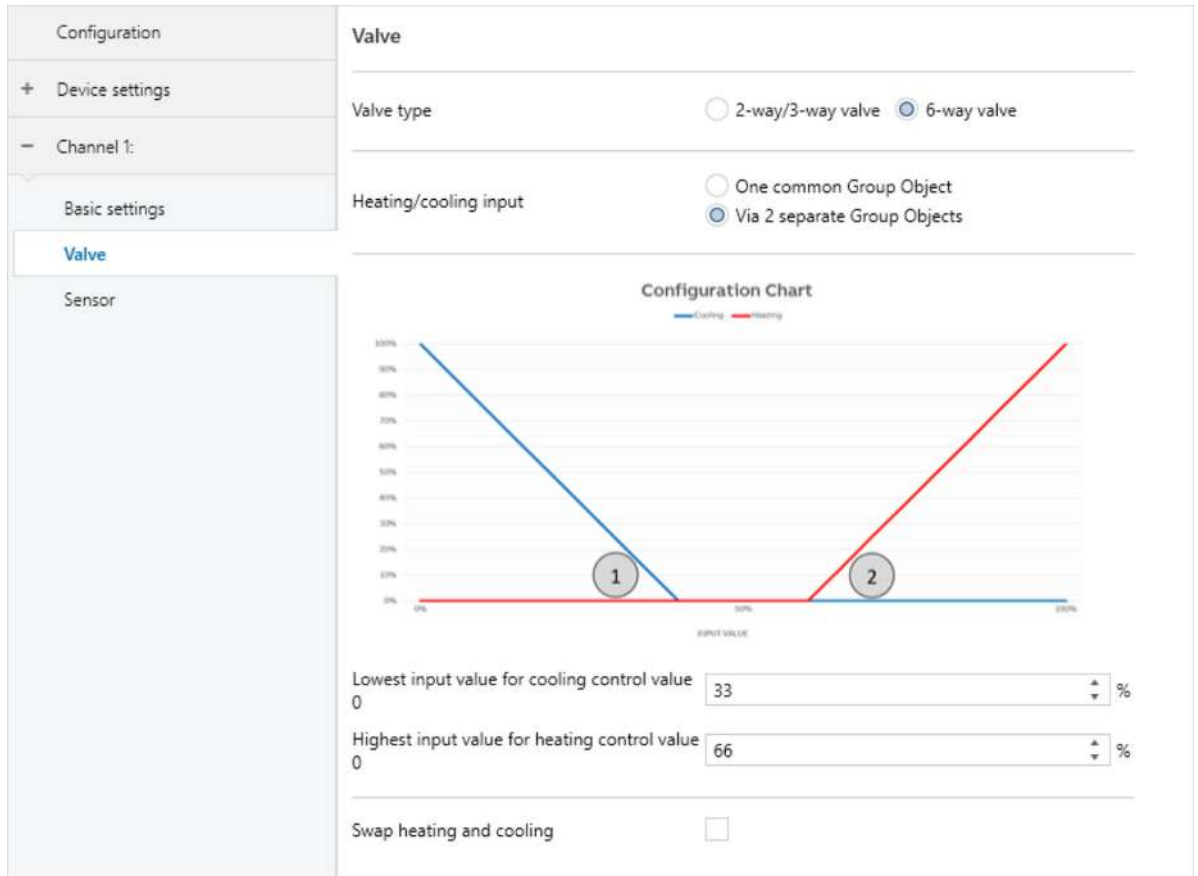


Fig. 19: Valve parameter window

This parameter window includes the following parameters:

- [Valve type, Page 76](#)
 - [Heating/cooling input, Page 77](#)
 - [Lowest control value for cooling = 0%, Page 77](#)
 - [Lowest control value for heating = 0%, Page 77](#)
 - [Swap heating and cooling, Page 77](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*

7.2.3.3.2.1

Valve type

The type of valve output is specified using this parameter.

Option	
<i>2-way/3-way valve</i>	<p>A 2-way valve or a 3-way valve is connected.</p> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Control value
<i>6-way valve</i>	<p>A 6-way valve is connected.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Heating/cooling input • Swap heating and cooling

7.2.3.3.2.2 Heating/cooling input

This parameter is used to define whether the heating/cooling control values should be received via one common or two separate Group Objects.

Option	
<i>One common Group Object</i>	<p>The heating/cooling control values are received via one common Group Object. The MP-Bus device sending the values is responsible for maintaining the 6-way characterization of the connected valve.</p> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Control value
<i>Via two separate Group Objects</i>	<p>The heating/cooling control values are received via two separate Group Objects. The 6-way characterization of the valve can be set in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Lowest control value for cooling = 0% • Lowest control value for heating = 0% <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Heating control value • Cooling control value • Heating/cooling changeover • Activate heating • Activate cooling

7.2.3.3.2.3 Lowest control value for cooling = 0%

This parameter is used to set the value for 0% cooling. This value defines the start of the dead zone between cooling and heating.

Option
0 ... 33 ... 60 %

7.2.3.3.2.4 Lowest control value for heating = 0%

This parameter is used to set the value for 0% heating. This value defines the end of the dead zone between heating and cooling.

Option
40 ... 66 ... 70 %

7.2.3.3.2.5 Swap heating and cooling

This parameter is used to define whether the control ranges for heating and cooling are swapped.

Option	
<i>Yes</i>	The heating control value acts on the control range defined for cooling. The cooling control value acts on the heating control range.
<i>No</i>	The heating control value acts on the control range defined for heating. The cooling control value acts on the cooling control range.

7.2.3.3.3 Parameter windows Sensor

The following settings can be made in this parameter window:

Fig. 20: Sensor parameter window

This parameter window includes the following parameters:

- [Sensor type, Page 78](#)
- [Output sensor value, Page 80](#)
- [Output sensor value, Page 81](#)
- [Output sensor value, Page 81](#)
- [Minimum sensor value, Page 81](#)
- [Minimum output value, Page 81](#)
- [Maximum sensor value, Page 82](#)
- [Maximum output value, Page 82](#)
- [Send sensor values, Page 82](#)
- [Send sensor values, Page 83](#)
- [Send sensor values, Page 84](#)
- [Send sensor values, Page 85](#)
- [Send sensor values, Page 86](#)
- [Send sensor values, Page 86](#)
 - [Sensor values are sent from a change of, Page 87](#)
 - [Sensor values are sent from a change of, Page 87](#)
 - [Sensor values are sent from a change of, Page 88](#)
 - [Sensor values are sent from a change of, Page 88](#)
 - [Sensor values are sent from a change of, Page 88](#)
 - [Sending cycle, Page 88](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter

7.2.3.3.3.1

Sensor type

This parameter is used to define what type of sensor is connected to the external MP-Bus device.

The options available depend on the selected MP-Bus device → [Channel X Device profile, Page 37](#).

Option	
<i>No sensor</i>	No sensor is connected to the external MP-Bus device.
<i>Analog input signal</i>	<p>The external MP-Bus device is controlled by an analog input signal.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade not enabled (→ parameter Room pressure cascade) • Activation of the external MP-Bus device is analog (→ parameter Control via) • External MP-Bus device <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>
<i>Active sensor</i>	<p>The active sensor is an analog voltage input value that can be transmitted on the bus (ABB i-bus® KNX) as either an actual mV value or as a percentage scaled value.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade enabled (→ parameter Room pressure cascade) <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value
<i>Passive sensor 1 kohm</i>	<p>The 1 kΩ passive sensor enables connection of an ohmic resistance of up to 1 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Passive sensor 20 kohms</i>	<p>The 20 kΩ passive sensor enables connection of an ohmic resistance of up to 20 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Switch contact</i>	<p>Via the bus, (ABB i-bus® KNX), the switch sensor transmits a basic binary input signal that is connected to the external MP-Bus device.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)
<i>Temperature sensor PT 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Temperature sensor Ni 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)

Option	
<i>Temperature sensor NTC 10 kohms</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/NI1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Humidity sensor</i>	<p>Selecting this option allows you to connect a humidity sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sensor values are sent from a change of • Sending cycle
<i>Air quality sensor (CO2)</i>	<p>Selecting this option allows you to connect an air quality sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (air quality)
<i>Dew point sensor</i>	<p>Via the bus, (ABB i-bus® KNX), the dew point sensor transmits a binary input signal that is connected to the external MP-Bus device.</p> <p>This option is not available for the following external MP-Bus devices:</p> <ul style="list-style-type: none"> • <i>Air "xM24A-MP" rotary/damper actuator</i> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)

7.2.3.3.2

Output sensor value

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Voltage (DPT 9.020)</i>	<p>The measured value of the sensor is output directly as a voltage value (mV).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (voltage)
<i>Percent (DPT 5.001)</i>	<p>The measured value of the sensor is output as a scaled percentage value. The measured value of the voltage is converted to a percentage value using the settings in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Minimum sensor value • Minimum output value • Maximum sensor value • Maximum output value • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (percent)

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Active sensor*

7.2.3.3.3 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>DPT 9.007</i>	The measured value of the sensor is output as a 2-byte floating point value (DPT 9.007). The following dependent Group Objects are displayed: • Sensor value (humidity)
<i>DPT 5.001</i>	The measured value of the sensor is output as a 1-byte unsigned value (DPT 5.001). The following dependent Group Objects are displayed: • Sensor value (humidity)

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.3.4 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Normal</i>	1 = Sensor contact closed, 0 = Sensor contact open
<i>Inverted</i>	0 = Sensor contact closed, 1 = Sensor contact open

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.3.5 **Minimum sensor value**

This parameter is used to define the minimum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Minimum output value](#).

Option	
<i>0 ... 10,000 mV</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.3.6 **Minimum output value**

This parameter is used to define the minimum output value in percent that corresponds to the voltage value in the parameter [Minimum sensor value](#).

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

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.3.3.7 Maximum sensor value

This parameter is used to define the maximum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter *Maximum output value*.

Option

0 ... 10,000 mV

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.3.3.8 Maximum output value

This parameter is used to define the maximum output value in percent that corresponds to the voltage value in the parameter *Maximum sensor value*.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.3.3.9 Send sensor values

This parameter is used to define when the measured value of the active sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Voltage \(DPT 9.020\)](#)

7.2.3.3.3.10

Send sensor values

This parameter is used to define when the measured value of the active sensor or the humidity sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

Or

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.3.3.11

Send sensor values

This parameter is used to define when the measured value of the passive sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Passive sensor 1 kohm / Passive sensor 20 kohms*

7.2.3.3.3.12

Send sensor values

This parameter is used to define when the value of the sensor (switch contact or dew point sensor) is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On 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 cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Switch contact / Dew point sensor*

7.2.3.3.3.13

Send sensor values

This parameter is used to define when the measured value of the temperature sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms*

7.2.3.3.3.14

Send sensor values

This parameter is used to define when the measured value of the air quality sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Air quality sensor (CO2)*

7.2.3.3.3.15

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>1 ... 5 ... 100 %</i>	<div style="border: 1px solid gray; padding: 5px;"> <p>Note</p> <p>The status values are always sent when the 0 % and 100 % positions are reached. Reaching a previously received position command only results in a new status value being sent if the change value set here has been exceeded. If necessary, a smaller change value should be selected to ensure that the status values are sent.</p> </div>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.3.16

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>0.5 ... 10 K</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.3.17 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 500 ppm

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.3.18 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 65000 mV

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.3.19 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 65000 ohms

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.3.3.20 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.4 Parameter windows Air "CM24-MPL-x" rotary/damper actuator

7.2.3.4.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

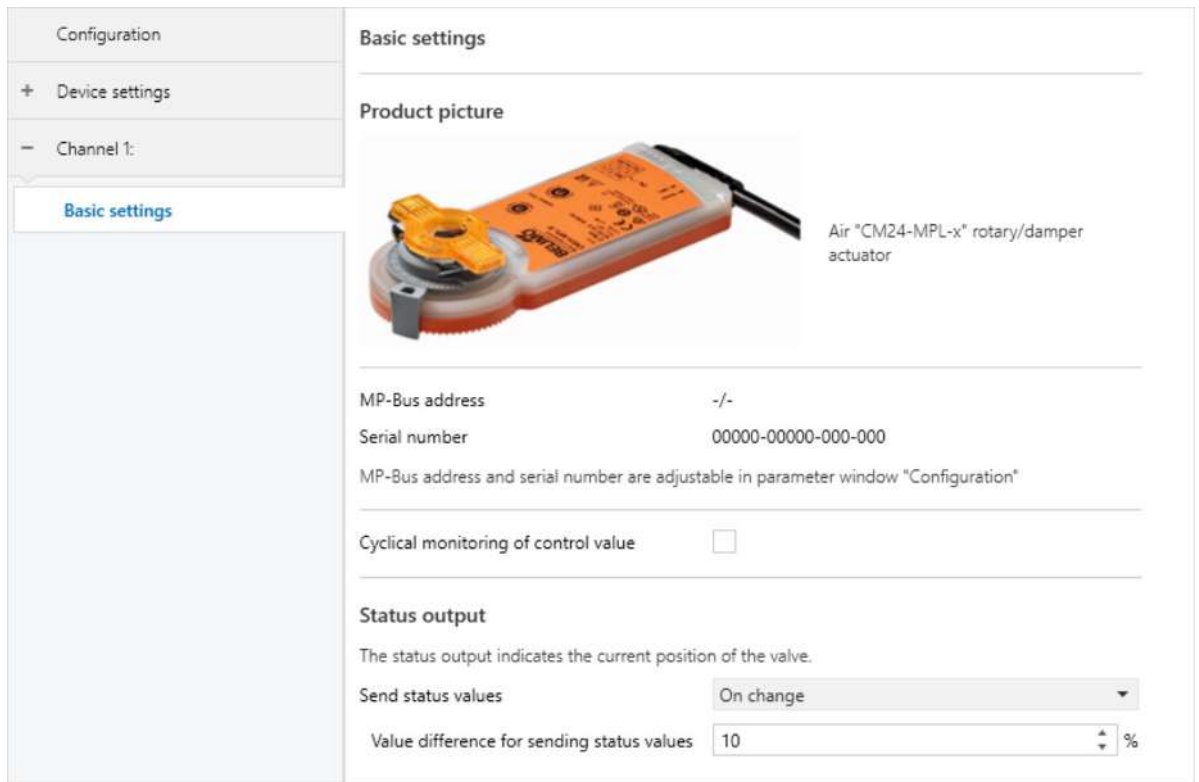


Fig. 21: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of control value, Page 89](#)
 - [Monitoring time, Page 90](#)
 - [Actuator position after cyclical monitoring time has expired, Page 90](#)
- [Send status values, Page 90](#)
 - [Values are sent from a change of, Page 91](#)
 - [Sending cycle, Page 91](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "CM24-MPL-x" rotary/damper actuator

7.2.3.4.1.1 Cyclical monitoring of control value

This parameter is used to activate cyclical monitoring of the external control value.

Option	
No	Cyclical monitoring is not activated.
Yes	Cyclical monitoring is activated. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Monitoring time • Actuator position after cyclical monitoring time has expired The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Error cyclical monitoring

7.2.3.4.1.2 Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option

00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.4.1.3

Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Note

The change refers to the change in a relative control value (absolute value) and to sending the absolute control value.

Note

When used to activate a 6-way valve, the positions 0 % and 100 % still refer to the left and right end positions of the actuator. At 0 %, the center position of the 6-way valve is not activated.

Option

<i>Unchanged</i>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<i>Open</i>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<i>Closed</i>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.

Prerequisites for visibility

- Parameter window [Channel X](#) \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of control value](#) \ Option Yes

7.2.3.4.1.4

Send status values

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- [Status Relative position](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.4.1.5

Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

More information: → [Sending status values, Page 17](#).

Option
<i>0 ... 10 ... 30 %</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.4.1.6

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.5 Parameter windows Water "CQ24A-MPL-x" rotary actuator for zone valves

7.2.3.5.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

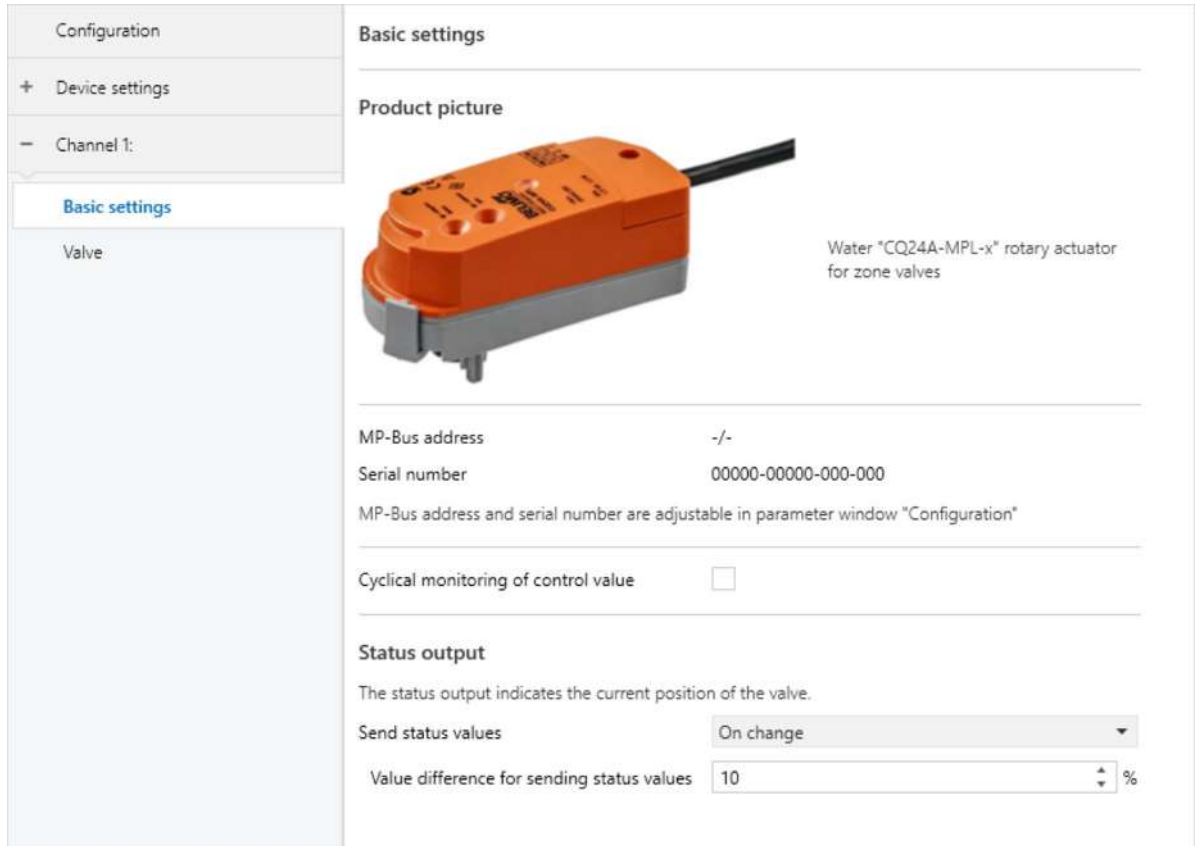


Fig. 22: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of control value, Page 92](#)
 - [Monitoring time, Page 93](#)
 - [Actuator position after cyclical monitoring time has expired, Page 93](#)
- [Send status values, Page 93](#)
 - [Values are sent from a change of, Page 94](#)
 - [Sending cycle, Page 94](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "CQ24A-MPL-x" rotary actuator for zone valves](#)

7.2.3.5.1.1 Cyclical monitoring of control value

This parameter is used to activate cyclical monitoring of the external control value.

Option	
<u>No</u>	Cyclical monitoring is not activated.
Yes	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Monitoring time • Actuator position after cyclical monitoring time has expired The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Error cyclical monitoring

7.2.3.5.1.2 Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option

00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.5.1.3

Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Option

<i>Unchanged</i>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<i>Open</i>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<i>Closed</i>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of control value](#) \ Option *Yes*

7.2.3.5.1.4

Send status values

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- [Status Relative position](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle

7.2.3.5.1.5

Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

More information: → [Sending status values, Page 17](#).

Option
<i>0 ... <u>10</u> ... 30 %</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.5.1.6

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... <u>00:10:00</u> ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.5.2 Parameter windows Valve

The following settings can be made in this parameter window:

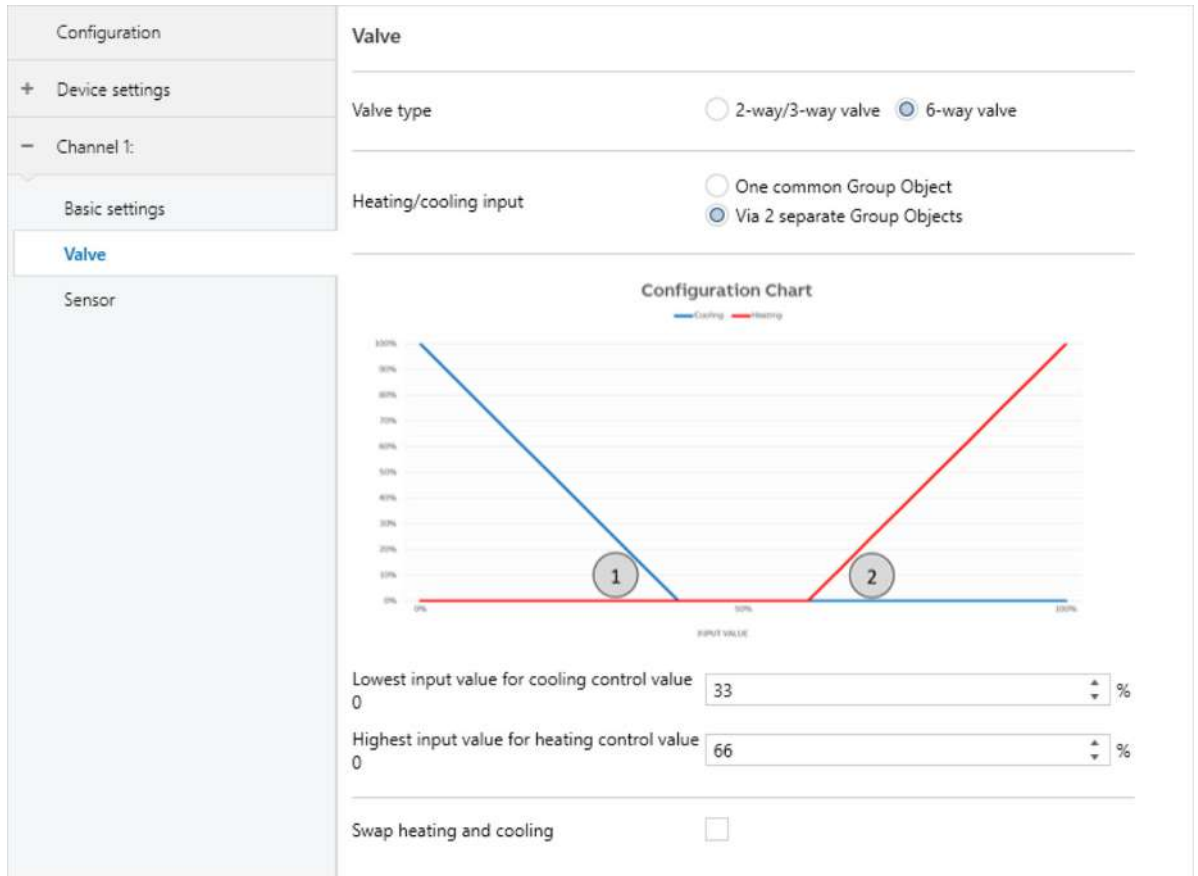


Fig. 23: Valve parameter window

This parameter window includes the following parameters:

- [Valve type, Page 95](#)
 - [Heating/cooling input, Page 96](#)
 - [Lowest control value for cooling = 0%, Page 96](#)
 - [Lowest control value for heating = 0%, Page 96](#)
 - [Swap heating and cooling, Page 96](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*

7.2.3.5.2.1

Valve type

The type of valve output is specified using this parameter.

Option	
<i>2-way/3-way valve</i>	A 2-way valve or a 3-way valve is connected. The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Control value
<i>6-way valve</i>	A 6-way valve is connected. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Heating/cooling input • Swap heating and cooling

7.2.3.5.2.2 Heating/cooling input

This parameter is used to define whether the heating/cooling control values should be received via one common or two separate Group Objects.

Option	
<i>One common Group Object</i>	<p>The heating/cooling control values are received via one common Group Object. The MP-Bus device sending the values is responsible for maintaining the 6-way characterization of the connected valve.</p> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Control value
<i>Via two separate Group Objects</i>	<p>The heating/cooling control values are received via two separate Group Objects. The 6-way characterization of the valve can be set in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Lowest control value for cooling = 0% • Lowest control value for heating = 0% <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Heating control value • Cooling control value • Heating/cooling changeover • Activate heating • Activate cooling

7.2.3.5.2.3 Lowest control value for cooling = 0%

This parameter is used to set the value for 0% cooling. This value defines the start of the dead zone between cooling and heating.

Option
0 ... 33 ... 60 %

7.2.3.5.2.4 Lowest control value for heating = 0%

This parameter is used to set the value for 0% heating. This value defines the end of the dead zone between heating and cooling.

Option
40 ... 66 ... 70 %

7.2.3.5.2.5 Swap heating and cooling

This parameter is used to define whether the control ranges for heating and cooling are swapped.

Option	
<i>Yes</i>	The heating control value acts on the control range defined for cooling. The cooling control value acts on the heating control range.
<i>No</i>	The heating control value acts on the control range defined for heating. The cooling control value acts on the cooling control range.

7.2.3.6 Parameter windows Air "VRU-x-BAC-x" VAV universal controller (modular)

7.2.3.6.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

Configuration

+ Device settings


- Channel 1:

Basic settings

Sensor

Basic settings

Product picture



Air "VRU-x-BAC-x" VAV universal controller (modular)

i Please ensure that the configuration of the ETS application matches the installed device.

MP-Bus address	-/-
Serial number	00000-00000-000-000

MP-Bus address and serial number are adjustable in parameter window "Configuration"

Cyclical monitoring of setpoint and override control

Status output

The status output indicates the current position of the valve.

Send status values On change ▾

Value difference for sending status values 10 ▾ %

Control via Analog input signal MP-Bus

VRU type VRU-D3-BAC/VRU-M1-BAC VRU-M1R-BAC

Application Flow control ▾

Control mode Position control Flow control

DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate" 2 bytes (DPT 9.009) 4 bytes (DPT 14.077)

Fig. 24: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of setpoint and override control, Page 98](#)
- [Monitoring time, Page 98](#)
- [Actuator position after cyclical monitoring time has expired, Page 99](#)
- [Send status values, Page 99](#)
 - [Values are sent from a change of, Page 100](#)
 - [Sending cycle, Page 100](#)
- [Control via, Page 100](#)
- [VRU type, Page 100](#)
- [Application, Page 101](#)
 - [Control mode, Page 102](#)
 - [Room pressure cascade, Page 103](#)
 - [Operating mode, Page 103](#)
 - [DPT for Group Objects "Absolute flow rate", "Nominal flow rate", Page 102](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "VRU-x-BAC-x"* VAV universal controller (modular)

7.2.3.6.1.1

Cyclical monitoring of setpoint and override control

This parameter is used to activate cyclical monitoring of the external setpoint and of override control.

Option	
<i>No</i>	Cyclical monitoring is not activated.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Monitoring time • Actuator position after cyclical monitoring time has expired The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Error cyclical monitoring

Prerequisites for visibility

- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Application](#) \ Option *Flow control / Pressure control / Room pressure control*

7.2.3.6.1.2

Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

 Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option
<i>00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.1.3

Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Option	
<i>Unchanged</i>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<i>Open</i>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<i>Closed</i>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of setpoint and override control](#) \ Option *Yes*

7.2.3.6.1.4

Send status values

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):

- [Status Relative position](#)
- [Status Absolute position](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> Values are sent from a change of Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> Values are sent from a change of Sending cycle

7.2.3.6.1.5 Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

More information: → [Sending status values, Page 17](#).

Option

0 ... 10 ... 30 %

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.1.6 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.1.7 Control via

This parameter is used to define how the external MP-Bus device is activated.

Option

Analog input signal

An analog control value is applied to the MP-Bus device and then controlled.

The following dependent Group Objects are displayed:

- [Status Analog input signal](#)

MP-Bus

The control values are received via the KNX/MP-Bus Controller.

The following dependent Group Objects are displayed:

- [Setpoint](#)
-

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Application](#) \ all options except [Flow measurement](#)

7.2.3.6.1.8 VRU type

This parameter is used to define which variant of the VAV universal is used.

Option

[VRU-D3-BAC](#)/[VRU-M1-BAC](#)

[VRU-M1R-BAC](#)

7.2.3.6.1.9

Application

This parameter is used to define the application for which the MP-Bus device is used.

Note

If the VRU type *VRU-D3-BAC/VRU-M1-BAC* is selected, the options available in this parameter are *Flow control*, *Pressure control* and *Flow measurement*.

If the VRU type *VRU-M1R-BAC* is selected, this parameter is permanently set to the option *Room pressure control*.

Option*Flow control*

The following dependent parameters are displayed:

- *Cyclical monitoring of setpoint and override control*
- *Control mode*
- *DPT for Group Objects "Absolute flow rate", "Nominal flow rate"*

The following dependent Group Objects are displayed:

- *Override control*
- *Start adjustment*
- *Start synchronization*
- *Status Relative position*
- *Status Absolute position*
- *Gear disengagement active*
- *Override control active*
- *Minimum flow rate*
- *Maximum flow rate*
- *Status Minimum flow rate*
- *Status Maximum flow rate*
- *Status Relative flow rate*

Pressure control

The following dependent parameters are displayed:

- *Cyclical monitoring of setpoint and override control*

The following dependent Group Objects are displayed:

- *Override control*
- *Start adjustment*
- *Start synchronization*
- *Status Relative position*
- *Status Absolute position*
- *Gear disengagement active*
- *Override control active*
- *Minimum differential pressure*
- *Maximum differential pressure*
- *Status Minimum differential pressure*
- *Status Maximum differential pressure*
- *Status Relative differential pressure*
- *Status Absolute differential pressure*
- *Status Nominal differential pressure*

Flow measurement

The following dependent parameters are displayed:

- *DPT for Group Objects "Absolute flow rate", "Nominal flow rate"*

The following dependent Group Objects are displayed:

- *Minimum flow rate*
- *Maximum flow rate*
- *Status Minimum flow rate*
- *Status Maximum flow rate*
- *Status Relative flow rate*

Room pressure control

The following dependent parameters are displayed:

- *Room pressure cascade*

The following dependent Group Objects are displayed:

- *Minimum differential pressure*
- *Maximum differential pressure*
- *Status Minimum differential pressure*
- *Status Maximum differential pressure*
- *Status Relative differential pressure*
- *Status Absolute differential pressure*
- *Status Nominal differential pressure*

7.2.3.6.1.10 **Control mode**

This parameter is used to define whether the MP-Bus device is changed to position control or flow control.

Option	
<i>Position control</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Relative flow rate
<i>Flow control</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Room pressure cascade

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option [VRU-D3-BAC/VRU-M1-BAC](#)
 - Parameter [Application](#) \ Option [Flow control](#)

7.2.3.6.1.11

DPT for Group Objects "Absolute flow rate", "Nominal flow rate"

This parameter is used to define the data point type (DPT) for the Group Objects of the absolute and nominal flow rates.

Option	
<i>2 bytes (DPT 9.009)</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Absolute flow rate • Status Nominal flow rate
<i>4 bytes (DPT 14.077)</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Absolute flow rate • Status Nominal flow rate

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option [VRU-D3-BAC/VRU-M1-BAC](#)
 - Parameter [Application](#) \ all options except [Pressure control](#)
- Or
 - Parameter [VRU type](#) \ Option [VRU-M1R-BAC](#)
 - Parameter [Room pressure cascade](#) \ Option [Not enabled](#)

7.2.3.6.1.12

Room pressure cascade

This parameter is used to define whether room pressure cascade is activated for the connected VRU. This parameter is used to define whether it is possible to connect an independent external sensor to the external MP-Bus device (deactivated) or whether the sensor connected to the VRU is used directly for room pressure cascade.

Option	
<i>Not enabled</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Relative flow rate
<i>Enabled</i>	Option with VRU type <i>VRU-D3-BAC/VRU-M1-BAC</i> . The parameter Sensor type is permanently set to the option <i>Active sensor</i> .
<i>Enabled</i>	Option with VRU type <i>VRU-M1R-BAC</i> . The parameter Sensor type is permanently set to the option <i>Active sensor</i> . The following dependent parameters are displayed: <ul style="list-style-type: none"> • Operating mode
<i>Enabled (fast)</i>	Option with VRU type <i>VRU-D3-BAC/VRU-M1-BAC</i> . The parameter Sensor type is permanently set to the option <i>Active sensor</i> .
<i>Enabled (fast)</i>	Option with VRU type <i>VRU-M1R-BAC</i> . The parameter Sensor type is permanently set to the option <i>Active sensor</i> . The following dependent parameters are displayed: <ul style="list-style-type: none"> • Operating mode

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option *VRU-D3-BAC/VRU-M1-BAC*
 - Parameter [Application](#) \ Option *Flow control*
 - Parameter [Control mode](#) \ Option *Flow control*
- Or
- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter window [VRU type](#) \ Option *VRU-M1R-BAC*

7.2.3.6.1.13

Operating mode

This parameter is used to define the control mode of the VRU connected to the channel.

Option	
<i>Negative pressure</i>	
<i>Positive pressure</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option *VRU-M1R-BAC*
 - Parameter [Room pressure cascade](#) \ all options except *Not enabled*

7.2.3.6.2 Parameter windows Sensor

The following settings can be made in this parameter window:

Fig. 25: Sensor parameter window

This parameter window includes the following parameters:

- [Sensor type, Page 104](#)
- [Output sensor value, Page 106](#)
- [Output sensor value, Page 107](#)
- [Output sensor value, Page 107](#)
- [Minimum sensor value, Page 107](#)
- [Minimum output value, Page 107](#)
- [Maximum sensor value, Page 108](#)
- [Maximum output value, Page 108](#)
- [Send sensor values, Page 108](#)
- [Send sensor values, Page 109](#)
- [Send sensor values, Page 110](#)
- [Send sensor values, Page 111](#)
- [Send sensor values, Page 112](#)
- [Send sensor values, Page 112](#)
 - [Sensor values are sent from a change of, Page 113](#)
 - [Sensor values are sent from a change of, Page 113](#)
 - [Sensor values are sent from a change of, Page 114](#)
 - [Sensor values are sent from a change of, Page 114](#)
 - [Sensor values are sent from a change of, Page 114](#)
 - [Sending cycle, Page 114](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1UX" thermal energy meter

7.2.3.6.2.1

Sensor type

This parameter is used to define what type of sensor is connected to the external MP-Bus device.

The options available depend on the selected MP-Bus device → [Channel X Device profile, Page 37](#).

Option	
<i>No sensor</i>	No sensor is connected to the external MP-Bus device.
<i>Analog input signal</i>	<p>The external MP-Bus device is controlled by an analog input signal.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade not enabled (→ parameter Room pressure cascade) • Activation of the external MP-Bus device is analog (→ parameter Control via) • External MP-Bus device <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>
<i>Active sensor</i>	<p>The active sensor is an analog voltage input value that can be transmitted on the bus (ABB i-bus® KNX) as either an actual mV value or as a percentage scaled value.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade enabled (→ parameter Room pressure cascade) <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value
<i>Passive sensor 1 kohm</i>	<p>The 1 kΩ passive sensor enables connection of an ohmic resistance of up to 1 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Passive sensor 20 kohms</i>	<p>The 20 kΩ passive sensor enables connection of an ohmic resistance of up to 20 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Switch contact</i>	<p>Via the bus, (ABB i-bus® KNX), the switch sensor transmits a basic binary input signal that is connected to the external MP-Bus device.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)
<i>Temperature sensor PT 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Temperature sensor Ni 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)

Option	
<i>Temperature sensor NTC 10 kohms</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/NI1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Humidity sensor</i>	<p>Selecting this option allows you to connect a humidity sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sensor values are sent from a change of • Sending cycle
<i>Air quality sensor (CO2)</i>	<p>Selecting this option allows you to connect an air quality sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (air quality)
<i>Dew point sensor</i>	<p>Via the bus, (ABB i-bus® KNX), the dew point sensor transmits a binary input signal that is connected to the external MP-Bus device.</p> <p>This option is not available for the following external MP-Bus devices:</p> <ul style="list-style-type: none"> • <i>Air "xM24A-MP" rotary/damper actuator</i> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)

7.2.3.6.2.2

Output sensor value

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Voltage (DPT 9.020)</i>	<p>The measured value of the sensor is output directly as a voltage value (mV).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (voltage)
<i>Percent (DPT 5.001)</i>	<p>The measured value of the sensor is output as a scaled percentage value. The measured value of the voltage is converted to a percentage value using the settings in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Minimum sensor value • Minimum output value • Maximum sensor value • Maximum output value • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (percent)

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Active sensor*

7.2.3.6.2.3 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>DPT 9.007</i>	The measured value of the sensor is output as a 2-byte floating point value (DPT 9.007). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Sensor value (humidity)
<i>DPT 5.001</i>	The measured value of the sensor is output as a 1-byte unsigned value (DPT 5.001). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Sensor value (humidity)

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.6.2.4 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Normal</i>	1 = Sensor contact closed, 0 = Sensor contact open
<i>Inverted</i>	0 = Sensor contact closed, 1 = Sensor contact open

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.6.2.5 **Minimum sensor value**

This parameter is used to define the minimum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Minimum output value](#).

Option	
<i>0 ... 10,000 mV</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.6.2.6 **Minimum output value**

This parameter is used to define the minimum output value in percent that corresponds to the voltage value in the parameter [Minimum sensor value](#).

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

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.6.2.7 Maximum sensor value

This parameter is used to define the maximum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter *Maximum output value*.

Option

0 ... 10,000 mV

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.6.2.8 Maximum output value

This parameter is used to define the maximum output value in percent that corresponds to the voltage value in the parameter *Maximum sensor value*.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.6.2.9 Send sensor values

This parameter is used to define when the measured value of the active sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Voltage \(DPT 9.020\)](#)

7.2.3.6.2.10

Send sensor values

This parameter is used to define when the measured value of the active sensor or the humidity sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

Or

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.6.2.11

Send sensor values

This parameter is used to define when the measured value of the passive sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Passive sensor 1 kohm / Passive sensor 20 kohms*

7.2.3.6.2.12

Send sensor values

This parameter is used to define when the value of the sensor (switch contact or dew point sensor) is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On 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 cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Switch contact / Dew point sensor*

7.2.3.6.2.13

Send sensor values

This parameter is used to define when the measured value of the temperature sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms*

7.2.3.6.2.14

Send sensor values

This parameter is used to define when the measured value of the air quality sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Air quality sensor (CO2)*

7.2.3.6.2.15

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>1 ... 5 ... 100 %</i>	<div style="border: 1px solid gray; padding: 5px;"> <p>Note</p> <p>The status values are always sent when the 0 % and 100 % positions are reached. Reaching a previously received position command only results in a new status value being sent if the change value set here has been exceeded. If necessary, a smaller change value should be selected to ensure that the status values are sent.</p> </div>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.2.16

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>0.5 ... 10 K</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.2.17 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 500 ppm

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.2.18 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 65000 mV

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.2.19 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 65000 ohms

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.6.2.20 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7 Parameter windows Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4

7.2.3.7.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

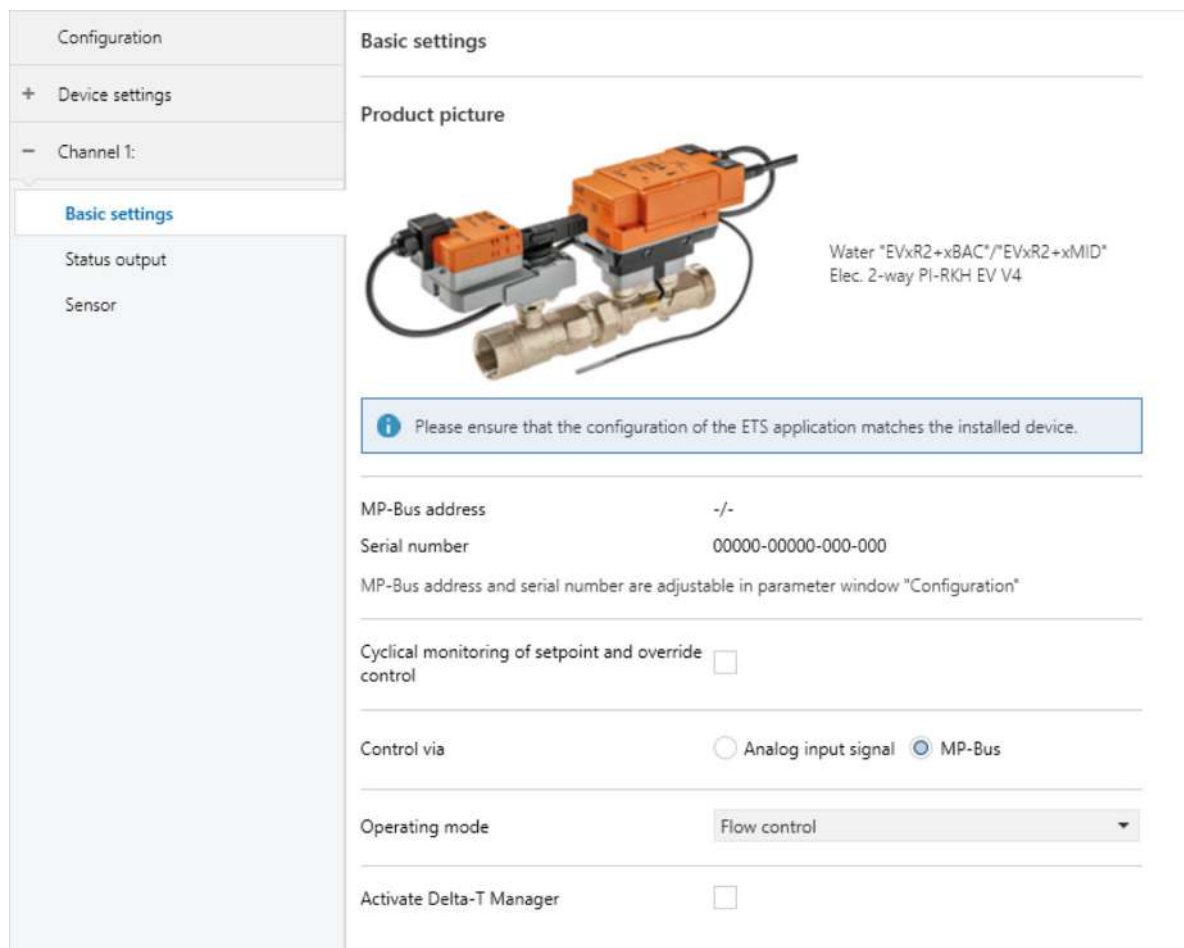


Fig. 26: Basic Settings parameter window

This parameter window includes the following parameters:

- [Cyclical monitoring of setpoint and override control, Page 116](#)
 - [Monitoring time, Page 116](#)
 - [Actuator position after cyclical monitoring time has expired, Page 116](#)
- [Control via, Page 116](#)
- [Operating mode, Page 117](#)
- [Enable Delta-T Manager, Page 117](#)
 - [Default value Delta-T, Page 117](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4](#)

7.2.3.7.1.1 Cyclical monitoring of setpoint and override control

This parameter is used to activate cyclical monitoring of the external setpoint and of override control.

Option	
<u>No</u>	Cyclical monitoring is not activated.
<u>Yes</u>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Monitoring time • Actuator position after cyclical monitoring time has expired The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Error cyclical monitoring

7.2.3.7.1.2 Monitoring time

This parameter is used to define the period during which a value must be received on monitored Group Objects.

More information: → [Cyclical monitoring, Page 230](#).

i Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

Option	
<i>00:01:00 ... 00:15:00 ... 18:12:15 hh:mm:ss</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.1.3 Actuator position after cyclical monitoring time has expired

This parameter is used to define the actuator position of the external MP-Bus device after the monitoring time has expired. The position applies if no values were received on the monitored Group Objects during the monitoring time. The position is valid until a new control value is received.

Option	
<u>Unchanged</u>	The actuator remains in the current position. A position movement that has already begun is continued until the target position is reached. The actuator then remains in this position.
<u>Open</u>	The actuator is moved to the 100 % open position (i.e. the actuator end position on the right) and remains in this position until a new control value is received.
<u>Closed</u>	The actuator is moved to the 100 % closed position (i.e. the actuator end position on the left) and remains in this position until a new control value is received.

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter Cyclical monitoring of control value \ Option [Yes](#)

7.2.3.7.1.4 Control via

This parameter is used to define how the external MP-Bus device is activated.

Option	
<u>Analog input signal</u>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Analog input signal
<u>MP-Bus</u>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Depends on the setting in the parameter Operating mode

7.2.3.7.1.5

Operating mode

This parameter is used to define the control mode of the EV that is connected to the channel ().

Option	
<i>Position control</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Setpoint
<i>Flow control</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Setpoint • Minimum flow rate • Maximum flow rate • Status Minimum flow rate • Status Maximum flow rate
<i>Power control</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Setpoint • Minimum flow rate • Maximum flow rate • Maximum power limit • Status Minimum flow rate • Status Maximum flow rate • Status Maximum power limit
<i>Differential pressure control</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Setpoint absolute differential pressure • Maximum flow rate • Maximum power limit • Status Maximum flow rate • Status Maximum power limit • Status Relative differential pressure • Status Absolute differential pressure • Status Nominal differential pressure

7.2.3.7.1.6

Enable Delta-T Manager

This parameter enables Delta-T Manager.

Option	
<i>No</i>	Delta-T Manager is not enabled.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Default value Delta-T The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Activate Delta-T Manager • Activate Delta-T Manager flow-dependent adjustment (scaling) • Setpoint absolute flow at Delta-T • Setpoint Delta-T limitation • Status Delta-T Manager • Status Delta-T Manager flow-dependent adjustment (scaling)

7.2.3.7.1.7

Default value Delta-T

This parameter can be used to define an initial Delta-T value until a new value is received via the bus (ABB i-bus® KNX).

Option
<i>0.1 ... 40 K</i>

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Enable Delta-T Manager](#) \ Option [Yes](#)

7.2.3.7.2 Parameter windows Status output

The following settings can be made in this parameter window:

Configuration	Status output
+ Device settings	
- Channel 1:	
Basic settings	
Status output	
Sensor	
	<p>Total energy</p> <p>Send values of Group Objects "Status Total energy cooling" On change ▼ "Status Total energy heating"</p> <p>Value difference for sending status values <input type="text" value="1"/> kWh</p> <hr/> <p>Temperature values</p> <p>Send temperature values On change ▼</p> <p>Value difference for sending value <input type="text" value="1"/> K</p> <hr/> <p>Position control values</p> <p>Send position control values On change ▼</p> <p>Value difference for sending value <input type="text" value="5"/> %</p> <hr/> <p>Flow rates</p> <p>Send flow rates On change ▼</p> <p>Value difference for sending value <input type="text" value="5"/> %</p> <p>Output relative value in relation to <input type="radio"/> V'nom (normalized to 100%) <input checked="" type="radio"/> V'max (0...150%)</p> <p><small>If V'max is selected, the relative value is shown with 2 bytes (DPT 8.010).</small></p> <hr/> <p>Accumulated volume</p> <p>Send value of Group Object "Status Accumulated volume" On change ▼</p> <p>Value difference for sending value <input type="text" value="1"/> m³</p> <hr/> <p>Power values</p> <p>Send power values On change ▼</p> <p>Value difference for sending value <input type="text" value="5"/> %</p> <p>Output relative value in relation to <input type="radio"/> Pnom (normalized to 100%) <input checked="" type="radio"/> Pmax (0...300%)</p> <p><small>If Pmax is selected, the relative value is shown with 2 bytes (DPT 8.010).</small></p>

Fig. 27: Status output parameter window

This parameter window includes the following parameters:

- Send values of Group Objects "Status Total energy cooling" "Status Total energy heating", Page 119
 - Sending cycle, Page 120
 - Values are sent from a change of, Page 120
- Send temperature values, Page 120
 - Sending cycle, Page 120
 - Value sent from a change of, Page 121
- Send position control values, Page 121
 - Sending cycle, Page 120
 - Value sent from a change of, Page 122
- Send flow rates, Page 122
 - Sending cycle, Page 120
 - Value sent from a change of, Page 122
- Output relative value in relation to, Page 123
- Send value of Group Object "Status Accumulated volume", Page 123
 - Sending cycle, Page 120
 - Value sent from a change of, Page 124
- Send power values, Page 124
 - Sending cycle, Page 120
 - Value sent from a change of, Page 122
- Output relative value in relation to, Page 125

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X Device profile* \ Option *Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4*

7.2.3.7.2.1

Send values of Group Objects "Status Total energy cooling" "Status Total energy heating"

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):

- [Status Total energy cooling](#)
- [Status Total energy heating](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.7.2.2 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.3 Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
1 ... 1000 kWh

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.4 Send temperature values

This parameter is used to define when temperature values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.7.2.5 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.6 Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
0.1 ... 1 ... 10 K

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.7 Send position control values

This parameter is used to define when position control values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.7.2.8 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option
00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.9 **Value sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
0 ... 5 ... 20 %

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.10 **Send flow rates**

This parameter is used to define when flow rate values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.7.2.11 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.12 **Value sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

0 ... 5 ... 20 %

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.13 **Output relative value in relation to**

This parameter is used to define whether the relative flow rate value is displayed as a function of the Vmax or Vnom value.

Option

<i>Vnom (normalized to 100%)</i>	If Vnom is selected, the relative value is shown with 1 byte (DPT 5.001). The following dependent Group Objects are displayed: • Status Relative flow rate (DPT 5.001)
<i>Vmax (0 ... 150 %)</i>	If Vmax is selected, the relative value is shown with 2 bytes (DPT 8.010). The following dependent Group Objects are displayed: • Status Relative flow rate (DPT 8.010)

7.2.3.7.2.14 **Send value of Group Object "Status Accumulated volume"**

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- [Status Accumulated volume](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle

7.2.3.7.2.15

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.16

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>0,1 ... 1 ... 100,000 m³</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.17

Send power values

This parameter is used to define when power values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.7.2.18

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option	
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.19

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>0 ... 5 ... 20 %</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.2.20

Output relative value in relation to

This parameter is used to define whether the relative power value is displayed as a function of the Pmax or Pnom value.

Option	
<i>Pnom (normalized to 100%)</i>	If Pnom is selected, the relative value is shown with 1 byte (DPT 5.001). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Relative power (DPT 5.001)
<i>Pmax (0 ... 300 %)</i>	If Pmax is selected, the relative value is shown with 2 bytes (DPT 8.010). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Relative power (DPT 8.010)

7.2.3.7.3 Parameter windows Sensor

The following settings can be made in this parameter window:

Fig. 28: Sensor parameter window

This parameter window includes the following parameters:

- [Sensor type, Page 126](#)
- [Output sensor value, Page 128](#)
- [Output sensor value, Page 129](#)
- [Output sensor value, Page 129](#)
- [Minimum sensor value, Page 129](#)
- [Minimum output value, Page 129](#)
- [Maximum sensor value, Page 130](#)
- [Maximum output value, Page 130](#)
- [Send sensor values, Page 130](#)
- [Send sensor values, Page 131](#)
- [Send sensor values, Page 132](#)
- [Send sensor values, Page 133](#)
- [Send sensor values, Page 134](#)
- [Send sensor values, Page 134](#)
 - [Sensor values are sent from a change of, Page 135](#)
 - [Sensor values are sent from a change of, Page 135](#)
 - [Sensor values are sent from a change of, Page 136](#)
 - [Sensor values are sent from a change of, Page 136](#)
 - [Sensor values are sent from a change of, Page 136](#)
 - [Sending cycle, Page 136](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter

7.2.3.7.3.1

Sensor type

This parameter is used to define what type of sensor is connected to the external MP-Bus device.

The options available depend on the selected MP-Bus device → [Channel X Device profile, Page 37](#).

Option	
<i>No sensor</i>	No sensor is connected to the external MP-Bus device.
<i>Analog input signal</i>	<p>The external MP-Bus device is controlled by an analog input signal.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade not enabled (→ parameter Room pressure cascade) • Activation of the external MP-Bus device is analog (→ parameter Control via) • External MP-Bus device <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>
<i>Active sensor</i>	<p>The active sensor is an analog voltage input value that can be transmitted on the bus (ABB i-bus® KNX) as either an actual mV value or as a percentage scaled value.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade enabled (→ parameter Room pressure cascade) <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value
<i>Passive sensor 1 kohm</i>	<p>The 1 kΩ passive sensor enables connection of an ohmic resistance of up to 1 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Passive sensor 20 kohms</i>	<p>The 20 kΩ passive sensor enables connection of an ohmic resistance of up to 20 kΩ.</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Switch contact</i>	<p>Via the bus, (ABB i-bus® KNX), the switch sensor transmits a basic binary input signal that is connected to the external MP-Bus device.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)
<i>Temperature sensor PT 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Temperature sensor Ni 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)

Option	
<i>Temperature sensor NTC 10 kohms</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/NI1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • <i>Send sensor values</i> • <i>Sensor values are sent from a change of</i> • <i>Sending cycle</i> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • <i>Sensor value (temperature)</i>
<i>Humidity sensor</i>	<p>Selecting this option allows you to connect a humidity sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • <i>Output sensor value</i> • <i>Send sensor values</i> • <i>Sensor values are sent from a change of</i> • <i>Sending cycle</i>
<i>Air quality sensor (CO2)</i>	<p>Selecting this option allows you to connect an air quality sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • <i>Send sensor values</i> • <i>Sensor values are sent from a change of</i> • <i>Sending cycle</i> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • <i>Sensor value (air quality)</i>
<i>Dew point sensor</i>	<p>Via the bus, (ABB i-bus® KNX), the dew point sensor transmits a binary input signal that is connected to the external MP-Bus device.</p> <p>This option is not available for the following external MP-Bus devices:</p> <ul style="list-style-type: none"> • <i>Air "xM24A-MP" rotary/damper actuator</i> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • <i>Output sensor value</i> • <i>Send sensor values</i> • <i>Sending cycle</i> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • <i>Sensor value (switch)</i>

7.2.3.7.3.2

Output sensor value

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Voltage (DPT 9.020)</i>	<p>The measured value of the sensor is output directly as a voltage value (mV).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • <i>Send sensor values</i> • <i>Sensor values are sent from a change of</i> • <i>Sending cycle</i> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • <i>Sensor value (voltage)</i>
<i>Percent (DPT 5.001)</i>	<p>The measured value of the sensor is output as a scaled percentage value. The measured value of the voltage is converted to a percentage value using the settings in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • <i>Minimum sensor value</i> • <i>Minimum output value</i> • <i>Maximum sensor value</i> • <i>Maximum output value</i> • <i>Send sensor values</i> • <i>Sensor values are sent from a change of</i> • <i>Sending cycle</i> <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • <i>Sensor value (percent)</i>

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Active sensor*

7.2.3.7.3.3 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>DPT 9.007</i>	The measured value of the sensor is output as a 2-byte floating point value (DPT 9.007). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Sensor value (humidity)
<i>DPT 5.001</i>	The measured value of the sensor is output as a 1-byte unsigned value (DPT 5.001). The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Sensor value (humidity)

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.7.3.4 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Normal</i>	1 = Sensor contact closed, 0 = Sensor contact open
<i>Inverted</i>	0 = Sensor contact closed, 1 = Sensor contact open

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.7.3.5 **Minimum sensor value**

This parameter is used to define the minimum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Minimum output value](#).

Option	
<i>0 ... 10,000 mV</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.7.3.6 **Minimum output value**

This parameter is used to define the minimum output value in percent that corresponds to the voltage value in the parameter [Minimum sensor value](#).

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

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.7.3.7 Maximum sensor value

This parameter is used to define the maximum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter *Maximum output value*.

Option

0 ... 10,000 mV

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.7.3.8 Maximum output value

This parameter is used to define the maximum output value in percent that corresponds to the voltage value in the parameter *Maximum sensor value*.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.7.3.9 Send sensor values

This parameter is used to define when the measured value of the active sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Voltage \(DPT 9.020\)](#)

7.2.3.7.3.10

Send sensor values

This parameter is used to define when the measured value of the active sensor or the humidity sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

Or

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.7.3.11

Send sensor values

This parameter is used to define when the measured value of the passive sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Passive sensor 1 kohm / Passive sensor 20 kohms*

7.2.3.7.3.12

Send sensor values

This parameter is used to define when the value of the sensor (switch contact or dew point sensor) is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On 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 cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Switch contact / Dew point sensor*

7.2.3.7.3.13

Send sensor values

This parameter is used to define when the measured value of the temperature sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms*

7.2.3.7.3.14

Send sensor values

This parameter is used to define when the measured value of the air quality sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Air quality sensor (CO2)*

7.2.3.7.3.15

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>1 ... 5 ... 100 %</i>	<div style="border: 1px solid gray; padding: 5px;"> <p>Note</p> <p>The status values are always sent when the 0 % and 100 % positions are reached. Reaching a previously received position command only results in a new status value being sent if the change value set here has been exceeded. If necessary, a smaller change value should be selected to ensure that the status values are sent.</p> </div>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.3.16

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>0.5 ... 10 K</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.3.17 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 500 ppm

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.3.18 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 65000 mV

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.3.19 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 65000 ohms

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.7.3.20 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8 Parameter windows Water "22PEX-1Ux" thermal energy meter

7.2.3.8.1 Parameter windows Basic settings

The following settings can be made in this parameter window:

The screenshot displays the 'Basic settings' parameter window for the Water "22PEX-1Ux" thermal energy meter. The window is divided into a sidebar on the left and a main content area on the right. The sidebar contains the following options: Configuration, Device settings, Channel 1, Basic settings (highlighted in blue), Status output, and Sensor. The main content area is titled 'Basic settings' and includes a 'Product picture' section showing the device. Below the picture is an information box with a blue 'i' icon and the text: 'Please ensure that the configuration of the ETS application matches the installed device.' At the bottom, there are two configuration fields: 'MP-Bus address' with a value of '-/-' and 'Serial number' with a value of '00000-00000-000-000'. A note below these fields states: 'MP-Bus address and serial number are adjustable in parameter window "Configuration".'

Fig. 29: Basic Settings parameter window

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option → [Water "22PEX-1Ux" thermal energy meter](#), [Page 137](#)

7.2.3.8.2 Parameter windows Status output

The following settings can be made in this parameter window:

Section	Send values	Value difference for sending	Unit
Total energy	On change	1	kWh
Temperature values	On change	1	K
Flow rates	On change	5	%
Accumulated volume	On change	1	m ³
Power values	On change	5	%

Fig. 30: Status output parameter window

This parameter window includes the following parameters:

- [Send values of Group Objects "Status Total energy cooling" "Status Total energy heating", Page 139](#)
 - [Sending cycle, Page 139](#)
 - [Values are sent from a change of, Page 139](#)
- [Send temperature values, Page 139](#)
 - [Sending cycle, Page 139](#)
 - [Value sent from a change of, Page 140](#)
- [Send flow rates, Page 140](#)
 - [Sending cycle, Page 139](#)
 - [Value sent from a change of, Page 141](#)
- [Send value of Group Object "Status Accumulated volume", Page 141](#)
 - [Sending cycle, Page 139](#)
 - [Value sent from a change of, Page 142](#)
- [Send power values, Page 142](#)
 - [Sending cycle, Page 139](#)
 - [Value sent from a change of, Page 141](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "22PEX-1Ux" thermal energy meter](#)

7.2.3.8.2.1 Send values of Group Objects "Status Total energy cooling" "Status Total energy heating"

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):

- [Status Total energy cooling](#)
- [Status Total energy heating](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.8.2.2 Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.3 Values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>1 ... 1000 kWh</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.4 Send temperature values

This parameter is used to define when temperature values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle

7.2.3.8.2.5

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.6

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>0.1 ... 1 ... 10 K</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.7

Send flow rates

This parameter is used to define when flow rate values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle

7.2.3.8.2.8

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.9

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>0 ... 5 ... 20 %</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.10

Send value of Group Object "Status Accumulated volume"

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- [Status Accumulated volume](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle

7.2.3.8.2.11

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.12

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>0,1 ... 1 ... 100,000 m³</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.13

Send power values

This parameter is used to define when power values are sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Values are sent from a change of • Sending cycle

7.2.3.8.2.14

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.2.15

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

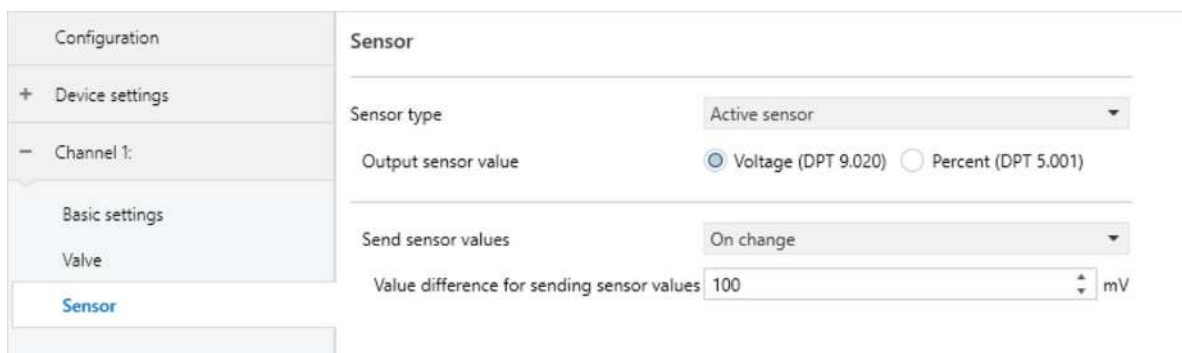
Option
<i>0 ... 5 ... 20 %</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.3 Parameter windows Sensor

The following settings can be made in this parameter window:



Configuration	Sensor
+ Device settings	Sensor type: Active sensor
- Channel 1:	Output sensor value: <input checked="" type="radio"/> Voltage (DPT 9.020) <input type="radio"/> Percent (DPT 5.001)
Basic settings	Send sensor values: On change
Valve	Value difference for sending sensor values: 100 mV
Sensor	

Fig. 31: Sensor parameter window

This parameter window includes the following parameters:

- [Sensor type, Page 144](#)
- [Output sensor value, Page 146](#)
- [Output sensor value, Page 147](#)
- [Output sensor value, Page 147](#)
- [Minimum sensor value, Page 147](#)
- [Minimum output value, Page 147](#)
- [Maximum sensor value, Page 148](#)
- [Maximum output value, Page 148](#)
- [Send sensor values, Page 148](#)
- [Send sensor values, Page 149](#)
- [Send sensor values, Page 150](#)
- [Send sensor values, Page 151](#)
- [Send sensor values, Page 152](#)
- [Send sensor values, Page 152](#)
 - [Sensor values are sent from a change of, Page 153](#)
 - [Sensor values are sent from a change of, Page 153](#)
 - [Sensor values are sent from a change of, Page 154](#)
 - [Sensor values are sent from a change of, Page 154](#)
 - [Sensor values are sent from a change of, Page 154](#)
 - [Sending cycle, Page 154](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEx-1Ux" thermal energy meter

7.2.3.8.3.1

Sensor type

This parameter is used to define what type of sensor is connected to the external MP-Bus device.

The options available depend on the selected MP-Bus device → [Channel X Device profile, Page 37](#).

Option	
<i>No sensor</i>	No sensor is connected to the external MP-Bus device.
<i>Analog input signal</i>	<p>The external MP-Bus device is controlled by an analog input signal.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade not enabled (→ parameter Room pressure cascade) • Activation of the external MP-Bus device is analog (→ parameter Control via) • External MP-Bus device <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>
<i>Active sensor</i>	<p>The active sensor is an analog voltage input value that can be transmitted on the bus (ABB i-bus® KNX) as either an actual mV value or as a percentage scaled value.</p> <p>This option is set and cannot be changed if the following prerequisites are met:</p> <ul style="list-style-type: none"> • External MP-Bus device <i>Air "VRU-x-BAC-x" VAV universal controller (modular)</i> • Room pressure cascade enabled (→ parameter Room pressure cascade) <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value
<i>Passive sensor 1 kohm</i>	<p>The 1 kΩ passive sensor enables connection of an ohmic resistance of up to 1 kΩ. This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Passive sensor 20 kohms</i>	<p>The 20 kΩ passive sensor enables connection of an ohmic resistance of up to 20 kΩ. This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (resistance)
<i>Switch contact</i>	<p>Via the bus, (ABB i-bus® KNX), the switch sensor transmits a basic binary input signal that is connected to the external MP-Bus device.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Output sensor value • Send sensor values • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (switch)
<i>Temperature sensor PT 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)
<i>Temperature sensor Ni 1000</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/Ni1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> • <i>Air "xV-D3-MP" VAV compact controller</i> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • Send sensor values • Sensor values are sent from a change of • Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Sensor value (temperature)

Option	
<i>Temperature sensor NTC 10 kohms</i>	<p>Selecting this option allows you to connect a temperature sensor of the type specified in the option (PT1000/NII1000/NTC10k) to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>This option is not available for the following external MP-Bus device:</p> <ul style="list-style-type: none"> Air "xV-D3-MP" VAV compact controller <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (temperature)
<i>Humidity sensor</i>	<p>Selecting this option allows you to connect a humidity sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Output sensor value Send sensor values Sensor values are sent from a change of Sending cycle
<i>Air quality sensor (CO2)</i>	<p>Selecting this option allows you to connect an air quality sensor to the external MP-Bus device and send its sensor value on the bus (ABB i-bus® KNX).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (air quality)
<i>Dew point sensor</i>	<p>Via the bus, (ABB i-bus® KNX), the dew point sensor transmits a binary input signal that is connected to the external MP-Bus device.</p> <p>This option is not available for the following external MP-Bus devices:</p> <ul style="list-style-type: none"> Air "xM24A-MP" rotary/damper actuator Air "xV-D3-MP" VAV compact controller <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Output sensor value Send sensor values Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (switch)

7.2.3.8.3.2

Output sensor value

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Voltage (DPT 9.020)</i>	<p>The measured value of the sensor is output directly as a voltage value (mV).</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (voltage)
<i>Percent (DPT 5.001)</i>	<p>The measured value of the sensor is output as a scaled percentage value. The measured value of the voltage is converted to a percentage value using the settings in the dependent parameters.</p> <p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> Minimum sensor value Minimum output value Maximum sensor value Maximum output value Send sensor values Sensor values are sent from a change of Sending cycle <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> Sensor value (percent)

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Active sensor*

7.2.3.8.3.3 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>DPT 9.007</i>	The measured value of the sensor is output as a 2-byte floating point value (DPT 9.007). The following dependent Group Objects are displayed: • Sensor value (humidity)
<i>DPT 5.001</i>	The measured value of the sensor is output as a 1-byte unsigned value (DPT 5.001). The following dependent Group Objects are displayed: • Sensor value (humidity)

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.8.3.4 **Output sensor value**

This parameter is used to define how the measured value of the sensor is output.

Option	
<i>Normal</i>	1 = Sensor contact closed, 0 = Sensor contact open
<i>Inverted</i>	0 = Sensor contact closed, 1 = Sensor contact open

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Switch contact / Dew point sensor](#)

7.2.3.8.3.5 **Minimum sensor value**

This parameter is used to define the minimum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter [Minimum output value](#).

Option	
<i>0 ... 10,000 mV</i>	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.8.3.6 **Minimum output value**

This parameter is used to define the minimum output value in percent that corresponds to the voltage value in the parameter [Minimum sensor value](#).

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

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

7.2.3.8.3.7 Maximum sensor value

This parameter is used to define the maximum output value of the sensor in mV. This value is converted to the percentage value specified in the parameter *Maximum output value*.

Option

0 ... 10,000 mV

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.8.3.8 Maximum output value

This parameter is used to define the maximum output value in percent that corresponds to the voltage value in the parameter *Maximum sensor value*.

Option

0 ... 100 %

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor*
 - Parameter *Sensor type* \ Option *Active sensor*
 - Parameter *Output sensor value* \ Option *Percent (DPT 5.001)*

7.2.3.8.3.9 Send sensor values

This parameter is used to define when the measured value of the active sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Voltage \(DPT 9.020\)](#)

7.2.3.8.3.10

Send sensor values

This parameter is used to define when the measured value of the active sensor or the humidity sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option [Active sensor](#)
 - Parameter [Output sensor value](#) \ Option [Percent \(DPT 5.001\)](#)

Or

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option [Humidity sensor](#)

7.2.3.8.3.11

Send sensor values

This parameter is used to define when the measured value of the passive sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Passive sensor 1 kohm / Passive sensor 20 kohms*

7.2.3.8.3.12

Send sensor values

This parameter is used to define when the value of the sensor (switch contact or dew point sensor) is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On 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 cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Switch contact / Dew point sensor*

7.2.3.8.3.13

Send sensor values

This parameter is used to define when the measured value of the temperature sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Sensor](#) \ Parameter [Sensor type](#) \ Option *Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms*

7.2.3.8.3.14

Send sensor values

This parameter is used to define when the measured value of the air quality sensor is sent on the bus (ABB i-bus® KNX).

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Sensor values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Sensor values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Sensor* \ Parameter *Sensor type* \ Option *Air quality sensor (CO2)*

7.2.3.8.3.15

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>1 ... 5 ... 100 %</i>	<div style="border: 1px solid gray; padding: 5px;"> <p>Note</p> <p>The status values are always sent when the 0 % and 100 % positions are reached. Reaching a previously received position command only results in a new status value being sent if the change value set here has been exceeded. If necessary, a smaller change value should be selected to ensure that the status values are sent.</p> </div>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.3.16

Sensor values are sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option	
<i>0.5 ... 10 K</i>	

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.3.17 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 500 ppm

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.3.18 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 100 ... 65000 mV

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.3.19 **Sensor values are sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

1 ... 65000 ohms

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.8.3.20 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9 Parameter windows Air "P-22RTx-1900x-2" room operation unit

7.2.3.9.1 **Parameter windows Basic settings**

The following settings can be made in this parameter window:

Configuration


+ Device settings

- Channel 1:

Basic settings

Basic settings

Product picture



Air "P-22RTx-2" room control unit

i Please ensure that the configuration of the ETS application matches the installed device.

MP-Bus address	-/-
Serial number	00000-00000-000-000
MP-Bus address and serial number are adjustable in parameter window "Configuration"	

Enable Group Object "Binary input"

Temperature settings

Temperature display	Status Room temperature ▼
Offset temperature	0 ▲▼ K
Send value of Group Object "Status Room temperature"	On change ▼
Value difference for sending value	0,5 ▲▼ K

CO2 settings

Enable Group Object "CO2 value"	<input type="checkbox"/>
Display air quality	<input type="checkbox"/>
Display CO2 value	<input type="checkbox"/>

Humidity settings

Enable Group Object "Status Relative humidity"	<input type="checkbox"/>
Display humidity	<input type="checkbox"/>
Enable Group Object "Dew point temperature"	<input type="checkbox"/>

Ventilation settings

Enable fan control	<input type="checkbox"/>
Receive status Heating/cooling	Deactivated ▼
Enable ECO mode button	Deactivated ▼
Enable On/Off button	Deactivated ▼
Enable Boost mode button	<input type="checkbox"/>

Fig. 32: Basic Settings parameter window

This parameter window includes the following parameters:

- [Enable Group Object "Binary input", Page 158](#)
 - [Invert binary input, Page 159](#)
- [Temperature display, Page 159](#)
 - [Base setpoint, Page 159](#)
 - [Temperature setpoint indicator, Page 159](#)
 - [Temperature setpoint range, Page 160](#)
- [Offset temperature value, Page 160](#)
- [Send value of Group Object "Status Room temperature", Page 160](#)
 - [Sending cycle, Page 161](#)
 - [Value sent from a change of, Page 161](#)
- [Enable Group Object "CO2 value", Page 161](#)
 - [Send value of Group Object "CO2 value", Page 161](#)
 - [Sending cycle, Page 161](#)
 - [Value sent from a change of, Page 162](#)
- [Display air quality, Page 163](#)
 - [CO2 threshold OK/warning, Page 163](#)
 - [CO2 threshold warning/alarm, Page 163](#)
- [Display CO2 value, Page 164](#)
 - [Offset CO2 value, Page 164](#)
- [Enable Group Object "Status Relative humidity", Page 164](#)
 - [Send value of Group Object "Status Relative humidity", Page 164](#)
 - [Sending cycle, Page 161](#)
 - [Value sent from a change of, Page 165](#)
- [Display humidity, Page 166](#)
 - [Humidity offset, Page 166](#)
- [Enable Group Object "Dew point temperature", Page 166](#)
 - [Send value of Group Object "Dew point temperature", Page 166](#)
 - [Sending cycle, Page 161](#)
 - [Value sent from a change of, Page 161](#)
- [Enable fan control, Page 168](#)
 - [Number of fan stages, Page 168](#)
 - [Enable fan automatic, Page 168](#)
- [Receive status Heating/Cooling, Page 168](#)
- [Enable ECO mode button, Page 169](#)
- [Enable On/Off button, Page 169](#)
- [Enable Boost mode button, Page 169](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "P-22RTx-1900x-2" room operation unit*

7.2.3.9.1.1

Enable Group Object "Binary input"

This parameter is used to define whether the binary input of the room operation unit is used and whether the Group Object [Binary input](#) is enabled.

Option	
<i>No</i>	The Group Object is not enabled.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Invert binary input The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Binary input

7.2.3.9.1.2 **Invert binary input**

This parameter is used to define whether the value of the Group Object *Binary input* is inverted.

Option	
<i>No</i>	1: Contact closed, 0: Contact open
<i>Yes</i>	0: Contact closed, 1: Contact open

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Enable Group Object "Binary input"* \ Option *Yes*

7.2.3.9.1.3 **Temperature display**

This parameter is used to define which temperature value is shown on the room operation unit display.

Option	
<i>No display</i>	No temperature value is shown.
<i>Status Room temperature</i>	The current room temperature is shown.
<i>Room temperature setpoint</i>	The setpoint temperature is shown. The following dependent parameters are displayed: <ul style="list-style-type: none"> <i>Base setpoint</i> <i>Temperature setpoint indicator</i> <i>Temperature setpoint range</i> The following dependent Group Objects are displayed: <ul style="list-style-type: none"> <i>Base setpoint</i>

7.2.3.9.1.4 **Base setpoint**

This parameter is used to define the base setpoint that is shown after KNX voltage recovery, ETS download or ETS reset.

Option	
<i>15 ... 21 ... 34 °C</i>	

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Temperature display* \ Option *Room temperature setpoint*

7.2.3.9.1.5 **Temperature setpoint indicator**

This parameter is used to define how the setpoint temperature is shown on the room operation unit display.

Option	
<i>Absolute</i>	The setpoint temperature is shown as an absolute temperature value. The following dependent Group Objects are displayed: <ul style="list-style-type: none"> <i>Request room temperature setpoint (absolute)</i> <i>Confirm room temperature setpoint (absolute)</i>
<i>Relative</i>	The setpoint temperature is shown as the relative difference to the actual room temperature. The following dependent Group Objects are displayed: <ul style="list-style-type: none"> <i>Request room temperature setpoint (relative)</i> <i>Confirm room temperature setpoint (relative)</i>

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Temperature display* \ Option *Room temperature setpoint*

7.2.3.9.1.6 Temperature setpoint range

This parameter is used to define the range within which users are allowed to manually adjust the setpoint temperature.

Option

-5 ... 5 K

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window *Basic settings* \ Parameter *Temperature display* \ Option *Room temperature setpoint*

7.2.3.9.1.7 Offset temperature value

This parameter is used to define an offset for the measured temperature in order to adjust the internal temperature sensor to the actual measured room temperature.

Option

-14.5 ... 0 ... 14.5 K

7.2.3.9.1.8 Send value of Group Object "Status Room temperature"

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- Status Room temperature*

Option

No, update only

The value is updated but is not sent.

On change

The value is sent if there is a change.

The following dependent parameters are displayed:

- Value sent from a change of*

Cyclically

The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent.

The following dependent parameters are displayed:

- Sending cycle*

On change or cyclically

The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change.

The following dependent parameters are displayed:

- Value sent from a change of*
- Sending cycle*

On request

The value is sent on request.

On change or on request

The value is sent on change or on request.

The following dependent parameters are displayed:

- Value sent from a change of*

On request or cyclically

The value is sent on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on request.

The following dependent parameters are displayed:

- Sending cycle*

On change, on request or cyclically

The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request.

The following dependent parameters are displayed:

- Value sent from a change of*
 - Sending cycle*
-

7.2.3.9.1.9 **Sending cycle**

This parameter is used to define the cycle in which the Group Object value is sent.

Option

00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.10 **Value sent from a change of**

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option

0.5 ... 10 K

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.11 **Enable Group Object "CO₂ value"**** Note**

Not all room operation units have a CO₂ sensor.

This parameter enables the following Group Object:

- [CO₂ value](#)

Option

No

The Group Object is not enabled.

Yes

The following dependent parameters are displayed:

- [Send value of Group Object "CO₂ value"](#)
- [Offset CO₂ value](#)

The following dependent Group Objects are displayed:

- [CO₂ value](#)

7.2.3.9.1.12 **Send value of Group Object "CO₂ value"**** Note**

Not all room operation units have a CO₂ sensor.

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- [CO₂ value](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Basic settings* \ Parameter *Enable Group Object "CO2 value"* \ Option Yes

7.2.3.9.1.13

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.14

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>1 ... 100 ... 1000 ppm</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.15 **Display air quality**

This parameter is used to activate the air quality indicator (CO₂ traffic light) on the room operation unit.

Note

The CO₂ traffic light can output the following information:

- Green: OK
- Yellow: Warning
- Red: Alarm

Option

<i>No</i>	The air quality indicator is not activated; the CO ₂ traffic light is not displayed.
<i>Yes</i>	<p>The following dependent parameters are displayed:</p> <ul style="list-style-type: none"> • CO₂ threshold OK/warning • CO₂ threshold warning/alarm • Offset CO₂ value <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Air quality OK • Air quality warning • Air quality alarm

7.2.3.9.1.16 **CO₂ threshold OK/warning**

This parameter is used to define the CO₂ threshold between good and moderate air quality.

Note

Below the threshold, good is output. Between the thresholds OK/Warning and Warning/Alarm, a warning is output. Above the threshold, an alarm is output.

Option

600 ... 1000 ... 1249 ppm

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Display air quality](#) \ Option *Yes*

7.2.3.9.1.17 **CO₂ threshold warning/alarm**

This parameter is used to define the CO₂ threshold between moderate and poor air quality.

Note

Below the threshold, good is output. Between the thresholds OK/Warning and Warning/Alarm, a warning is output. Above the threshold, an alarm is output.

Option

1250 ... 1500 ... 2000 ppm

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Display air quality](#) \ Option *Yes*

7.2.3.9.1.18 **Display CO2 value**

This parameter is used to define whether the current CO2 value is shown on the room operation unit display.

Option	
<i>No</i>	The CO2 value is not displayed.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Offset CO2 value

7.2.3.9.1.19 **Offset CO2 value**

This parameter is used to define an offset for the measured CO₂ value.

Option	
-500 ... 0 ... 500 ppm	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#)
 - Parameter [Enable Group Object "CO2 value"](#) \ Option Yes
- Or
- Parameter [Display air quality](#) \ Option Yes
- Or
- Parameter [Display CO2 value](#) \ Option Yes

7.2.3.9.1.20 **Enable Group Object "Status Relative humidity"**

This parameter enables the following Group Object:

- [Status Relative humidity](#)

Option	
<i>No</i>	The Group Object is not enabled.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Send value of Group Object "Status Relative humidity" • Humidity offset The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Status Relative humidity

7.2.3.9.1.21 **Send value of Group Object "Status Relative humidity"**

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- [Status Relative humidity](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: • Values are sent from a change of
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: • Values are 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: • Values are sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Enable Group Object "Status Relative humidity"](#) \ Option Yes

7.2.3.9.1.22

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.23

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>1 ... 5 ... 30 %</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.24 **Display humidity****Note**

Not all room operation units have a humidity sensor.

This parameter is used to activate the humidity indicator on the room operation unit display.

Option

<i>No</i>	The humidity indicator is not activated.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Humidity offset

7.2.3.9.1.25 **Humidity offset**

This parameter is used to define an offset for the measured relative humidity.

Option

-20 ... 0 ... 20 %

Prerequisites for visibility

- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [Enable Group Object "Status Relative humidity"](#) \ Option Yes
- Or
- Parameter [Display humidity](#) \ Option Yes

7.2.3.9.1.26 **Enable Group Object "Dew point temperature"****Note**

Not all room operation units have a humidity sensor.

This parameter enables the following Group Object:

- [Dew point temperature](#)

Option

<i>No</i>	The Group Object is not enabled.
<i>Yes</i>	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Send value of Group Object "Dew point temperature" <p>The following dependent Group Objects are displayed:</p> <ul style="list-style-type: none"> • Dew point temperature

7.2.3.9.1.27 **Send value of Group Object "Dew point temperature"**

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 temperature](#)

Option	
<i>No, update only</i>	The value is updated but is not sent.
<i>On change</i>	The value is sent if there is a change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value sent from a change of
<i>Cyclically</i>	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change or cyclically</i>	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value sent from a change of • Sending cycle
<i>On request</i>	The value is sent on request.
<i>On change or on request</i>	The value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value 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 cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Sending cycle
<i>On change, on request or cyclically</i>	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are displayed: <ul style="list-style-type: none"> • Value sent from a change of • Sending cycle

Prerequisites for visibility

- Parameter window *Channel X*: \ Parameter window [Basic settings](#) \ Parameter [Enable Group Object "Dew point temperature"](#) \ Option *Yes*

7.2.3.9.1.28

Sending cycle

This parameter is used to define the cycle in which the Group Object value is sent.

Option
<i>00:00:30 ... 00:10:00 ... 24:00:00 hh:mm:ss</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.29

Value sent from a change of

This parameter is used to define the minimum change in the input value (based on the last value sent) for sending the output value on the bus (ABB i-bus® KNX).

Option
<i>0.5 ... 10 K</i>

Prerequisites for visibility

- The visibility is dependent on the application and the higher-level parameter.

7.2.3.9.1.30 **Enable fan control**

This parameter is used to enable fan control on the room operation unit. When fan control is enabled, the corresponding control elements are shown on the display.

Option	
<u>No</u>	Fan control is not enabled.
Yes	The following dependent parameters are displayed: <ul style="list-style-type: none"> • Number of fan stages • Enable fan automatic The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Request fan stage • Confirm fan stage

7.2.3.9.1.31 **Number of fan stages**

This parameter is used to define the number of fan stages.

Option	
<u>0 ... 2</u>	
0 ... 3	
0 ... 6	

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Enable fan control](#) \ Option Yes

7.2.3.9.1.32 **Enable fan automatic**

This parameter is used to enable fan automatic mode. When fan automatic mode is enabled, it can be activated or deactivated via the room operation unit.

Option	
<u>No</u>	Fan automatic mode is not enabled.
Yes	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Request fan automatic mode • Confirm fan automatic mode

Prerequisites for visibility

- Parameter window [Channel X](#): \ Parameter window [Basic settings](#) \ Parameter [Enable fan control](#) \ Option Yes

7.2.3.9.1.33 **Receive status Heating/Cooling**

This parameter is used to define whether the heating/cooling symbol is shown on the room operation unit display and how the heating/cooling status is received from the room temperature controller.

Option	
<u>Deactivated</u>	The heating/cooling symbol is not displayed; the heating/cooling status is not received.
<i>Via combined RTC status</i>	The heating/cooling symbol is displayed; the heating/cooling status is received via the Group Object Status RTC. The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Receipt of Status RTC
<i>Via 2 separate Group Objects</i>	The heating/cooling symbol is displayed; the heating/cooling status is received via two separate Group Objects. The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Receive status Heating • Receive status Cooling

7.2.3.9.1.34 Enable ECO mode button

This parameter is used to define whether the ECO mode button is shown on the room operation unit display and how the button is used.

Operating the button triggers a change of operating mode.

Switching the button on puts the device into Comfort mode. Switching the button off puts the device into Building Protection mode.

Option	
<i>Deactivated</i>	The ECO mode button is not displayed.
<i>Status indicator</i>	The ECO mode button is displayed. The button is only used as a status indicator and has no other function.
<i>Adjustable</i>	The ECO mode button is displayed and ECO mode can be activated or deactivated with the button.

7.2.3.9.1.35 Enable On/Off button

This parameter is used to define whether the On/Off button is shown on the room operation unit display and how the button is used.

Operating the button triggers a change of operating mode.

Switching the button on puts the device into Comfort mode. Switching the button off puts the device into Building Protection mode.

Option	
<i>Deactivated</i>	The On/Off button is not displayed.
<i>Status indicator</i>	The On/Off button is displayed. The button is only used as a status indicator and has no other function.
<i>Adjustable</i>	The On/Off button is displayed and the room operation unit can be switched on or off with the button.

7.2.3.9.1.36 Enable Boost mode button

This parameter is used to define whether the Boost mode button is shown on the room operation unit display.

Option	
<i>No</i>	The Boost mode button is not displayed.
<i>Yes</i>	The following dependent Group Objects are displayed: <ul style="list-style-type: none"> • Display Boost mode • Activate Boost mode

8 Group Objects

8.1 Overview of Group Objects

Function	Group Object name	Data point type	Length	Flags
Activate Boost mode	Channel X – Room operation unit	DPT 1.001	1 bit	C T
Activate cooling	Channel X – x:	DPT 1.003	1 bit	C W T U I
Activate cooling	Channel X – x:	DPT 1.003	1 bit	C W T U I
Activate Delta-T Manager flow-dependent adjustment (scaling)	Channel X – Water 2-way valve:	DPT 1.003	1 bit	C W
Activate Delta-T Manager	Channel X – Water 2-way valve:	DPT 1.003	1 bit	C W
Activate heating	Channel X – x:	DPT 1.003	1 bit	C W T U I
Activate heating	Channel X – x:	DPT 1.003	1 bit	C W T U I
Addressing error	Central – General:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Air quality alarm	Channel X – Room operation unit	DPT 1.002	1 bit	C R T
Air quality OK	Channel X – Room operation unit	DPT 1.002	1 bit	C R T
Air quality warning	Channel X – Room operation unit	DPT 1.002	1 bit	C R T
Base setpoint	Channel X – Room operation unit:	DPT 9.001	2 bytes	C W T U I
Binary input	Channel X – Room operation unit:	DPT 1.001	1 bit	C R T
Block local operation	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
Certified meter	Channel X – Thermal energy meter:	DPT 1.002	1 bit	C R T
Certified meter	Channel X – Water 2-way valve:	DPT 1.002	1 bit	C R T
CO2 value	Channel X – Room operation unit:	DPT 9.008	2 bytes	C R T
Communication error	Central – General	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Central – General:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Confirm fan automatic mode	Channel X – Room operation unit:	DPT 1.003	1 bit	C T
Confirm fan stage	Channel X – Room operation unit:	DPT 5.001	1 byte	C W T U I
Confirm room temperature setpoint (absolute)	Channel X – Room operation unit:	DPT 9.001	2 bytes	C W T U I
Confirm room temperature setpoint (relative)	Channel X – Room operation unit:	DPT 9.002	2 bytes	C W T U I
Confirm RTC operating mode	Channel X – Room operation unit	DPT 20.102	1 byte	C W T U I
Control value	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I
Control value	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I
Control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
Control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
Cooling control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
Cooling control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
DCA configuration access is active	Central – General:	DPT 1.002	1 bit	C R T
Dew point temperature	Channel X – Room operation unit:	DPT 9.001	2 bytes	C R T
Display Boost mode	Channel X – Room operation unit	DPT 1.001	1 bit	C W T U I

Function	Group Object name	Data point type	Length	Flags
Display warning symbol	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
Display window symbol	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
Error cyclical monitoring	Channel X – Rotary actuator for ball valves:	DPT 1.005	1 bit	C R T
Error cyclical monitoring	Channel X – Rotary actuator for zone valves	DPT 1.005	1 bit	C R T
Error cyclical monitoring	Channel X – Rotary/damper actuator:	DPT 1.005	1 bit	C R T
Error cyclical monitoring	Channel X – Rotary/damper actuator:	DPT 1.005	1 bit	C R T
Error cyclical monitoring	Channel X – VAV compact controller:	DPT 1.005	1 bit	C R T
Error cyclical monitoring	Channel X – VAV universal controller (modular):	DPT 1.005	1 bit	C R T
Error cyclical monitoring	Channel X – Water 2-way valve:	DPT 1.005	1 bit	C R T
Error	Channel X – x:	DPT 1.005	1 bit	C R T
Error	Channel X – x:	DPT 1.005	1 bit	C R T
Error	Channel X – x:	DPT 1.005	1 bit	C R T
Error	Channel X – x:	DPT 1.005	1 bit	C R T
Error	Channel X – x:	DPT 1.005	1 bit	C R T
Error	Channel X – x:	DPT 1.005	1 bit	C R T
Gear disengagement active	Channel X – VAV universal controller (modular):	DPT 1.011	1 bit	C R T
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
Heating control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
Heating control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
Heating/cooling changeover	Channel X – x:	DPT 1.100	1 bit	C W T U I
Heating/cooling changeover	Channel X – x:	DPT 1.100	1 bit	C W T U I
In operation	Central – General:	DPT 1.002	1 bit	C R T
Maximum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W I
Maximum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C W T U I
Maximum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W T U I
Maximum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
Maximum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	1 byte	C W T U I
Maximum position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I
Maximum power limit	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
Minimum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W I
Minimum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C W T U I
Minimum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W T U I
Minimum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
Minimum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	1 byte	C W T U I
Minimum position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus device error	Central – General:	DPT 1.005	1 bit	C R T
MP-Bus monitoring timed out	Channel X – Water 2-way valve:	DPT 1.005	1 bit	C R T
MP-Bus voltage error	Central – General:	DPT 1.005	1 bit	C R T
Override control active	Channel X – VAV universal controller (modular):	DPT 1.011	1 bit	C R T
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
Override control	Channel X – Rotary actuator for ball valves:	nonDPT	1 byte	C W T U I
Override control	Channel X – Rotary/damper actuator:	nonDPT	1 byte	C W T U I
Override control	Channel X – VAV compact controller:	nonDPT	1 byte	C W T U I
Override control	Channel X – VAV universal controller (modular):	nonDPT	1 byte	C W T U I
Override control	Channel X – Water 2-way valve:	nonDPT	1 byte	C W T U I
Receipt of Status RTC	Channel X – Room operation unit	DPT 22.103	16 bit	C W T U I
Receive status Cooling	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
Receive status Heating	Channel X – Room operation unit:	DPT 1.003	1 bit	C W T U I
Request fan automatic mode	Channel X – Room operation unit:	DPT 1.003	1 bit	C W T U I
Request fan stage	Channel X – Room operation unit:	DPT 5.001	1 byte	C T
Request room temperature setpoint (absolute)	Channel X – Room operation unit:	DPT 9.001	2 bytes	C T
Request room temperature setpoint (relative)	Channel X – Room operation unit:	DPT 9.002	2 bytes	C T
Request RTC operating mode	Channel X – Room operation unit	DPT 20.102	1 byte	C T

Function	Group Object name	Data point type	Length	Flags
Request status values	Central – General:	DPT 1.017	1 bit	C W
Reset service information	Channel X – x:	DPT 1.017	1 bit	C W
Reset service information	Channel X – x:	DPT 1.017	1 bit	C W
Reset service information	Channel X – x:	DPT 1.017	1 bit	C W
Sensor module must be replaced	Channel X – Water 2-way valve:	DPT 1.005	1 bit	C R T
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
Service information	Channel X – Rotary actuator for ball valves:	DPT 27.001	4 bytes	C R T
Service information	Channel X – Rotary/damper actuator:	DPT 27.001	4 bytes	C R T
Service information	Channel X – Thermal energy meter:	DPT 27.001	4 bytes	C R T
Service information	Channel X – VAV compact controller:	DPT 27.001	4 bytes	C R T
Service information	Channel X – VAV universal controller (modular):	DPT 27.001	4 bytes	C R T
Service information	Channel X – Water 2-way valve:	DPT 27.001	4 bytes	C R T
Service information	Channel X – Room operation unit:	DPT 27.001	4 bytes	C R T
Setpoint absolute differential pressure	Channel X – Water 2-way valve:	DPT 14.058	4 bytes	C W T U I
Setpoint absolute flow at Delta-T	Channel X – Water 2-way valve:	DPT 14.1201	4 bytes	C W T U I
Setpoint Delta-T limitation	Channel X – Water 2-way valve:	DPT 9.002	2 bytes	C W T U I
Setpoint	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W T U I
Setpoint	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
Setpoints	Channel X – VAV compact controller:	DPT 5.001	1 byte	C W T U I
Start adjustment	Channel X – VAV universal controller (modular):	DPT 1.017	1 bit	C W

Function	Group Object name	Data point type	Length	Flags
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
Start synchronization	Channel X – VAV universal controller (modular):	DPT 1.017	1 bit	C W
Start synchronization	Channel X – x:	DPT 1.017	1 bit	C W
Start test run	Channel X – Rotary actuator for ball valves:	DPT 1.017	1 bit	C W
Start test run	Channel X – Rotary/damper actuator:	DPT 1.017	1 bit	C W
Status Absolute cooling power	Channel X – Thermal energy meter:	DPT 14.056	4 bytes	C R T
Status Absolute cooling power	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
Status Absolute differential pressure	Channel X – VAV universal controller (modular):	DPT 14.058	4 bytes	C R T
Status Absolute differential pressure	Channel X – Water 2-way valve:	DPT 14.058	4 bytes	C R T
Status Absolute flow rate	Channel X – Thermal energy meter:	DPT 14.1201	4 bytes	C R T
Status Absolute flow rate	Channel X – VAV compact controller:	DPT 9.009	2 bytes	C R T
Status Absolute flow rate	Channel X – VAV compact controller:	DPT 14.077	4 bytes	C R T
Status Absolute flow rate	Channel X – VAV universal controller (modular):	DPT 9.009	2 bytes	C R T
Status Absolute flow rate	Channel X – VAV universal controller (modular):	DPT 14.077	4 bytes	C R T
Status Absolute flow rate	Channel X – Water 2-way valve:	DPT 14.1201	4 bytes	C R T
Status Absolute heating power	Channel X – Thermal energy meter:	DPT 14.056	4 bytes	C R T
Status Absolute heating power	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
Status Absolute position (millimeters)	Channel X – Rotary actuator for ball valves:	DPT 7.011	2 bytes	C R T
Status Absolute position (millimeters)	Channel X – Rotary/damper actuator:	DPT 7.011	2 bytes	C R T
Status Absolute position (millimeters)	Channel X – VAV compact controller:	DPT 7.011	2 bytes	C R T
Status Absolute position (rotation angle)	Channel X – Rotary actuator for ball valves:	DPT 8.011	2 bytes	C R T
Status Absolute position (rotation angle)	Channel X – Rotary/damper actuator:	DPT 8.011	2 bytes	C R T
Status Absolute position (rotation angle)	Channel X – VAV compact controller:	DPT 8.011	2 bytes	C R T
Status Absolute position	Channel X – VAV universal controller (modular):	DPT 8.011	2 bytes	C R T
Status Absolute position	Channel X – Water 2-way valve:	DPT 8.011	2 bytes	C R T
Status Accumulated volume	Channel X – Thermal energy meter:	DPT 14.076	4 bytes	C R T
Status Accumulated volume	Channel X – Water 2-way valve:	DPT 14.076	4 bytes	C R T
Status Analog input signal	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Analog input signal	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Delta temperature	Channel X – Thermal energy meter:	DPT 9.002	2 bytes	C R T
Status Delta temperature	Channel X – Water 2-way valve:	DPT 9.002	2 bytes	C R T
Status Delta-T Manager flow-dependent adjustment (scaling)	Channel X – Water 2-way valve:	DPT 1.002	1 bit	C R T
Status Delta-T Manager	Channel X – Water 2-way valve:	DPT 1.002	1 bit	C R T
Status External sensor	Channel X – Water 2-way valve:	DPT 9.001	2 bytes	C R T
Status Glycol concentration	Channel X – Thermal energy meter:	DPT 8.010	2 bytes	C R T
Status Glycol concentration	Channel X – Water 2-way valve:	DPT 8.010	2 bytes	C R T
Status Internal sensor	Channel X – Water 2-way valve:	DPT 9.001	2 bytes	C R T
Status Maximum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Maximum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
Status Maximum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Maximum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Maximum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	2 bytes	C R T
Status Maximum position	Channel X – Rotary/damper actuator:	DPT 5.001	2 bytes	C R T
Status Maximum power limit	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Minimum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Minimum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
Status Minimum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Minimum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Minimum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	2 bytes	C R T
Status Minimum position	Channel X – Rotary/damper actuator:	DPT 5.001	2 bytes	C R T
Status Nominal differential pressure	Channel X – VAV universal controller (modular):	DPT 14.058	4 bytes	C R T
Status Nominal differential pressure	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
Status Nominal flow rate	Channel X – Thermal energy meter:	DPT 14.1201	4 bytes	C R T
Status Nominal flow rate	Channel X – VAV compact controller:	DPT 9.009	2 bytes	C R T
Status Nominal flow rate	Channel X – VAV compact controller:	DPT 14.077	4 bytes	C R T
Status Nominal flow rate	Channel X – VAV universal controller (modular):	DPT 9.009	2 bytes	C R T
Status Nominal flow rate	Channel X – VAV universal controller (modular):	DPT 14.077	4 bytes	C R T
Status Nominal flow rate	Channel X – Water 2-way valve:	DPT 14.1201	4 bytes	C R T
Status Nominal power	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
Status Nominal range (millimeters)	Channel X – Rotary actuator for ball valves:	DPT 7.011	2 bytes	C R T
Status Nominal range (millimeters)	Channel X – Rotary/damper actuator:	DPT 7.011	2 bytes	C R T
Status Nominal range (millimeters)	Channel X – VAV compact controller:	DPT 7.011	2 bytes	C R T
Status Nominal range (rotation angle)	Channel X – Rotary actuator for ball valves:	DPT 8.011	2 bytes	C R T
Status Nominal range (rotation angle)	Channel X – Rotary/damper actuator:	DPT 8.011	2 bytes	C R T

Function	Group Object name	Data point type	Length	Flags
Status Nominal range (rotation angle)	Channel X – VAV compact controller:	DPT 8.011	2 bytes	C R T
Status Relative differential pressure	Channel X – VAV universal controller (modular):	DPT 8.010	2 bytes	C R T
Status Relative differential pressure	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Relative flow rate	Channel X – Thermal energy meter:	DPT 8.010	2 bytes	C R T
Status Relative flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
Status Relative flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Relative flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Relative flow rate	Channel X – Water 2-way valve:	DPT 8.010	2 bytes	C R T
Status Relative humidity	Channel X – Room operation unit:	DPT 5.001	2 bytes	C R T
Status Relative position	Channel X – Rotary actuator for ball valves:	DPT 5.001	1 byte	C R T
Status Relative position	Channel X – Rotary actuator for zone valves	DPT 5.001	1 byte	C R T
Status Relative position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C R T
Status Relative position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C R T
Status Relative position	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
Status Relative position	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
Status Relative position	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Relative power	Channel X – Water 2-way valve:	DPT 8.010	2 bytes	C R T
Status Relative power	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
Status Room temperature	Channel X – Room operation unit:	DPT 9.001	2 bytes	C R T
Status Total energy cooling	Channel X – Thermal energy meter:	DPT 13.013	4 bytes	C R T
Status Total energy cooling	Channel X – Water 2-way valve:	DPT 13.013	4 bytes	C R T
Status Total energy heating	Channel X – Thermal energy meter:	DPT 13.013	4 bytes	C R T
Status Total energy heating	Channel X – Water 2-way valve:	DPT 13.013	4 bytes	C R T
Temperature external sensor	Channel X – Thermal energy meter:	DPT 9.001	2 bytes	C R T
Temperature internal sensor	Channel X – Thermal energy meter:	DPT 9.001	2 bytes	C R T

8.2 Group Objects Central – General

Function	Group Object name	Data point type	Length	Flags
In operation	Central – 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 *Enable 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 *Device settings* \ Parameter *Enable Group Object "In operation"* \ Option *Yes, send value 0 cyclically / Yes, send value 1 cyclically*

Request status values	Central – General:	DPT 1.017	1 bit	C W
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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

Prerequisites for visibility

- Parameter window *Device settings* \ Parameter *Enable Group Object "Request status values"* \ Option *Yes*

DCA configuration access is active	Central – General:	DPT 1.002	1 bit	C R T
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Telegram value:

- 1 = Active
- 0 = Not active

MP-Bus voltage error	Central – General:	DPT 1.005	1 bit	C R T
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This Group Object sends a central error telegram on the bus (ABB i-bus® KNX) if there is a voltage error on the MP-Bus.

Telegram value:

- 1 = Error
- 0 = No error

Function	Group Object name	Data point type	Length	Flags
Communication error	Central – General	DPT 1.005	1 bit	C R T
This Group Object sends a central error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the KNX/MP-Bus Controller and the external MP-Bus device.				
<p>Note</p> <p>A communication error can be caused by the following:</p> <ul style="list-style-type: none"> • Fault on external MP-Bus device • MP-Bus voltage fault 				
Telegram value:				
<ul style="list-style-type: none"> • 1 = Error • 0 = No error 				
Addressing error	Central – General:	DPT 1.005	1 bit	C R T
This Group Object sends a central error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on any channel.				
<p>Note</p> <p>An addressing error can be caused by the following:</p> <ul style="list-style-type: none"> • The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus. • The type of operation of the external MP-Bus device (e.g. rotary operation/linear operation) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle). 				
Telegram value:				
<ul style="list-style-type: none"> • 1 = Error • 0 = No error 				
Configuration error	Central – General:	DPT 1.005	1 bit	C R T
This Group Object sends a central error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on any channel.				
<p>Note</p> <p>A configuration error can be caused by the following:</p> <ul style="list-style-type: none"> • The MP profile set in the DCA is not suitable for the connected external MP-Bus device. • The password used for a data pool device was not the default password (0000). 				
Telegram value:				
<ul style="list-style-type: none"> • 1 = Error • 0 = No error 				
MP-Bus device error	Central – General:	DPT 1.005	1 bit	C R T
This Group Object sends a central error telegram on the bus (ABB i-bus® KNX) if there is a device error on the MP-Bus.				
Telegram value:				
<ul style="list-style-type: none"> • 1 = Error • 0 = No error 				

8.3 Group Objects Air "xV-D3-MP" VAV compact controller

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – VAV compact controller:	DPT 1.005	1 bit	C R T
This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).				
<p>Note</p> <p>If no value is received on the monitored Group Objects (→ Group Objects Setpoints, Override control) during the set time interval (→ parameter Monitoring time), the following actions are triggered:</p> <ul style="list-style-type: none"> • This Group Object is set to "Error". • Value in the parameter Actuator position after cyclical monitoring time has expired becomes valid. 				
Telegram value:				
<ul style="list-style-type: none"> • 1 = Error • 0 = No error 				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Cyclical monitoring of setpoint and override control \ Option Yes 				
Minimum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the minimum flow rate for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The minimum flow rate can be used to set the limit for the minimum possible flow value that the external MP-Bus device will not fall below during operation (provided that there is a general flow and no sudden pressure change occurs). The minimum flow rate always relates to the nominal flow rate. Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p>				
Telegram value:				
<ul style="list-style-type: none"> • 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				

Function	Group Object name	Data point type	Length	Flags
Maximum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the maximum flow rate for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The maximum flow rate can be used to set the limit for the maximum possible flow value that the external MP-Bus device will not exceed during operation (provided that there is a general flow and no sudden pressure change occurs). The maximum flow rate always relates to the nominal flow rate. Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 20 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				
Status Relative flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The relative flow rate always relates to the nominal flow rate.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				
Status Absolute flow rate	Channel X – VAV compact controller:	DPT 9.009	2 bytes	C R T
This Group Object sends the current absolute flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 60000 m³/h <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate" \ Option 2 bytes (DPT 9.009) 				
Status Absolute flow rate	Channel X – VAV compact controller:	DPT 14.077	4 bytes	C R T
This Group Object sends the current absolute flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 0.00 ... 16.66 m³/s <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate" \ Option 4 bytes (DPT 14.077) 				
Status Nominal flow rate	Channel X – VAV compact controller:	DPT 9.009	2 bytes	C R T
This Group Object sends the nominal flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The nominal flow rate is preset by the manufacturer of the flow rate controller and cannot be changed.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 60000 m³/h <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate" \ Option 2 bytes (DPT 9.009) 				
Status Nominal flow rate	Channel X – VAV compact controller:	DPT 14.077	4 bytes	C R T
This Group Object sends the nominal flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The nominal flow rate is preset by the manufacturer of the flow rate controller and cannot be changed.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0.00 ... 16.66 m³/s <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT for Group Objects "Status Absolute flow rate", "Status Nominal flow rate" \ Option 4 bytes (DPT 14.077) 				
Status Minimum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
This Group Object sends the current minimum flow rate on the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				

Function	Group Object name	Data point type	Length	Flags
Status Maximum flow rate	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
This Group Object sends the current maximum flow rate on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				
Setpoints	Channel X – VAV compact controller:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the setpoint for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.</p> <p>After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p>				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				
Override control	Channel X – VAV compact controller:	nonDPT	1 byte	C W T U I
This Group Object is used to receive the position override for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>Using position override allows the external MP-Bus device to be set to a specified position and locked in this position until another valid override telegram is received.</p> <p>This Group Object is always initialized with the value "0". After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p>				
Telegram value (other values are ignored):				
<ul style="list-style-type: none"> 0 = Reset override/KNX operation 1 = Open 2 = Close 3 = Maximum position/maximum flow rate 4 = Minimum position/minimum flow rate 5 = Mid position/mid flow rate (between max and min position/flow rate) 6 = Stop 7 = Nominal flow rate 8 = Fast close 9 = Fast open 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
This Group Object is used to start the adjustment cycle of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The adjustment is used to detect the control range of the external MP-Bus device and is generally only required during commissioning. Once the adjustment has started, it cannot be stopped.</p>				
Telegram value:				
<ul style="list-style-type: none"> 1 = Start adjustment 0 = Start adjustment 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Status Relative position	Channel X – VAV compact controller:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p>				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xV-D3-MP" VAV compact controller 				

Function	Group Object name	Data point type	Length	Flags
Status Absolute position (rotation angle)	Channel X – VAV compact controller:	DPT 8.011	2 bytes	C R T

This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 90°

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xV-D3-MP" VAV compact controller*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Rotation angle (DPT 8.011)*

Status Absolute position (millimeters)	Channel X – VAV compact controller:	DPT 7.011	2 bytes	C R T
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This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 100 mm

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xV-D3-MP" VAV compact controller*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Millimeters (DPT 7.011)*

Status Nominal range (rotation angle)	Channel X – VAV compact controller:	DPT 8.011	2 bytes	C R T
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This Group Object sends the current nominal range of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 90°

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xV-D3-MP" VAV compact controller*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Rotation angle (DPT 8.011)*

Status Nominal range (millimeters)	Channel X – VAV compact controller:	DPT 7.011	2 bytes	C R T
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This Group Object sends the current nominal range of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 100 mm

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xV-D3-MP" VAV compact controller*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Millimeters (DPT 7.011)*

Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
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This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.

Telegram value:

- 0 ... 10000 mV

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter*
- Parameter window [Channel X:](#) \ Parameter window [Sensor](#)
 - Parameter [Sensor type](#) \ Option *Active sensor*
 - Parameter [Output sensor value](#) \ Option *Voltage (DPT 9.020)*

Function	Group Object name	Data point type	Length	Flags
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Active sensor</i> Parameter Output sensor value \ Option <i>Percent (DPT 5.001)</i> 				
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Switch contact</i> 				
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Humidity sensor</i> Parameter Output sensor value \ Option <i>DPT 9.007</i> 				
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Humidity sensor</i> Parameter Output sensor value \ Option <i>DPT 5.001</i> 				
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 2000 ppm 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Air quality sensor (CO2)</i> 				
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of override control on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Override control active 0 = Override control not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of gear disengagement on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Gear disengagement active (physical button on external MP-Bus device) 0 = Gear disengagement not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				

Function	Group Object name	Data point type	Length	Flags
Error	Channel X – x:	DPT 1.005	1 bit	C R T
<p>This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is any error (e.g. actuator overload) on the external MP-Bus device.</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 Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Service information	Channel X – VAV compact controller:	DPT 27.001	4 bytes	C R T
<p>This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of bits 16, 17, 18, 24 and 25 in the high bytes is always 1. The value of all other bits in the high bytes is always 0.</p> <p>If the value 0x03 07 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.</p> </div> <p>The following information is sent via the low bytes:</p> <ul style="list-style-type: none"> • Bit 0: Utilization too high • Bit 1: Control range increased • Bit 2: Mechanical overload • Bit 3: Not used • Bit 4: Not used • Bit 5: Not used • Bit 6: Not used • Bit 7: Not used • Bit 8: Internal activity • Bit 9: MP-Bus Watchdog triggered • Bit 10: Not used • Bit 11: Not used • Bit 12: Not used • Bit 13: Not used • Bit 14: Not used • Bit 15: Not used <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Air "xV-D3-MP" VAV compact controller</i> 				
Reset service information	Channel X – x:	DPT 1.017	1 bit	C W
<p>This Group Object is used to reset the combined status information via the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Reset service information • 0 = Reset service information <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
<p>This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>A communication error can be caused by the following:</p> <ul style="list-style-type: none"> • Fault on external MP-Bus device • MP-Bus voltage fault </div> <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 Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
<p>This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>An addressing error can be caused by the following:</p> <ul style="list-style-type: none"> • The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus. </div> <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 Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				

Function	Group Object name	Data point type	Length	Flags
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

Note

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.4 Group Objects Air "xM24A-MP" rotary/damper actuator

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – Rotary/damper actuator:	DPT 1.005	1 bit	C R T

This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).

Note

If no value is received on the monitored Group Objects (→ Group Objects [Control value](#), [Override control](#)) during the set time interval (→ parameter [Monitoring time](#)), the following actions are triggered:

- This Group Object is set to "Error".
- Value in the parameter [Actuator position after cyclical monitoring time has expired](#) becomes valid.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xM24A-MP" rotary/damper actuator*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of control value and override control](#) \ Option *Yes*

Control value	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I

This Group Object is used to receive the control value for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xM24A-MP" rotary/damper actuator*

Function	Group Object name	Data point type	Length	Flags
Override control	Channel X – Rotary/damper actuator:	nonDPT	1 byte	C W T U I

This Group Object is used to receive the position override for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Using position override allows the external MP-Bus device to be set to a specified position and locked in this position until another valid override telegram is received.

This Group Object is always initialized with the value "0". After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value (other values are ignored):

- 0 = Reset override/KNX operation
- 1 = Open
- 2 = Close
- 3 = Maximum position
- 4 = Minimum position
- 5 = Mid position (between maximum and minimum position)
- 6 = Stop
- 7 = Not used
- 8 = Fast close
- 9 = Fast open

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator

Minimum position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the minimum position for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The minimum position can be used to set the limit for the minimum possible position that the external MP-Bus device will not fall below during operation.

The minimum position always relates to the nominal range.

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator

Maximum position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the maximum position for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The maximum position can be used to set the limit for the maximum possible position that the external MP-Bus device will not exceed during operation.

The maximum position always relates to the nominal range.

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 20 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator

Start test run	Channel X – Rotary/damper actuator:	DPT 1.017	1 bit	C W
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This Group Object is used to start the test run of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Start test run
- 0 = Start test run

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "xM24A-MP" rotary/damper actuator

Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
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This Group Object is used to start the adjustment cycle of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The adjustment is used to detect the control range of the external MP-Bus device and is generally only required during commissioning. Once the adjustment has started, it cannot be stopped.

Telegram value:

- 1 = Start adjustment
- 0 = Start adjustment

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Status Relative position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator 				
Status Absolute position (rotation angle)	Channel X – Rotary/damper actuator:	DPT 8.011	2 bytes	C R T
This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 90° <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT of absolute position \ Option Rotation angle 				
Status Absolute position (millimeters)	Channel X – Rotary/damper actuator:	DPT 7.011	2 bytes	C R T
This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 200 mm <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT of absolute position \ Option Millimeters 				
Status Nominal range (rotation angle)	Channel X – Rotary/damper actuator:	DPT 8.011	2 bytes	C R T
This Group Object sends the current nominal range of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 90° <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT of absolute position \ Option Rotation angle 				
Status Nominal range (millimeters)	Channel X – Rotary/damper actuator:	DPT 7.011	2 bytes	C R T
This Group Object sends the current nominal range of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 200 mm <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator Parameter window Channel X: \ Parameter window Basic settings \ Parameter DPT of absolute position \ Option Millimeters 				

Function	Group Object name	Data point type	Length	Flags
Status Minimum position	Channel X – Rotary/damper actuator:	DPT 5.001	2 bytes	C R T
This Group Object sends the minimum position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator 				
Status Maximum position	Channel X – Rotary/damper actuator:	DPT 5.001	2 bytes	C R T
This Group Object sends the maximum position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator 				
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
<p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 10000 mV <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xD3" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Active sensor Parameter Output sensor value \ Option Voltage (DPT 9.020) 				
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
<p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xD3" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Active sensor Parameter Output sensor value \ Option Percent (DPT 5.001) 				
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
<p>Telegram value:</p> <ul style="list-style-type: none"> 1 ... 20000 Ω <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xD3" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Passive sensor 1 kohm / Passive sensor 20 kohms 				
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
<p>Telegram value:</p> <ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xD3" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Switch contact 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> -35 ... 160 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms 				
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Humidity sensor Parameter Output sensor value \ Option DPT 9.007 				
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Humidity sensor Parameter Output sensor value \ Option DPT 5.001 				
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 2000 ppm 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Air quality sensor (CO2) 				
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of override control on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Override control active 0 = Override control not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of gear disengagement on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Gear disengagement active (physical button on external MP-Bus device) 0 = Gear disengagement not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is any error (e.g. actuator overload) on the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 = Error 0 = No error 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				

Function	Group Object name	Data point type	Length	Flags
Service information	Channel X – Rotary/damper actuator:	DPT 27.001	4 bytes	C R T

This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of bits 16, 17, 18, 24 and 25 in the high bytes is always 1. The value of all other bits in the high bytes is always 0.

If the value 0x03 07 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.

The following information is sent via the low bytes:

- Bit 0: Utilization too high
- Bit 1: Control range increased
- Bit 2: Mechanical overload
- Bit 3: Not used
- Bit 4: Not used
- Bit 5: Not used
- Bit 6: Not used
- Bit 7: Not used
- Bit 8: Internal activity
- Bit 9: MP-Bus Watchdog triggered
- Bit 10: Not used
- Bit 11: Not used
- Bit 12: Not used
- Bit 13: Not used
- Bit 14: Not used
- Bit 15: Not used

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "xM24A-MP" rotary/damper actuator*

Reset service information	Channel X – x:	DPT 1.017	1 bit	C W
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This Group Object is used to reset the combined status information via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Reset service information
- 0 = Reset service information

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
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This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.

Note

A communication error can be caused by the following:

- Fault on external MP-Bus device
- MP-Bus voltage fault

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
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This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.

Note

An addressing error can be caused by the following:

- The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
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This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

Note

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.5 Group Objects Water "xR24A-MP" rotary actuator for ball valves

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – Rotary actuator for ball valves:	DPT 1.005	1 bit	C R T

This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).

i Note

If no value is received on the monitored Group Objects (→ Group Objects [Control value](#), [Override control](#)) during the set time interval (→ parameter [Monitoring time](#)), the following actions are triggered:

- This Group Object is set to "Error".
- Value in the parameter [Actuator position after cyclical monitoring time has expired](#) becomes valid.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "xR24A-MP" rotary actuator for ball valves](#)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of control value and override control](#) \ Option [Yes](#)

Control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the control value for the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves](#)
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option [2-way/3-way valve](#)
 - Or
 - Parameter [Valve type](#) \ Option [6-way valve](#)
 - Parameter [Heating/cooling input](#) \ Option [One common Group Object](#)

Heating control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the heating control value for the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves](#)
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option [6-way valve](#)
 - Parameter [Heating/cooling input](#) \ Option [Via 2 separate Group Objects](#)

Function	Group Object name	Data point type	Length	Flags
Cooling control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the cooling control value for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.</p> <p>After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p>				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves</i> Parameter window Channel X: \ Parameter window Valve <ul style="list-style-type: none"> Parameter Valve type \ Option <i>6-way valve</i> Parameter Heating/cooling input \ Option <i>Via 2 separate Group Objects</i> 				
Heating/cooling changeover	Channel X – x:	DPT 1.100	1 bit	C W T U I
This Group Object is used to receive the changeover of the type of operation (Heating/Cooling) via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Heating 0 = Cooling 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves</i> Parameter window Channel X: \ Parameter window Valve <ul style="list-style-type: none"> Parameter Valve type \ Option <i>6-way valve</i> Parameter Heating/cooling input \ Option <i>Via two separate Group Objects</i> 				
Activate heating	Channel X – x:	DPT 1.003	1 bit	C W T U I
This Group Object is used to activate or deactivate the <i>Heating</i> type of operation via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Activate heating 0 = Deactivate heating 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves</i> Parameter window Channel X: \ Parameter window Valve <ul style="list-style-type: none"> Parameter Valve type \ Option <i>6-way valve</i> Parameter Heating/cooling input \ Option <i>Via 2 separate Group Objects</i> 				
Activate cooling	Channel X – x:	DPT 1.003	1 bit	C W T U I
This Group Object is used to activate or deactivate the <i>Cooling</i> type of operation via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Activate cooling 0 = Deactivate cooling 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves</i> Parameter window Channel X: \ Parameter window Valve <ul style="list-style-type: none"> Parameter Valve type \ Option <i>6-way valve</i> Parameter Heating/cooling input \ Option <i>Via 2 separate Group Objects</i> 				
Override control	Channel X – Rotary actuator for ball valves:	nonDPT	1 byte	C W T U I
This Group Object is used to receive the position override for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>Using position override allows the external MP-Bus device to be set to a specified position and locked in this position until another valid override telegram is received.</p> <p>This Group Object is always initialized with the value "0". After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p>				
Telegram value (other values are ignored):				
<ul style="list-style-type: none"> 0 = Reset override/KNX operation 1 = Open 2 = Close 3 = Maximum position 4 = Minimum position 5 = Mid position (between maximum and minimum position) 6 = Stop 7 = Not used 8 = Fast close 9 = Fast open 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "xR24A-MP" rotary actuator for ball valves</i> 				

Function	Group Object name	Data point type	Length	Flags
Minimum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	1 byte	C W T U I

This Group Object is used to receive the minimum position for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The minimum position can be used to set the limit for the minimum possible position that the external MP-Bus device will not fall below during operation. The minimum position always relates to the nominal range. Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Maximum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the maximum position for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The maximum position can be used to set the limit for the maximum possible position that the external MP-Bus device will not exceed during operation. The maximum position always relates to the nominal range. Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 20 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Start test run	Channel X – Rotary actuator for ball valves:	DPT 1.017	1 bit	C W
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This Group Object is used to start the test run of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Start test run
- 0 = Start test run

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
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This Group Object is used to start the adjustment cycle of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The adjustment is used to detect the control range of the external MP-Bus device and is generally only required during commissioning. Once the adjustment has started, it cannot be stopped.

Telegram value:

- 1 = Start adjustment
- 0 = Start adjustment

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Status Relative position	Channel X – Rotary actuator for ball valves:	DPT 5.001	1 byte	C R T
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This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Status Absolute position (rotation angle)	Channel X – Rotary actuator for ball valves:	DPT 8.011	2 bytes	C R T
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This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 90°

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Rotation angle (DPT 8.011)*

Function	Group Object name	Data point type	Length	Flags
Status Absolute position (millimeters)	Channel X – Rotary actuator for ball valves:	DPT 7.011	2 bytes	C R T

This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 40 mm

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Millimeters (DPT 7.011)*

Status Nominal range (rotation angle)	Channel X – Rotary actuator for ball valves:	DPT 8.011	2 bytes	C R T
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This Group Object sends the current nominal range of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 90°

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Rotation angle (DPT 8.011)*

Status Nominal range (millimeters)	Channel X – Rotary actuator for ball valves:	DPT 7.011	2 bytes	C R T
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This Group Object sends the current nominal range of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 40 mm

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [DPT of absolute position](#) \ Option *Millimeters (DPT 7.011)*

Status Minimum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	2 bytes	C R T
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This Group Object sends the minimum position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Status Maximum position	Channel X – Rotary actuator for ball valves:	DPT 5.001	2 bytes	C R T
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This Group Object sends the maximum position of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Function	Group Object name	Data point type	Length	Flags
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 10000 mV 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Active sensor Parameter Output sensor value \ Option Voltage (DPT 9.020) 				
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Active sensor Parameter Output sensor value \ Option Percent (DPT 5.001) 				
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 ... 20000 Ω 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Passive sensor 1 kohm / Passive sensor 20 kohms 				
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Switch contact 				
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> -35 ... 160 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms 				
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Humidity sensor Parameter Output sensor value \ Option DPT 9.007 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEx-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Humidity sensor Parameter Output sensor value \ Option DPT 5.001 				
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 2000 ppm 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEx-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Air quality sensor (CO2) 				
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEx-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Dew point sensor 				
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of override control on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Override control active 0 = Override control not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except Deactivated 				
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of gear disengagement on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Gear disengagement active (physical button on external MP-Bus device) 0 = Gear disengagement not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except Deactivated 				
Error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is any error (e.g. actuator overload) on the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 = Error 0 = No error 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except Deactivated 				

Function	Group Object name	Data point type	Length	Flags
Service information	Channel X – Rotary actuator for ball valves:	DPT 27.001	4 bytes	C R T

This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of bits 16, 17, 18, 24 and 25 in the high bytes is always 1. The value of all other bits in the high bytes is always 0.

If the value 0x03 07 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.

The following information is sent via the low bytes:

- Bit 0: Utilization too high
- Bit 1: Control range increased
- Bit 2: Mechanical overload
- Bit 3: Not used
- Bit 4: Not used
- Bit 5: Not used
- Bit 6: Not used
- Bit 7: Not used
- Bit 8: Internal activity
- Bit 9: MP-Bus Watchdog triggered
- Bit 10: Not used
- Bit 11: Not used
- Bit 12: Not used
- Bit 13: Not used
- Bit 14: Not used
- Bit 15: Not used

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "xR24A-MP" rotary actuator for ball valves*

Reset service information	Channel X – x:	DPT 1.017	1 bit	C W
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This Group Object is used to reset the combined status information via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Reset service information
- 0 = Reset service information

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
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This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.

Note

A communication error can be caused by the following:

- Fault on external MP-Bus device
- MP-Bus voltage fault

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
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This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.

Note

An addressing error can be caused by the following:

- The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
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This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

Note

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.6 Group Objects Air "CM24-MPL-x" rotary/damper actuator

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – Rotary/damper actuator:	DPT 1.005	1 bit	C R T

This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).

i Note

If no value is received on the monitored Group Object (→ Group Object [Control value](#)) during the set time interval (→ parameter [Monitoring time](#)), the following actions are triggered:

- This Group Object is set to "Error".
- Value in the parameter [Actuator position after cyclical monitoring time has expired](#) becomes valid.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "CM24-MPL-x" rotary/damper actuator
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of control value](#) \ Option Yes

Function	Group Object name	Data point type	Length	Flags
Control value	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C W T U I

This Group Object is used to receive the control value for the connected MP-Bus device via the bus (ABB i-bus® KNX).

i Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "CM24-MPL-x" rotary/damper actuator

Function	Group Object name	Data point type	Length	Flags
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W

This Group Object is used to start the adjustment cycle of the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

The adjustment is used to detect the control range of the external MP-Bus device and is generally only required during commissioning. Once the adjustment has started, it cannot be stopped.

Telegram value:

- 1 = Start adjustment
- 0 = Start adjustment

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Status Relative position	Channel X – Rotary/damper actuator:	DPT 5.001	1 byte	C R T

This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "CM24-MPL-x" rotary/damper actuator

Function	Group Object name	Data point type	Length	Flags
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.

**Note**

A communication error can be caused by the following:

- Fault on external MP-Bus device
- MP-Bus voltage fault

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.

**Note**

An addressing error can be caused by the following:

- The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

**Note**

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

**Note**

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.7 Group Objects Water "CQ24A-MPL-x" rotary actuator for zone valves

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – Rotary actuator for zone valves	DPT 1.005	1 bit	C R T

This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).

**Note**

If no value is received on the monitored Group Objects (→ Group Objects [Control value](#), [Heating control value](#), [Cooling control value](#)) during the set time interval (→ parameter [Monitoring time](#)), the following actions are triggered:

- This Group Object is set to "Error".
- Value in the parameter [Actuator position after cyclical monitoring time has expired](#) becomes valid.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option [Water "CQ24A-MPL-x" rotary actuator for zone valves](#)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of control value](#) \ Option [Yes](#)

Function	Group Object name	Data point type	Length	Flags
Control value	Channel X – x:	DPT 5.001	1 byte	C W T U I

This Group Object is used to receive the control value for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option *2-way/3-way valve*
- Or
- Parameter [Valve type](#) \ Option *6-way valve*
- Parameter [Heating/cooling input](#) \ Option *One common Group Object*

Heating control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the heating control value for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option *6-way valve*
 - Parameter [Heating/cooling input](#) \ Option *Via 2 separate Group Objects*

Cooling control value	Channel X – x:	DPT 5.001	1 byte	C W T U I
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This Group Object is used to receive the cooling control value for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.

After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option *6-way valve*
 - Parameter [Heating/cooling input](#) \ Option *Via 2 separate Group Objects*

Heating/cooling changeover	Channel X – x:	DPT 1.100	1 bit	C W T U I
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This Group Object is used to receive the changeover of the type of operation (Heating/Cooling) via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Heating
- 0 = Cooling

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option *6-way valve*
 - Parameter [Heating/cooling input](#) \ Option *Via two separate Group Objects*

Activate heating	Channel X – x:	DPT 1.003	1 bit	C W T U I
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This Group Object is used to activate or deactivate the *Heating* type of operation via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Activate heating
- 0 = Deactivate heating

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves*
- Parameter window [Channel X:](#) \ Parameter window [Valve](#)
 - Parameter [Valve type](#) \ Option *6-way valve*
 - Parameter [Heating/cooling input](#) \ Option *Via 2 separate Group Objects*

Function	Group Object name	Data point type	Length	Flags
Activate cooling	Channel X – x:	DPT 1.003	1 bit	C W T U I
<p>This Group Object is used to activate or deactivate the <i>Cooling</i> type of operation via the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Activate cooling 0 = Deactivate cooling <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "CQ24A-MPL-x" rotary actuator for zone valves / Water "xR24A-MP" rotary actuator for ball valves</i> Parameter window Channel X: \ Parameter window Valve <ul style="list-style-type: none"> Parameter Valve type \ Option <i>6-way valve</i> Parameter Heating/cooling input \ Option <i>Via 2 separate Group Objects</i> 				
Start adjustment	Channel X – x:	DPT 1.017	1 bit	C W
<p>This Group Object is used to start the adjustment cycle of the external MP-Bus device via the bus (ABB i-bus® KNX).</p> <p>Note</p> <p>The adjustment is used to detect the control range of the external MP-Bus device and is generally only required during commissioning. Once the adjustment has started, it cannot be stopped.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Start adjustment 0 = Start adjustment <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Status Relative position	Channel X – Rotary actuator for zone valves	DPT 5.001	1 byte	C R T
<p>This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).</p> <p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "CQ24A-MPL-x" rotary actuator for zone valves</i> 				
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
<p>This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.</p> <p>Note</p> <p>A communication error can be caused by the following:</p> <ul style="list-style-type: none"> Fault on external MP-Bus device MP-Bus voltage fault <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 Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
<p>This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.</p> <p>Note</p> <p>An addressing error can be caused by the following:</p> <ul style="list-style-type: none"> The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus. <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 Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
<p>This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.</p> <p>Note</p> <p>Depending on the MP-Bus device, a configuration error can be caused by the following:</p> <ul style="list-style-type: none"> The MP profile set in the DCA is not suitable for the external MP-Bus device. The password used for a data pool device was not the default password (0000). The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle). The parameter settings in ETS do not match the parameterization of the MP-Bus device. <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 Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				

Function	Group Object name	Data point type	Length	Flags
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.8 Group Objects Air "VRU-x-BAC-x" VAV universal controller (modular)

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – VAV universal controller (modular):	DPT 1.005	1 bit	C R T

This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).

Note

If no value is received on the monitored Group Objects (→ Group Objects [Setpoint](#), [Override control](#)) during the set time interval (→ parameter [Monitoring time](#)), the following actions are triggered:

- This Group Object is set to "Error".
- Value in the parameter [Actuator position after cyclical monitoring time has expired](#) becomes valid.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "VRU-x-BAC-x" VAV universal controller (modular)*
- Parameter window [Channel X:](#) \ Parameter [Basic settings](#)
 - Parameter [Cyclical monitoring of setpoint and override control](#) \ Option *Yes*
 - Parameter [Application](#) \ Option *Flow control / Pressure control / Room pressure control*

Function	Group Object name	Data point type	Length	Flags
Override control	Channel X – VAV universal controller (modular):	nonDPT	1 byte	C W T U I

This Group Object is used to receive the setpoint override via the bus (ABB i-bus® KNX).

Note

By overriding the setpoint, the external MP-Bus device can be set to a specified position and locked in this position until another valid override telegram is received. This Group Object is always initialized with the value "0". After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value (other values are ignored):

- 0 = Reset override/KNX operation
- 1 = Open
- 2 = Close
- 3 = Maximum flow rate/maximum differential pressure
- 4 = Minimum flow rate/minimum differential pressure
- 5 = Not used
- 6 = Stop
- 7 = Nominal flow rate/nominal differential pressure

Note

The override must be repeated cyclically on the MP-Bus side, as the external MP-Bus device automatically ends the override if no value is received within 120 seconds. Cyclical sending of override telegrams is unusual in KNX, so the external MP-Bus device must provide an internal timer that repeats the last received override value (except for value 0) on the external MP-Bus device at least every 60 seconds.

More information: → [MP-Bus-Watchdog](#), [Page 16](#).

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "VRU-x-BAC-x" VAV universal controller (modular)*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option *VRU-D3-BAC/VRU-M1-BAC*
 - Parameter [Application](#) \ Option *Flow control / Pressure control*

Function	Group Object name	Data point type	Length	Flags
Start adjustment	Channel X – VAV universal controller (modular):	DPT 1.017	1 bit	C W
This Group Object is used to start the adjustment cycle of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The adjustment is used to detect the control range of the external MP-Bus device and is generally only required during commissioning. Once the adjustment has started, it cannot be stopped.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Start adjustment 0 = Start adjustment <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Pressure control 				
Start synchronization	Channel X – VAV universal controller (modular):	DPT 1.017	1 bit	C W
This Group Object is used to start the synchronization of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>During synchronization, the external MP-Bus device moves, one time, all the way to the minimum or maximum position and back to the current position. Once synchronization has started, it cannot be stopped.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Start synchronization 0 = Start synchronization <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Pressure control 				
Status Relative position	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Pressure control 				
Status Absolute position	Channel X – VAV universal controller (modular):	DPT 8.011	2 bytes	C R T
This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 95° <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Pressure control 				
Gear disengagement active	Channel X – VAV universal controller (modular):	DPT 1.011	1 bit	C R T
This Group Object sends the status of gear disengagement on the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Gear disengagement active (physical button on external MP-Bus device) 0 = Gear disengagement not active <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Pressure control 				

Function	Group Object name	Data point type	Length	Flags
Override control active	Channel X – VAV universal controller (modular):	DPT 1.011	1 bit	C R T
This Group Object sends the status of override control on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> • 1 = Override control active • 0 = Override control not active 				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC – Parameter Application \ Option Flow control / Pressure control 				
Setpoint	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the setpoint for the external MP-Bus device via the bus (ABB i-bus® KNX). The external MP-Bus device transmits the received value to the corresponding destination.				
Note				
Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.				
After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> • 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter Control via \ Option MP-Bus – Parameter Application \ Option Flow control / Pressure control / Room pressure control 				
Status Analog input signal	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
This Group Object sends the analog setpoint of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
With analog activation, the external MP-Bus device is activated directly via an analog setpoint.				
The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.				
Telegram value:				
<ul style="list-style-type: none"> • 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter Control via \ Option Analog input signal – Parameter Application \ Option Flow control / Pressure control / Room pressure control 				
Minimum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the minimum flow rate for the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The minimum flow rate can be used to set the limit for the minimum possible flow value that the external MP-Bus device will not fall below during operation (provided that there is a general flow and no sudden pressure change occurs).				
The minimum flow rate always relates to the nominal flow rate.				
Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> • 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC – Parameter Application \ Option Flow control / Flow measurement 				

Function	Group Object name	Data point type	Length	Flags
Maximum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W T U I

This Group Object is used to receive the maximum flow rate for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The maximum flow rate can be used to set the limit for the maximum possible flow value that the external MP-Bus device will not exceed during operation (provided that there is a general flow and no sudden pressure change occurs).
The maximum flow rate always relates to the nominal flow rate.
Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 20 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option [Flow control / Flow measurement](#)

Status Minimum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
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This Group Object sends the current minimum flow rate on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option [Flow control / Flow measurement](#)

Status Maximum flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
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This Group Object sends the current maximum flow rate on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option [Flow control / Flow measurement](#)

Status Relative flow rate	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
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This Group Object sends the current relative flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The relative flow rate always relates to the nominal flow rate.

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option [Flow control / Flow measurement](#)
- Or
 - Parameter [VRU type](#) \ Option VRU-M1R-BAC
 - Parameter [Room pressure cascade](#) \ Option [Not enabled](#)

Status Absolute flow rate	Channel X – VAV universal controller (modular):	DPT 9.009	2 bytes	C R T
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This Group Object sends the current absolute flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 60000 m³/h

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option [Flow control / Flow measurement](#)
 - Parameter [DPT for Group Objects "Absolute flow rate", "Nominal flow rate"](#) \ Option 2 bytes (DPT 9.009)
- Or
 - Parameter [VRU type](#) \ Option VRU-M1R-BAC
 - Parameter [Room pressure cascade](#) \ Option [Not enabled](#)
 - Parameter [DPT for Group Objects "Absolute flow rate", "Nominal flow rate"](#) \ Option 2 bytes (DPT 9.009)

Function	Group Object name	Data point type	Length	Flags
Status Absolute flow rate	Channel X – VAV universal controller (modular):	DPT 14.077	4 bytes	C R T
This Group Object sends the current absolute flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 16.66 m³/s 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Flow measurement Parameter DPT for Group Objects "Absolute flow rate", "Nominal flow rate" \ Option 4 bytes (DPT 14.077) Or <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-M1R-BAC Parameter Room pressure cascade \ Option Not enabled Parameter DPT for Group Objects "Absolute flow rate", "Nominal flow rate" \ Option 4 bytes (DPT 14.077) 				
Status Nominal flow rate	Channel X – VAV universal controller (modular):	DPT 9.009	2 bytes	C R T
This Group Object sends the nominal flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The nominal flow rate is preset by the manufacturer of the flow rate controller and cannot be changed.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 60000 m³/h 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Flow measurement Parameter DPT for Group Objects "Absolute flow rate", "Nominal flow rate" \ Option 2 bytes (DPT 9.009) Or <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-M1R-BAC Parameter Room pressure cascade \ Option Not enabled Parameter DPT for Group Objects "Absolute flow rate", "Nominal flow rate" \ Option 2 bytes (DPT 9.009) 				
Status Nominal flow rate	Channel X – VAV universal controller (modular):	DPT 14.077	4 bytes	C R T
This Group Object sends the nominal flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The nominal flow rate is preset by the manufacturer of the flow rate controller and cannot be changed.				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 16.66 m³/s 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Flow control / Flow measurement Parameter DPT for Group Objects "Absolute flow rate", "Nominal flow rate" \ Option 4 bytes (DPT 14.077) Or <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-M1R-BAC Parameter Room pressure cascade \ Option Not enabled Parameter DPT for Group Objects "Absolute flow rate", "Nominal flow rate" \ Option 4 bytes (DPT 14.077) 				
Minimum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W I
This Group Object is used to receive the minimum differential pressure for the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The minimum differential pressure can be used to set the limit for the minimum possible differential pressure that the external MP-Bus device will not fall below during operation (provided that there is a general pressure and no sudden pressure change occurs). The minimum differential pressure always relates to the nominal differential pressure. Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Pressure control Or <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-M1R-BAC 				

Function	Group Object name	Data point type	Length	Flags
Maximum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C W I

This Group Object is used to receive the maximum differential pressure for the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The maximum differential pressure can be used to set the limit of the maximum possible differential pressure that the external MP-Bus device will not exceed during operation (provided that there is a general pressure and no sudden pressure change occurs).
 The maximum differential pressure always relates to the nominal differential pressure.
 Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).

Telegram value:

- 20 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option Pressure control
- Or
- Parameter [VRU type](#) \ Option VRU-M1R-BAC

Status Minimum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
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This Group Object sends the current minimum differential pressure on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option Pressure control
- Or
- Parameter [VRU type](#) \ Option VRU-M1R-BAC

Status Maximum differential pressure	Channel X – VAV universal controller (modular):	DPT 5.001	1 byte	C R T
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This Group Object sends the current maximum differential pressure on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option Pressure control
- Or
- Parameter [VRU type](#) \ Option VRU-M1R-BAC

Status Relative differential pressure	Channel X – VAV universal controller (modular):	DPT 8.010	2 bytes	C R T
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This Group Object sends the current relative differential pressure of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The relative differential pressure always relates to the nominal differential pressure.

Telegram value:

- 0 ... 100 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option Pressure control
- Or
- Parameter [VRU type](#) \ Option VRU-M1R-BAC

Status Absolute differential pressure	Channel X – VAV universal controller (modular):	DPT 14.058	4 bytes	C R T
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This Group Object sends the absolute differential pressure of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 0.00 ... 1000 Pa

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "VRU-x-BAC-x" VAV universal controller (modular)
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#)
 - Parameter [VRU type](#) \ Option VRU-D3-BAC/VRU-M1-BAC
 - Parameter [Application](#) \ Option Pressure control
- Or
- Parameter [VRU type](#) \ Option VRU-M1R-BAC

Function	Group Object name	Data point type	Length	Flags
Status Nominal differential pressure	Channel X – VAV universal controller (modular):	DPT 14.058	4 bytes	C R T
This Group Object sends the nominal differential pressure of the external MP-Bus device via the bus (ABB i-bus® KNX).				
 Note The nominal differential pressure is preset by the manufacturer of the flow rate controller and cannot be changed.				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 1000 Pa 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-D3-BAC/VRU-M1-BAC Parameter Application \ Option Pressure control Or <ul style="list-style-type: none"> Parameter VRU type \ Option VRU-M1R-BAC 				
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 10000 mV 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Active sensor Parameter Output sensor value \ Option Voltage (DPT 9.020) 				
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Active sensor Parameter Output sensor value \ Option Percent (DPT 5.001) 				
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 ... 20000 Ω 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Passive sensor 1 kohm / Passive sensor 20 kohms 				
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Switch contact 				
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> -35 ... 160 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Humidity sensor Parameter Output sensor value \ Option DPT 9.007 				
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option Humidity sensor Parameter Output sensor value \ Option DPT 5.001 				
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 2000 ppm 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Air quality sensor (CO2) 				
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xBAC" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option Dew point sensor 				
Error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is any error (e.g. actuator overload) on the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 = Error 0 = No error 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except Deactivated 				
Service information	Channel X – VAV universal controller (modular):	DPT 27.001	4 bytes	C R T
This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of all bits (bit 16 to bit 31) in the high bytes is always 1. If the value 0xFF FF 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.</p>				
The following information is sent via the low bytes:				
<ul style="list-style-type: none"> Bit 0: Not used Bit 1: Not used Bit 2: Not used Bit 3: Error Delta-P sensor Bit 4: Not used Bit 5: Air flow not reached Bit 6: Not used Bit 7: Internal activity Bit 8: Gear disengagement activated Bit 9: MP-Bus Watchdog triggered Bit 10: Actuator unsuitable for application Bit 11: Pressure sensor incorrectly connected Bit 12: Pressure sensor not responding Bit 13: Error Delta-P sensor: outside operating range Bit 14: Not used Bit 15: Not used 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) 				

Function	Group Object name	Data point type	Length	Flags
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.

i Note

A communication error can be caused by the following:

- Fault on external MP-Bus device
- MP-Bus voltage fault

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.

i Note

An addressing error can be caused by the following:

- The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

i Note

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

i Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.9 Group Objects Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4

Function	Group Object name	Data point type	Length	Flags
Error cyclical monitoring	Channel X – Water 2-way valve:	DPT 1.005	1 bit	C R T

This Group Object sends the error status of the cyclical monitoring on the bus (ABB i-bus® KNX).

i Note

If no value is received on the monitored Group Objects (→ Group Objects [Setpoint](#), [Override control](#)) during the set time interval (→ parameter [Monitoring time](#)), the following actions are triggered:

- This Group Object is set to "Error".
- Value in the parameter [Actuator position after cyclical monitoring time has expired](#) becomes valid.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Cyclical monitoring of setpoint and override control](#) \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Start synchronization	Channel X – x:	DPT 1.017	1 bit	C W
This Group Object is used to start the synchronization of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>During synchronization, the external MP-Bus device moves, one time, all the way to the minimum or maximum position and back to the current position. Once synchronization has started, it cannot be stopped.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Start synchronization 0 = Start synchronization <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Sensor module must be replaced	Channel X – Water 2-way valve:	DPT 1.005	1 bit	C R T
This Group Object sends an alarm telegram on the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The alarm telegram indicates that the sensor module needs to be replaced. The counter in the sensor module is calibrated for 3 years; accordingly, the alarm telegram is sent every 3 years.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Alarm 0 = No alarm <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Override control	Channel X – Water 2-way valve:	nonDPT	1 byte	C W T U I
This Group Object is used to receive the position override for the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>Using position override allows the external MP-Bus device to be set to a specified position and locked in this position until another valid override telegram is received.</p> <p>This Group Object is always initialized with the value "0". After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p> <p>Telegram value (other values are ignored):</p> <ul style="list-style-type: none"> 0 = Reset override/KNX operation 1 = Open 2 = Close 3 = Maximum position/maximum flow rate 4 = Minimum position/minimum flow rate 5 = Not used 6 = Stop 7 = Nominal flow rate <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Relative position	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Absolute position	Channel X – Water 2-way valve:	DPT 8.011	2 bytes	C R T
This Group Object sends the current absolute position of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note</p> <p>The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 90° <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				

Function	Group Object name	Data point type	Length	Flags
Status Relative power	Channel X – Water 2-way valve:	DPT 8.010	2 bytes	C R T
This Group Object sends the current relative power of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note The relative power relates to the maximum power.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 300 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> Parameter window Channel X: \ Parameter window Status output \ Parameter Output relative value in relation to \ Option <i>Pmax (0 ... 300 %)</i> 				
Status Relative power	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative power of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Note The relative power relates to the nominal power.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> Parameter window Channel X: \ Parameter window Status output \ Parameter Output relative value in relation to \ Option <i>Pnom (normalized to 100%)</i> 				
Status Nominal power	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
This Group Object sends the current nominal power of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 1330 kW <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Override control active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of override control on the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Override control active 0 = Override control not active <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
Gear disengagement active	Channel X – x:	DPT 1.003	1 bit	C R T
This Group Object sends the status of gear disengagement on the bus (ABB i-bus® KNX).				
<p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Gear disengagement active (physical button on external MP-Bus device) 0 = Gear disengagement not active <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ all options except <i>Deactivated</i> 				
MP-Bus monitoring timed out	Channel X – Water 2-way valve:	DPT 1.005	1 bit	C R T
Via the bus (ABB i-bus® KNX), this Group Object sends the error status for the cyclical monitoring of the MP-Bus.				
<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 Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Activate Delta-T Manager	Channel X – Water 2-way valve:	DPT 1.003	1 bit	C W
This Group Object is used to activate or deactivate Delta-T Manager via the bus (ABB i-bus® KNX).				
More information: .				
<p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Activate Delta-T Manager 0 = Deactivate Delta-T Manager <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Delta-T Manager \ Option <i>Yes</i> 				
Activate Delta-T Manager flow-dependent adjustment (scaling)	Channel X – Water 2-way valve:	DPT 1.003	1 bit	C W
This Group Object is used to activate or deactivate, via the bus (ABB i-bus® KNX), the flow-dependent adjustment (scaling) of Delta-T Manager.				
More information: .				
<p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Activate Delta-T Manager scaling 0 = Deactivate Delta-T Manager scaling <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Delta-T Manager \ Option <i>Yes</i> 				

Function	Group Object name	Data point type	Length	Flags
Setpoint Delta-T limitation	Channel X – Water 2-way valve:	DPT 9.002	2 bytes	C W T U I
<p>This Group Object is used to receive, via the bus (ABB i-bus® KNX), the setpoint difference between the supply and return temperature when Delta-T Manager is active. More information: .</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 55 K <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Delta-T Manager \ Option <i>Yes</i> 				
Setpoint absolute flow at Delta-T	Channel X – Water 2-way valve:	DPT 14.1201	4 bytes	C W T U I
<p>This Group Object is used to receive, via the bus (ABB i-bus® KNX), the maximum flow rate when Delta-T Manager flow-dependent adjustment (scaling) is active. More information: .</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 l/s <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Delta-T Manager \ Option <i>Yes</i> 				
Status Delta-T Manager	Channel X – Water 2-way valve:	DPT 1.002	1 bit	C R T
<p>This Group Object sends the status of Delta-T Manager on the bus (ABB i-bus® KNX). More information: .</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Delta-T Manager activated • 0 = Delta-T Manager deactivated <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Delta-T Manager \ Option <i>Yes</i> 				
Status Delta-T Manager flow-dependent adjustment (scaling)	Channel X – Water 2-way valve:	DPT 1.002	1 bit	C R T
<p>This Group Object sends the status of the flow-dependent adjustment (scaling) of Delta-T Manager via the bus (ABB i-bus® KNX). More information: .</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Delta-T Manager scaling activated • 0 = Delta-T Manager scaling deactivated <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Delta-T Manager \ Option <i>Yes</i> 				
Status Analog input signal	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
<p>This Group Object sends the current analog control value of the external MP-Bus device via the bus (ABB i-bus® KNX).</p>				
<p>Note</p> <p>With analog activation, the external MP-Bus device is activated directly via a control value. The value of the Group Object is updated with every request to the external MP-Bus device (typically the normal cyclical query for the status values of the external MP-Bus device). The Group Object is therefore also updated during movement. If the change is greater than defined for the send behavior on change, intermediate positions are also sent on the bus (ABB i-bus® KNX). When 0 % or 100 % is reached, the status value is always sent on the bus, regardless of the change in the last value sent.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Control via \ Option <i>Analog input signal</i> 				
Setpoint	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
<p>This Group Object is used to receive the setpoint for the external MP-Bus device via the bus (ABB i-bus® KNX).</p>				
<p>Note</p> <p>Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the MP-Bus device. After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter Control via \ Option <i>MP-Bus</i> – Parameter Operating mode \ all options except <i>Differential pressure control</i> 				

Function	Group Object name	Data point type	Length	Flags
Setpoint absolute differential pressure	Channel X – Water 2-way valve:	DPT 14.058	4 bytes	C W T U I
This Group Object is used to receive the setpoint of the absolute differential pressure for the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 10 ... 400 kPa				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings				
– Parameter Control via \ Option <i>MP-Bus</i>				
– Parameter Operating mode \ Option <i>Differential pressure control</i>				
Minimum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the minimum flow rate for the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The minimum flow rate can be used to set the limit for the minimum possible flow value that the external MP-Bus device will not fall below during operation (provided that there is a general flow and no sudden pressure change occurs).				
The minimum flow rate always relates to the absolute flow rate (Vnom), which can only be set via the Belimo tools (e.g. Belimo Assistant App).				
Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.				
After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Flow control / Power control</i>				
Maximum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the maximum flow rate for the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The maximum flow rate can be used to set the limit for the maximum possible flow value that the external MP-Bus device will not exceed during operation (provided that there is a general flow and no sudden pressure change occurs).				
The maximum flow rate always relates to the absolute flow rate (Vnom), which can only be set via the Belimo tools (e.g. Belimo Assistant App).				
Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.				
After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).				
Telegram value:				
• 20 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ all options except <i>Position control</i>				
Maximum power limit	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C W T U I
This Group Object is used to receive the maximum power value for the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The maximum power value always relates to the nominal power.				
Depending on the min/max setting, the actual value may deviate from the setpoint, but the current relative position value always indicates the position relative to the entire control range of the external MP-Bus device.				
After a restart (KNX voltage recovery, download or ETS reset), a Value Read is sent on the bus (ABB i-bus® KNX).				
Telegram value:				
• 0.5 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Power control / Differential pressure control</i>				
Status Relative flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The relative flow rate relates to the nominal flow rate.				
Telegram value:				
• 0 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Status output \ Parameter Output relative value in relation to \ Option <i>Vnom (normalized to 100%)</i>				
Status Relative flow rate	Channel X – Water 2-way valve:	DPT 8.010	2 bytes	C R T
This Group Object sends the current relative flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Note				
The relative flow rate refers to the maximum flow rate.				
Telegram value:				
• 0 ... 150 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Status output \ Parameter Output relative value in relation to \ Option <i>Vmax (0 ... 150 %)</i>				

Function	Group Object name	Data point type	Length	Flags
Status Absolute flow rate	Channel X – Water 2-way valve:	DPT 14.1201	4 bytes	C R T
This Group Object sends the current absolute flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0.00 ... 15,762 m ³ /s				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
Status Minimum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current minimum flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Flow control / Power control</i>				
Status Maximum flow rate	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current maximum flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ all options except <i>Position control</i>				
Status Nominal flow rate	Channel X – Water 2-way valve:	DPT 14.1201	4 bytes	C R T
This Group Object sends the nominal flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).				
i Note				
The nominal flow rate is preset by the manufacturer of the flow rate controller and cannot be changed.				
Telegram value:				
• 0.00 ... 15,762 m ³ /s				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
Status Absolute cooling power	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
This Group Object sends the current absolute <i>Cooling</i> power of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 21474836 kWh				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
Status Absolute heating power	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
This Group Object sends the current absolute <i>Heating</i> power of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 21474836 kWh				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
Status Maximum power limit	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current maximum power limit of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Power control / Differential pressure control</i>				
Status Relative differential pressure	Channel X – Water 2-way valve:	DPT 5.001	1 byte	C R T
This Group Object sends the current relative differential pressure of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• 0 ... 100 %				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Differential pressure control</i>				
Status Absolute differential pressure	Channel X – Water 2-way valve:	DPT 14.058	4 bytes	C R T
This Group Object sends the current absolute differential pressure of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
• -100 ... 1000 Pa				
Prerequisites for visibility				
• Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i>				
• Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Differential pressure control</i>				

Function	Group Object name	Data point type	Length	Flags
Status Nominal differential pressure	Channel X – Water 2-way valve:	DPT 14.056	4 bytes	C R T
This Group Object sends the current nominal differential pressure of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 600 kPa 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> Parameter window Channel X: \ Parameter window Basic settings \ Parameter Operating mode \ Option <i>Differential pressure control</i> 				
Status Glycol concentration	Channel X – Water 2-way valve:	DPT 8.010	2 bytes	C R T
This Group Object sends the current measured glycol concentration on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 60 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Certified meter	Channel X – Water 2-way valve:	DPT 1.002	1 bit	C R T
This Group Object sends the information, via the bus (ABB i-bus® KNX), about whether the meter is calibrated (MID certified).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Yes 0 = No 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Accumulated volume	Channel X – Water 2-way valve:	DPT 14.076	4 bytes	C R T
This Group Object sends the current accumulated volume of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 214748.36 m³ 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Total energy cooling	Channel X – Water 2-way valve:	DPT 13.013	4 bytes	C R T
This Group Object sends the current total <i>Cooling</i> energy of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 3990.00 kW 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Total energy heating	Channel X – Water 2-way valve:	DPT 13.013	4 bytes	C R T
This Group Object sends the current total <i>Heating</i> energy of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 3990.00 kW 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Delta temperature	Channel X – Water 2-way valve:	DPT 9.002	2 bytes	C R T
This Group Object sends the current difference between the supply and return flow temperature of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 450 K 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status Internal sensor	Channel X – Water 2-way valve:	DPT 9.001	2 bytes	C R T
This Group Object sends the current value of the internal sensor via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> -20 ... 120 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Status External sensor	Channel X – Water 2-way valve:	DPT 9.001	2 bytes	C R T
This Group Object sends the current value of the external sensor via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> -20 ... 120 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4</i> 				
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 10000 mV 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter</i> Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Active sensor</i> Parameter Output sensor value \ Option <i>Voltage (DPT 9.020)</i> 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Active sensor</i> Parameter Output sensor value \ Option <i>Percent (DPT 5.001)</i> 				
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 ... 20000 Ω 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Passive sensor 1 kohm / Passive sensor 20 kohms</i> 				
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Switch contact</i> 				
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> -35 ... 160 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms</i> 				
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Humidity sensor</i> Parameter Output sensor value \ Option <i>DPT 9.007</i> 				
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Humidity sensor</i> Parameter Output sensor value \ Option <i>DPT 5.001</i> 				
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 2000 ppm 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Air quality sensor (CO2)</i> 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device. Telegram value: <ul style="list-style-type: none"> • Depends on the setting in the parameter <i>Output sensor value</i> Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1UX" thermal energy meter • Parameter window <i>Channel X:</i> \ Parameter window <i>Sensor</i> \ Parameter <i>Sensor type</i> \ Option <i>Dew point sensor</i> 				
Error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is any error (e.g. actuator overload) on the external MP-Bus device. Telegram value: <ul style="list-style-type: none"> • 1 = Error • 0 = No error Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ all options except <i>Deactivated</i> 				
Service information	Channel X – Water 2-way valve:	DPT 27.001	4 bytes	C R T
This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of all bits (bit 16 to bit 31) in the high bytes is always 1. If the value 0xFF 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.</p> <p>The following information is sent via the low bytes:</p> <ul style="list-style-type: none"> • Bit 0: Communication with actuator not possible • Bit 1: Mechanical overload, e.g. due to blocked valves (available only for EV..R+KBAC) • Bit 2: Reverse flow detected • Bit 3: Setpoint could not be reached within 15 minutes with flow rate control • Bit 4: Flow rate measured but valve position is closed • Bit 5: Current flow rate exceeds the nominal flow rate for which the device is designed • Bit 6: Flow rate measurement error: Air in system. An error occurred during flow rate measurement • Bit 7: No connection to external temperature sensor • Bit 8: Error on internal temperature sensor • Bit 9: Internal communication to flow rate sensor interrupted • Bit 10: Freeze warning: Measured temperature and glycol concentration indicate that the lubricant may acquire an ice-like consistency • Bit 11: Glycol was detected in a MID application • Bit 12: Setpoint could not be reached within 15 minutes with power control • Bit 13: No differential pressure detected within 5 minutes with differential pressure control • Bit 14: Setpoint could not be reached within 15 minutes with differential pressure control • Bit 15: Minimum position applied Minimum position (27%) is applied: <ul style="list-style-type: none"> – When the valve has been restarted – After a voltage failure – If manual override was used beforehand – After a changeover from another control mode (e.g. flow rate control) to differential pressure control – If no differential pressure is detected at a flow rate of < 0.7 % Vnom Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ Option Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 </div>				
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.				
<div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>A communication error can be caused by the following:</p> <ul style="list-style-type: none"> • Fault on external MP-Bus device • MP-Bus voltage fault Telegram value: <ul style="list-style-type: none"> • 1 = Error • 0 = No error Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ all options except <i>Deactivated</i> </div>				
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.				
<div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>An addressing error can be caused by the following:</p> <ul style="list-style-type: none"> • The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus. Telegram value: <ul style="list-style-type: none"> • 1 = Error • 0 = No error Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ all options except <i>Deactivated</i> </div>				

Function	Group Object name	Data point type	Length	Flags
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

Note

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
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This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.10 Group Objects Water "22PEx-1Ux" thermal energy meter

Function	Group Object name	Data point type	Length	Flags
Status Relative flow rate	Channel X – Thermal energy meter:	DPT 8.010	2 bytes	C R T

This Group Object sends the current relative flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The relative flow rate refers to the maximum flow rate.

Telegram value:

- 0 ... 150 %

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "22PEx-1Ux" thermal energy meter*

Status Absolute flow rate	Channel X – Thermal energy meter:	DPT 14.1201	4 bytes	C R T
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This Group Object sends the current absolute flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 0.00 ... 15,762 m³/s

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "22PEx-1Ux" thermal energy meter*

Status Nominal flow rate	Channel X – Thermal energy meter:	DPT 14.1201	4 bytes	C R T
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This Group Object sends the nominal flow rate of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

The nominal flow rate is preset by the manufacturer of the flow rate controller and cannot be changed.

Telegram value:

- 0.00 ... 15,762 m³/s

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "22PEx-1Ux" thermal energy meter*

Status Absolute cooling power	Channel X – Thermal energy meter:	DPT 14.056	4 bytes	C R T
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This Group Object sends the current absolute *Cooling* power of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 21474836 kWh

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "22PEx-1Ux" thermal energy meter*

Status Absolute heating power	Channel X – Thermal energy meter:	DPT 14.056	4 bytes	C R T
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This Group Object sends the current absolute *Heating* power of the external MP-Bus device via the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 21474836 kWh

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Water "22PEx-1Ux" thermal energy meter*

Function	Group Object name	Data point type	Length	Flags
Status Glycol concentration	Channel X – Thermal energy meter:	DPT 8.010	2 bytes	C R T
This Group Object sends the current measured glycol concentration on the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 60 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Certified meter	Channel X – Thermal energy meter:	DPT 1.002	1 bit	C R T
This Group Object sends the information, via the bus (ABB i-bus® KNX), about whether the meter is calibrated (MID certified).				
Telegram value:				
<ul style="list-style-type: none"> 1 = Yes 0 = No 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Status Accumulated volume	Channel X – Thermal energy meter:	DPT 14.076	4 bytes	C R T
This Group Object sends the current accumulated volume of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 214748.36 m³ 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Status Total energy cooling	Channel X – Thermal energy meter:	DPT 13.013	4 bytes	C R T
This Group Object sends the current total <i>Cooling</i> energy of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 3990.00 kW 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Status Total energy heating	Channel X – Thermal energy meter:	DPT 13.013	4 bytes	C R T
This Group Object sends the current total <i>Heating</i> energy of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0.00 ... 3990.00 kW 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Status Delta temperature	Channel X – Thermal energy meter:	DPT 9.002	2 bytes	C R T
This Group Object sends the current difference between the supply and return flow temperature of the external MP-Bus device via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 450 K 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Temperature internal sensor	Channel X – Thermal energy meter:	DPT 9.001	2 bytes	C R T
This Group Object sends the current value of the internal sensor via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 20 ... 120 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Temperature external sensor	Channel X – Thermal energy meter:	DPT 9.001	2 bytes	C R T
This Group Object sends the value of the external sensor via the bus (ABB i-bus® KNX).				
Telegram value:				
<ul style="list-style-type: none"> 20 ... 120 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Sensor value (voltage)	Channel X – x:	DPT 9.020	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 10000 mV 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option <i>Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEx-1Ux" thermal energy meter</i> Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Active sensor</i> Parameter Output sensor value \ Option <i>Voltage (DPT 9.020)</i> 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (percent)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Active sensor</i> Parameter Output sensor value \ Option <i>Percent (DPT 5.001)</i> 				
Sensor value (resistance)	Channel X – x:	DPT 14.060	4 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 1 ... 20000 Ω 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Passive sensor 1 kohm / Passive sensor 20 kohms</i> 				
Sensor value (switch)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> Depends on the setting in the parameter Output sensor value 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Switch contact</i> 				
Sensor value (temperature)	Channel X – x:	DPT 9.001	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> -35 ... 160 °C 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Temperature sensor PT 1000 / Temperature sensor Ni 1000 / Temperature sensor NTC 10 kohms</i> 				
Sensor value (humidity)	Channel X – x:	DPT 9.007	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Humidity sensor</i> Parameter Output sensor value \ Option <i>DPT 9.007</i> 				
Sensor value (humidity)	Channel X – x:	DPT 5.001	1 byte	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 100 % 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor <ul style="list-style-type: none"> Parameter Sensor type \ Option <i>Humidity sensor</i> Parameter Output sensor value \ Option <i>DPT 5.001</i> 				
Sensor value (air quality)	Channel X – x:	DPT 9.008	2 bytes	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device.				
Telegram value:				
<ul style="list-style-type: none"> 0 ... 2000 ppm 				
Prerequisites for visibility				
<ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "xM24A-MP" rotary/damper actuator / Air "xV-D3-MP" VAV compact controller / Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEX-1Ux" thermal energy meter Parameter window Channel X: \ Parameter window Sensor \ Parameter Sensor type \ Option <i>Air quality sensor (CO2)</i> 				

Function	Group Object name	Data point type	Length	Flags
Sensor value (dew point alarm)	Channel X – x:	DPT 1.001	1 bit	C R T
This Group Object sends, via the bus (ABB i-bus® KNX), the value of the sensor connected to the external MP-Bus device. Telegram value: <ul style="list-style-type: none"> • Depends on the setting in the parameter <i>Output sensor value</i> Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ Option Air "VRU-x-BAC-x" VAV universal controller (modular) / Water "xR24A-MP" rotary actuator for ball valves / Water "EVxR2+xBAC", "EVxR2+xMID" Elec. 2-way PI-RKH EV V4 / Water "22PEx-1Ux" thermal energy meter • Parameter window <i>Channel X:</i> \ Parameter window <i>Sensor</i> \ Parameter <i>Sensor type</i> \ Option <i>Dew point sensor</i> 				
Error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is any error (e.g. actuator overload) on the external MP-Bus device. Telegram value: <ul style="list-style-type: none"> • 1 = Error • 0 = No error Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ all options except <i>Deactivated</i> 				
Service information	Channel X – Thermal energy meter:	DPT 27.001	4 bytes	C R T
This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).				
<div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of all bits (bit 16 to bit 31) in the high bytes is always 1. If the value 0xFF FF 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.</p> </div>				
The following information is sent via the low bytes: <ul style="list-style-type: none"> • Bit 0: Not used • Bit 1: Not used • Bit 2: Reverse flow detected • Bit 3: Not used • Bit 4: Not used • Bit 5: Current flow rate exceeds the nominal flow rate for which the device is designed • Bit 6: Flow rate measurement error: Air in system. An error occurred during flow rate measurement • Bit 7: No connection to external temperature sensor • Bit 8: Error on internal temperature sensor • Bit 9: Internal communication to flow rate sensor interrupted • Bit 10: Freeze warning: Measured temperature and glycol concentration indicate that the lubricant may acquire an ice-like consistency • Bit 11: Glycol was detected in a MID application • Bit 12: Not used • Bit 13: Not used • Bit 14: Not used • Bit 15: Not used Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ Option <i>Water "22PEx-1Ux" thermal energy meter</i> 				
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.				
<div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>A communication error can be caused by the following:</p> <ul style="list-style-type: none"> • Fault on external MP-Bus device • MP-Bus voltage fault </div>				
Telegram value: <ul style="list-style-type: none"> • 1 = Error • 0 = No error Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ all options except <i>Deactivated</i> 				
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.				
<div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>An addressing error can be caused by the following:</p> <ul style="list-style-type: none"> • The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus. </div>				
Telegram value: <ul style="list-style-type: none"> • 1 = Error • 0 = No error Prerequisites for visibility <ul style="list-style-type: none"> • Parameter window <i>Configuration</i> \ Parameter <i>Channel X Device profile</i> \ all options except <i>Deactivated</i> 				

Function	Group Object name	Data point type	Length	Flags
Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

- Note**
 Depending on the MP-Bus device, a configuration error can be caused by the following:
- The MP profile set in the DCA is not suitable for the external MP-Bus device.
 - The password used for a data pool device was not the default password (0000).
 - The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
 - The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

- Note**
 This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

8.11 Group Objects Air "P-22RTx-1900x-2" room operation unit

Function	Group Object name	Data point type	Length	Flags
Binary input	Channel X – Room operation unit:	DPT 1.001	1 bit	C R T

This Group Object sends a switch telegram on the bus (ABB i-bus® KNX).

Telegram value:

- Depends on the setting in the parameter [Invert binary input](#)

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "P-22RTx-1900x-2" room operation unit*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Enable Group Object "Binary input"](#) \ Option *Yes*

Base setpoint	Channel X – Room operation unit:	DPT 9.001	2 bytes	C W T U I
Base setpoint	Channel X – Room operation unit:	DPT 9.001	2 bytes	C W T U I

This Group Object is used to receive the base setpoint via the bus (ABB i-bus® KNX).

Telegram value:

- 15.5 ... 35.5 °C

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "P-22RTx-1900x-2" room operation unit*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Temperature display](#) \ Option *Room temperature setpoint*

CO2 value	Channel X – Room operation unit:	DPT 9.008	2 bytes	C R T
CO2 value	Channel X – Room operation unit:	DPT 9.008	2 bytes	C R T

This Group Object sends the current CO2 value on the bus (ABB i-bus® KNX).

Telegram value:

- 0 ... 2000 ppm

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "P-22RTx-1900x-2" room operation unit*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Enable Group Object "CO2 value"](#) \ Option *Yes*

Air quality OK	Channel X – Room operation unit	DPT 1.002	1 bit	C R T
Air quality OK	Channel X – Room operation unit	DPT 1.002	1 bit	C R T

This Group Object sends the value "1" on the bus (ABB i-bus® KNX) if the air quality above the CO2 threshold is good/sufficient (→ parameter [CO2 threshold OK/warning](#)).

Telegram value:

- 1 = Air quality good
- 0 = Air quality not good

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "P-22RTx-1900x-2" room operation unit*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Display air quality](#) \ Option *Yes*

Air quality warning	Channel X – Room operation unit	DPT 1.002	1 bit	C R T
Air quality warning	Channel X – Room operation unit	DPT 1.002	1 bit	C R T

This Group Object sends the value "1" on the bus (ABB i-bus® KNX) if the air quality is between the CO2 thresholds (→ parameters [CO2 threshold OK/warning](#) and [CO2 threshold warning/alarm](#)).

Telegram value:

- 1 = Air quality sufficient
- 0 = Air quality insufficient

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option *Air "P-22RTx-1900x-2" room operation unit*
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Display air quality](#) \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Air quality alarm	Channel X – Room operation unit	DPT 1.002	1 bit	C R T
<p>This Group Object sends the value "1" on the bus (ABB i-bus® KNX) if the air quality below the CO2 threshold is sufficient/poor (→ parameter CO2 threshold warning/ alarm).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 1 = Air quality poor • 0 = Air quality not poor <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Display air quality \ Option Yes 				
Status Relative humidity	Channel X – Room operation unit:	DPT 5.001	2 bytes	C R T
<p>This Group Object sends the relative humidity on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Group Object "Status Relative humidity" \ Option Yes 				
Dew point temperature	Channel X – Room operation unit:	DPT 9.001	2 bytes	C R T
<p>This Group Object sends the current dew point temperature on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • -50 ... 50 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Group Object "Dew point temperature" \ Option Yes 				
Confirm fan stage	Channel X – Room operation unit:	DPT 5.001	1 byte	C W T U I
<p>This Group Object is used to receive the current fan stage via the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable fan control \ Option Yes 				
Request fan stage	Channel X – Room operation unit:	DPT 5.001	1 byte	C T
<p>This Group Object sends the fan stage adjustment on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 0 ... 100 % <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable fan control \ Option Yes 				
Request room temperature setpoint (absolute)	Channel X – Room operation unit:	DPT 9.001	2 bytes	C T
<p>This Group Object is used to receive, via the bus (ABB i-bus® KNX), the room temperature to be set.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 15.5 ... 35.5 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter Temperature display \ Option Room temperature setpoint – Parameter Temperature setpoint indicator \ Option Absolute 				
Request room temperature setpoint (relative)	Channel X – Room operation unit:	DPT 9.002	2 bytes	C T
<p>This Group Object is used to receive, via the bus (ABB i-bus® KNX), the room temperature to be set.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • -5 ... 5 K <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter Temperature display \ Option Room temperature setpoint – Parameter Temperature setpoint indicator \ Option Relative 				
Confirm room temperature setpoint (absolute)	Channel X – Room operation unit:	DPT 9.001	2 bytes	C W T U I
<p>This Group Object sends the set room temperature on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> • 15.5 ... 35.5 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> • Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit • Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> – Parameter Temperature display \ Option Room temperature setpoint – Parameter Temperature setpoint indicator \ Option Absolute 				

Function	Group Object name	Data point type	Length	Flags
Confirm room temperature setpoint (relative)	Channel X – Room operation unit:	DPT 9.002	2 bytes	C W T U I
<p>This Group Object sends the set room temperature on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> -5 ... 5 K <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter Temperature display \ Option Room temperature setpoint Parameter Temperature setpoint indicator \ Option Relative 				
Request fan automatic mode	Channel X – Room operation unit:	DPT 1.003	1 bit	C W T U I
<p>This Group Object sends a telegram on the bus (ABB i-bus® KNX) to activate or deactivate fan automatic mode.</p> <p>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"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter Enable fan control \ Option Yes Parameter Enable fan automatic \ Option Yes 				
Confirm fan automatic mode	Channel X – Room operation unit:	DPT 1.003	1 bit	C T
<p>This Group Object is used to receive the status of fan automatic mode via the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Fan automatic activated 0 = Fan automatic deactivated <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit Parameter window Channel X: \ Parameter window Basic settings <ul style="list-style-type: none"> Parameter Enable fan control \ Option Yes Parameter Enable fan automatic \ Option Yes 				
Display warning symbol	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
<p>This Group Object is used to show or hide the indicator for a warning symbol (e.g. dew point alarm) on the room operation unit display.</p> <p>Note This Group Object is used to show or hide the symbol. The actual warning must be received via the corresponding Status Group Object.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Show symbol 0 = Hide symbol <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit 				
Display window symbol	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
<p>This Group Object is used to show or hide the indicator for the window symbol (e.g. window open or window closed) on the room operation unit display.</p> <p>Note This Group Object is used to show or hide the symbol. The actual window status must be received via the corresponding Status Group Object.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Show symbol 0 = Hide symbol <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit 				

Function	Group Object name	Data point type	Length	Flags
Receipt of Status RTC	Channel X – Room operation unit	DPT 22.103	16 bit	C W T U I

This Group Object is used to receive the status information of the controller as a 16-bit value via the bus (ABB i-bus® KNX).

Telegram value:

- Bit 0: Not used, permanent 0
- Bit 1: Type of operation
 - 1 = Heating
 - 0 = Cooling
- Bit 2: Dew point alarm
 - 1 = Active (controller blocked)
 - 0 = Inactive (controller enabled)
- Bit 3: Frost alarm
 - 1 = Active
 - 0 = Inactive
- Bit 4: Overheating alarm
 - 1 = Active
 - 0 = Inactive
- Bit 5: Status Controller
 - 1 = Inactive (dead zone)
 - 0 = Active
- Bit 6: Not used, permanent 0
- Bit 7: Status Type of operation Heating
 - 1 = Enabled
 - 0 = Blocked
- Bit 8: Status Type of operation Cooling
 - 1 = Enabled
 - 0 = Blocked
- Bit 9 ... 15: Not used, permanent 0

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "P-22RTx-1900x-2" room operation unit
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Receive status Heating/Cooling](#) \ Option [Via combined RTC status](#)

Receive status Heating	Channel X – Room operation unit:	DPT 1.003	1 bit	C W T U I
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This Group Object is used to receive the *Heating* status via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Heating active
- 0 = Heating not active

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "P-22RTx-1900x-2" room operation unit
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Receive status Heating/Cooling](#) \ Option [Via 2 separate Group Objects](#)

Receive status Cooling	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
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This Group Object is used to receive the *Cooling* status via the bus (ABB i-bus® KNX).

Telegram value:

- 1 = Cooling active
- 0 = Cooling not active

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "P-22RTx-1900x-2" room operation unit
- Parameter window [Channel X:](#) \ Parameter window [Basic settings](#) \ Parameter [Receive status Heating/Cooling](#) \ Option [Via 2 separate Group Objects](#)

Request RTC operating mode	Channel X – Room operation unit	DPT 20.102	1 byte	C T
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This Group Object is used to receive, via the bus (ABB i-bus® KNX), the operating mode to be set.

Note

The operating mode Standby is not shown on the room operation unit display. Receipt of the telegram value "2" is ignored; the indicator on the display does not change.

Telegram value:

- 1 = Comfort
- 2 = Standby
- 3 = Economy
- 4 = Building Protection

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "P-22RTx-1900x-2" room operation unit

Block local operation	Channel X – Room operation unit	DPT 1.003	1 bit	C W T U I
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This Group Object is used to block or enable operation via the room operation unit.

Telegram value:

- 1 = Block operation
- 0 = Enable operation

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ Option Air "P-22RTx-1900x-2" room operation unit

Function	Group Object name	Data point type	Length	Flags
Display Boost mode	Channel X – Room operation unit	DPT 1.001	1 bit	C W T U I
<p>This Group Object is used to show the Boost mode button on the display.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1= Show Boost mode button 0= Hide Boost mode button <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Boost mode button \ Option Yes 				
Activate Boost mode	Channel X – Room operation unit	DPT 1.001	1 bit	C T
<p>This Group Object sends a telegram on the bus (ABB i-bus® KNX) to activate or deactivate Boost mode.</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Activate Boost mode 0 = Deactivate Boost mode <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit Parameter window Channel X: \ Parameter window Basic settings \ Parameter Enable Boost mode button \ Option Yes 				
Status Room temperature	Channel X – Room operation unit:	DPT 9.001	2 bytes	C R T
<p>This Group Object sends the current room temperature on the bus (ABB i-bus® KNX).</p> <p>Telegram value:</p> <ul style="list-style-type: none"> 0 ... 50 °C <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit 				
Confirm RTC operating mode	Channel X – Room operation unit	DPT 20.102	1 byte	C W T U I
<p>This Group Object sends the current operating mode on the bus (ABB i-bus® KNX).</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>The telegram value "1" is sent if the display is switched on or if the ECO mode button is operated when ECO mode is active. The telegram value "3" is sent if the ECO mode button is operated. The telegram value "4" is sent if the display is switched off.</p> </div> <p>Telegram value:</p> <ul style="list-style-type: none"> 1 = Comfort 3 = Economy 4 = Building Protection <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit 				
Service information	Channel X – Room operation unit:	DPT 27.001	4 bytes	C R T
<p>This Group Object sends the combined status information of the external MP-Bus device via the bus (ABB i-bus® KNX).</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note</p> <p>Service information is shown in the low bytes (bit 0 to bit 15: value 1 = valid, value 0 = invalid). The value of all bits (bit 16 to bit 31) in the high bytes is always 1. If the value 0xFF FF 00 00 is shown in the bus monitor, there is no service information. The external MP-Bus device is working properly. If the last four digits are not 00 00, there is at least one service information bit that is set.</p> </div> <p>The following information is sent via the low bytes:</p> <ul style="list-style-type: none"> Bit 0: Utilization too high Bit 1: Control range increased Bit 2: Mechanical overload Bit 3: Not used Bit 4: Not used Bit 5: Not used Bit 6: Not used Bit 7: Not used Bit 8: Internal activity Bit 9: MP-Bus Watchdog triggered Bit 10: Not used Bit 11: Not used Bit 12: Not used Bit 13: Not used Bit 14: Not used Bit 15: Not used <p>Prerequisites for visibility</p> <ul style="list-style-type: none"> Parameter window Configuration \ Parameter Channel X Device profile \ Option Air "P-22RTx-1900x-2" room operation unit 				

Function	Group Object name	Data point type	Length	Flags
Communication error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a communication error between the external MP-Bus device and the MPG/S.

Note

A communication error can be caused by the following:

- Fault on external MP-Bus device
- MP-Bus voltage fault

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T
Addressing error	Channel X – x:	DPT 1.005	1 bit	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is an addressing error on the external MP-Bus device.

Note

An addressing error can be caused by the following:

- The MP address assigned to the external MP-Bus device is duplicated on the MP-Bus.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

Configuration error	Channel X – x:	DPT 1.005	1 bit	C R T
Configuration error	Channel X – x:	DPT 1.005 <td>1 bit <td>C R T</td> </td>	1 bit <td>C R T</td>	C R T

This Group Object sends an error telegram on the bus (ABB i-bus® KNX) if there is a configuration error on the external MP-Bus device.

Note

Depending on the MP-Bus device, a configuration error can be caused by the following:

- The MP profile set in the DCA is not suitable for the external MP-Bus device.
- The password used for a data pool device was not the default password (0000).
- The actuator type of the external MP-Bus device (rotary/linear) is not suitable for the DPT selected for the absolute position (millimeters/rotation angle).
- The parameter settings in ETS do not match the parameterization of the MP-Bus device.

Telegram value:

- 1 = Error
- 0 = No error

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T
MP-Bus address	Channel X – x:	DPT 5.010	1 byte	C R T

This Group Object sends the MP-Bus address of the external MP-Bus device via the bus (ABB i-bus® KNX).

Note

This information is especially useful if the address of the external MP-Bus device was set via one of the Belimo tools rather than via the DCA, and the external MP-Bus device is connected without opening the DCA.

Telegram value:

- 1 ... 16

Prerequisites for visibility

- Parameter window [Configuration](#) \ Parameter [Channel X Device profile](#) \ all options except *Deactivated*

9

Operation

 **Note**

The devices cannot be operated manually.

10 Maintenance and cleaning

10.1 Service

The devices are maintenance-free if used properly. In the event of damage, e.g. during transport and/or storage, repairs are not allowed to be carried out.

10.2 Cleaning

1. Disconnect devices 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

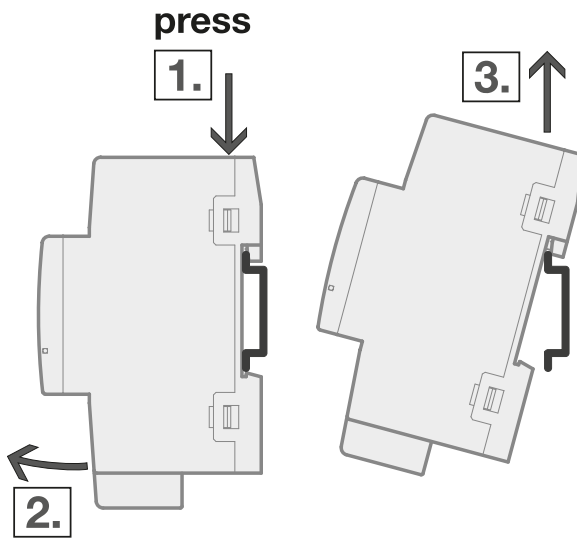


Fig. 33: Removing from the mounting rail

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 Basic knowledge

12.1.1 Pressure-independent characterized control valves

Pressure-independent control valves ensure precise control of hydronic systems. This improves room comfort and allows for significant energy savings. Automatic, hydronic balancing is also guaranteed under all load conditions.

To ensure the correct flow in every application, each valve can be preset at the factory and adjusted on site. No additional balancing is required. Pressure-independent valves are used when the flow through ventilation units, heating and cooling coils, fan coil units, unit fans, VAV reheating coils and underfloor heating systems needs to be controlled in an energy-efficient manner.

12.1.2 KNX Secure

i Note

ETS version 6 or later is required when using KNX Secure. The use of the latest ETS version is recommended. Using older ETS versions can cause errors during project planning, problems during commissioning (e.g. while replacing devices), or while undertaking diagnostics on group addresses and devices.

KNX Secure is an encryption technology that guarantees data protection in a KNX twisted pair network. KNX Secure is based on end-to-end encryption that ensures all data exchanged between KNX devices are encrypted and can only be read by authorized users.

In conventional KNX networks (colloquially termed "KNX Plain"), data are sent unencrypted on the bus. The data could be read by anyone with access to the bus and can be intercepted or falsified by unauthorized individuals.

Using KNX Secure protects transmitted data against unauthorized access, ensures data integrity and minimizes potential security risks. KNX Secure helps to increase security and privacy in KNX-based smart home or building automation systems. KNX devices that only support KNX Plain can be used in the same installation with the aid of a suitable coupler.



Fig. 34: KNX Secure logo

A KNX Secure product is identifiable by the KNX Secure logo on the packaging or the product. This logo indicates that the product meets the KNX Secure security standard and supports KNX Secure encryption technology.

KNX Secure distinguishes between two types of encrypted KNX telegrams:

- KNX IP Secure can only be used on the KNX IP medium (typically the backbone line) exposed to an external IP network (e.g. the Internet). KNX IP Secure telegrams are fully encrypted.
- KNX Data Secure can be used on any KNX medium, but is only permitted to be used for the part of the KNX installation not exposed to an external IP network (e.g. the Internet). KNX Data Secure telegrams are encrypted.

For more information, see:

- [ABB documentation "KNX Secure"](#)
- [Documentation available at knx.org](#)

12.1.3 Network (cyber) security

The industry is increasingly faced with cyber security risks. To increase the stability, security and robustness of its solutions, ABB has introduced cyber security robustness tests as part of the product development process.

In addition, the sections below include guidelines and mechanisms that you can use to improve the security of KNX systems.

12.1.3.1 Preventing unauthorized access

The basis for any protection concept is the careful shielding of the system against unauthorized access. The following points must be taken into consideration when planning and installing a KNX system:

- Only authorized persons (installers, custodians, users) should be allowed to have physical access to the KNX system.
- Sub-distributions with KNX devices should be closed, or in rooms to which only authorized persons have access.
- If available, use the anti-theft features on the KNX devices.
- All components in a KNX system should be permanently installed and protected from unauthorized access.
- The bus cable (ABB i-bus® KNX) should not be visible inside or outside the building. Cables outdoors are an increased risk. Physical access should be made particularly difficult here.
- Devices installed in areas with limited protection (e.g. outdoor areas, underground parking lots, restrooms, etc.) should be designed using a line coupler as a separate line.
- If possible, KNX DATA Secure should be used for data transmission in KNX networks (→ [KNX Secure, Page 228](#)).
- The system should be divided into security segments that are based on the available security functions of the devices used. This is done by using segment couplers.

12.1.3.2 IP cabling inside the building

For building automation, use a separate LAN or WiFi network with its own hardware (routers, switches, etc.). Regardless of the KNX system, apply the usual security mechanisms for IP networks:

- MAC filter
- Encryption of wireless networks
- Usage of strong passwords, and password protection against access by unauthorized persons

12.1.3.3 Using filter tables

Filter tables are used to improve system security and ensure that only authorized telegrams are forwarded.

12.1.4 Sending or switching delay

No telegrams are sent on the bus during the sending or switching delay (ABB i-bus® KNX).

Telegrams received (e.g. requests from a visualization system) are sent to the outputs after the sending or 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 or switching delay. If, at the time of reception, the staircase lighting time is shorter than the remaining sending or switching delay, the staircase lighting time elapses during the sending or switching delay. After the sending or switching delay has elapsed, there is no switching command; the staircase lighting is not switched on.

i Note

The sending or switching delay includes the device initialization time.

12.1.5 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 parameterization.

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.

12.1.6 Cyclical monitoring

The reception of a telegram on a Group Object can be monitored using cyclical monitoring. If a telegram is not received on the Group Object within a parameterizable time (monitoring time), the sending device may be faulty or the bus cable to the sending device may be interrupted.

Depending on the device, there are two possible reactions to a missing telegram: either the reaction set in the application-specific parameters; or, on devices without those parameters, the corresponding predefined alarm is triggered.

After receiving a telegram, ETS download, or KNX voltage recovery, the monitoring time is restarted.

i Note

The monitoring time should be at least quadruple the cyclical sending time of the sending device. As a result, the set reactions or the alarms will not be triggered immediately if a telegram is missing, e.g. due to high bus load.

12.1.7 MP-Bus technology

The MP-Bus is a single-client/multi-server bus. Up to 8 MP nodes can be connected to one MP client device. When exclusively using actuators with the latest technology (e.g. ..-MPL), up to 16 devices can be connected. The specifications of the respective MP partner apply.

12.1.7.1 MP-Bus line topologies

There are no restrictions with respect to line topology. For example, star, ring, tree and mixed topologies are permissible.



Fig. 35: Line topologies

12.1.7.2 MP-Bus operation

In MP-Bus operation, one sensor can be connected per MP node. The sensor value is recorded with its raw value (Ω , mA, 0/1), digitized by the MP node and transferred to the MP-Bus. The sensor value is scaled and evaluated in the MP-Bus device.

Active sensors (DC 0...10 V output) and switches (0/1) can be connected to the MP nodes. Passive resistance sensors (e.g. PT1000, NTC10K) can also be connected.



Fig. 36: MP-Bus operation

12.1.7.3 Sensor connection

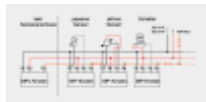


Fig. 37: Sensor connection

12.1.8 MP(L) actuators

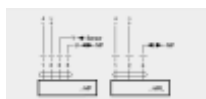


Fig. 38: MP(L) actuators

12.1.9 Cable

Communication and supply for the MP-Bus can be carried in the same cable. The power supply of the MP nodes is secured with GND and 24 V AC or DC. The MP client communicates with the connected actuators via the MP communication connection, which is referenced to the same GND as the power supply.

9AKK108464A1385

9AKK108464A1384

9AKK108464A1392

9AKK108464A1398



Fig. 39: Cable

Neither special cables nor termination resistors are required. An MP-Bus connection can be set up with commercially available installation cables.

12.1.10 Cable lengths

The cable length of an MP network is limited by the following factors:

- The sum of the power consumption of the connected MP nodes
- The type of supply (AC or DC via MP-Bus / AC or DC local supply)
- Cable cross section

For the calculation of the maximum cable length, the Belimo wiring calculator is available on the Belimo website for the complete MP-Bus range https://www.belimo.com/mam/europe/technical-documentation/application_programs_and_plug-ins/MP-Bus/MP-Bus_Application_MP-Bus-cable-length-calculator.zip.

12.1.10.1 Determining the maximum cable length for a 24 V AC supply

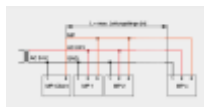


Fig. 40: Maximum cable length for a 24 V AC supply

The power rating [VA] of each MP node has to be added together, and the corresponding cable lengths are to be read from the diagram.

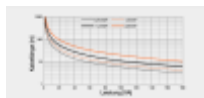


Fig. 41: Cable length diagram

12.1.10.2 Determining the maximum cable length for a 24 V DC supply

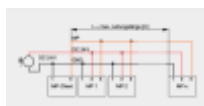


Fig. 42: Maximum cable length for a 24 V DC supply

The power consumption [W] of each MP node has to be added together, and the corresponding cable lengths are to be read from the diagram.

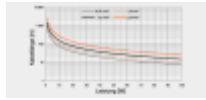


Fig. 43: Cable length diagram

12.1.10.3 Local on-site supply

If the MP nodes are supplied with 24 V AC or DC locally via an individual transformer, the cable lengths can be increased.

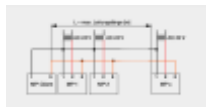


Fig. 44: Local on-site supply

12.1.11 MP-Bus function profiles

MP function profiles define the interface and its scope (data points, parameters, functions) of an MP node.

12.1.11.1 Profile overview



Fig. 45: Profile overview

12.1.11.2 Air/water valve drives



Fig. 46: Air/water valve drives

12.1.11.3 VAV/EPIV



Fig. 47: VAV/EPIV

12.1.11.4

Data-Pool devices

Data-Pool devices are MP nodes that have no specific commands compared to previous profiles.



Fig. 48: Data-Pool devices

13 Appendix

13.1 Scope of delivery

The device is supplied together with the following components:

- 1 x installation and operating instructions
- 1 x KNX/MP-Bus Controller



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