Temperature Sensor
KNX T-UP

elsner elektronik

Installation and Adjustment

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KNX T-UP • from software version 0.2.0, ETS programme version 2.0 • Version: 24.02.2010. Errors excepted. Subject to technical changes.

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Description

The Temperature Sensor KNX T-UP measures ambient temperature. 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-UP 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.

The integrated display shows the own value and data received from the bus (e. g. date, time). The housing is completed with a frame of the switching series installed in the building and thus merges with the interior.

Functions:

- Measurement of **temperature**
- **Display** 1-3 rows (own values or values received from the bus)
- **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 **programme file** (format VD2) and the **manual** can be downloaded from the Elsner Elektronik homepage on **www.elsner-elektronik.de** in the “Service” menu.

Scope of delivery

- Housing with display and sensor board
- Base plate

You will need *in addition* (not supplied):

- Socket ∅ 60 mm, 42 mm deep
- Frame (for element 55 x 55 mm), suitable for the switching programme used in the building

Technical specifications

Housing:	Plastic material (partly lacquered)
Colours:	• White glossy (similar to RAL 9016 Traffic White) • Aluminium matt • Anthracite matt • Stainless steel • Special colours on request
Mounting:	In-wall (in socket ∅ 60 mm, 42 mm deep)
Protection category:	IP 20
Dimensions:	Housing approx. 55 × 55 (W × H, mm), mounting depth approx. 15 mm, base plate approx. 71 × 71 (W × H, mm)
Total weight:	approx. 50 g
Ambient temperature:	Operation -10…+50°C, Storage -20…+60°C
Ambient air humidity:	max. 95% R. H., avoid bedewing
Operating voltage:	KNX bus voltage
Bus current:	max. 6 mA, max. 10 mA when programming LED is active
Data output:	KNX +/- bus terminal plug
BCU type:	Own micro controller
PEI type:	0
Group addresses:	max. 184
Allocations:	max. 184
Communication objects:	87
Measurement range:	-40…+80°C
Resolution:	0.1°C
Accuracy:	±0.5°C at +10…+50°C ±1°C at -10…+85°C ±1.5°C at -25…+150°C

The following standards have been considered for the evaluation of the product in terms of electro magnetic compatibility:
Transient emissions:

- EN 60730-1:2000 Section EMV (23, 26, H23, H26) (threshold category: B)
- EN 50090-2-2:1996-11 + A1:2002-01 (threshold category: B)
- EN 61000-6-3:2001 (threshold category: B)

Interference resistance:

- EN 60730-1:2000 Section EMV (23, 26, H23, H26)
- EN 50090-2-2:1996-11 + A1:2002-01
- EN 61000-6-1:2004

The product has been tested for the above mentioned standards by an accredited EMV laboratory.

Installation and Commissioning

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

Disconnect all lines to be assembled, and take safety precautions against accidental switch-on.

The sensor is exclusively intended for appropriate use. With each inappropriate change or non-observance of the instructions for use, any warranty or guarantee claim will be void.
After unpacking the device, check immediately for any mechanical damages. In case of transport damage, this must immediately notified to the supplier.

If damaged, the sensor must not be put into operation.

If an operation without risk may supposedly not be guaranteed, the device must be put out of operation and be secured against accidental operation.

The sensor must only be operated as stationary system, i.e. only in a fitted state and after completion of all installation and start-up works, and only in the environment intended for this purpose.

Elsner Elektronik does not assume any liability for changes in standards after publication of this instruction manual.

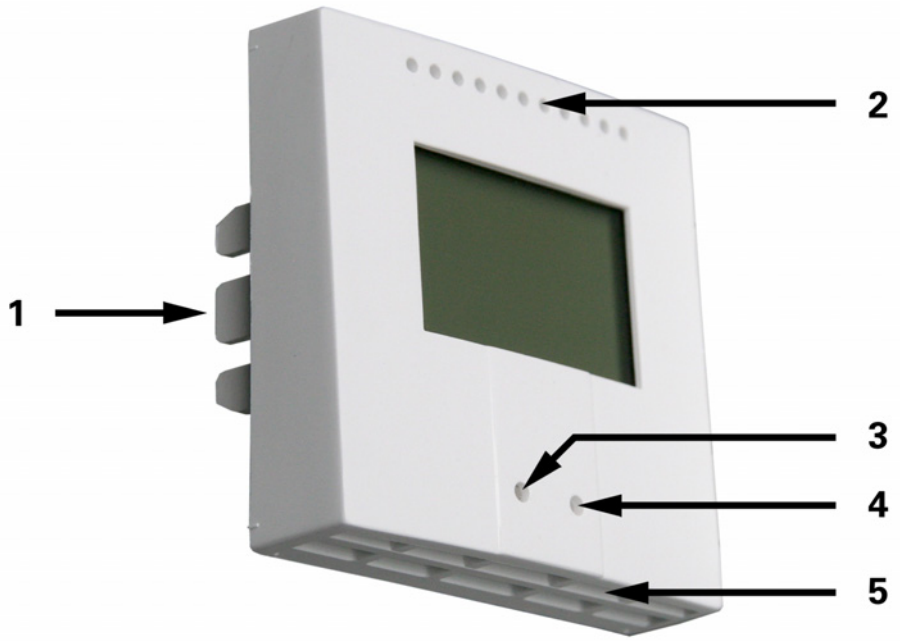
Installation position

The KNX T-UP will be installed concealed within a socket (∅ 60 mm, 42 mm deep) and fitted with a frame from the switching programme used in the building.
In selecting an installation location, please take care that no direct sunlight, heating element or draught from windows or doors will distort the values measured. Infiltration from pipes that lead to the socket where the sensor is installed from other rooms may cause false measurement results, too.

The sensor may be installed and operated in dry interior rooms only. Avoid condensation.

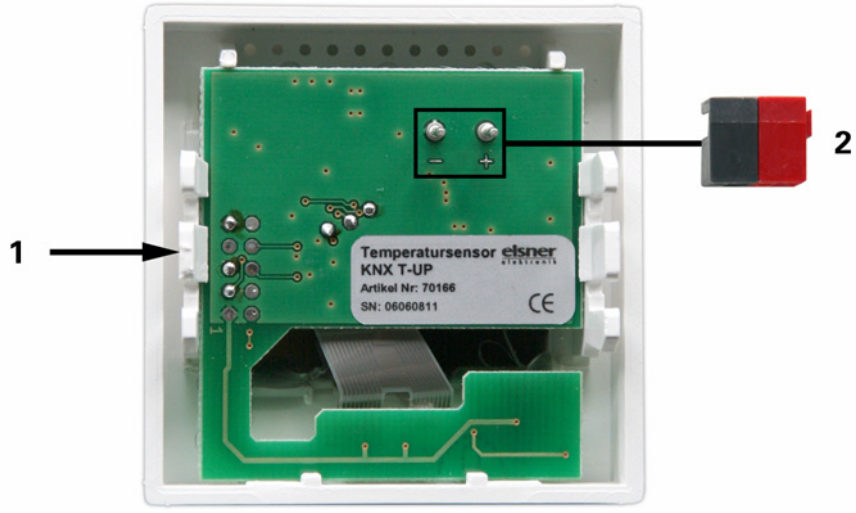
Composition

Casing



1 Notches
2 Air circulation holes
3 Programming LED (recessed)
4 Programming button (recessed) for teaching instrument
5 Air circulation holes (BOTTOM)

Rear view of casing with sensor board



1 Notches
2 Slot for KNX terminal BUS +/-

Assembly

First of all fit the socket with connection. Seal inlet pipes to avoid infiltration. Then screw the base plate onto the socket and position the frame of the switching programme.
Connect the bus line +/- (black-red plug) to the terminals provided on the sensor board of KNX T-UP. Pin the sensor with the notches on to the metal frame, so that sensor and frame are fixed.

Notes on installation

Sensor must not be exposed to water (rain) or dust. This could result in the electronic being damaged. A relative air humidity of 95% must not be exceeded. Avoid bedewing.

Transmission protocol

Abbreviations

Flags:

C	Communication
R	Read
W	Write
T	Transmit
U	Update

Listing of all communication objects

No.	*Name*	*Function*	*DPT*	*Flags*
0	External measured value for temperature	Input	9.001	C W
1	Internal measured value for temperature	Output	9.001	C R T
2	Total measured value for temperature	Output	9.001	C R T
3	Request min./max. measured value for temperature	Input	1.017	C W
4	Minimum measured value for temperature	Output	9.001	C R T
5	Maximum measured value for temperature	Output	9.001	C R T
6	Reset min./max. measured value for temperature	Input	1.017	C W
7	Temperature sensor malfunction	Output	1.001	C R T
9	Temp. threshold value 1: Absolute value	Input / Output	9.001	C R W T U
10	Temp. threshold value 1: (1:+ | 0:-)	Input	1.006	C W
11	Temp. threshold value 1: Switching output	Output	1.001	C R T
12	Temp. threshold value 1: Switching output block	Input	1.006	C W
13	Temp. threshold value 2: Absolute value	Input / Output	9.001	C R W T U
14	Temp. threshold value 2: (1:+ | 0:-)	Input	1.006	C W
15	Temp. threshold value 2: Switching output	Output	1.001	C R T
16	Temp. threshold value 2: Switching output block	Input	1.006	C W

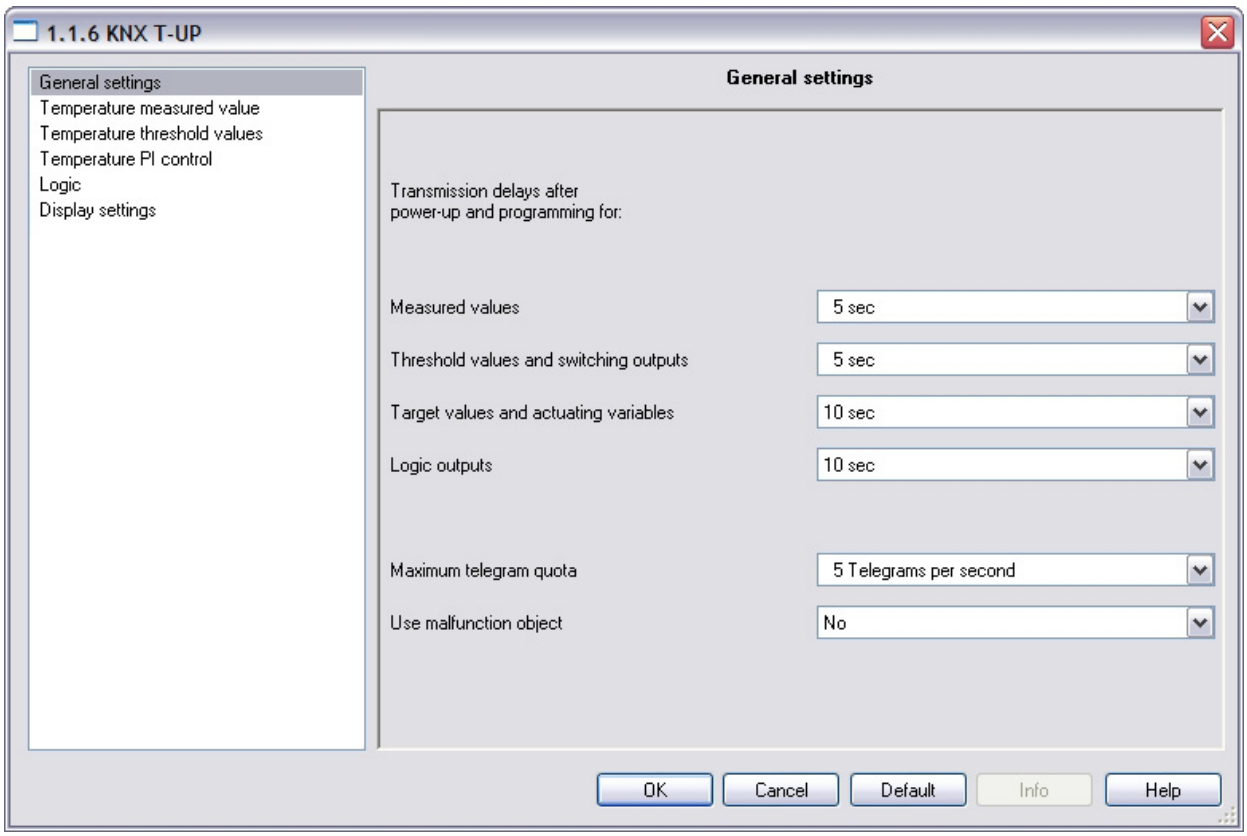
No.	Name	Function	DPT	Flags
17	Temp. threshold value 3: Absolute value	Input / Output	9.001	C R W T U
18	Temp. threshold value 3: (1:+ | 0:-)	Input	1.006	C W
19	Temp. threshold value 3: Switching output	Output	1.001	C R T
20	Temp. threshold value 3: Switching output block	Input	1.006	C W
21	Temp. threshold value 4: Absolute value	Input / Output	9.001	C R W T U
22	Temp. threshold value 4: (1:+ | 0:-)	Input	1.006	C W
23	Temp. threshold value 4: Switching output	Output	1.001	C R T
24	Temp. threshold value 4: Switching output block	Input	1.006	C W
25	Temp. control: Switching object (0:heating | 1:cooling)	Input	1.002	C W
26	Temp. control: Target value current	Output	9.001	C R T
27	Temp. control: Blocking object	Input	1.006	C R W
28	Temp. control: Target value, day heating	Input / Output	9.001	C R W T U
29	Temp. control: Target value, day heating (1:+ | 0:-)	Input	1.002	C W
30	Temp. control: Target value, day cooling	Input / Output	9.001	C R W T U
31	Temp. control: Target value, day cooling (1:+ | 0:-)	Input	1.002	C W
32	Temp. control: Act. variable heating 1. stage	Output	5.001	C R T
33	Temp. control: Act. variable heating 2. stage	Output	5.001	C R T
34	Temp. control: Act. variable heating 2. stage	Output	1.001	C R T
35	Temp. control: Act. variable cooling 1. stage	Output	5.001	C R T
36	Temp. control: Act. variable cooling 2. stage	Output	5.001	C R T
37	Temp. control: Act. variable cooling 2. stage	Output	1.001	C R T
38	Temp. control: Night lowering activation	Input	1.003	C W

No.	Name	Function	DPT	Flags
39	Temp. control: Target value heating, night	Input / Output	9.001	C R W T U
40	Temp. control: TargetV heating, night (1:+ | 0:-)	Input	1.002	C W
41	Temp. control: Target value cooling, night	Input / Output	9.001	C R W T U
42	Temp. control: TargetV cooling, night (1:+ | 0:-)	Input	1.002	C W
43	Temp. control: Status heating 1 (1=ON | 0=OFF)	Output	1.001	C R T
44	Temp. control: Status heating 2 (1=ON | 0=OFF)	Output	1.001	C R T
45	Temp. control: Status cooling 1 (1=ON | 0=OFF)	Output	1.001	C R T
46	Temp. control: Status cooling 2 (1=ON | 0=OFF)	Output	1.001	C R T
47	Temp. control: Window status (0: closed | 1: open)	Input	1.019	C W
78	Logic input 1	Input	1.006	C W
79	Logic input 2	Input	1.006	C W
80	Logic input 3	Input	1.006	C W
81	Logic input 4	Input	1.006	C W
82	Logic input 5	Input	1.006	C W
83	Logic input 6	Input	1.006	C W
84	Logic input 7	Input	1.006	C W
85	Logic input 8	Input	1.006	C W
86	AND logic 1: 1 bit	Output	1.001	C R T
87	AND logic 1: 8 bit output A	Output	5.010	C R T
88	AND logic 1: 8 bit output B	Output	5.010	C R T
89	AND logic 2: 1 bit	Output	1.001	C R T
90	AND logic 2: 8 bit output A	Output	5.010	C R T
91	AND logic 2: 8 bit output B	Output	5.010	C R T
92	AND logic 3: 1 bit	Output	1.001	C R T
93	AND logic 3: 8 bit output A	Output	5.010	C R T
94	AND logic 3: 8 bit output B	Output	5.010	C R T

No.	Name	Function	DPT	Flags
95	AND logic 4: 1 bit	Output	1.001	C R T
96	AND logic 4: 8 bit output A	Output	5.010	C R T
97	AND logic 4: 8 bit output B	Output	5.010	C R T
98	OR logic 1: 1 bit	Output	1.001	C R T
99	OR logic 1: 8 bit output A	Output	5.010	C R T
100	OR logic 1: 8 bit output B	Output	5.010	C R T
101	OR logic 2: 1 bit	Output	1.001	C R T
102	OR logic 2: 8 bit output A	Output	5.010	C R T
103	OR logic 2: 8 bit output B	Output	5.010	C R T
104	OR logic 3: 1 bit	Output	1.001	C R T
105	OR logic 3: 8 bit output A	Output	5.010	C R T
106	OR logic 3: 8 bit output B	Output	5.010	C R T
107	OR logic 4: 1 bit	Output	1.001	C R T
108	OR logic 4: 8 bit output A	Output	5.010	C R T
109	OR logic 4: 8 bit output B	Output	5.010	C R T
110	Display contrast (1 = higher | 0 = lower)	Input	1.001	C W
111	Date for display	Input	11.001	C W
112	Time for display	Input	10.001	C W
113	8 bit object for display	Input	5.xxx	C W
114	16 bit object for display	Input	9.xxx	C W
115	Text message 1 for display	Input	16.000	C W
116	Text message 2 for display	Input	16.000	C W
117	Software version	Output	217.001	C R T

Setting of parameters

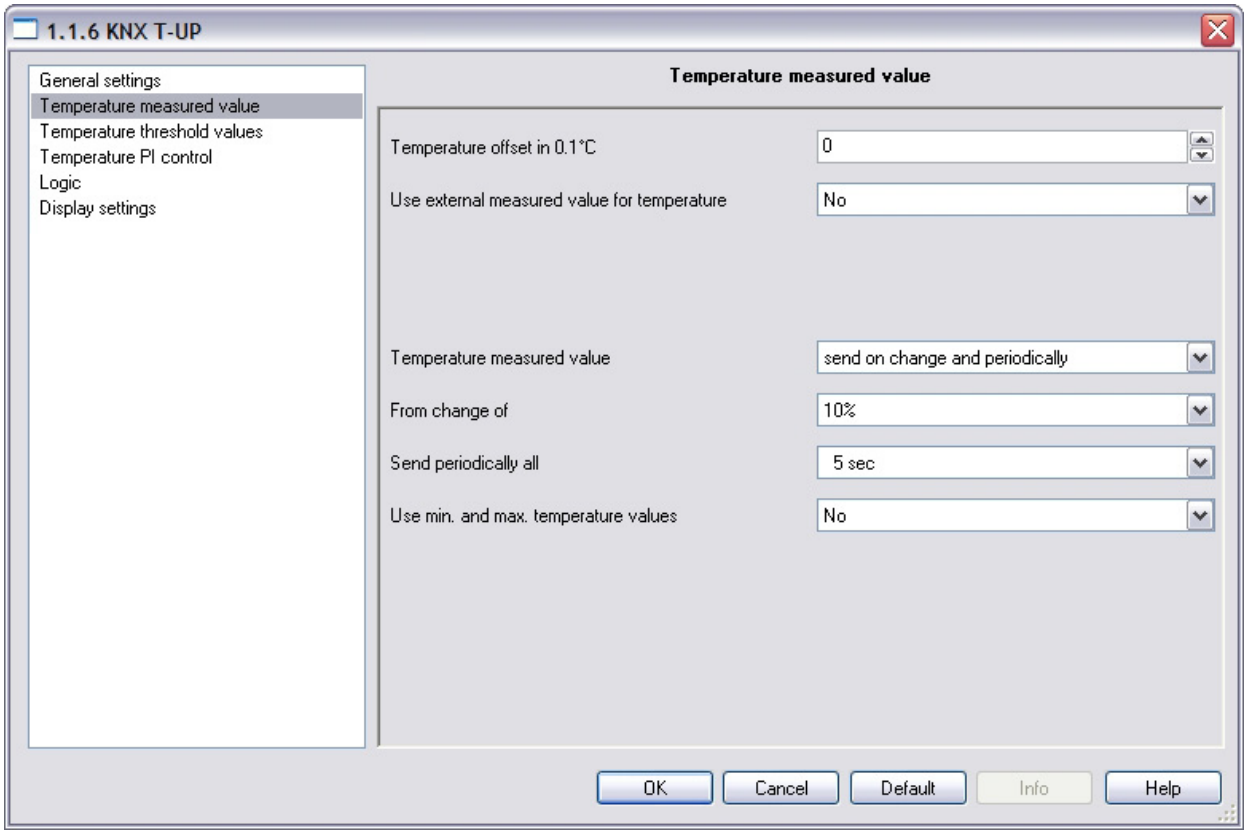
General settings



Transmission delays after power-up and programming for:	
Measured values	5 s • 10 s • 30 s • 1 min • ... • 2 h
Threshold values and switching outputs	5 s • 10 s • 30 s • 1 min • ... • 2 h
Target values and actuating variables	5 s • 10 s • 30 s • 1 min • ... • 2 h
Logic outputs	5 s • 10 s • 30 s • 1 min • ... • 2 h

Maximum telegram quota	1 • 2 • 3 • 5 • 10 • 20 Telegrams per second
Use malfunction object	No • Yes

Temperature measured value



Temperature offset in 0.1°C	-50 … 50
Use external measured value for temperature	No • Yes

If no external measured value is used:

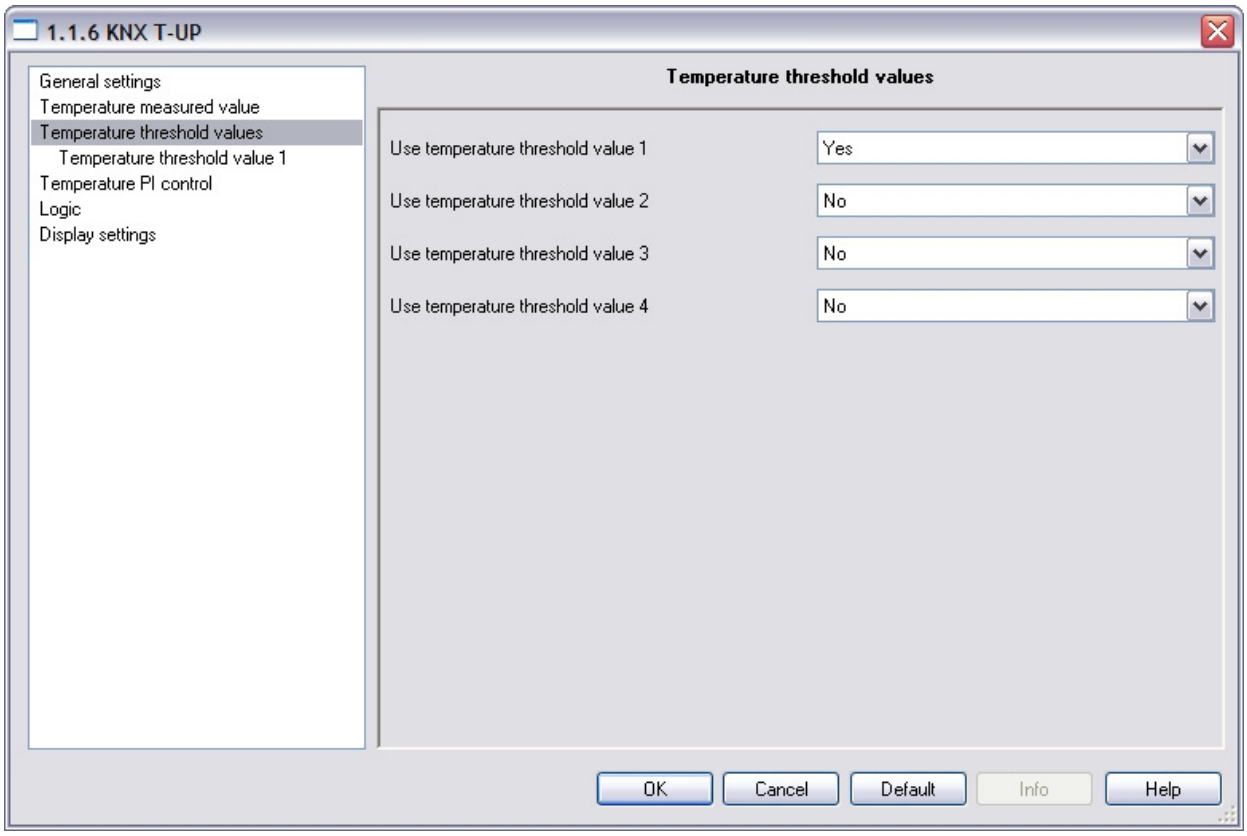
Use external measured value for temperature	**No**
Temperature measured value	• do not send • send periodically • send in case of change • send in case of change and periodically
From change of *(only if sending "in case of change")*	2% • 5% • 10% • 25% • 50%
Send periodically all *(only if sending "periodically")*	5 s • 10 s • 30 s • 1 min • … • 2 h
Use min. and max. temperature values (Values are not maintained after reset)	No • Yes

If an external measured value is used:

Use external measured value for temperature	**Yes**
Ext. temperature measured value proportion of the total measured value	5% … 100% (in steps of 5%)

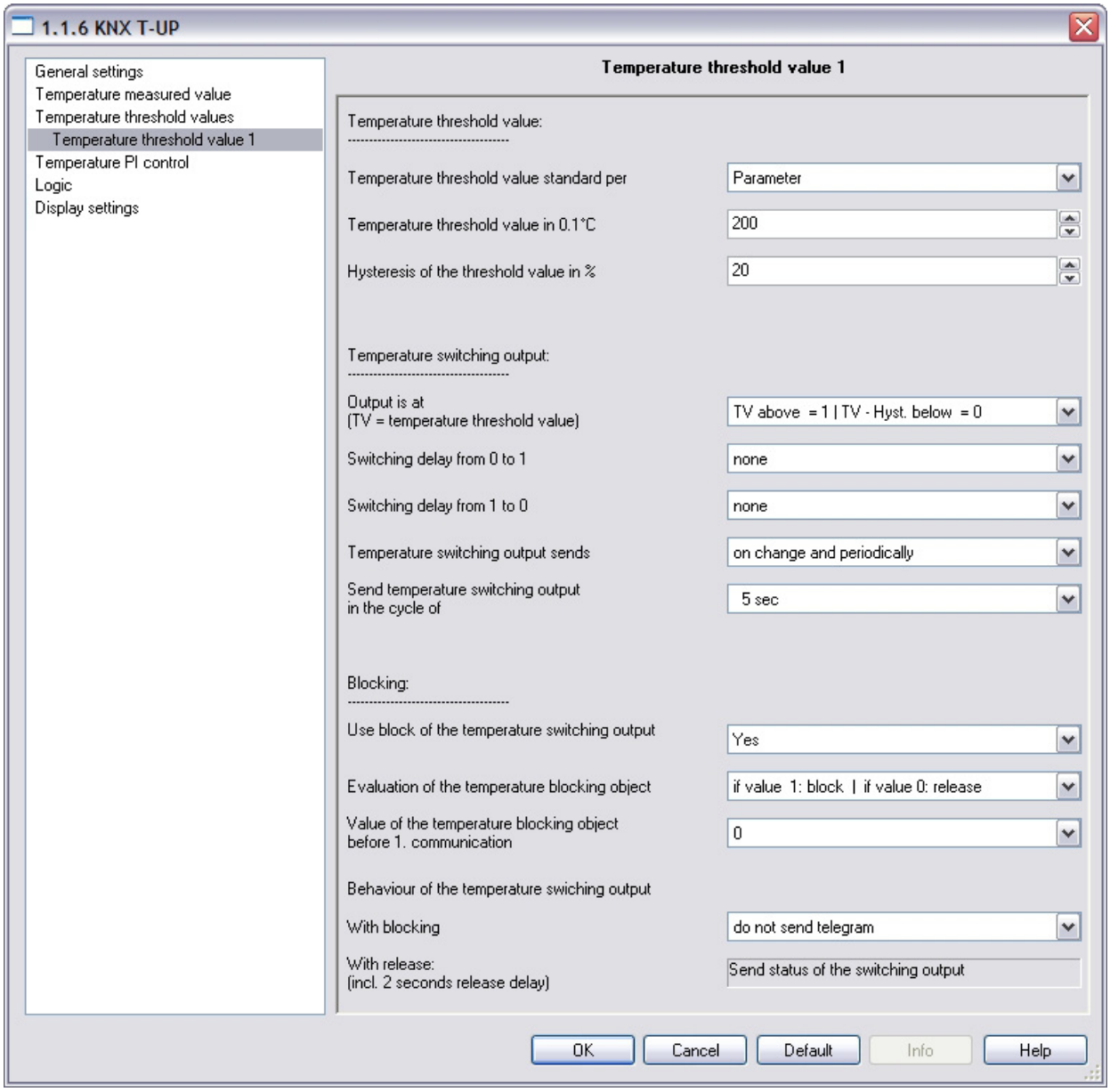
Internal and total measured value for temperature	• do not send • send periodically • send in case of change • send in case of change and periodically
All following settings refer to the total measured value	
From change of *(only if sending "in case of change")*	2% • 5% • 10% • 25% • 50%
Send periodically all *(only if sending "periodically")*	5 s • 10 s • 30 s • 1 min • ... • 2 h
Use min. and max. temperature values (Values are not maintained after reset)	No • Yes

Temperature threshold values



Use temperature threshold value 1 /2 / 3 / 4	No • Yes

Temperature threshold value 1 / 2 / 3 / 4



Temperature threshold value:

.....

Temperature threshold value standard per	Parameter • Communication object

If the threshold value is set per Parameter:

Temperature threshold value standard per	**Parameter**
Temperature threshold value in 0.1°C	-300 ... 800
Hysteresis of the threshold value in %	0 ... 50

If the threshold value is set per Communication object:

Temperature threshold value standard per	**Communication object**

The value communicated last shall be maintained	• not • after restoration of voltage • after restoration of voltage and programming (Do not use for first commissioning)
Start temperature threshold value in 0.1°C valid until 1.communication *(only if the value communicated last is "not" maintained or "after restoration of voltage")*	-300 … 800
Type of threshold change for temperature	• Absolute value • Increment/decrement
Step size *(only with "Increment/decrement")*	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
Hysteresis of the threshold value in %	0 … 50

Temperature switching output:

.....

Output is at (TV = temperature threshold value)	• TV above = 1 | TV – Hyst. below = 0 • TV above = 0 | TV – Hyst. below = 1 • TV below = 1 | TV + Hyst. above = 0 • TV below = 0 | TV + Hyst. 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
Temperature 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 sending "periodically")*	5 s • 10 s • 30 s • 1 min • … • 2 h

Blocking:

.....

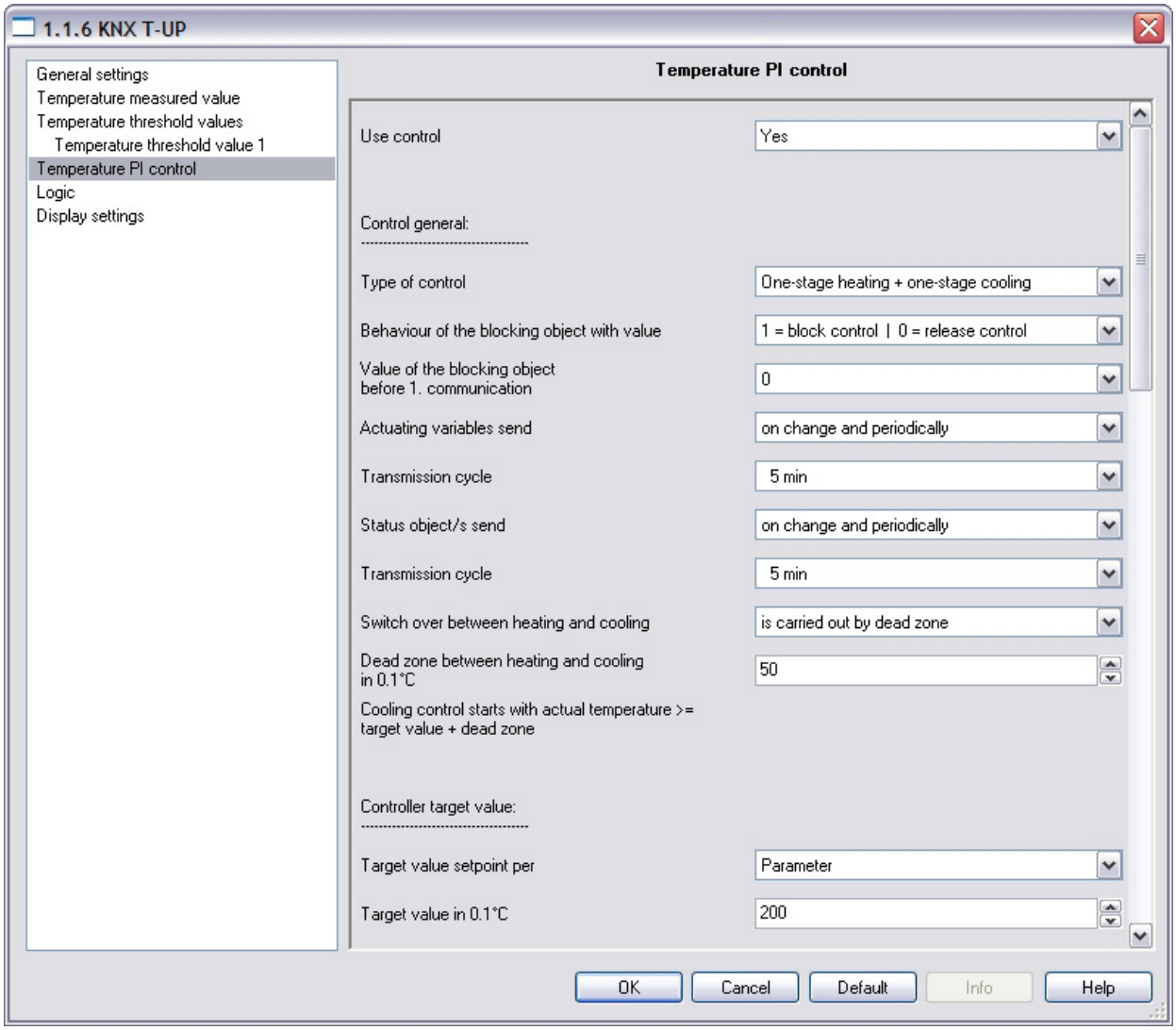
Use block of the temperature switching output	No • Yes
Evaluation of the temperature blocking object	• if value 1: block | if value 0: release • if value 0: block | if value 1: release
Wert des Sperrobjekts vor 1. Kommunikation	0 • 1

Behaviour of switching output	
with blocking	• do not send telegram • send 0 • send 1

The behaviour with release of the switching output depends on the value of the parameter “Temperature switching output sends …” (see ”Temperature switching output”)

Value of parameter “Temperature switching output sends”:	*Setting options “Behaviour of switching output with release”:*
on change	• do not send telegram • send status of the switching output
on change to 1	• do not send telegram • if switching output = 1 ➔ send 1
on change to 0	• do not send telegram • if switching output = 0 ➔ send 0
on change and periodically	send status of the switching output (no selection)
on change to 1 and periodically	if switching output = 1 ➔ send 1 (no selection)
on change to 0 and periodically	if switching output = 0 ➔ send 0 (no selection)

Temperature PI control



Use control	No • Yes

If the control is in use:

Control general:

.....

Type of control	• One-stage heating • Two-stage heating • One-stage cooling • One-stage heating + one-stage cooling • Two-stage heating + one-stage cooling • Two-stage heating + two-stage cooling
Behaviour of the blocking object with value	• 1 = block control | 0 = release control • 0 = block control | 1 = release control

Value of the blocking object before 1. communication	0 • 1
Send actuating variables	• on change • on change and periodically
Transmission cycle *(only if sending „periodically“)*	5 s … 2 h
Status object/s send	• 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
Transmission cycle *(only if sending „periodically“)*	5 s … 2 h

Controller target value:

.....

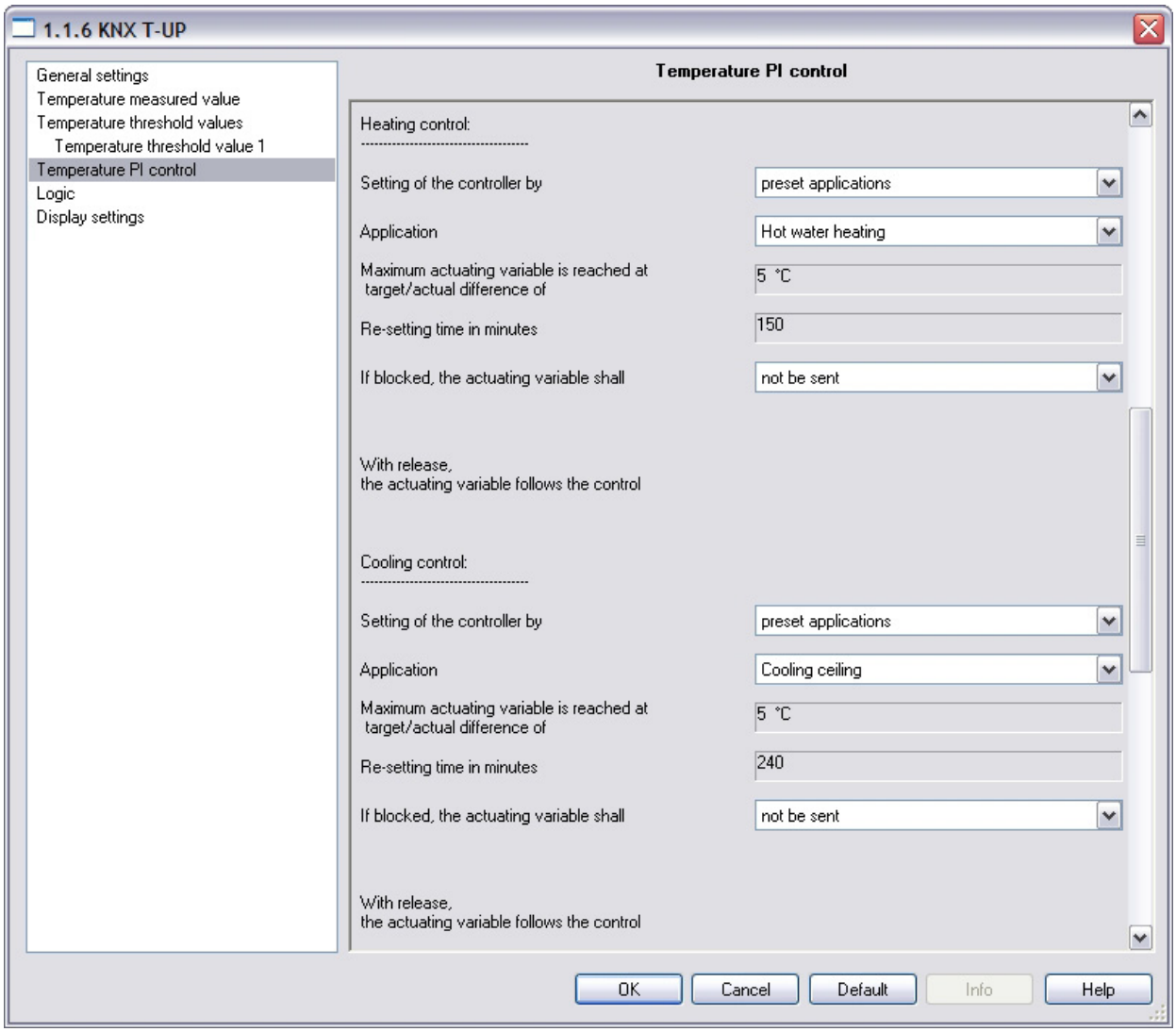
Target value setpoint per	Parameter • Communication object

If the target value is set per Parameter:

Target value setpoint per	**Parameter**
Target value in 0.1°C	-300 … 800

If the target value is set per Communication object:

Target value setpoint per	**Communication object**
The value communicated last shall be maintained	• not • after restoration of voltage • after restoration of voltage and programming (Do not use for first commissioning)
Start target value in 0.1°C valid until 1.communication *(only if the value communicated last is “not” maintained or “after restoration of voltage”)*	-300 … 800
Limitation of object value (min) in 0.1°C	-300 … 800
Limitation of object value (max) in 0.1°C	-300 … 800
Type of the target value change	• Absolute value • Increment/decrement
Step size *(only with “Increment/decrement”)*	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 / Heating control 1. stage (Appears only if heating control is used):

.....

Setting of the controller by	• preset applications • controller parameter
Application *(only if controller is set by "preset applications")*	• Hot water heating • Floor heating • Fan convector • Electrical heating
Maximum actuating variable is reached at target/actual difference of *(Attention: Can only be adjusted if "Setting of the controller by controller parameter")*	1°C • 2°C • 3°C • 4°C • 5 °C
Re-setting time in mins *(Attention: Can only be adjusted if "Setting of the controller by controller parameter")*	1 ... 255
If blocked, the actuating variable shall	• will not be sent • send a specific value
Value in % *(not if a specific value is sent)*	0 ... 100

With release, the actuating variable follows the control

Presetting for “preset applications”:

	Maximum actuating variable is reached at target/actual difference of	Re-setting time
Hot water heating	5°C	150 min
Floor heating	5°C	240 min
Fan convector	4°C	90 min
Electrical heating	4°C	100 min

Heating control 2. stage:
(Appears only if two-stage heating control is used)
.....

Target value difference between 1. and 2. stage in 0.1°C	0 ... 100
Type of control of the 2. stage	• 2-point-control • PI control

If the 2. stage is controlled with 2-point-control:

Hysteresis in 0.1°C	0 ... 100
Actuating variable is a	• 1 bit object • 8 bit object
Value in % *(only if actuating variable is an 8 bit object)*	0 ... 100
If blocked, the actuating variable shall	• not be sent • send a specific value
Value in % *(only if a specific value is sent)*	0 ... 100
With release, the actuating variable follows the control	

If the 2. stage is controlled with PI control:
Setting options see heating control 1. stage.

Cooling control / Cooling control 1. stage
(Appears only if cooling control is used)
.....

Setting of the controller by	• preset applications • controller parameter
Application *(only if controller is set by “preset applications”)*	• Cooling ceiling

Maximum actuating variable is reached at target/actual difference of *(Attention: Can only be adjusted if "Setting of the controller by controller parameter")*	1°C • 2°C • 3°C • 4°C • 5°C
Re-setting time in mins *(Attention: Can only be adjusted if "Setting of the controller by controller parameter")*	1 … 255
If blocked, the actuating variable shall	• not be sent • send a specific value
Value in % *(only if a specific value is sent)*	0 … 100
With release, the actuating variable follows the control	

Presetting for "preset applications":

	Maximum actuating variable is reached at target/actual difference of	Re-setting time
Cooling ceiling	5°C	240 min

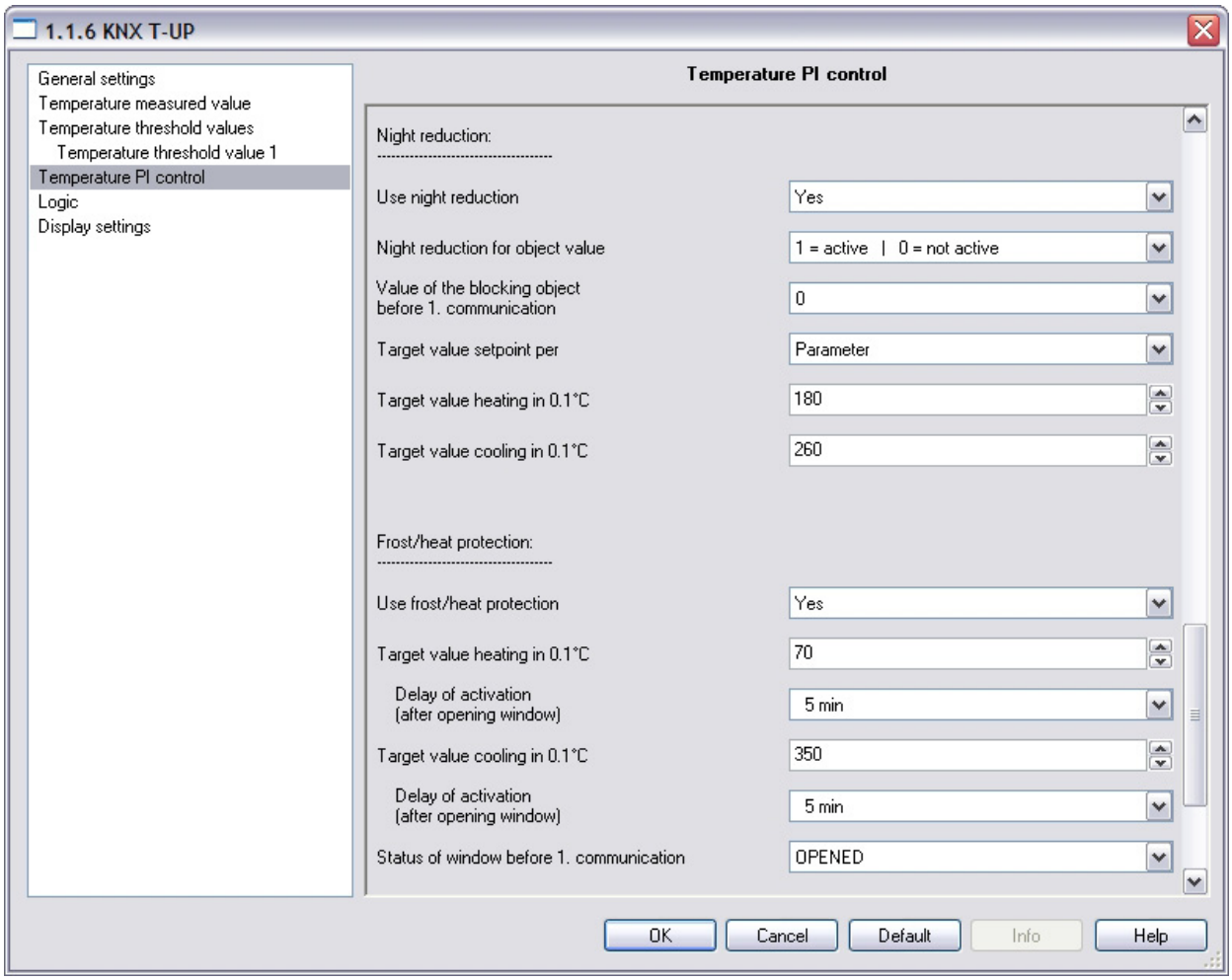
Cooling control 2. stage:
(Appears only if two-stage cooling control is used)
.....

Target value difference between 1. and 2. stage in 0.1°C	0 … 100
Type of control of the 2. stage	• 2-point-control • PI control

If the 2. stage is controlled with 2-point-control:

Hysteresis in 0.1°C	0 … 100
Actuating variable is a	• 1 bit object • 8 bit object
Value in % *(only if actuating variable is an 8 bit object)*	0 … 100
If blocked, the actuating variable shall	• not be sent • send a specific value
Value in % *(only if a specific value is sent)*	0 … 100
With release, the actuating variable follows the control	

If the 2. stage is controlled with PI control:
Setting options see cooling control 1. stage.



Night lowering

Use night lowering	No • Yes

If night lowering is used:

Use night lowering	**Yes**
Night lowering for object value	• 1 = active | 0 = not active • 0 = active | 1 = not active
Value of the activation object before 1. communication	0 • 1
Target value setpoint per	Parameter • Communication object

If the target value is set per Parameter:

Target value setpoint per	**Parameter**
Target value heating in 0.1°C *(if the heating control is used)*	-300 … 800
Target value cooling in 0.1°C *(if the cooling control is used)*	-300 … 800

If the target value is set per Communication object:

Target value setpoint per	**Communication object**

The value communicated last shall be maintained	• not • after restoration of voltage • after restoration of voltage and programming (Do not use for first commissioning)
Start target value heating in 0.1°C valid until 1.communication *(if the heating control is used and only if the value communicated last is "not" maintained or "after restoration of voltage")*	-300 ... 800
Limitation of object value H(min) in 0.1°C	-300 ... 800
Limitation of object value H(max) in 0.1°C	-300 ... 800
Start target value cooling in 0.1°C valid until 1.communication *(if the cooling control is used and only if the value communicated last is "not" maintained or "after restoration of voltage")*	-300 ... 800
Limitation of object value C(min) in 0.1°C	-300 ... 800
Limitation of object value C(max) in 0.1°C	-300 ... 800
Type of the target value change	• Absolute value • Increment/decrement
Step size *(only with "Increment/decrement")*	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

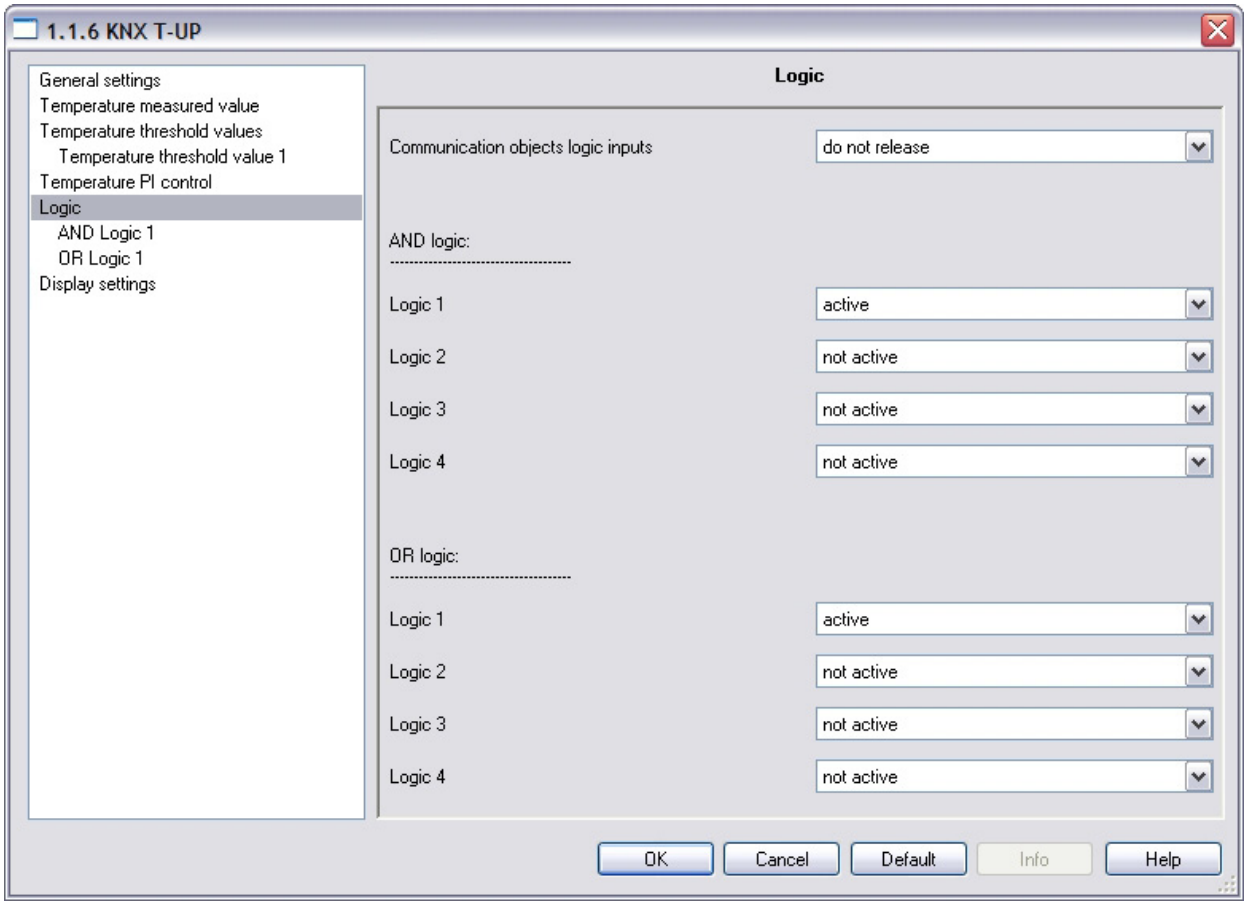
.....

Use frost/heat protection	No • Yes

If frost/heat protection is used:

Use frost/heat protection	**Yes**
Target value heating in 0.1°C *(only if heating control is used)*	-300 ... 800
Delay of activation (after opening window)	none • 1 s ... 2 h
Target value cooling in 0.1°C *(only if cooling control is used)*	-300 ... 800
Delay of activation (after opening window)	none • 1 s ... 2 h
Status of window before 1. communication	CLOSED • OPENED

Logic



Communication objects logic inputs	do nor release • release

AND logic:

.....

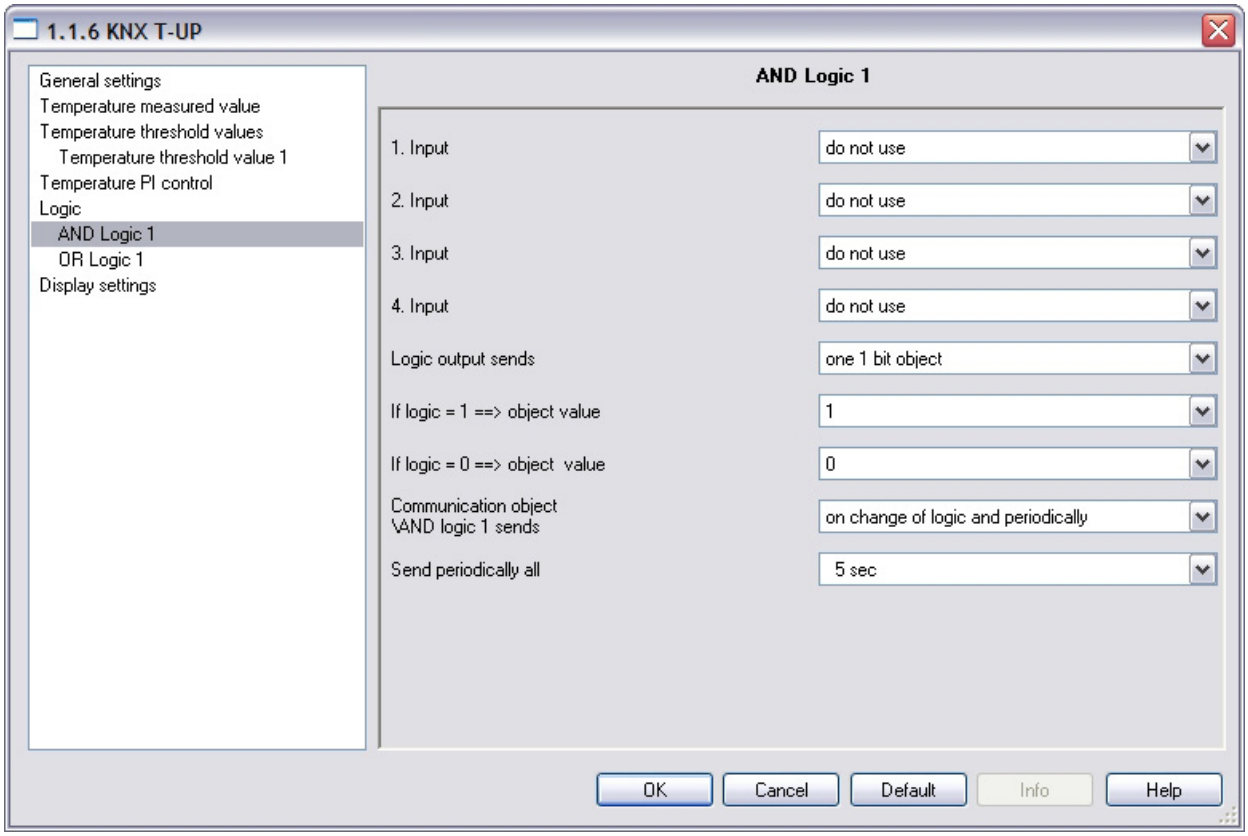
Logic 1 / 2 / 3 / 4	not active • active

OR logic:

.....

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

AND Logic 1 / 2 / 3 / 4



1. / 2. / 3. / 4. Input	• do not use • all switching events which the sensor provides (see “Linkage inputs of the AND logic”)
Logic output sends	not • one 1 bit object • 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	1 • 0
If logic = 0 ➔ object value	0 • 1
Communication object AND logic 1 / 2 sends	• 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 all *(only if sending “periodically”)*	5 s • 10 s • 30 s • 1 min • ... • 2 h

If the logic output sends two 8 bit objects:

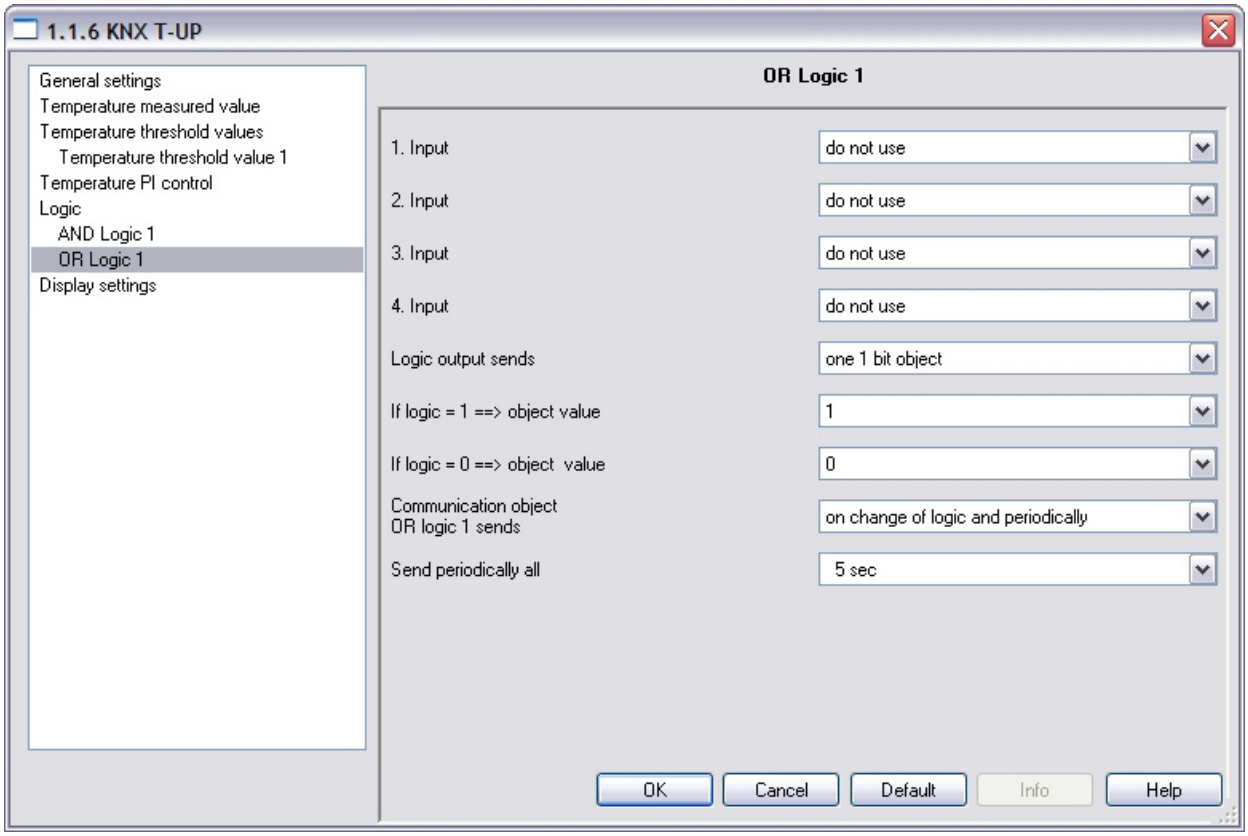
Logic output sends	**two 8 bit objects**
If logic = 1 ➔ object A Wert	0 ... 255
If logic = 0 ➔ object A value	0 ... 255

If logic = 1 ➔ object B value	0 … 255
If logic = 0 ➔ object B value	0 … 255
Communication objects AND Logic 1 A and B send	• 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 all *(only if sending "periodically")*	5 s • 10 s • 30 s • 1 min • … • 2 h

Linkage inputs of AND logic

do not use
Communication object logic input 1
Communication object logic input 1 inverted
Communication object logic input 2
Communication object logic input 2 inverted
Communication object logic input 3
Communication object logic input 3 inverted
Communication object logic input 4
Communication object logic input 4 inverted
Communication object logic input 5
Communication object logic input 5 invertiert
Communication object logic input 6
Communication object logic input 6 inverted
Communication object logic input 7
Communication object logic input 7 inverted
Communication object logic input 8
Communication object logic input 8 inverted
Temperature threshold value 1
Temperature threshold value 1 inverted
Temperature threshold value 2
Temperature threshold value 2 inverted
Temperature threshold value 3
Temperature threshold value 3 inverted
Temperature threshold value 4
Temperature threshold value 4 inverted
Malfunction sensor
Malfunction sensor inverted

OR Logic 1 / 2 / 3 / 4



1. / 2. / 3. / 4. Input	• do not use • all switching events which the sensor provides (see “Linkage inputs of the AND logic”)
Logic output sends	one 1 bit object • two 8 bit objects

If the logic output sends one 1 bit object:

Logic output sends	**ein 1 Bit-Objekt**
If logic = 1 ➔ object value	1 • 0
If logic = 0 ➔ object value	0 • 1
Communication object OR Logic 1 / 2 sends	• 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 all *(only if sending “periodically”)*	5 s • 10 s • 30 s • 1 min • ... • 2 h

If the logic output sends two 8 bit objects:

Logic output sends	**two 8 bit objects**
If logic = 1 ➔ object A value	0 ... 255
If logic = 0 ➔ object A value	0 ... 255

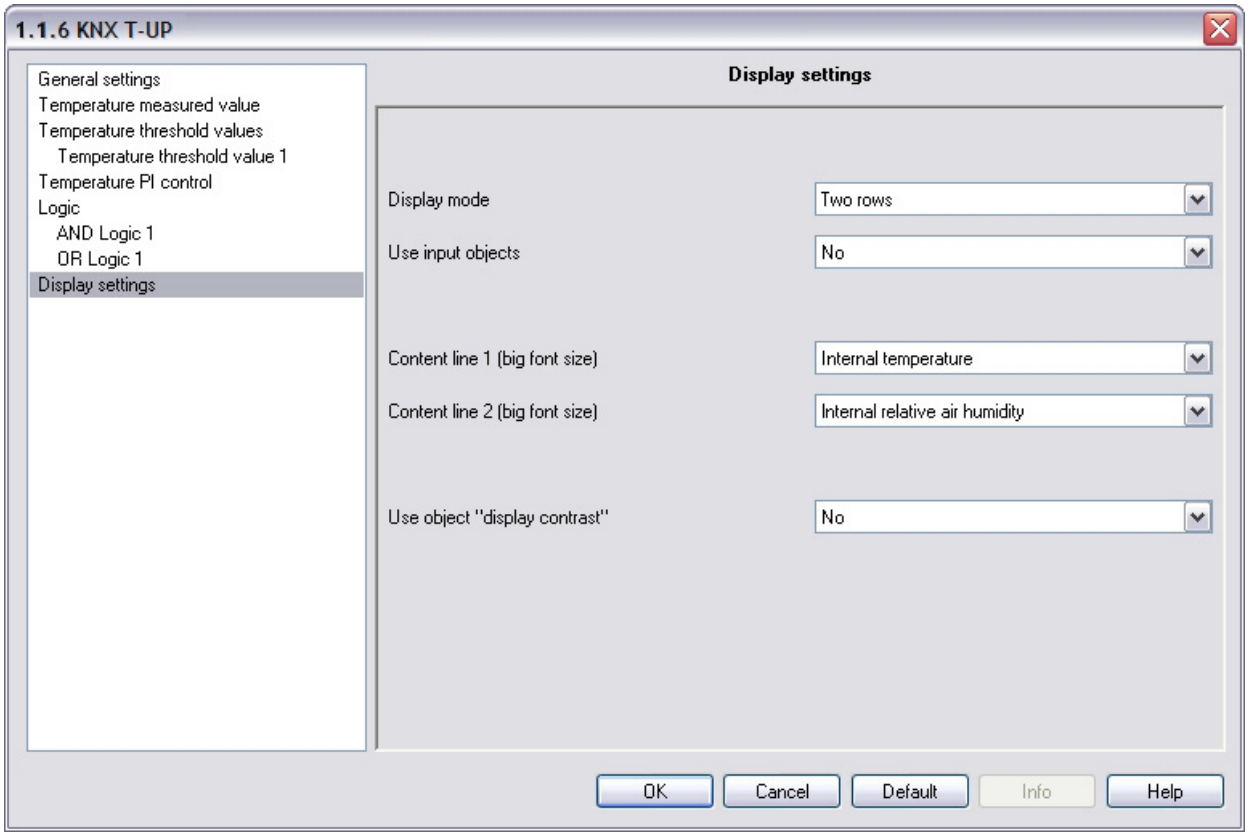
If logic = 1 ➔ object B value	0 … 255
If logic = 0 ➔ object B value	0 … 255
Communication objects OR Logic 1 / 2 A and B send	• on change of logic • on change of logic to 1 • on change of logic to 0 • on change of logic and periodically • on change of logic to 1 and periodically • on change of logic to 0 and periodically
Send periodically all *(only if sending "periodically")*	5 s • 10 s • 30 s • 1 min • … • 2 h

Linkage inputs of OR logic

The linkage inputs of the OR logic correspond with the parameters of the AND logic. The OR logic is *additionally* provided with the following inputs:

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

Display Settings



Display Mode	• Two rows • Three rows
Use input objects	No • Yes

If display mode two rows: 1. line big font size, 2. line big font size

Content line 1 / 2	• Display nothing • Internal temperature • External temperature • Total temperature • ~~Internal relative air humidity~~ * • ~~External relative air humidity~~ * • ~~Total relative air humidity~~ * • ~~Absolute humidity g/kg~~ * • ~~Absolute humidity g/m³~~ * • ~~Dew point temperature~~ * • Time • Value of the 8 bit object

* Cannot be used with this device type

If display mode three rows:

1. line small font size, 2. line big font size, 3. line small font size

Content line 1 / 3	• Display nothing • Internal temperature • External temperature • Total temperature • ~~Internal relative air humidity~~ * • ~~External relative air humidity~~ * • ~~Total relative air humidity~~ * • ~~Absolute humidity g/kg~~ * • ~~Absolute humidity g/m³~~ * • ~~Dew point temperature~~ * • Date • Time • Value of the 8 bit object • Value of the 16 bit object • Text message 1 • Text message 2
Content line 2	• Display nothing • Internal temperature • External temperature • Total temperature • ~~Internal relative air humidity~~ * • ~~External relative air humidity~~ * • ~~Total relative air humidity~~ * • ~~Absolute humidity g/kg~~ * • ~~Absolute humidity g/m³~~ * • ~~Dew point temperature~~ * • Time • Value of the 8 bit object

* Cannot be used with this device type

Unit of the 8 bit value *(only if value of an 8 bit object is displayed)*	• without [0…255] • Percent [0%...100%] • Degree [0°…360°]

Unit of the 16 bit value *(only if value of an 16 bit object is displayed)*	• without • °C • lux • m/s (meters per second) • Pa (Pascal) • bar • mbar (millibars) • % rh (% relative humidity) • ppm (parts per million) • s (seconds) • ms (milliseconds) • V (volts) • mV (millivolts) • A (amperes) • mA (milliamperes) • W (watts) • mW (milliwatts) • W/m^2 (watts per sqaremeter) • W/h (watts per hour) • ltr (litres) • ltr/h (litres per hour) • m (metre) • mm (millimetres)
Display duration of the message *(only if a textmessage is dislayed)*	• Until new message is available • Maximum 1 minute • Maximum 2 minutes • Maximum 5 minutes • Maximum 10 minutes • Maximum 20 minutes • Maximum 30 minutes • Maximum 60 minutes

Use object “display contrast”	No • Yes

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