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HVAC ObIS

On/Off Valve Actuator

Summary

This object is used to control On/Off actuating valve actuators e.g. for hot water heating radiators.

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Document updates

Version	Date	Modifications
1.0	2002.04.03	Editorially updated: based on " 18-01_ObIS_OVA.doc"
1.0	2009.06.15	Editorial update in view of inclusion in the KNX Specifications v2.0.
01.00.01	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.

References

None.

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1 Application Model(s)

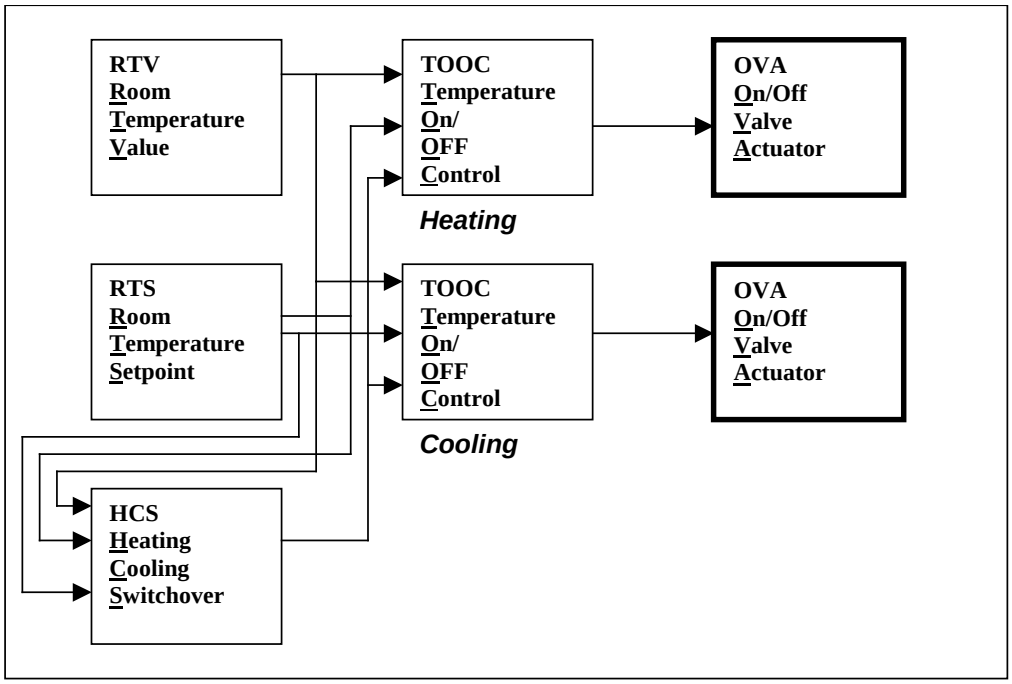

Figure 1 - Example for Individual Room Temperature Control with Heating and Cooling with ON/OFF Control

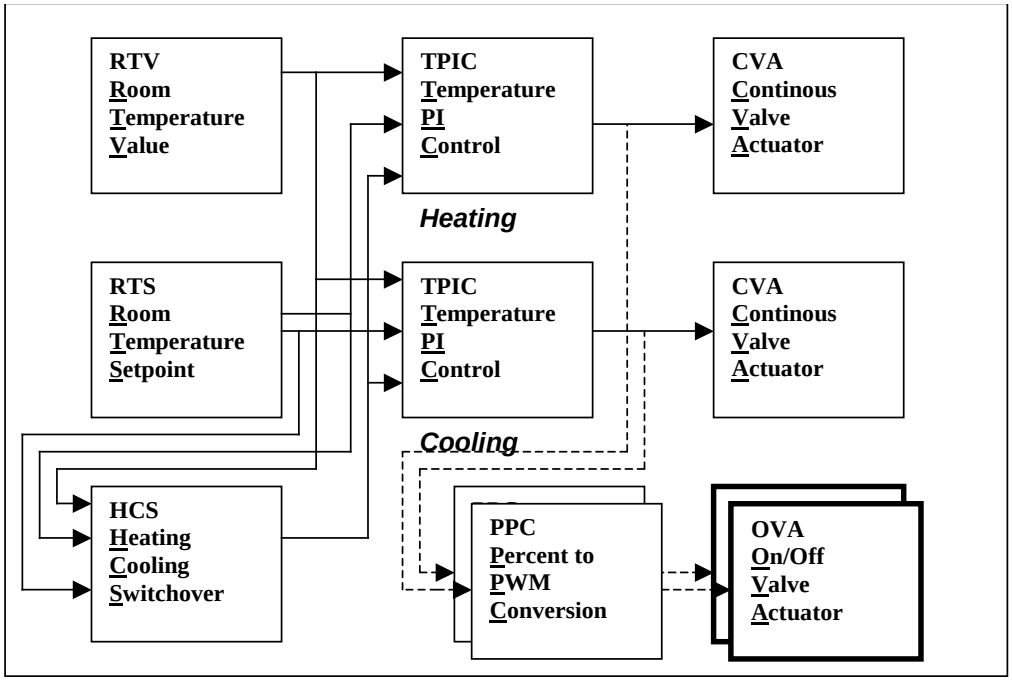

Figure 2 - Example for Individual Room Temperature Control with Heating and Cooling with PI Control

2 ObIS Function Model(s)

2.1 ObIS Function Model "On/Off Valve Actuator"

2.1.1 Aims and objectives

This object is used to control On/Off actuating valve positioners e.g. for hot water heating radiators.

2.1.2 Functional specification

This ObIS controls the position of a valve positioner depending on the Input signal „ON/OFF Actuating Command " and under consideration of the optional Inputs „Manual Override Enable", „Manual Override command", Forced Position Enable " and „Forced Position". The "OVA Status" and the „Position Status" are optional Outputs.

2.1.3 Constraints

No constraints are defined for the ObIS On/Off Valve Actuator.

2.1.4 Functional Block

Input(s)		**On/Off Valve Actuator**			**Output(s)**
ON/OFF Actuating Command	1.009 --------	OAC	OPS	1.009 ---------	ON/OFF Position Status
Manual Override Enable	See 3.1 --------	MOE	OVAS	See 3.2 ---------	OVA Status
Manual Override Command	1.009 --------	MOC			
Forced Position Enable	See 3.1 --------	FPE			
Parameter(s)					
Position of deenergiezed Valve	See 3.1 ---------	PDV			
Timeout Period	See 3.3 --------	TP			
PWM-Period at Timeout	See 3.4 --------	PPT			
ON/OFF ratio at timeout	5.001 --------	ORT			
Forced Position	1.009 --------	FP			
Period for Valve Protection	See 3.3 --------	PVP			
Duration of Valve Protection	See 3.4 --------	DVP			
Transmit OVA Status on Change Enable	See 3.1 --------	TOVASC			
Transmit Cycle Time OVA Status	See 3.3 --------	TCTOVA			
Transmit Position Status on Change Enable	See 3.1 --------	TPSC			
Transmit Cycle Time Position Status	See 3.3 ---------	TCTPS			

2.1.4.1 Priority of the inputs

The position the OVA is controlled by the inputs “Manual Override Enable” and “Forced Position Enable”. The priority of these inputs is shown in the table below:

Table 1 – Priority rules for the ObIS OVA

Manual Override Enable MOE	Forced Position Enable FPE	Used Command for the position of the On/Off Valve Actuator
0	0	ON/OFF Actuating Command OAC
0	1	Forced Position FP
1	0	Manual Override Command MOC
1	1	Manual Override Command MOC

2.1.5 Properties

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

Input(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	PID_COMMAND_ACTUATING_ON_-OFF	OAC	ON/OFF Actuating Command	1.009	M
<tbd>	PID_OVERRIDE_MANUAL_ENABLE	MOE	Manual Override Enable	See 3.1	O
<tbd>	PID_OVERRIDE_COMMAND_-MANUAL	MOC	Manual Override Command	1.009	O
<tbd>	PID_POSITION_FORCED_ENABLE	FPE	Forced Position Enable	See 3.1	O

Output(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	PID_STATUS_POSITION_ON_OFF	OPS	ON/OFF Position Status	1.009	O
<tbd>	PID_STATUS_OVA	OVAS	OVA Status	See 3.2	O

Parameter(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	PID_POSITION_VALVE_-DEENERGIZED	PDV	Position of deenergized valve	See 3.1	O
<tbd>	PID_PERIOD_TIMEOUT	TP	Timeout Period	See 3.3	O
<tbd>	PID_PERIOD_PWM_TIMEOUT	PPT	PWM_Period at Timeout	See 3.4	O
<tbd>	PID_RATIO_ON_OFF_TIMEOUT	ORT	ON/Off Ration at Timeout	5.001	O
<tbd>	PID_POSITION_FORCED	FP	Forced Position	1.009	O
<tbd>	PID_PERIOD_PROTECTION_VALVE	PVP	Period for Valve Protection	See 3.3	O
<tbd>	PID_DURATION_PROTECTION_-VALVE	DVP	Duration of Valve Protection	See 3.4	O
<tbd>	PID_TRANSMIT_CHANGE_OVA_-STATUS	TOVASC	Transmit OVA Status on Change Enable	See 3.1	O
<tbd>	PID_CYCLE_TIME_TRANSMIT_OVA_STATUS	TCTOVA	OVA Status Transmit Cycle Time	See 3.3	O
<tbd>	PID_TRANSMIT_CHANGE_STATUS_POSITION	DTPS	Transmit Position Status on Change Enable	See 3.1	O
<tbd>	PID_CYCLE_TIME_TRANSMIT_STATUS_POSITION	TCTPS	Transmit Cycle Time Position Status	See 3.3	O

2.1.5.1 Property PID_COMMAND_ACTUATING_ON_OFF OAC

Unit: -
Range: 0,1
Default Value: -
Communication Object/Parameter: C
Input/Output: I
R/W Rate >> 10/day
Description: This is the On/Off positioning command.

2.1.5.2 Property PID_OVERRIDE_MANUAL_ENABLE MOE

Unit	-
Range:	0,1
Default Value:	0
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	< 1/day
Description:	This object serves to switch over from automatic mode (0) to manual mode (1). In manual mode the input „Manual Override Command“ MOC is used for positioning instead of the „ON/OFF Actuating Command“ OAC. See 3.1

2.1.5.3 Property PID_OVERRIDE_COMMAND_MANUAL MOC

Unit	-
Range:	0,1
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	< 1/day
Description:	If the „Manual Overide Enable“ is set (MOE = 1) the „Manual Override Command“ MOC is used for positioning instead of the „ON/OFF Actuating Command“ OAC.

2.1.5.4 Property PID_POSITION_FORCED_ENABLE FPE

Unit:	-
Range:	0,1
Default Value:	0
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	< 1/day
Description:	This communication object is used to force the valve positioner to the preprogrammed „Forced Position“ FP.

1.1.1.1 Property PID_STATUS_POSTION_ON_OFF OPS

Unit:	-
Range:	0,1
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	O
R/W Rate	>> 10/day
Description:	This object contains the actual position of the valve positioner.

2.1.5.5 Property PID_STATUS_OVA OVAS

Unit:	-
Range:	(coding: see 3.2)
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	O
R/W Rate	>> 10/day
Description:	OVA status (coding: see 3.2) is an optional communication object which is read only.

2.1.5.6 Property PID_POSITION_VALVE_DEENERGIZED PDV

Unit:	-
Range:	0,1
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the direction of control action of the valve positioner. The parameter must be set to „0“ if the valve is deenergized closed. It must be set to „1“ if the valve is deenergized open.

2.1.5.7 Property PID_PERIOD_TIMEOUT TP

Unit:	min
Range:	0; 1 ... 60
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the time during which at least one actuating value must have been received; else the OVA switches the output On and Off with the given „On/Off ratio“ ORT and the given „PWM-Period at Timeout“ PPT. If TP is 0 this function is disabled, the input OAC is not surveilled.

2.1.5.8 Property PID_PERIOD_PWM_TIMEOUT PPT

Unit:	min
Range:	5 ... 30
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This is the PWM period used for switching On/Off if no „ON/OFF Actuating Command“ OAC has been received during the timeout period.

2.1.5.9 Property PID_RATIO_ON_OFF_TIMEOUT ORT

Unit:	%
Range:	0 ... 100
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This is the ON/Off ratio used in combination with the PWM period if no „ON/OFF Actuating Command“ OAC has been received during the timeout period.

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2.1.5.10 Property PID_POSITION_FORCED FP

Unit:	-
Range:	0,1
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter is used as actuating command if the „Forced Position Enable“ FPE object is set.

2.1.5.11 Property PID_PERIOD_PROTECTION_VALVE _ PVP

Unit:	d(ays)
Range:	0; 1 ... 7
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the time during which two different actuating commands must have been received; otherwise the valve protection will be activated. It will not be activated if PVP is set to “0”.

2.1.5.12 Property PID_DURATION_PROTECTION_VALVE _ DVP

Unit:	min
Range:	1 ... 10
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the time of the On/Off cycle used for valve protection.

2.1.5.13 Property PID_TRANSMIT_CHANGE_OVA_STATUS TOVASC

Unit:	-
Range:	0,1
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines whether the „OVA Status“ OVAS is transmitted on change or not.

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2.1.5.14 Property PID_CYCLE_TIME_TRANSMIT_OVA_STATUSTCTOVA

Unit:	min.
Range:	0; 15 ... 60
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The „OVA Status“ OVAS will be transmitted cyclically after the given cycle time. It will not be transmitted cyclically if the cycle time is set to “0”.

2.1.5.15 Property PID_TRANSMIT_CHANGE_ STATUS_POSITION TPSC

Unit:	-
Range:	0,1
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines whether the „Position Status“ OPS is transmitted on change or not.

2.1.5.16 Property PID_ CYCLE_TIME_TRANSMIT_STATUS_POSITIONTCTPS

Unit:	min.
Range:	0; 15 ... 60
Default Value:	free
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The „Position Status“ OPS will be transmitted cyclically after the given cycle time. It will not be transmitted cyclically if the cycle time is set to “0”.

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3 Datapoint Type(s)

3.1 Datapoint Type “Boolean”

Format:	1 bit
	V
Encoding:	See below
Range:	V = {0,1}
Unit:	-

Datapoint Types

Code:	Symbol:	Encoding: V = 0	V = 1
1.003	FPE (Forced position_enable)	disable	enable
1.003	MOE (Manual_ overide_enable)	disable	enable
1.009	PDV Position of deenergized valve	closed	open
1.003	TOVASC Transmit_on_ change_enable	disable	enable
1.003	TPSC Transmit_on_ change_enable	disable	enable

3.2 Datapoint Type "OVA Status"

Format:	1 byte
	000EDCBA
Encoding:	See below
Range:	A ...H = {0,1}
Unit:	-

Datapoint Types

Code:	Symbol:	Encoding:
<tbd>	<tbd>	A : 0 = automatic; 1 = manual B: 0 = unforced position; 1 =forced position C: 1 = timeout actuating value active D: 1= malfunction of the valve positioner E: 0 = closed/OFF 1 = not closed/ON(open)

See TF 5.1.2 40-99 PPC-Status (Chapter 3.3)

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

Format:	1 byte VVVVVVVV
Encoding:	See below
Range:	V = [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>	"time for valve protection"	1…255 0 = corresponding function disabled	1 d

3.4 Datapoint Type "8-bit unsigned multiplier without zero"

Format:	1 byte VVVVVVVV
Encoding:	See below
Range:	V = [1…255] binary encoded
Unit:	See below

Datapoint Types

Code:	Symbol:	Encoding:	Range:	Unit:
<tbd>	<tbd>	"time"	1…255	1 min

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