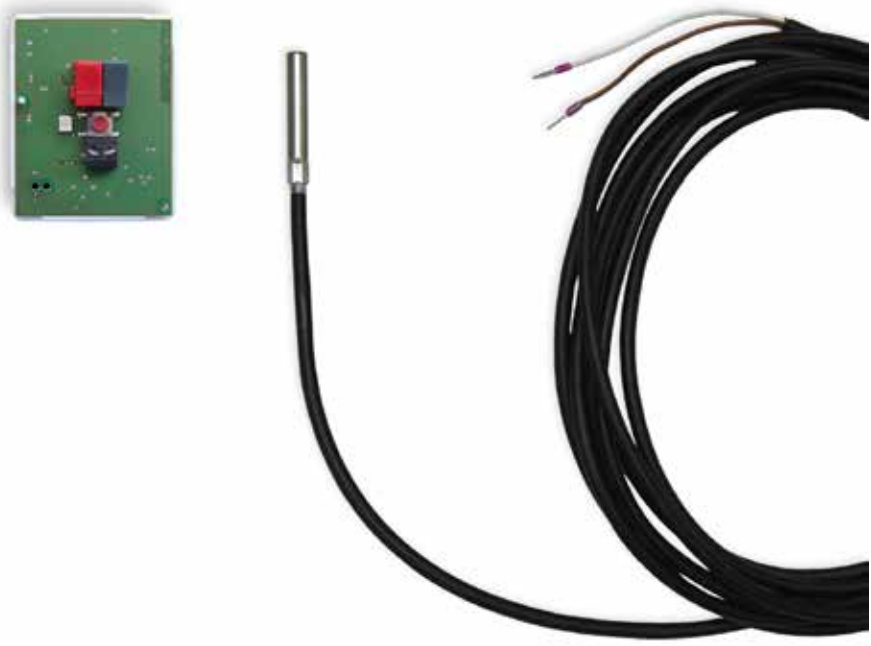
KNX T-UN 100

Temperature Sensor

Item number 70221



elsner elektronik

Installation and Adjustment

Installation, inspection, commissioning and troubleshooting of the device must only be carried out by a competent electrician.

This manual is amended periodically and will be brought into line with new software releases. The change status (software version and date) can be found in the contents footer. If you have a device with a later software version, please check **www.elsner-elektronik.de** in the menu area "Service" to find out whether a more up-to-date version of the manual is available.

Clarification of signs used in this manual

Safety advice.

Safety advice for working on electrical connections, components, etc.

DANGER! ... indicates an immediately hazardous situation which will lead to death or severe injuries if it is not avoided.

WARNING! ... indicates a potentially hazardous situation which may lead to death or severe injuries if it is not avoided.

CAUTION! ... indicates a potentially hazardous situation which may lead to trivial or minor injuries if it is not avoided.

ATTENTION! ... indicates a situation which may lead to damage to property if it is not avoided.

ETS In the ETS tables, the parameter default settings are marked by underlining.

1. Description

The **Temperature Sensor KNX T-UN 100** consists of evaluation electronics and measuring sensor. The sensor measures temperature in indoor and outdoor areas. The sensor can receive an external measured value via the bus and process it with the own data to an overall temperature (mixed value).

The **KNX T-UN 100** provides four switching outputs with adjustable threshold values as well as additional AND and OR logic gates. The sensor has got a PI controller for heating and cooling.

Functions:

- **Measurement of temperature**
- **Mixed value** from own measured value and external value (proportions can be set in percentage)
- **PI controller for heating** (one or two step) and **cooling** (one or two step)
- **4 switching outputs** with adjustable threshold values (Threshold values can be set by parameter or via communication objects)
- **4 AND and 4 OR logic gates** with each 4 inputs. Every switching incident as well as 8 logic inputs (in the form of communication objects) may be used as inputs for the logic gates. The output of each gate may optionally be configured as 1 bit or 2 x 8 bits

Configuration is made using the KNX software ETS. The **product file** can be downloaded from the Elsner Elektronik website on **www.elsner-elektronik.de** in the "Service" menu.

1.1. Technical specifications

Housing	Plastic material, sensor sleeve metal
Colour	Housing white, cable black
Installation	Mounting
Protection category meas. sensor	IP 43
Dimensions evaluation electronics	approx. 38 x 47 x 24 (W x H x D, mm)
Dimensions measuring sensor	length sensor sleeve approx. 32 mm, diameter approx. 6 mm, cable length approx. 300 cm
Ambient temperature	Evaluation electronics: Operation -20…+70 °C, storage -55…+150°C Measuring sensor and cable: Operation -35…+100 °C, storage -55…+150°C
Ambient air humidity	Evaluation electronics: max. 95% R. H., avoid bedewing
Operating voltage	KNX bus voltage
Bus current	max. 8 mA
Data output	KNX +/- bus terminal plug

BCU type	Own micro controller	
PEI type	0	
Group addresses	max. 184	
Allocations	max. 184	
Communication objects	80	
Measurement range	-35…+100°C	
Accuracy at +25°C housing temperature of evaluation electronics	Sensor temperature ±0°C -35…+25°C -35…+70°C -35…+100°C	Max. difference of measured value ± 1.0°C ± 1.5°C ± 2.5°C ± 4.0°C

The product conforms with the provisions of EU directives.

2. Installation and commissioning

2.1. Installation notes

Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.

CAUTION!
Live voltage!
There are unprotected live components inside the device.

- National legal regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for its intended purpose. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

2.2. Installation position

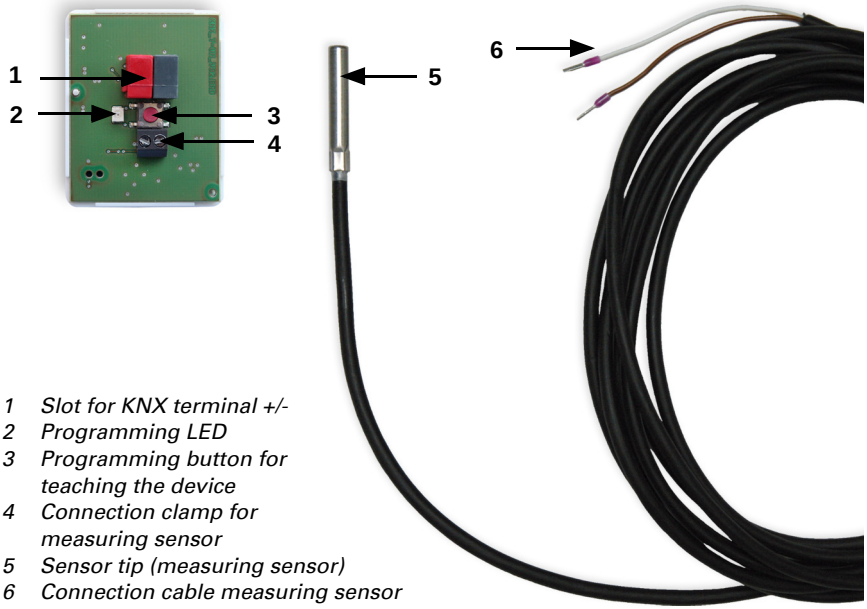
The evaluation electronics of the sensor is installed in a socket. When selecting an installation location for the measuring sensor, please ensure that the measurement results are affected as little as possible by external influences. Possible sources of interference include:

- Direct sunlight
- Drafts from windows and doors
- Warming or cooling of the building structure on which the sensor is mounted, e.g. due to sunlight, heating or cold water pipes
- Connection lines which lead from warmer or colder areas to the sensor

Temperature variations from such sources of interference must be corrected in the ETS in order to ensure the specified accuracy of the sensor (temperature offset).

2.3. Mounting and connection

2.3.1. Composition of the sensor



1 Slot for KNX terminal +/-
2 Programming LED
3 Programming button for teaching the device
4 Connection clamp for measuring sensor
5 Sensor tip (measuring sensor)
6 Connection cable measuring sensor

2.3.2. Connection of the sensor

Connect the cable of the measuring sensor to the evaluation electronics (connection is reverse polarity protected). The cable connection may be extended up to 10 m maximum.

2.4. Notes on mounting and commissioning

Never expose the device to water (e.g. rain) or dust. This can damage the electronics. You must not exceed a relative humidity of 95%. Avoid condensation.

After the bus voltage has been applied, the device will enter an initialisation phase lasting a few seconds. During this phase no information can be received or sent via the bus.

3. Transfer protocol

Units:

Temperatures in degrees Celsius

3.1. List of all communications objects

Abbreviation flags:

C Communication
R Read
W Write
T Transfer
U Update

No.	Text	Function	Flags	Size
0	External measured temperature value	Input	-WC-	2 bytes
1	Internal measured temperature value	Output	R-CT	2 bytes
2	Complete-Temperature measured value	Output	R-CT	2 bytes
3	Requirement min./max. Temperature measured value	Input	-WC-	1 bit
4	Minimum measured value for temperature	Output	R-CT	2 bytes
5	Maximum temperature measured value	Output	R-CT	2 bytes
6	Reset min./max. Temperature measured value	Input	-WC-	1 bit
7	Sensor malfunction	Output	R-CT	1 bit
8	Reserve	Output	R-CT	1 bit
9	Temp. threshold value 1: Absolute value	Input/Output	RWCT	2 bytes
10	Temp. threshold value 1: (1:+ | 0: -)	Input	-WC-	1 bit
11	Temp. threshold value 1: Switching output	Output	R-CT	1 bit
12	Temp. threshold value 1: Switching output block	Input	-WC-	1 bit
13	Temp. threshold value 2: Absolute value	Input/Output	RWCT	2 bytes
14	Temp. threshold value 2: (1:+ | 0:-)	Input	-WC-	1 bit
15	Temp. threshold value 2: Switching output	Output	R-CT	1 bit
16	Temp. threshold value 2: Switching output block	Input	-WC-	1 bit
17	Temp. threshold value 3: Absolute value	Input/Output	RWCT	2 bytes
18	Temp. threshold value 3: (1:+ | 0: -)	Input	-WC-	1 bit
19	Temp. threshold value 3: Switching output	Output	R-CT	1 bit

No.	Text	Function	Flags	Size
20	Temp. threshold value 3: Switching output block	Input	-WC-	1 bit
21	Temp. threshold value 4: Absolute value	Input/Output	RWCT	2 bytes
22	Temp. threshold value 4: (1:+ | 0: -)	Input	-WC-	1 bit
23	Temp. threshold value 4: Switching output	Output	R-CT	1 bit
24	Temp. threshold value 4: Switching output block	Input	-WC-	1 bit
25	Temp. controller: Switching object (0:Heating | 1:Cooling)	Input	-WC-	1 bit
26	Temp. controller: Current setpoint	Output	R-CT	2 bytes
27	Temp. controller: Blocking object	Input	-WC-	1 bit
28	Temp. controller: Setpoint, daytime	Input/Output	RWCT	2 bytes
29	Temp. controller: Setpoint, day (1:+ | 0: -)	Input	-WC-	1 bit
30	Temp. controller: Setpoint, daytime (cooling)	Input/Output	RWCT	2 bytes
31	Temp. controller: Setpoint, daytime (cooling) (1:+ | 0: -)	Input	-WC-	1 bit
32	Temp. controller: Control variable, heating (level 1)	Output	R-CT	1 byte
33	Temp. controller: Control variable, heating (level 2)	Output	R-CT	1 byte
34	Temp. controller: Control variable, heating (level 2)	Output	R-CT	1 bit
35	Temp. controller: Control variable, cooling	Output	R-CT	1 byte
36	Temp. controller: Control variable, cooling (level 2)	Output	R-CT	1 byte
37	Temp. controller: Control variable, cooling (level 2)	Output	R-CT	1 bit
38	Temp. controller: Night-time reduction activation	Input	-WC-	1 bit
39	Temp. controller: Heating setpoint, night	Input/Output	RWCT	2 bytes
40	Temp. controller: Heating setpoint, night (1:+ | 0:-)	Input	-WC-	1 bit
41	Temp. controller: Cooling setpoint, night	Input/Output	RWCT	2 bytes
42	Temp. controller: Cooling setpoint, night (1:+ | 0:-)	Input	-WC-	1 bit
43	Temp. controller: Heating status (1=ON | 0=OFF)	Output	R-CT	1 bit
44	Temp. controller: Heating 2 (1=ON | 0=OFF)	Output	R-CT	1 bit
45	Temp. controller: Cooling status (1=ON | 0=OFF)	Output	R-CT	1 bit

No.	Text	Function	Flags	Size
46	Temp. controller: Cooling 2 status (1=ON | 0=OFF)	Output	R-CT	1 bit
47	Temp. controller: Window status (0: CLOSED | 1: OPEN)	Input	-WC-	1 bit
78	Logic input 1	0	-WC-	1 bit
79	Logic input 2	0	-WC-	1 bit
80	Logic input 3	0	-WC-	1 bit
81	Logic input 4	0	-WC-	1 bit
82	Logic input 5	0	-WC-	1 bit
83	Logic input 6	0	-WC-	1 bit
84	Logic input 7	0	-WC-	1 bit
85	Logic input 8	0	-WC-	1 bit
86	AND logic 1	Switching output	R-CT	1 bit
87	AND logic 1	8-bit output A	R-CT	1 byte
88	AND logic 1	8-bit output B	R-CT	1 byte
89	AND logic 2	Switching output	R-CT	1 bit
90	AND logic 2	8-bit output A	R-CT	1 byte
91	AND logic 2	8-bit output B	R-CT	1 byte
92	AND logic 3	Switching output	R-CT	1 bit
93	AND logic 3	8-bit output A	R-CT	1 byte
94	AND logic 3	8-bit output B	R-CT	1 byte
95	AND logic 4	Switching output	R-CT	1 bit
96	AND logic 4	8-bit output A	R-CT	1 byte
97	AND logic 4	8-bit output B	R-CT	1 byte
98	OR logic 1:	Switching output	R-CT	1 bit
99	OR logic 1:	8-bit output A	R-CT	1 byte
100	OR logic 1:	8-bit output B	R-CT	1 byte
101	OR logic 2:	Switching output	R-CT	1 bit
102	OR logic 2:	8-bit output A	R-CT	1 byte
103	OR logic 2:	8-bit output B	R-CT	1 byte
104	OR logic 3:	Switching output	R-CT	1 bit
105	OR logic 3:	8-bit output A	R-CT	1 byte
106	OR logic 3:	8-bit output B	R-CT	1 byte
107	OR logic 4:	Switching output	R-CT	1 bit
108	OR logic 4:	8-bit output A	R-CT	1 byte
109	OR logic 4:	8-bit output B	R-CT	1 byte
117	Software version	Output	R-CT	2 bytes

4. Parameter settings

4.1. Behaviour on power failure/ power restoration

Behaviour following a failure of the bus power supply:

The device sends nothing.

Behaviour on bus restoration of power and following programming or reset:

The device sends all outputs according to their send behaviour set in the parameters with the delays established in the "General settings" parameter block. The "Software version" communications object is sent once after 5 seconds.

4.2. General settings

Configure the parameter display for the **Temperature Sensor KNX T-UN** as follows:

Use parameters and objects for the humidity sensor	No
Type of logic	Logic for temperature sensor
Use parameters and objects for display	No

Set the basic data transfer characteristics and activate the malfunction object as required.

Transmission delays after power-up and programming for:	
Measured values	5 s • ... • 2 h
Threshold values and switching outputs	5 s • ... • 2 h
Setpoints and actuating variable	5 s • 10 s • ... • 2 h
Logic outputs	5 s • 10 s • ... • 2 h
Maximum telegram quota	• 1 message per second • ... • 5 messages per second • ... • 20 messages per second
Use malfunction object	Yes • No

4.3. Temperature measured value

Use **Offsets** to adjust the readings to be sent.

Offset in 0.1°C	-50…50; 0

The unit can calculate a **mixed value** from its own reading and an external value. Set the mixed value calculation if desired.

Use external reading	Yes • No
Ext. Reading proportion of the total reading	5% • 10% • ... • 50% • ... • 100%
Internal and total measured temperature value	• do not send • send periodically • send on change • send on change and periodically
On change of *(if sent on change)*	0.1°C • ... • 0.5°C • ... • 5.0°C
Send cycle *(if sent periodically)*	5 s • ... • 2 h

Note: If an external portion is used, all of the following settings are related to the overall reading!

The **minimum and maximum readings** can be saved and sent to the bus . Using the "Reset temperature min/max. value" objects the values can be reset to the current readings.

Use min. and max. temperature values	Yes • No

Note: The values are not retained after a reset.

4.4. Temperature threshold values

Activate the threshold values that you want to use here. The **Temperature Sensor KNX T-UN** provides four threshold values for temperature.

Use threshold value 1/2/3/4	Yes • No

4.4.1. Temperature threshold value 1...4

Temperature threshold value

The threshold value can be directly set in the application program using parameters, or via the bus using a communications object.

Threshold value setpoint using parameter:

Set the threshold values and hysteresis directly.

Temperature threshold value specification per	**Parameter** • Communications object
Indoor temperature threshold value in 0.1°C	*T-UN 130:* -300 ... 1300; 200 *T-UN 100:* -350 ... 1000; 200
Hysteresis of the threshold value in %	0 ... 50; 20

Threshold value setpoint using a communications object:

Beforehand, enter how the threshold value will be received from the bus. Basically, a new value can be received, or simply a command to increase or decrease.

During initial commissioning, a threshold value must be defined which will be valid until the first call with of a new threshold value. For units which have already been taken into service, the last communicated threshold value can be used. Basically, a temperature range is given in which the threshold value can be changed (object value limit).

A set threshold value will be retained until a new value or a change is transferred. The current value is saved in EEPROM, so that this is retained in the event of a power supply failure and will be available once the power supply is restored.

Temperature threshold value specification per	Parameter • **Communications objects**
The last communicated value should	• never be retained • be retained after power restoration • be retained after power restoration and programming.
Start temperature threshold value in 0.1°C valid until first call	*T-UN 130:* -300 … 1300; 200 *T-UN 100:* -350 … 1000; 200
Type of threshold value change	Absolute value • Increase/decrease
Step size *(upon increase/decrease change)*	0.1°C • 0.2°C • ... • 1°C • ... • 5°C
Hysteresis of the threshold value in %	0 … 50; 20

Temperature switch output

Set the behaviour of the switching output when a threshold value is exceeded/undercut. The output switching delay can be set using objects or directly as a parameter.

When the following conditions apply, the output is (LV = Threshold value)	• TV above = 1 | TV - Hyst. below = 0 • TV above = 0 | TV - Hyst. below = 1 • LV below = 1 |LV + hysteresis above = 0 • LV below = 0 |LV + hysteresis above = 1
Switching delay from 0 to 1	None • 1 s • 2 s • 5 s • 10 s • ... • 2 h
Switching delay from 1 to 0	None • 1 s • 2 s • 5 s • 10 s • ... • 2 h
Switching output sends	• on change • on change to 1 • on change to 0 • on change and periodically • on change to 1 and periodically • on change to 0 and periodically
Send temperature switching output in the cycle of *(only if sent periodically)*	5 s • 10 s • 30 s... • 2 h

Block

The switching output can be blocked using an object. Define specifications here for the behaviour of the output when blocked.

Use temperature switching output block	No • Yes
Analysis of the temperature blocking object	• At value 1: block | At value 0: release • At value 0: block | At value 1: release
Value of the temperature blocking object before first call	0 • 1
Behaviour of the switching output	
On block	• Do not send message • send 0 • send 1
On release (with 2 seconds release delay)	[Dependent on the "Switching output sends" setting]

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

Switching output sends on change	• Do not send message • Send switching output status
Switching output sends on change to 1	• Do not send message • if switching output = 1 ➔ send 1
Switching output sends on change to 0	• Do not send message • if switching output = 0 ➔ send 0
Switching output sends on change and periodically	Send switching output status
Switching output sends on change to 1 and periodically	if switching output = 1 ➔ send 1
Switching output sends on change to 0 and periodically	• if switching output = 0 ➔ send 0

4.5. Temperature PI controller

Activate the controller if required.

Use controller	Yes • No

General control

Then define the type of setting. Heating and/or cooling may be controlled in two stages.

Type of control	• Single stage heating • Dual-stage heating • Single-stage cooling • Single-stage heating + single-stage cooling • Dual-stage heating + single-stage cooling • Dual-stage heating + dual-stage cooling

Then configure a temperature control block by the blocking object.

Behaviour of the blocking object with value	• 1 = Blocking regulation | 0 = Releasing regulation • 0 = Blocking regulation | 1 = Releasing regulation
Blocking object value before first call	0 • 1

Specify when the current control variables are to be sent to the bus. Periodic transmission is safer if a message does not reach a recipient. You may also set up periodical monitoring by the actuator with this setting.

Transmit control variable	• on change • on change and periodically
Send cycle *(is sent only if "periodically" is selected)*	5 s • ... • 5 min • ... • 2 h

Controller setpoint

Specified setpoint using	Parameter • Communications object

Specified setpoint per parameter:

Set the setpoint.

Specified setpoint using	**Parameter**
Setpoint in 0.1°C	-300 ... 800; 200

Specifying a setpoint per communications object:

A starting setpoint value is defined as well as a temperature range in which the setpoint value may be changed.

Specified setpoint using	**Communications object**
The last communicated value should	• never be retained • be retained after power restoration • be retained after power restoration and programming (not to be used for first commissioning)
Start setpoint in 0.1 °C valid until first call *(only if the last retained value is "not" retained, or retained "after power restoration")*	-300 ... 800; 200
Object value limit (min) in 0.1°C	-300 ... 800; 140
Object value limit (max) in 0.1°C	-300 ... 800; 250
Type of setpoint value change	• Absolute value • Increase / Decrease
Step size *(only when "increasing/decreasing")*	0.1°C • 0.2°C • 0.3°C • 0.4°C • 0.5°C • 1°C • 2°C • 3°C • 4°C • 5°C

Heating control level (1./2. level)

If a heating control mode is configured, one or two setting sections for the heating levels are displayed.

In the first level, heating is controlled by a PI controller which allows to either enter control parameters or select predetermined applications.

In the second level (therefore only in case of 2-stage heating), heating is controlled via a PI or a 2-point-control.
In stage 2, the setpoint deviation between the two stages must also be specified, i.e. beyond which setpoint undershoot the second stage is then added.

setpoint value difference between first and second stages (in 0.1°C) *only for stage 2*	0...100; 40
Control type *only for stage 2*	• 2-point-control • PI control

PI controller with control parameters:

This setting allows individual input of the parameters for PI control.

Control type *only for second stage*	**• PI control**
Setting of the controller by	**• Controller parameter** • specified applications

Specify the deviation from the setpoint value at which the maximum control variable value is reached, i.e. the point at which maximum heating power is activated.
The reset time shows how quickly the controller responds to deviations from the target value. In case of a short reset time, the control responds with a fast increase of the control variable. In case of a long reset time, the control responds somewhat less urgently and needs longer until the necessary control variable for the target value deviation is reached.
You should set the time appropriate to the heating system at this point (observe manufacturer's instructions).

Maximum control variable is reached at set point/actual difference of (in °C)	0...5
Reset time (in min.)	1...255; 30

Now specify what should be sent when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating.
On release, the control variable follows the rule again.

When blocked, the control variable shall	• not be sent • send a specific value
Value (in %) *only if a value is sent*	0...100

In case of a common control variable for heating and cooling, 0 is always transmitted as a fixed value.

PI control with predetermined application:

This setting provides fixed parameters for frequent applications.

Control type *only for second stage*	• **PI control**
Setting of the controller by	• Controller parameter • **specified applications**
Application	• Warm water heating • Floor heating • Convection unit • Electric heating
Maximum control variable is reached at set point/actual difference of (in °C)	Warm water heating: 5 Floor heating: 5 Convection unit: 4 Electric heating: 4
Reset time (in min.)	Warm water heating: 150 Floor heating: 240 Convection unit: 90 Electric heating: 100

Now specify what should be sent when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating.
On release, the control variable follows the rule again.

When blocked, the control variable shall	• not be sent • send a specific value
Value (in %) *only if a value is sent*	0...100

In case of a common control variable for heating and cooling, 0 is always transmitted as a fixed value.

2-point-control (only stage 2):

2-point-control is used for systems which are only set to ON or OFF.

Control type	• **2-point-control**

Enter the hysteresis that prevents frequent on/off switching of temperatures in the threshold range. Then set whether a 1-bit object (on/off) or an 8-bit object (on with percentage/off) should be used.

Hysteresis (in 0.1°C)	0...100; 20
Control variable is on	• 1-bit object • 8-bit object
Value (in %) *only for 8-bit objects*	0...100

Now specify what should be sent when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating.
On release, the control variable follows the rule again.

When blocked, the control variable shall	• not be sent • send a specific value
Value *only if a value is sent*	0 • 1

Cooling control level (1./2. level)

If a cooling control mode is configured, one or two setting sections for the cooling levels are displayed.

In the first stage, cooling is controlled by a PI controller in which either control parameters or predetermined applications can be selected.

In the second stage (therefore only ifor 2-stage cooling), cooling is controlled via a PI or a 2-point-control.
In stage 2, the setpoint deviation between the two levels must also be specified, i.e. beyond which setpoint value undershoot the second stage is then added.

setpoint value difference between first and second stages (in 0.1°C) *only for stage 2*	0...100; 40
Type of controls for the second stage	• 2-point-control • PI control

PI controller with control parameters:

This setting allows individual input of the parameters for PI control.

Control type *only for second stage*	• **PI control**
Setting of the controller by	• **Controller parameter** • specified applications

Specify the deviation from the set point value which reaches maximum variable value, i.e. the point at which maximum cooling power is activated.
The reset time shows how quickly the controller responds to deviations from the target value. In case of a short reset time, the control responds with a fast increase of the control variable. In case of a long reset time, the control responds somewhat less urgently and needs longer until the necessary control variable for the target value deviation is reached.
You should set the time appropriate to the cooling system at this point (observe manufacturer's instructions).

Maximum control variable is reached at set point/actual difference of (in °C)	0...5
Reset time (in min.)	1...255; 30

Now specify what should be sent when the control is blocked.
On release, the control variable follows the rule again.

When blocked, the control variable shall	• not be sent • send a specific value
Value (in %) *only if a value is sent*	0...100

PI control with predetermined application:

This setting provides fixed parameters for a cooling ceiling

Control type *only for second stage*	**• PI control**
Setting of the controller by	• Controller parameter **• specified applications**
Application	• Cooling ceiling
Maximum control variable is reached at set point/actual difference of (in °C)	Cooling ceiling: 5
Reset time (in min.)	Cooling ceiling: 30

Now specify what should be sent when the control is blocked.
On release, the control variable follows the rule again.

When blocked, the control variable shall	• not be sent • send a specific value
Value (in %) *only if a value is sent*	0...100
Value (in %) *only if a value is sent*	0...100

2-point-control (only stage 2):

The 2-point-control is used for systems which are only set to ON or OFF.

Control type	**• 2-point-control**

Enter the hysteresis that prevents frequent on/off switching of temperatures in the threshold range. Then set whether a 1 bit object (on/off) or an 8 bit object (on with percentage/off) should be used.

Hysteresis (in 0.1°C)	0...100; 20
Control variable is on	• 1-bit object • 8-bit object
Value (in %) *only for 8-bit objects*	0...100

Now specify what should be sent when the control is blocked.
On release, the control variable follows the rule again.

When blocked, the control variable shall	• not be sent • send a specific value
Value *only if a value is sent*	0 • 1

Night reduction

Activate night reduction to set the night time operation of the heating/cooling.

Use night reduction	No • Yes

Set for which object night reduction is active.

Use night reduction	**Yes**
Night reduction for object value	• 1 = active | 0 = inactive • 0 = active | 1 = inactive
Activation object value before first call	0 • 1

Specified setpoint per parameter:

Set the setpoint for the heating and/or cooling.

Specified setpoint using	**Parameter**
Setpoint heating in 0.1°C *(if the heating regulator is being used)*	-300 ... 800; 180
Setpoint cooling in 0.1°C *(if the cooling regulator is being used)*	-300 ... 800; 260

Specifying a setpoint per communications object:

A starting setpoint value is defined as well as a temperature range in which the setpoint value may be changed.

Specified setpoint using	**Communications object**
The last communicated value should	• never be retained • be retained after power restoration • be retained after power restoration and programming (not to be used for first commissioning)
Start setpoint heating in 0.1°C valid until first call *(if the heating regulator is being used and only if the last retained value is "not" retained, or retained "after power restoration")*	-300 ... 800; 180
Limitation of object value H(min)\r\n in 0.1°C	-300 ... 800; 140

Limitation of object value H(max)\r\n in 0.1°C	-300 ... 800; 250
Start setpoint cooling in 0.1°C valid until first call *(if the cooling regulator is being used and only if the last retained value is "not" retained, or retained "after power restoration")*	-300 ... 800; 260
Limitation of object value C(min)\r\n in 0.1°C	-300 ... 800; 240
Limitation of object value C(max)\r\n in 0.1°C	-300 ... 800; 300
Type of setpoint value change	• Absolute value • Increase / Decrease
Step size *(only when "increasing/decreasing")*	0.1°C • 0.2°C • 0.3°C • 0.4°C • 0.5°C • 1°C • 2°C • 3°C • 4°C • 5°C

Frost/heat protection

Activate the frost/heat protection to set building protection mode of the heating/cooling.

Use frost/heat protection	No • Yes

Set the setpoint for the heating and/or cooling. The building protection mode may be activated with delay, which allows you to leave the building before the controls switch to frost/heat protection mode.

Setpoint heating in 0.1°C *(only if the heating regulator is being used)*	-300 ... 800; 70
Activation delay (after opening windows)	no • 1 s • ... • 5 min • ... • 2 h
Setpoint cooling in 0.1°C *(only if the cooling regulator is being used)*	-300 ... 800; 350
Activation delay (after opening windows)	no • 1 s • ... • 5 min • ... • 2 h
Window status before first call	Closed • Open

4.6. Logic

Activate the communication objects of the logic inputs if required. Then, activate the required logic outputs.

Communications objects logic inputs	not released • released

AND logic

Logic 1 + 2 + 3 + 4	not active • active

OR logic

Logic 1 + 2 + 3 + 4	not active • active

4.6.1. AND and/or OR logic 1 / 2 / 3 / 4

AND- and OR logic gates provide the same setting options. Assign the inputs to a switching event and set the send behaviour.

1. / 2. / 3. / 4. Input	• do not use • all switching events which are available to the sensor (see *AND logic connection inputs*, Page 22)")
Logic output	• never sends • sends one 1-bit object • sends two 8-bit objects

If the logic output sends one 1-bit object:

Logic output sends	**one 1-bit object**
if logic = 1 ➔ object value	0 • 1
if logic = 0 ➔ object value	0 • 1

If the logic output sends two 8-bit objects:

Logic output sends	**two 8-bit objects**
If logic = 1 ➔ Object A value	0...255; 127
If logic = 0 ➔ Object A value	0...255
If logic = 1 ➔ Object B value	0...255; 127
If logic = 0 ➔ Object B value	0...255

Send communication object and logic 1/2/3/4	• on change of logic • on change of logic to 1 • on change of logic to 0 • on change of logic and periodically • on change of logic to 1 and periodically • on change of logic to 0 and periodically
Send periodically every *(only if sent periodically)*	5 s • 10 s • 30 s • 1 min • ... • 2 h

4.6.2. AND logic connection inputs

Do not use
Communications object logic input 1
Communications object logic input 1 inverted
Communications object logic input 2
Communications object logic input 2 inverted
Communications object logic input 3
Communications object logic input 3 inverted

Communications object logic input 4
Communications object logic input 4 inverted
Communications object logic input 5
Communications object logic input 5 inverted
Communications object logic input 6
Communications object logic input 6 inverted
Communications object logic input 7
Communications object logic input 7 inverted
Communications object logic input 8
Communications object logic input 8 inverted
Temperature threshold value 1
Temperature threshold value 1 inverted:
Temperature threshold value 1
Temperature threshold value 1 inverted:
Temperature threshold value 1
Temperature threshold value 1 inverted:
Temperature threshold value 1
Temperature threshold value 1 inverted:
Temperature threshold value 1
Temperature threshold value 1 inverted:
Sensor malfunction
Sensor malfunction inverted

4.6.3. OR logic connection inputs

The OR logic connection inputs correspond to those of the AND logic. In addition the following inputs are available for the OR logic:

AND logic output 1
AND logic output 1 inverted
AND logic output 2
AND logic output 2 inverted
AND logic output 3
AND logic output 3 inverted
AND logic output 4
AND logic output 4 inverted

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