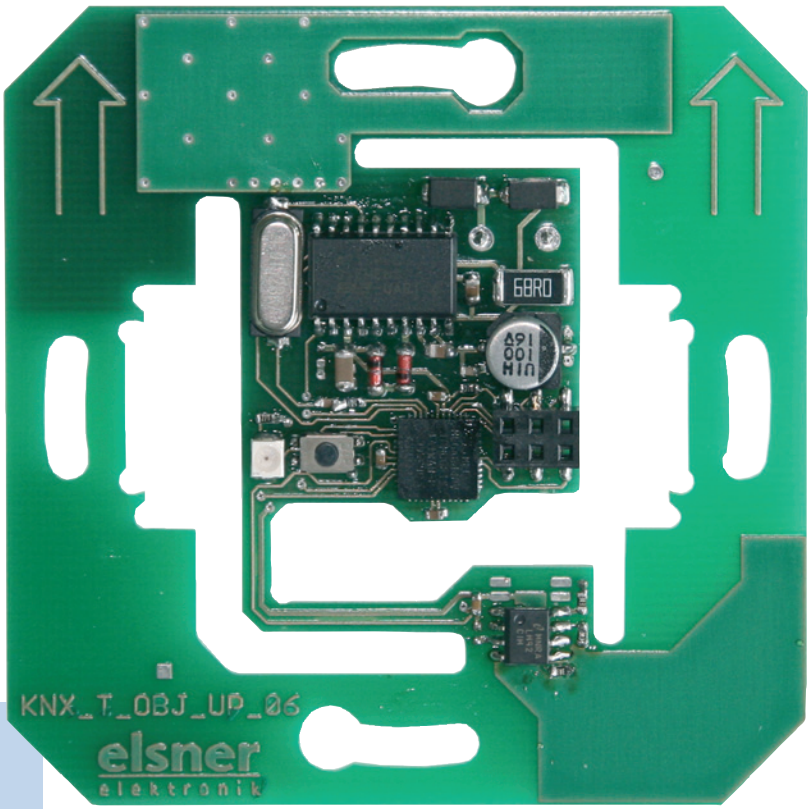
# Temperature Sensor
# KNX T-Objekt-UP

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## Installation and Adjustment

**Product Description** ..... **3**
Scope of delivery ..... 3
**Technical specifications** ..... **4**
**Installation and Commissioning** ..... **5**
**Installation position** ..... **5**
**Composition** ..... **6**
Front side ..... 6
Rear view with connection ..... 6
**Assembly** ..... **7**
Notes on installation ..... 7
**Transmission protocol** ..... **8**
**Abbreviations** ..... **8**
**Listing of all communication objects** ..... **8**
**Setting of parameters** ..... **12**
**General settings** ..... **12**
**Temperature measured value** ..... **13**
**Temperature threshold values** ..... **14**
Temperature threshold value 1 / 2 / 3 / 4 ..... 15
**Temperature PI control** ..... **18**
**Logic** ..... **25**
AND Logic 1 / 2 / 3 / 4 ..... 26
Linkage inputs of AND logic ..... 27
OR Logic 1 / 2 / 3 / 4 ..... 28
Linkage inputs of OR logic ..... 29

KNX T-Objekt-UP • from software version 0.2.0, ETS programme version 2.0 • Version: 14.01.2010.
Errors excepted. Subject to technical changes.

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# Product Description

The Temperature Sensor KNX T-Objekt-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-Objekt-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 device is completed with a frame and cover of the switching series installed in the building and thus merges with the interior.

**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 **programme file** (format VD2) can be downloaded from the Elsner Elektronik homepage on **www.elsner-elektronik.de** in the “Service” menu.

## Scope of delivery

- Sensor board, serves as base plate

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

- Socket ∅ 60 mm, 42 mm deep
- Frame according to the switching programme used in the building
- Cover according to the switching programme

# Technical specifications

| | |
|---|---|
| Mounting: | In-wall (in socket ∅ 60 mm, 42 mm deep) |
| Dimensions: | Mounting plate approx. 70 × 70 (W × H, mm) |
| Total weight: | approx. 20 g |
| Ambient temperature: | Operation -20…+70°C, storage -55…+150°C |
| Ambient air humidity: | max. 95% R. H., avoid bedewing |
| Operating voltage: | KNX bus voltage |
| Bus current: | max. 6 mA,<br>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: | 80 |
| Measurement range: | -40…+80°C |
| Resolution: | 0.1°C |
| Accuracy: | ±0.5°C at +10…+50°C<br>±1°C at -10…+85°C<br>±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.

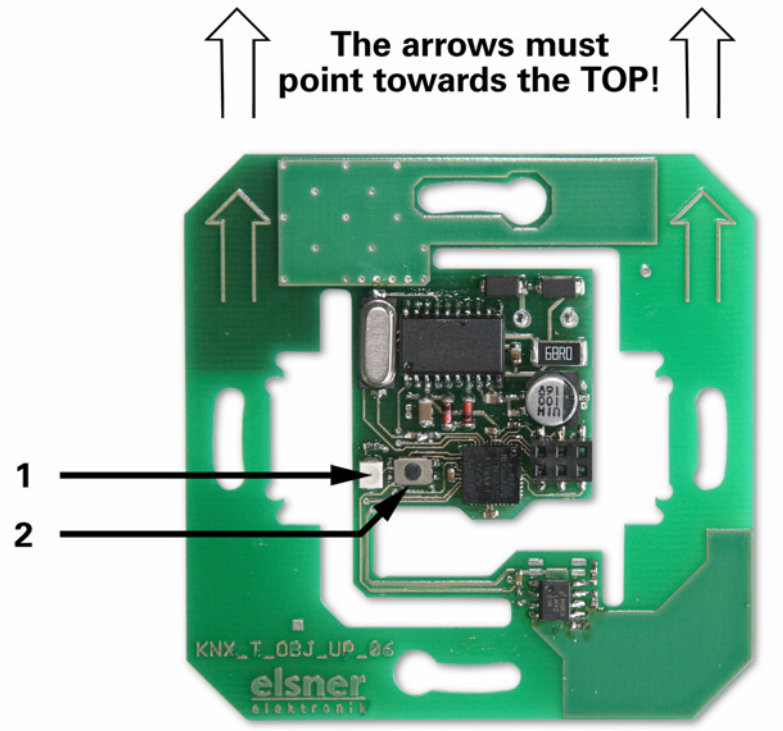
## Installation position

The KNX T-Objekt-UP will be installed concealed within a socket (∅ 60 mm, 42 mm deep) and fitted with a frame and cover 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.**

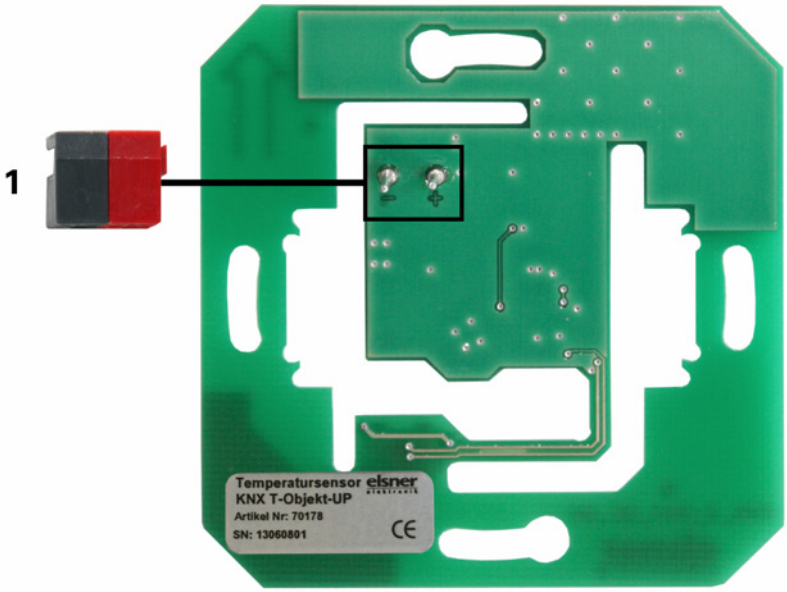
# Composition

## Front side




*1 Programming LED*
*4 Programming button for teaching instrument*

## Rear view with connection




*1 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-Objekt-UP. Screw the board/base plate on the socket. Ensure that the front side with the programming LED and button is directing out of the wall and that the arrows point towards the top.
After teaching the bus fit the frame and cover of the switching programme.

## 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 |

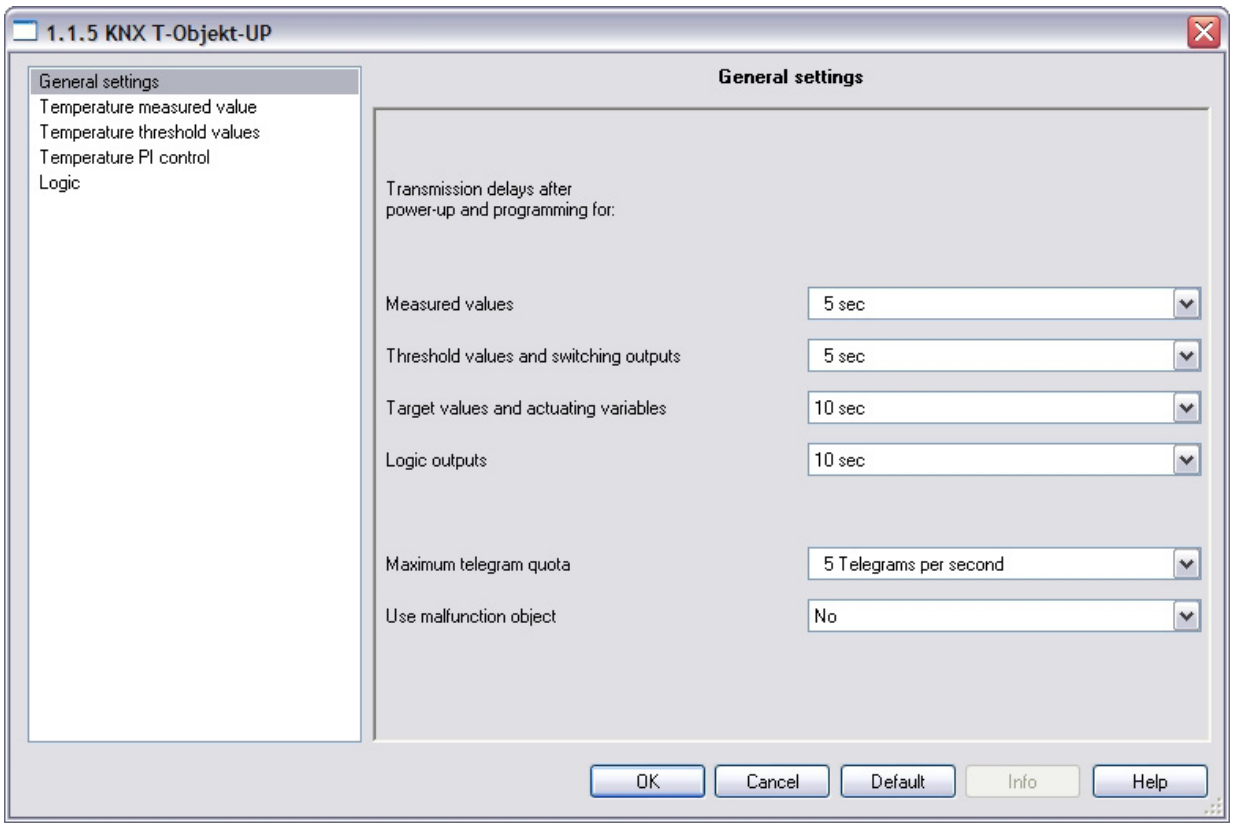
| No. | Name | Function | DPT | Flags |
|---|---|---|---|---|
| | | | | |
| 17 | Temp. threshold value 3: Absolute value | Input / Output | 9.001 | C R W T U |
| 18 | Temp. threshold value 3: (1:+ \| 0:-) | Input | 1.006 | C W |
| 19 | Temp. threshold value 3:<br>Switching output | Output | 1.001 | C R T |
| 20 | Temp. threshold value 3:<br>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:<br>Switching output | Output | 1.001 | C R T |
| 24 | Temp. threshold value 4:<br>Switching output block | Input | 1.006 | C W |
| | | | | |
| 25 | Temp. control: Switching object<br>(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<br>(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<br>(1:+ \| 0:-) | Input | 1.002 | C W |
| 32 | Temp. control: Act. variable heating<br>1. stage | Output | 5.001 | C R T |
| 33 | Temp. control: Act. variable heating<br>2. stage | Output | 5.001 | C R T |
| 34 | Temp. control: Act. variable heating<br>2. stage | Output | 1.001 | C R T |
| 35 | Temp. control: Act. variable cooling<br>1. stage | Output | 5.001 | C R T |
| 36 | Temp. control: Act. variable cooling<br>2. stage | Output | 5.001 | C R T |
| 37 | Temp. control: Act. variable cooling<br>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 |
| | | | | |
| 117 | Software version | Output | 217.001 | C R T |

# Setting of parameters

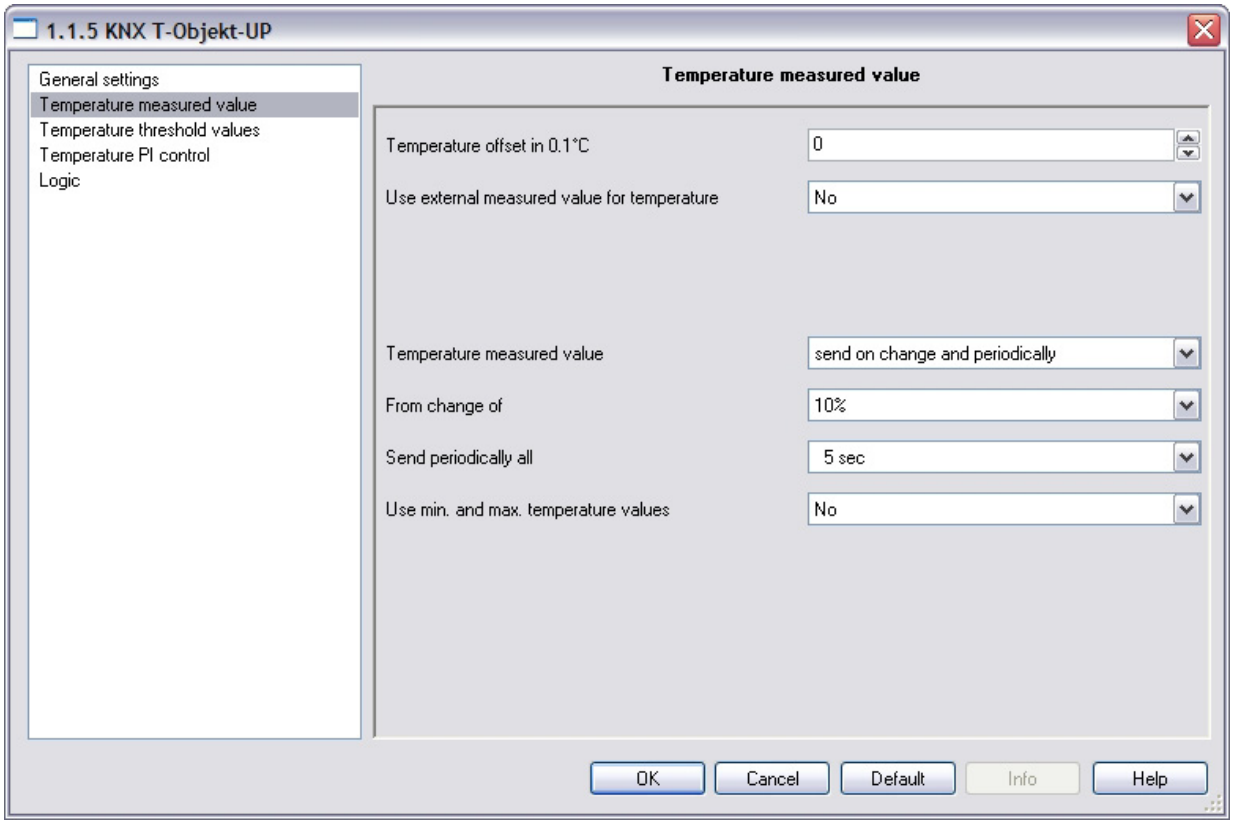
## General settings




| 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:

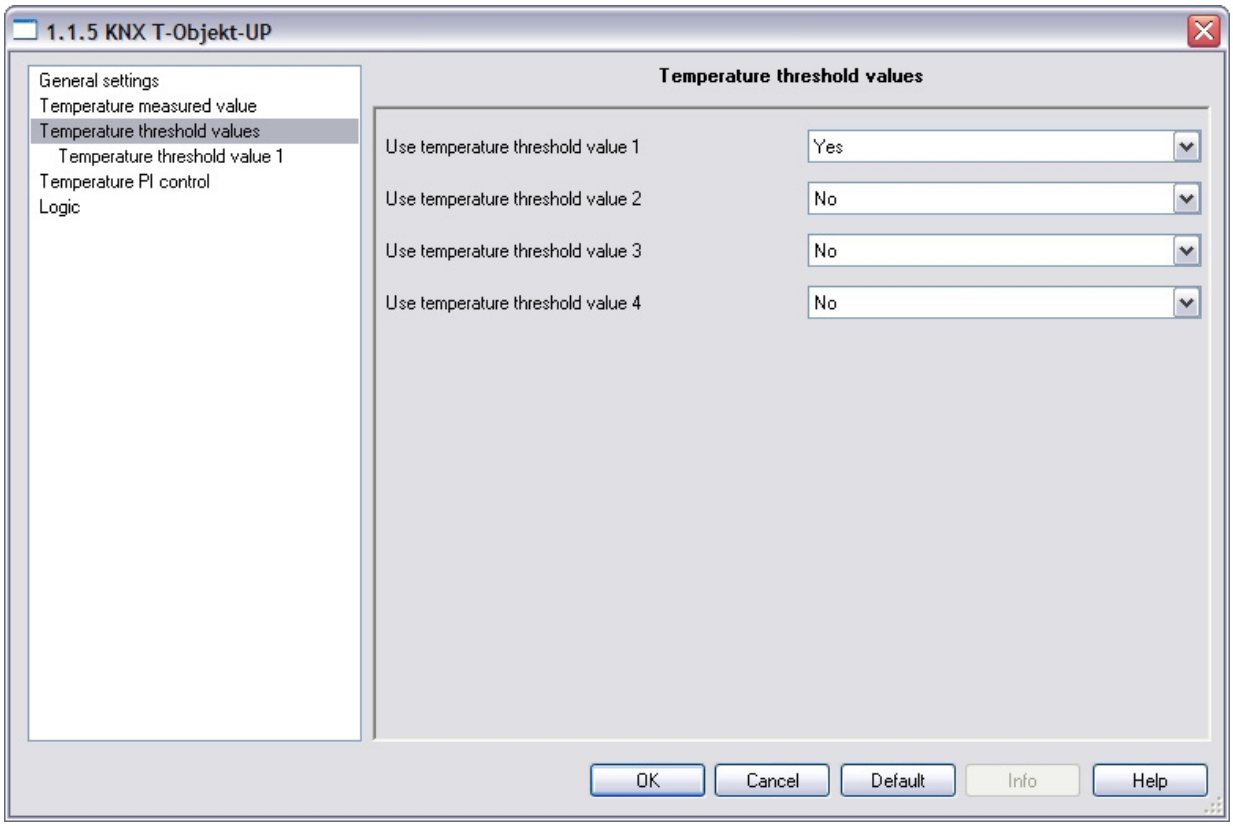
| | |
|---|---|
| Use external measured value for temperature | **No** |
| Temperature measured value | • do not send<br>• send periodically<br>• send in case of change<br>• send in case of change and periodically |
| From change of<br>*(only if sending "in case of change")* | 2% • 5% • 10% • 25% • 50% |
| Send periodically all<br>*(only if sending "periodically")* | 5 s • 10 s • 30 s • 1 min • … • 2 h |
| Use min. and max. temperature values<br>(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%) |

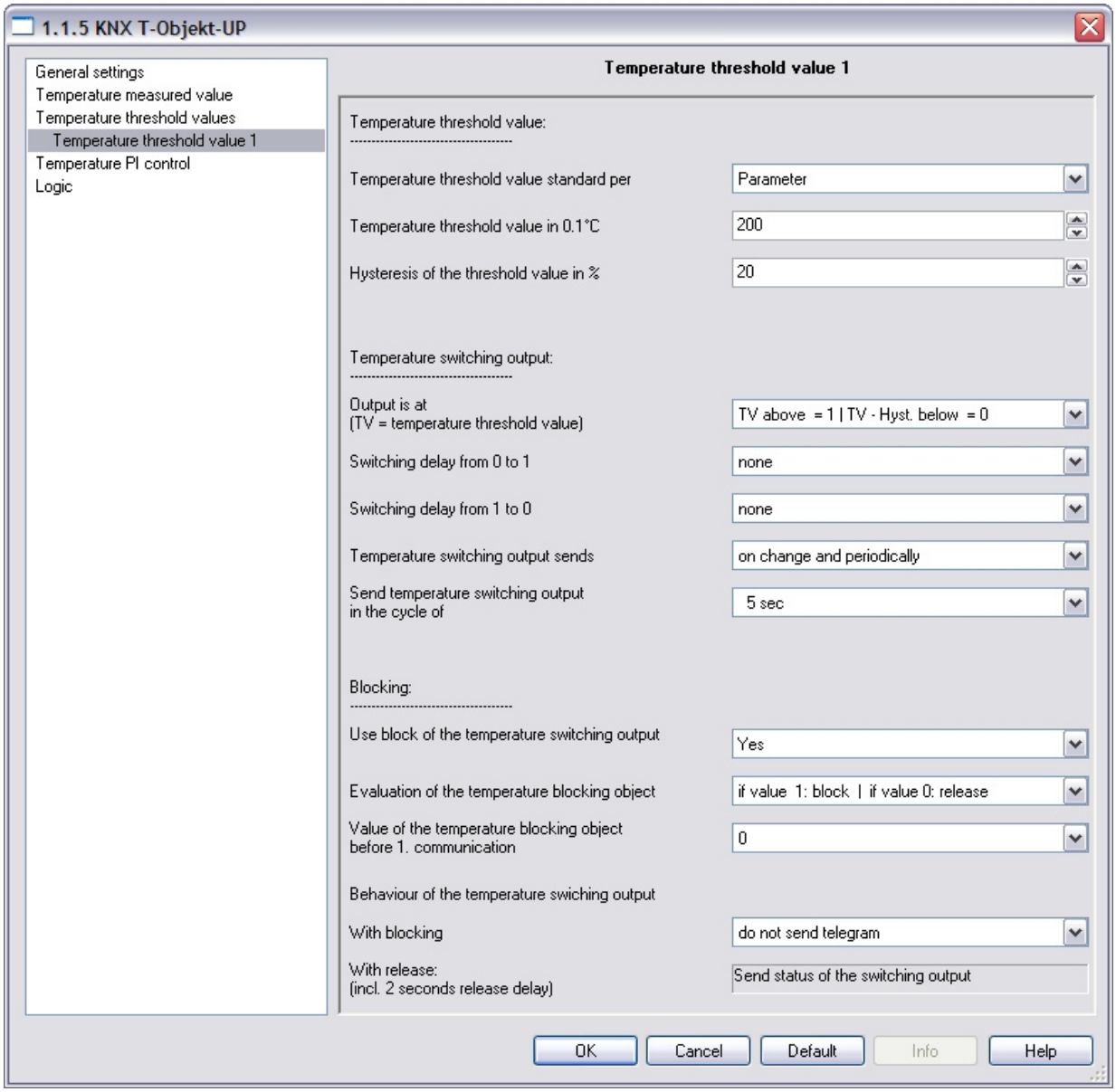
| | |
|---|---|
| Internal and total measured value for temperature | • do not send<br>• send periodically<br>• send in case of change<br>• send in case of change and periodically |
| All following settings refer to the total measured value | |
| From change of<br>*(only if sending "in case of change")* | 2% • 5% • 10% • 25% • 50% |
| Send periodically all<br>*(only if sending "periodically")* | 5 s • 10 s • 30 s • 1 min • ... • 2 h |
| Use min. and max. temperature values<br>(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<br>• after restoration of voltage<br>• after restoration of voltage and programming (Do not use for first commissioning) |
| Start temperature threshold value in 0.1°C valid until 1.communication<br>*(only if the value communicated last is "not" maintained or "after restoration of voltage")* | -300 … 800 |
| Type of threshold change for temperature | • Absolute value<br>• Increment/decrement |
| Step size<br>*(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<br>(TV = temperature threshold value) | • TV above = 1 \| TV – Hyst. below = 0<br>• TV above = 0 \| TV – Hyst. below = 1<br>• TV below = 1 \| TV + Hyst. above = 0<br>• 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<br>• on change to 1<br>• on change to 0<br>• on change and periodically<br>• on change to 1 and periodically<br>• on change to 0 and periodically |
| Send temperature switching output in the cycle of<br>*(only if sending "periodically")* | 5 s • 10 s • 30 s • 1 min • … • 2 h |

### Blocking:

.....

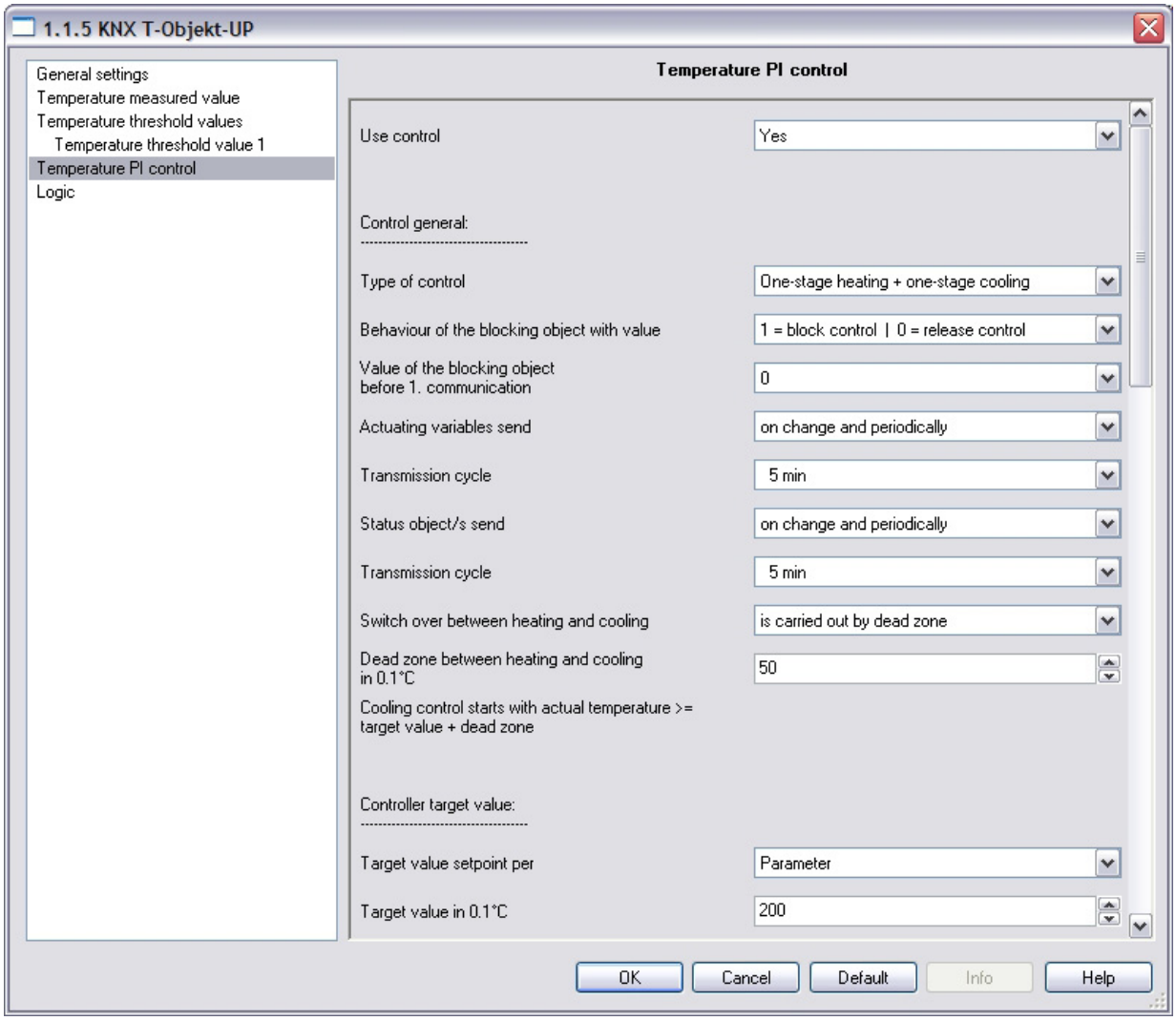
| | |
|---|---|
| Use block of the temperature switching output | No • Yes |
| Evaluation of the temperature blocking object | • if value 1: block \| if value 0: release<br>• if value 0: block \| if value 1: release |
| Wert des Sperrobjekts vor 1. Kommunikation | 0 • 1 |

| Behaviour of switching output | |
|---|---|
| with blocking | • do not send telegram<br>• send 0<br>• 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<br>• send status of the switching output |
| on change to 1 | • do not send telegram<br>• if switching output = 1 ➔ send 1 |
| on change to 0 | • do not send telegram<br>• if switching output = 0 ➔ send 0 |
| on change and periodically | send status of the switching output<br>(no selection) |
| on change to 1 and periodically | if switching output = 1 ➔ send 1<br>(no selection) |
| on change to 0 and periodically | if switching output = 0 ➔ send 0<br>(no selection) |

# Temperature PI control




| | |
|---|---|
| Use control | No • Yes |

**If the control is in use:**

**Control general:**

**.....**

| | |
|---|---|
| Type of control | • One-stage heating<br>• Two-stage heating<br>• One-stage cooling<br>• One-stage heating + one-stage cooling<br>• Two-stage heating + one-stage cooling<br>• Two-stage heating + two-stage cooling |
| Behaviour of the blocking object with value | • 1 = block control \|<br>0 = release control<br>• 0 = block control \|<br>1 = release control |
| Value of the blocking object<br>before 1. communication | 0 • 1 |

| | |
|---|---|
| Send actuating variables | • on change<br>• on change and periodically |
| Transmission cycle<br>*(only if sending „periodically“)* | 5 s … 2 h |
| Status object/s send | • on change<br>• on change to 1<br>• on change to 0<br>• on change and periodically<br>• on change to 1 and periodically<br>• on change to 0 and periodically |
| Transmission cycle<br>*(only if sending „periodically“)* | 5 s … 2 h |

### Controller target value:

.....

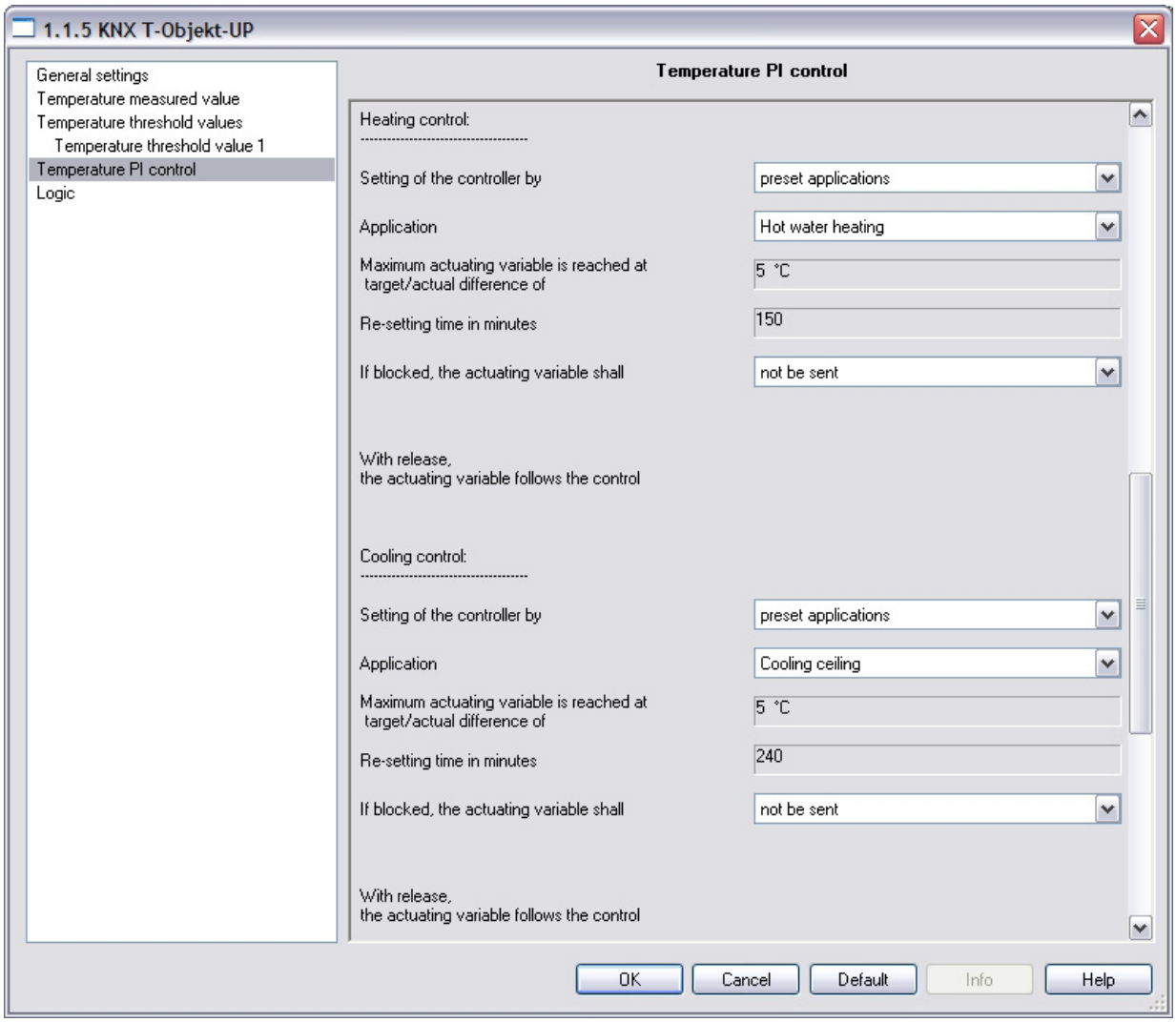
| | |
|---|---|
| Target value setpoint per | Parameter • Communication object |

### 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<br>• after restoration of voltage<br>• after restoration of voltage and programming<br>(Do not use for first commissioning) |
| Start target value in 0.1°C<br>valid until 1.communication<br>*(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<br>• Increment/decrement |
| Step size<br>*(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<br>• controller parameter |
| Application<br>*(only if controller is set by "preset applications")* | • Hot water heating<br>• Floor heating<br>• Fan convector<br>• Electrical heating |
| Maximum actuating variable is reached at target/actual difference of<br>*(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<br>*(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<br>• send a specific value |
| Value in %<br>*(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<br>• 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<br>• 8 bit object |
| Value in %<br>*(only if actuating variable is an 8 bit object)* | 0 ... 100 |
| If blocked, the actuating variable shall | • not be sent<br>• send a specific value |
| Value in %<br>*(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<br>• controller parameter |
| Application<br>*(only if controller is set by “preset applications”)* | • Cooling ceiling |

| | |
|---|---|
| Maximum actuating variable is reached at target/actual difference of<br>*(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<br>*(Attention: Can only be adjusted if "Setting of the controller by controller parameter")* | 1 … 255 |
| If blocked, the actuating variable shall | • not be sent<br>• send a specific value |
| Value in %<br>*(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 |

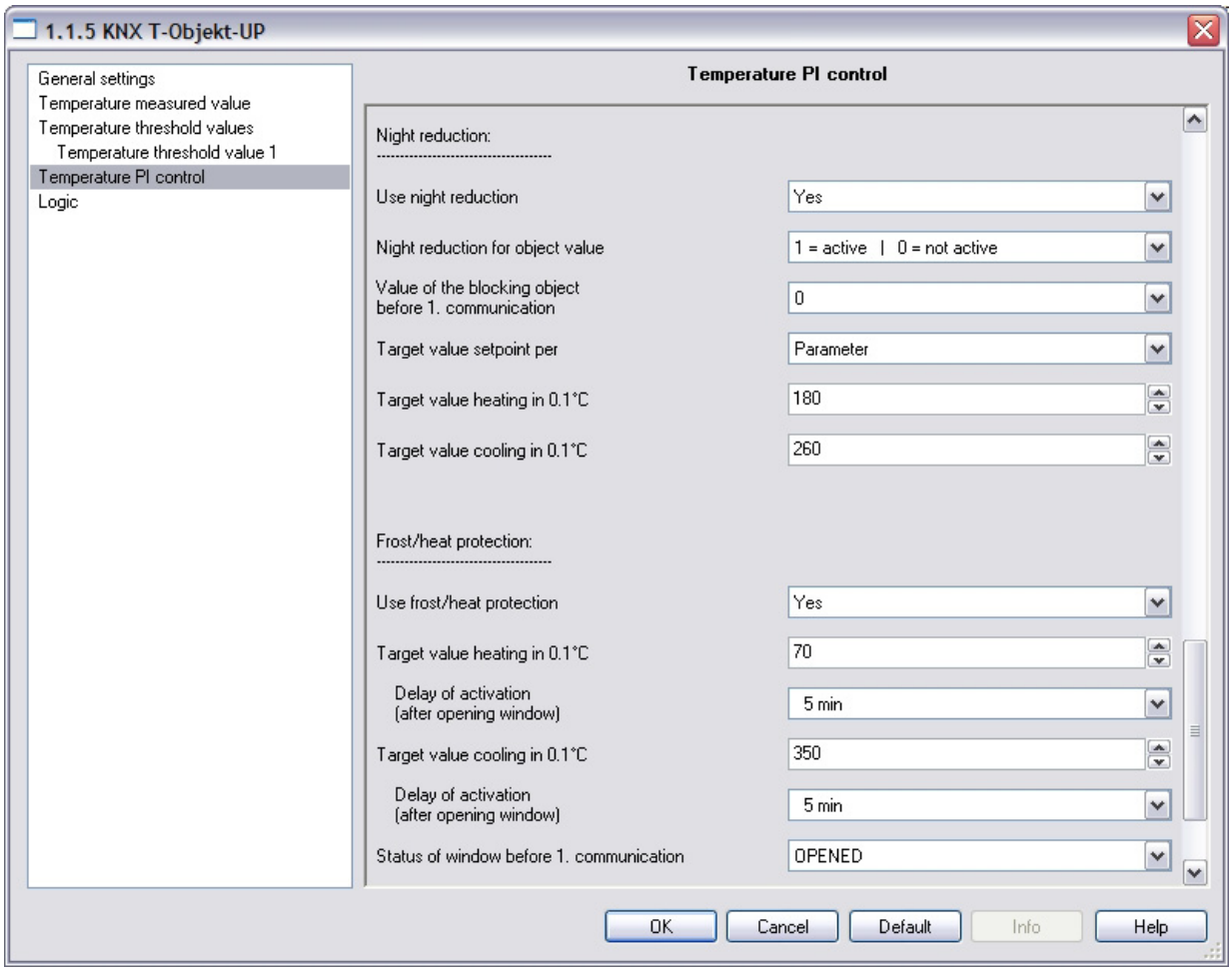
**Cooling control 2. stage:**
**(Appears only if two-stage cooling control is used)**
**.....**

| | |
|---|---|
| Target value difference<br>between 1. and 2. stage in 0.1°C | 0 … 100 |
| Type of control of the 2. stage | • 2-point-control<br>• 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<br>• 8 bit object |
| Value in %<br>*(only if actuating variable is an 8 bit object)* | 0 … 100 |
| If blocked, the actuating variable shall | • not be sent<br>• send a specific value |
| Value in %<br>*(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<br>• 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<br>*(if the heating control is used)* | -300 ... 800 |
| Target value cooling in 0.1°C<br>*(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<br>• after restoration of voltage<br>• 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<br>• 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

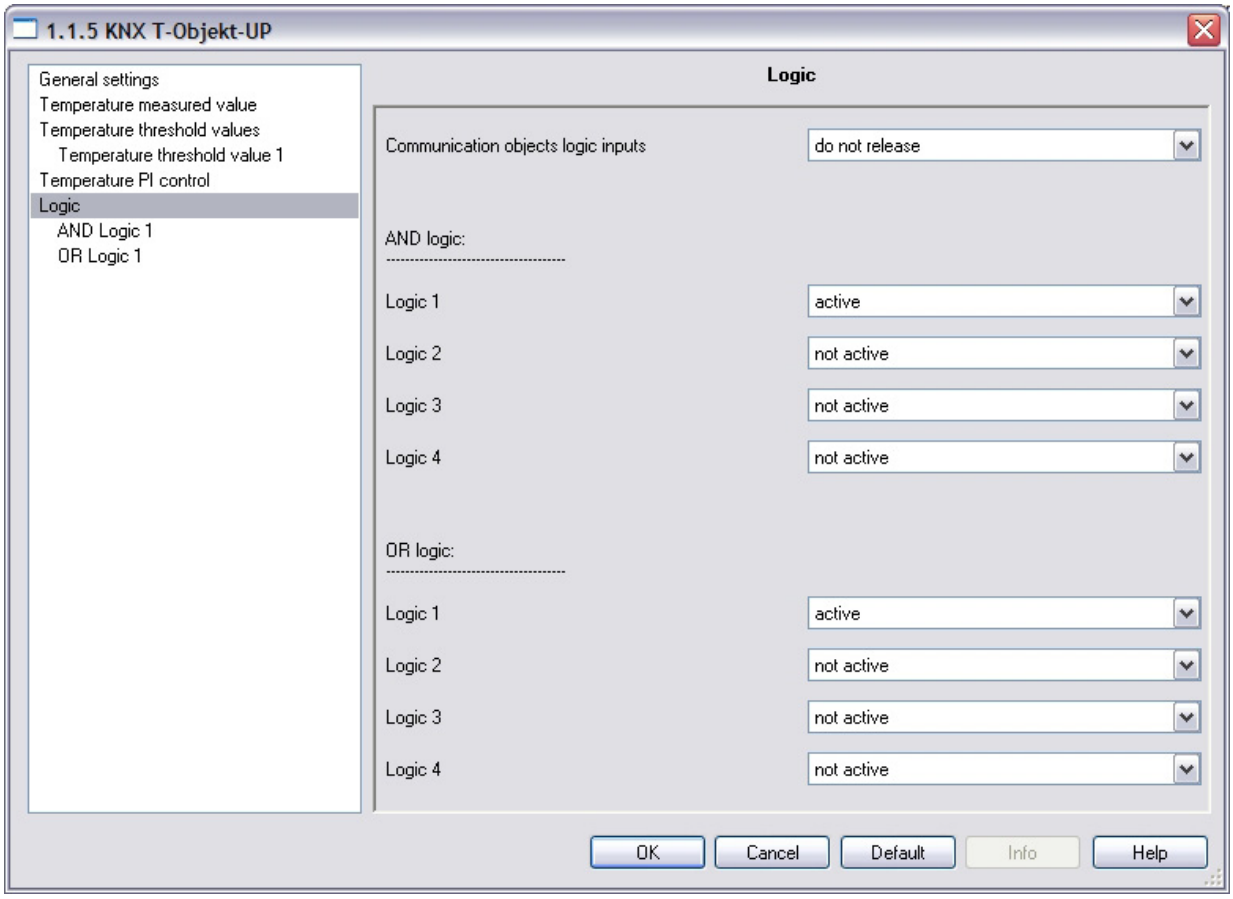
.....

| | |
|---|---|
| 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:

.....

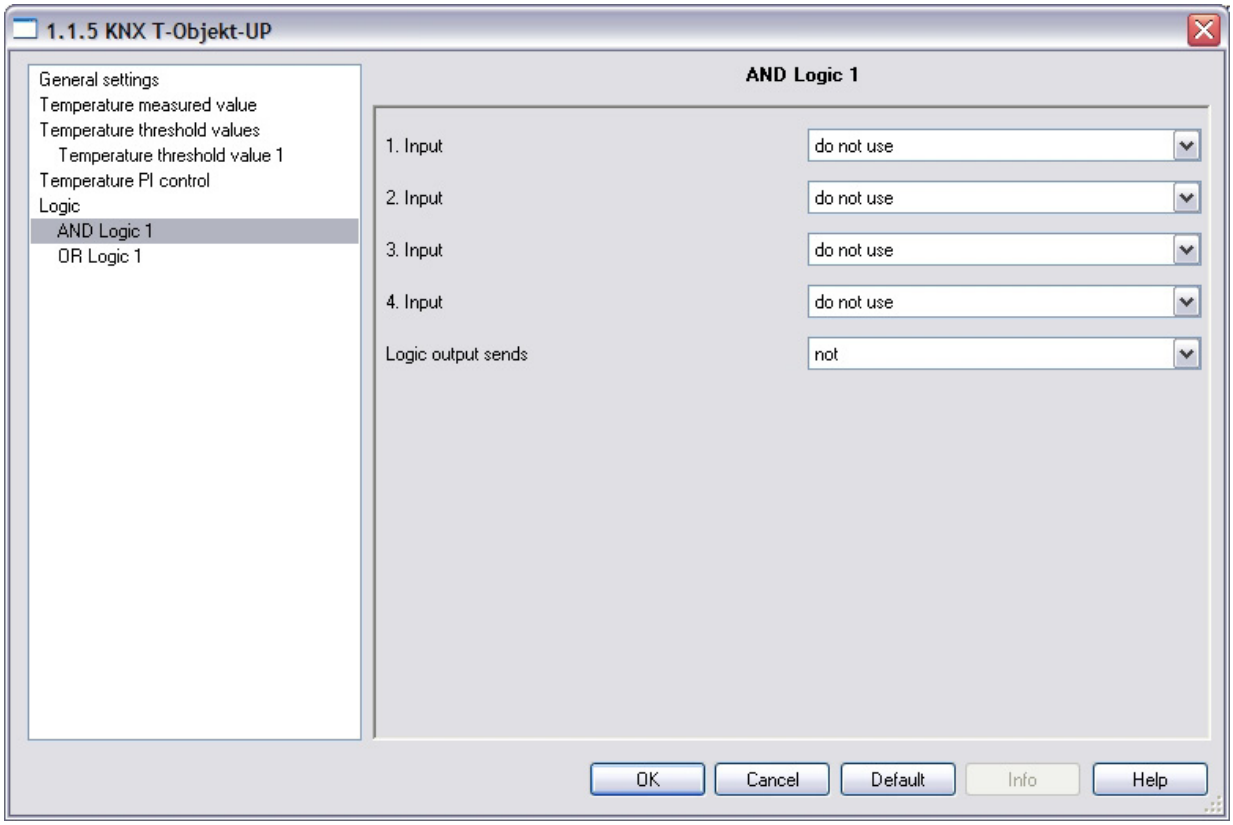
| | |
|---|---|
| Logic 1 / 2 / 3 / 4 | not active • active |

### OR logic:

.....

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

# AND Logic 1 / 2 / 3 / 4




| | |
|---|---|
| 1. / 2. / 3. / 4. Input | • do not use<br>• 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<br>AND logic 1 / 2 sends | • on change of logic<br>• on change of logic to 1<br>• on change of logic to 0<br>• on change of logic and periodically<br>• on change of logic to 1 and periodically<br>• on change of logic to 0 and periodically |
| Send periodically all<br>*(only if sending "periodically")* | 5 s • 10 s • 30 s • 1 min • ... • 2 h |

### If the logic output sends two 8 bit objects:

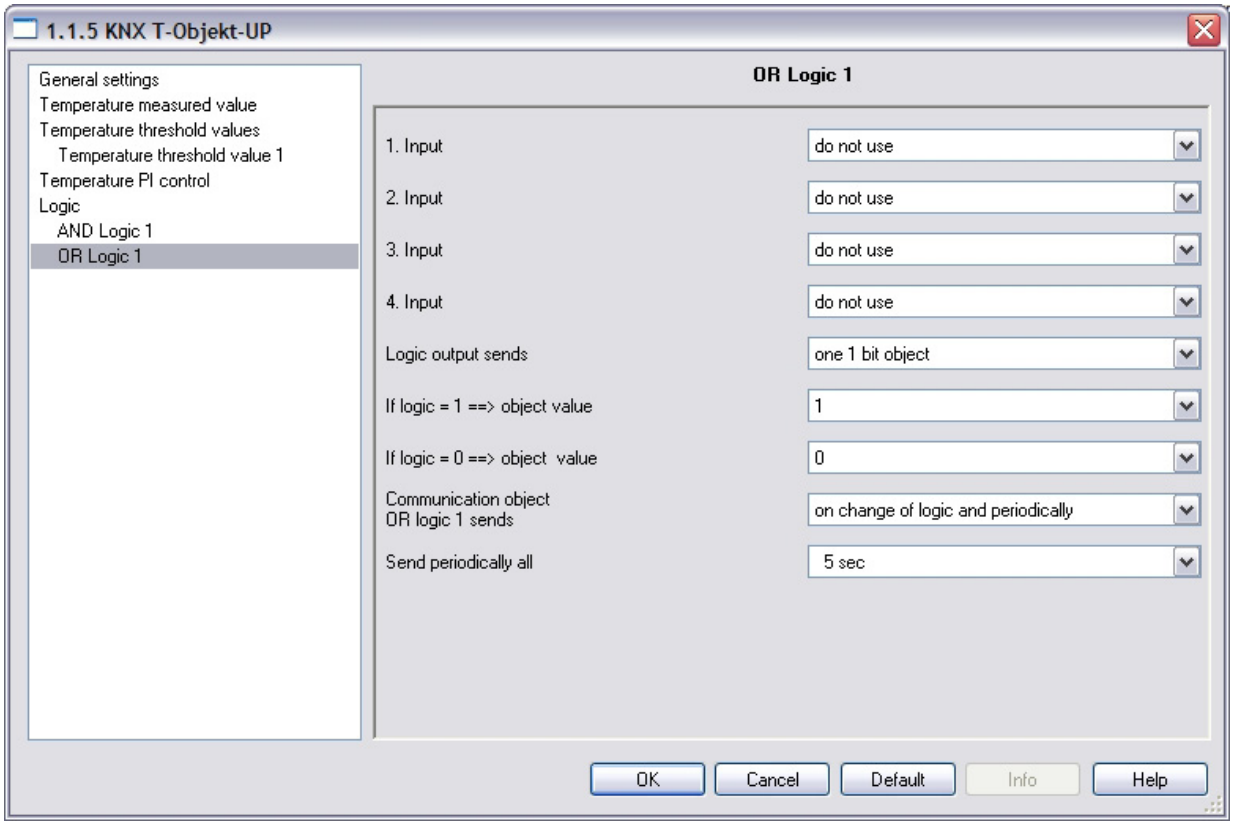
| | |
|---|---|
| Logic output sends | **two 8 bit objects** |
| If logic = 1 ➔ object A Wert | 0 ... 255 |
| If logic = 0 ➔ object A value | 0 ... 255 |

| | |
|---|---|
| If logic = 1 ➔ object B value | 0 … 255 |
| If logic = 0 ➔ object B value | 0 … 255 |
| Communication objects<br>AND Logic 1 A and B send | • on change of logic<br>• on change of logic to 1<br>• on change of logic to 0<br>• on change of logic and periodically<br>• on change of logic to 1 and periodically<br>• on change of logic to 0 and periodically |
| Send periodically all<br>*(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<br>• 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<br>OR Logic 1 / 2 sends | • on change of logic<br>• on change of logic to 1<br>• on change of logic to 0<br>• on change of logic and periodically<br>• on change of logic to 1 and periodically<br>• on change of logic to 0 and periodically |
| Send periodically all<br>*(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<br>OR Logic 1 / 2 A and B send | • on change of logic<br>• on change of logic to 1<br>• on change of logic to 0<br>• on change of logic and periodically<br>• on change of logic to 1 and periodically<br>• on change of logic to 0 and periodically |
| Send periodically all<br>*(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

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