Application Descriptions

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HVAC ObIS

Room Temperature Value

Summary

This object is used to transmit the current room temperature value and its status, e.g. to other objects, functions or devices of HVAC-applications.

Version 01.01.01 is a KNX Approved Standard.

This document is part of the KNX Specifications v2.1.

Document updates

Version	Date	Modifications
1.0	2002.04.02	Editorially restyled, based on " 1401_ObIS_RTV.doc"
1.1	2009.06.15	Editorial update in view of inclusion in the KNX Specifications v2.0.
01.01.01	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.

References

None.

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1 Application Model(s)

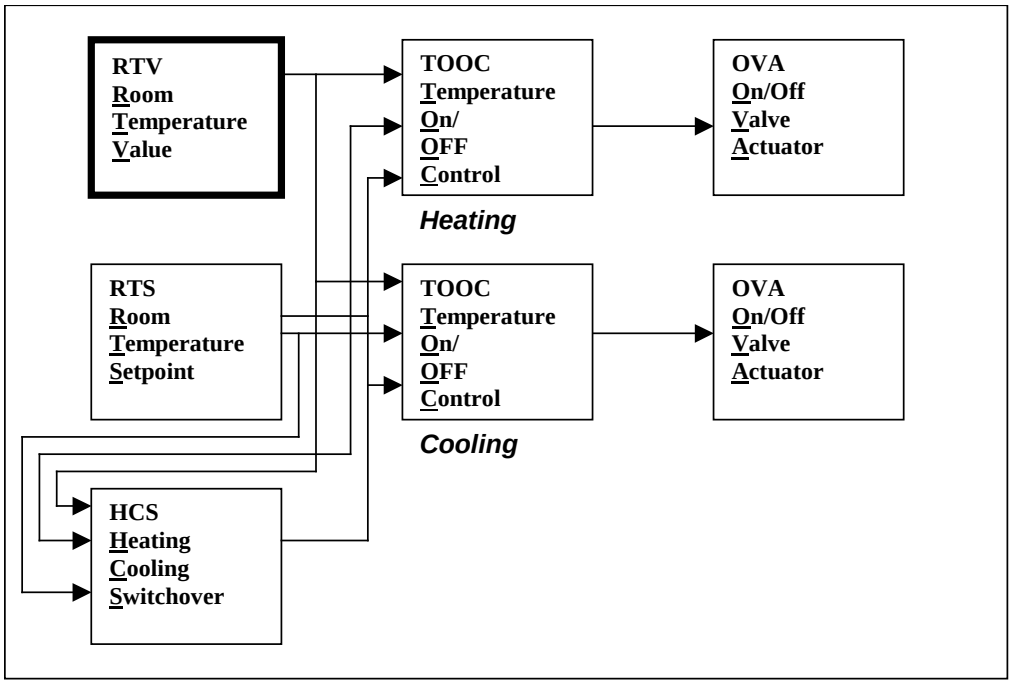


Figure 1 - Example for Individual Room Temperature Control with Heating and Cooling with ON/OFF Control

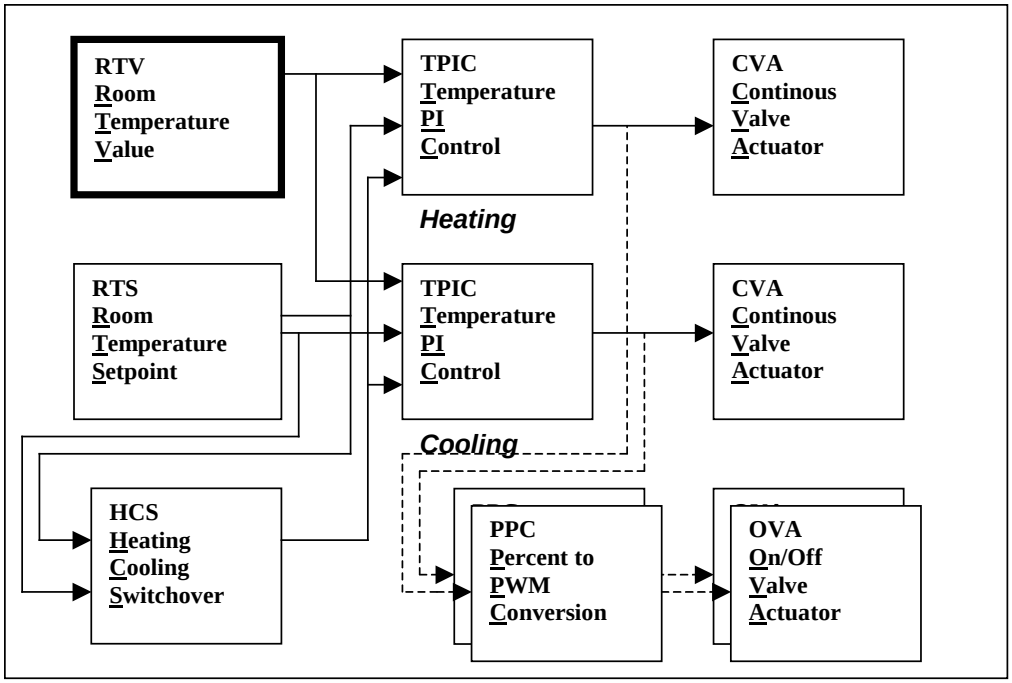


Figure 2 - Example for Individual Room Temperature Control with Heating and Cooling with PI Control

2 ObIS Function Model(s)

2.1 ObIS Function Model "Room Temperature Value"

2.1.1 Aims and objectives

This object is used to transmit the current room temperature value and its status, e.g. to other objects, functions or devices of HVAC-applications.

2.1.2 Functional specification

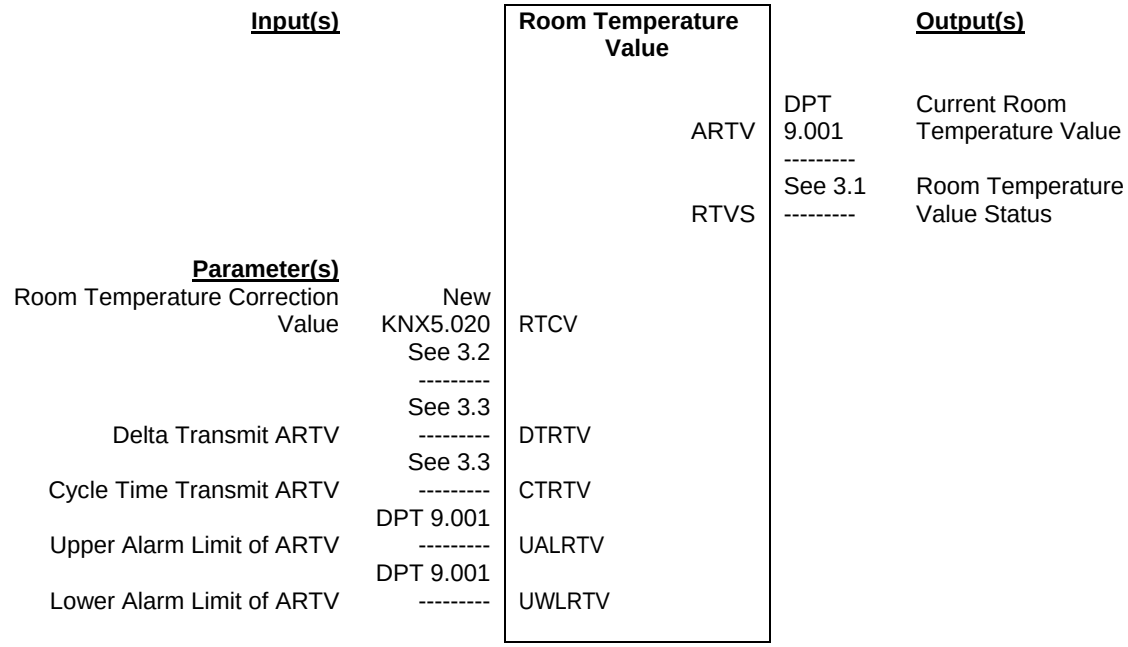
This ObIS RTV allows the combined transmission of the current room temperature value and the sensor/value status.

The status contains information about sensor errors and whether the value is inside of the defined range and inside of the warning and alarm limits or not.

2.1.3 Constraints

No constraints are defined for the ObIS Room Temperature Value.

2.1.4 Functional Block



2.1.5 Properties

ID	Name	Abbr.	Description	Datapoint Type	M/O
1	**PID_OBJECT_TYPE**		Object Type	KNX_Prop DataType	M

Input(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O

Output(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	**PID_VALUE_ACTUAL_ROOM_TEMPERATURE**	ARTV	Current room temperature Value	DPT 9.001	M
<tbd>	**PID_STATUS_ROOM_TEMPERATURE_VALUE**	RTVS	Room Temperature Value Status	See 3.1 KNX Z8	O

Parameter(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	**PID_VALUE_CORRECTION_ROOM_TEMPERATURE**	RTCV	Room Temperature Correction Value	KNX 5.020 See 3.2	O
<tbd>	**PID_ROOM_TEMPERATURE_VALUE_TRANSMIT_DELTA**	DTRTV	Delta Transmit Room Temperature Value	See 3.3	O
<tbd>	**PID_ROOM_TEMPERATURE_VALUE_TRANSMIT_CYCLE_TIME**	CTRTV	Cycle Time Transmit Room Temperature Value	See 3.3	O
<tbd>	**PID_ALARM_UPPER_LIMIT_ROOM_TEMPERATURE_VALUE**	UALRTV	Upper Alarm Limit of Room Temperature Value	DPT 9.001	O
<tbd>	**PID_ALARM_LOWER_LIMIT_ROOM_TEMPERATURE_VALUE**	LALRTV	Lower Alarm Limit of Room Temperature Value	DPT 9.001	O

2.1.5.1 Property PID_VALUE_ACTUAL_ROOM_TEMPERATURE ARTV

Unit: °C
Range: min. 5 … 35
Default Value: -
Group object/Parameter: C
Input/Output: O
R/W Rate >> 10/day
Description: This is the current room temperature value detected by the sensor and already corrected by the room temperature correction value RTCV (see 2.1.5.3).

2.1.5.2 Property PID_STATUS_ROOM_TEMPERATURE_VALUE RTST

Unit	-
Range:	-
Default Value:	-
Group object/Parameter:	C
Input/Output:	O
R/W Rate	>> 10/day
Description:	This group object is used to transmit the status of the current room temperature value ARTV.

2.1.5.3 Property PID_VALUE_CORRECTION_ROOM_TEMPERATURE RTCV

Unit:	0,1 K
Range:	min. -30 … +30 (see 3.2)
Default Value:	0
Group object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This value is used to modify the measured value to the correct value of the current room temperature.

2.1.5.4 Property PID_ROOM_TEMPERATURE_VALUE_TRANSMIT_DELTADTRTV

Unit:	K ("0" = no transmission)
Range:	min. 0 … 1 K
Default Value:	free
Group object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The current room temperature value will be transmitted automatically if the difference between old and new room temperature value is greater than the given DTRTV. It will not be transmitted automatically, if DTRTV is set to “0”.

2.1.5.5 Property PID_ROOM_TEMPERATURE_VALUE_TRANSMIT_CYCLE_TIME CTRTV

Unit:	minutes ("0" = no transmission)
Range:	min 0; 15 … 60 minutes
Default Value:	free
Group object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The current room temperature value will be transmitted cyclically after the given cycle time. It will not be transmitted cyclically, if CTRTV is set to “0”.

2.1.5.6 Property PID_ALARM_UPPER_LIMIT_ROOM_TEMPERATURE _VALUE UALRTV

Unit:	°C
Range:	min. 5 … 35
Default Value:	free
Group object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	If the room temperature value is higher than UALRTV the corresponding bit (bit 3) in the room temperature value status RTVS will be set to “1”.

2.1.5.7 Property PID_ALARM_LOWER_LIMIT_ROOM_TEMPERATURE _VALUE LALRTV

Unit:	°C
Range:	min. 5 … 35
Default Value:	free
Group object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	If the room temperature value is lower than LALRTV the corresponding bit (bit 1) in the room temperature value status RTVS is set to “1”.

3 Datapoint Types

3.1 Datapoint Type "Room Temperature Value Status"

Format:	1 octet HGFEDCBA
Encoding:	See below
Range:	A ...H = {0,1}
Unit:	-

Datapoint Types		
Code:	Symbol:	Encoding:
<tbd>	<tbd>	A = 1 : Out of Service B = 1 : Fault: Sensor error C = 1 : overridden D = 1 : In alarm E = 1 : Alarm unack (not used) F = 1 : Reserved G = 1 : Reserved H = 1 : Reserved

ARTV < lower alarm limit	This bit is set if the actual temperature value is lower than the lower alarm limit.
ARTV >upper alarm limit	This bit is set if the actual temperature value is higher than the upper alarm limit.
Out of Service	For example after Reset, if a new value is not available yet.
Sensor error	This bit is set if any sensor error occurs.
overridden	The sensor value is overridden for testing

3.2 Datapoint Type "8-bit signed integer"

Format:	1 octet VVVVVVVV
Encoding:	See below
Range:	V = [-128 … 127] binary encoded
Unit:	See below

Datapoint Types				
Code:	Symbol:	Encoding:	Range:	Unit:
5.020	DPT_TempHVACRel8	"temperature delta value"	-128…127	0.1 K

This Datapoint Type shall only be used for the encoding of parameters. It shall not be used for the encoding of any temperature value (real temperatures, shift values, offset values …) that are transmitted on the bus using group communication.

3.3 Datapoint Type "8-bit unsigned integer with special function for zero"

Format:	1 octet UUUUUUUU
Encoding:	See below
Range:	U = [0…255] binary encoded
Unit:	See below

Datapoint Types

Code:	Symbol:	Encoding:	Range:	Unit:
<tbd>	<tbd>	"time"	1…255 0 = corresponding function disabled	1 min
<tbd>	<tbd>	"temperature value difference"	1…255 0 = corresponding function disabled	0.1K

This Datapoint Type shall only be used for the encoding of parameters. It shall not be used for the encoding of any temperature value (real temperatures, shift values, offset values, …) that are transmitted on the bus using group communication.

