Application Descriptions

7

HVAC ObIS

19

Fan Actuator Continuous – Position Driven

10

Summary

This object is used to control a fan continuously depending on the continuous actuating values. This ObIS allows e.g. in combination with the other ObIS for HVAC to control a fan coil unit with one or two heat exchangers.

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Document updates

Version	Date	Modifications
1.0	2002.04.04	Editorially restyled, based on "05-02_ObIS_FAC-PD.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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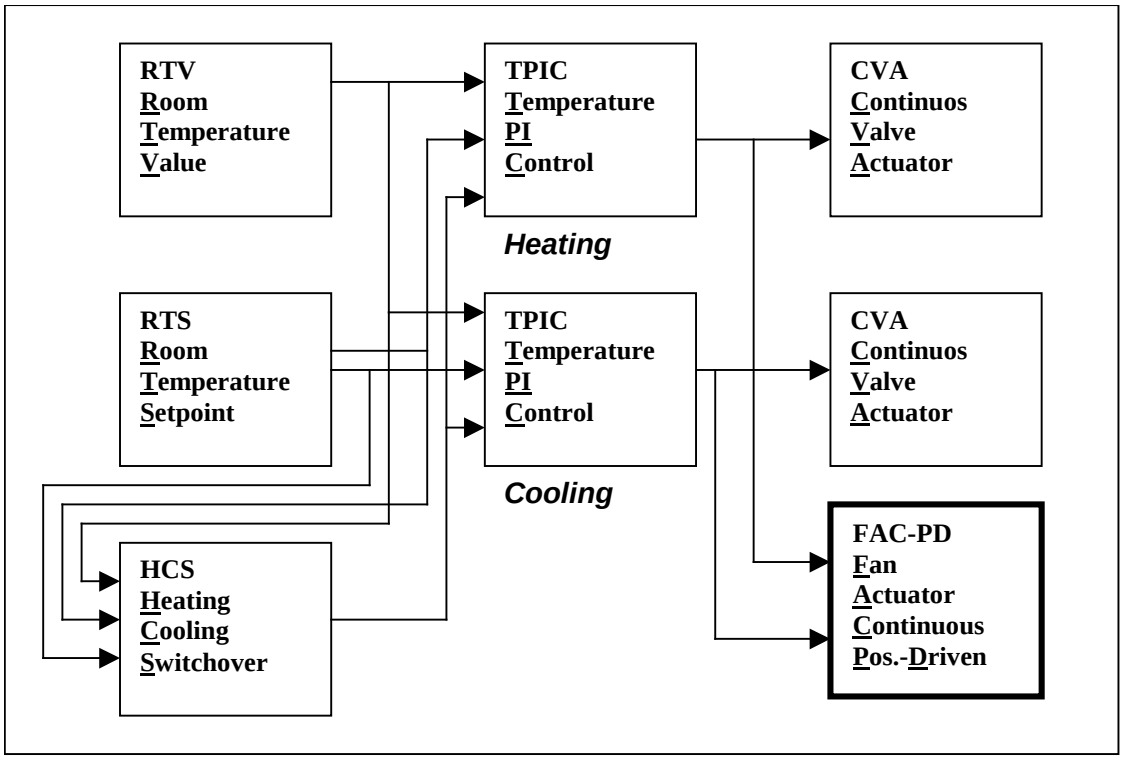

Figure 1 - Application of the ObIS „Fan Actuator Continuous-Position Driven“ for Individual Room Temperature Control with a Fan Coil Unit

2 ObIS Function Model(s)

2.1 ObIS Function Model "Fan Actuator Continuous-Position Driven"

2.1.1 Aims and objectives

This object is used to control a fan continuously depending on the continuous actuating values. This ObIS allows e.g. in combination with the other ObIS for HVAC (see Figure 1) to control a fan coil unit with one or two heat exchangers.

2.1.2 Functional specification

This ObIS controls the fan speed continuously depending on the continuous actuating values. The fan speed may be the same as well for heating mode as for cooling mode (if no parameters for cooling mode are defined). The fan speed will be different for heating and for cooling mode if separate parameters are defined.

The fan speed also depends on the optional Inputs „Manual Override Enable“ and „Manual Override Fan Speed“ and on the Input „Forced Fan Speed Enable“ and the parameter „Forced Fan Speed“. The priority of these Inputs is defined in clause 2.1.5 "Priority of the Inputs" below. The FAC status information is an optional output.

2.1.3 Constraints

No constraints are defined for the ObIS Fan Actuator Continuous – Position Driven.

2.1.4 Functional Block

Input(s)		Fan Actuator Continuous Position Driven		Output(s)	
Continuous Actuating Value	DPT 5.001 ---------	CAV	FSP	DPT 5.001 ---------	Fan Speed in Percent
Continuous Actuating Value Cooling	DPT 5.001 ---------	CAVC	FACS	See 3.1 ---------	Fan Actuator Continuous Status
Manual Override Enable	See 3.3 --------	MOE			
Manual Override Fan Speed	DPT 5.001 --------	MOS			
Forced Fan Speed Enable	See 3.3 --------	FFSE			
Parameter(s)					
CAV for FSP = 0%	DPT 5.001 --------	CAVFS0			
CAV for FSP = 100%	DPT 5.001 --------	CAVFS100			
Cooling CAV for FSP = 0%	DPT 5.001 --------	CCAVFS0			
Cooling CAV for FSP = 100%	DPT 5.001 --------	CCAVFS100			
Forced Fan Speed	DPT 5.001 --------	FFS			
Delta Transmit Fan Speed	DPT 5.001 --------	DTFS			
Transmit Cycle Time Fan Speed	See 3.3 -------	TCTFS			
Transmit FACS On Change Enable	see 3.4 --------	TFACSE			
Transmit Cycle Time FACS	See 3.3 -------	TCTFACS			

2.1.5 Priority of the Inputs

The Fan Speed is controlled by the Inputs “Manual Override Enable” and “ Forced Fan Speed Enable”. The priority of these Inputs is shown in the table below:

Table 1 - Priority rules for the ObIS FAC-PD

Manual Override Enable MOE	Forced Fan Speed Enable FFSE	Fan Speed
0	0	Fan Speed in Percent FSP
0	1	Forced Fan Speed FFS
1	0	Manual Override Fan Speed MOS
1	1	Manual Override Fan Speed MOS

2.1.6 Properties

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

Input(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	**PID_VALUE_ACTUATING_-CONTINUOUS_HEATING**	CAVH	Continuous Actuating Value Heating	DPT 5.001	M
<tbd>	**PID_VALUE_ACTUATING_-CONTINUOUS_COOLING**	CAVC	Continuous Actuating Value Cooling	DPT 5.001	O
<tbd>	**PID_OVERRIDE_MANUAL_ENABLE**	MOE	Manual Override Enable	See 3.3	O
<tbd>	**PID_OVERRIDE_MANUAL_SPEED_FAN**	MOS	Manual Override Fan Speed	DPT 5.001	O
<tbd>	**PID_FAN_SPEED_FORCED_ENABLE**	FFSE	Forced Fan Speed Enable	See 3.3	O

Output(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	**PID_SPEED_FAN_PERCENT**	FSP	Fan Speed in Percent	DPT 5.001	O
<tbd>	**PID_STATUS_FAN_ACTUATOR_-CONTINUOUS**	FACS	Fan Actuator Continuous Status	See 3.1	O

Parameter(s)

ID	Name	Abbr.	Description	Datapoint Type	M/O
<tbd>	**PID_ACTUATING_VALUE_-CONTINUOUS_FSP0**	CAVFS0	Continuous Actuating Value for FSP = 0%	DPT 5.001	M
<tbd>	**PID_ACTUATING_VALUE_-CONTINUOUS_FSP100**	CAVFS100	Continuous Actuating Value for FSP = 100%	DPT 5.001	M
<tbd>	**PID_ACTUATING_VALUE_-CONTINUOUS_FSP0_COOLING**	CCAVFS0	Continuous Actuating Value for FSP = 0 % at Cooling	DPT 5.001	O
<tbd>	**PID_ACTUATING_VALUE_-CONTINUOUS_FSP100_COOLING**	CCAVFS100	Continuous Actuating Value for FSP = 100 % at Cooling	DPT 5.001	O
<tbd>	**PID_FAN_SPEED_FORCED**	FFS	Forced Fan Speed	DPT 5.001	O
<tbd>	**PID_TRANSMIT_DELTA_SPEED_-FAN**	DTFS	Delta Transmit Fan Speed	DPT 5.001	O
<tbd>	**PID_TRANSMIT_CYCLE_TIME_-SPEED_FAN**	TCTFS	Transmit Cycle Time Fan Speed	See 3.2	O
<tbd>	**PID_ENABLE_TRANSMIT_FACS_ON_CHANGE**	TFACSE	Transmit FACS on Change Enable	See 3.3	O
<tbd>	**PID_TRANSMIT_CYCLE_TIME_-FACS**	TCTFACS	Transmit Cycle Time FACS	See 3.2	O

2.1.6.1 Property PID_VALUE_ACTUATING_CONTINUOUS CAV

Unit:	%
Range:	0..100
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	>> 10/day

Description: Fan Coil Units may be supplied by two pipes or three/four pipes.
Fan Coil Units with two pipes:
This is the positioning command used for calculating the fan speed based on the parameters CAVFS0 .. CAVFS100.
Fan Coil Units with three/four pipes:
This is the positioning command for the heating valve, used for calculating the fan speed steps based on the parameters CAVFS0…CAVFS100.

2.1.6.2 Property PID_VALUE_ACTUATING_CONTINUOUS_COOLING CAVC

Unit:	%
Range:	0 ... 100
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	>> 10/day

Description: This is the positioning command for the cooling valve (see ObIS TPIC). It is used for calculating the fan speed either based on the parameters CAVFS0 and CAVFS100 or (in case of different speeds for the cooling mode) based on the parameters CCAVFS0 and CCAVFS100. This communication object CAVC is only available in Fan Coil Units with three/four pipes.

2.1.6.3 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 the fan from automatic mode (0) to manual mode (1). In manual mode the Input Manual Override Fan Speed MOS is used for the Fan Speed in Percent FSP.

2.1.6.4 Property PID_OVERRIDE_MANUAL_SPEED_FAN MOS

Unit	%
Range:	0 .:. 100
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	< 1/day

Description: The Input Manual Override Fan Speed MOS is used for manual control of the Fan Speed in Percent FSP.

2.1.6.5 Property PID_FAN_SPEED_FORCED_ENABLE FFSE

Unit	-
Range:	0,1
Default Value:	0
Communication Object/Parameter:	C
Input/Output:	I
R/W Rate	< 1/day
Description:	This Input Forced Fan Speed Enable FFSE is used to switch the Fan Speed in Percent FSP to a predefined value. This value is defined as parameter FFS (see 2.1.6.12).

2.1.6.6 Property PID_SPEED_FAN_PERCENT FSP

Unit:	%
Range:	0-100
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	O
R/W Rate	>> 1/day
Description:	.This is the actual fan speed in percent.

2.1.6.7 Property PID_STATUS_FAN_ACTUATOR_CONTINUOUS FACS

Unit:	-
Range:	-
Default Value:	-
Communication Object/Parameter:	C
Input/Output:	O
R/W Rate	>> 10/day
Description:	This object contains several information about the fan actuator status (see 3.1).

2.1.6.8 Property PID_ACTUATING_VALUE_CONTINUOUS_FSP0 CAVFS0

Unit:	%
Range:	min 0 ... 30
Default Value:	-
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the continuous actuating value up to which the fan speed is 0 %. This parameter is used for both heating and cooling if no separate parameters for cooling (CCAVFS0 and CCAVFS100) are available.

2.1.6.9 Property PID_ACTUATING_VALUE_CONTINUOUS_FSP100 CAVFS100

Unit:	%
Range:	min 1 ... 100
Default Value:	-
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the continuous actuating value at which the fan speed becomes 100 %. This parameter is used for both heating and cooling if no separate parameters for cooling (CCAVFS0 and CCAVFS100) are available.

2.1.6.10 Property PID_ACTUATING_VALUE_CONTINUOUS_FSP0_COOLING CCAVFS0

Unit:	%
Range:	min 0 ... 30
Default Value:	-
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the continuous actuating value for cooling mode up to which the fan speed is 0 %.

2.1.6.11 Property PID_ACTUATING_VALUE_CONTINUOUS_FSP100_COOLING CCAVFS100

Unit:	%
Range:	min 1 ... 100
Default Value:	-
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter defines the continuous actuating value for cooling mode at which the fan speed becomes 100 %.

2.1.6.12 Property PID_FAN_SPEED_FORCED FFS

Unit	%
Range:	0 .. 100
Default Value:	-
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	This parameter is used as Fan Speed in Percent FSP if the Forced Fan Speed Enable FFSE object is set.

2.1.6.13 PID_TRANSMIT_DELTA_SPEED_FAN DTFS

Unit:	%
Range:	min 0 ... 20
Default Value:	5
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The Fan Speed in Percent FSP will be transmitted automatically if the difference between the last transmitted FSP and the current FSP is greater than the given delta value. It will not be transmitted automatically if DTFS is set to “0”.

2.1.6.14 PID_TRANSMIT_CYCLE_TIME_SPEED_FAN TCTFS

Unit:	minutes
Range:	min 0, 15..60
Default Value:	0
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The Fan Speed in Percent FSP will be transmitted cyclically after the given cycle time. It will not be transmitted cyclically if the cycle time is set to “0”.

2.1.6.15 PID_ENABLE_TRANSMIT_FACS_ON_CHANGE TFACSE

Unit:	-
Range:	0,1
Default Value:	1
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The parameter defines whether the Fan Actuator Continuous Status FACS will be transmitted on change (1) or not (0).

2.1.6.16 PID_TRANSMIT_CYCLE_TIME_FACS TCTFACS

Unit:	minutes
Range:	min 0, 15..60
Default Value:	0
Communication Object/Parameter:	P
Input/Output:	R/W
R/W Rate	<< 1/day
Description:	The status object Fan Actuator Continuous Status FACS will be transmitted cyclically after the given cycle time. It will not be transmitted cyclically if the cycle time is set to “0”.

3 Datapoint Type(s)

3.1 Datapoint Type "Fan Actuator Status"

Format:	1 octet EEEE DCBA	
Encoding:	See below	
Range:	A..D= {0,1}	
Unit:	-	
Datapoint Types		
Code:	Symbol:	Encoding:
<tbd>	<tbd>	A : 0 = automatic; 1 = manual/forced (1) B : 0 = heating; 1 cooling C : 0 =CAV = 0 1 = CAV > 0 (0 = heating valve closed) D : 0 =CAVC = 0 1 = CAVHC> 0 (0 = cooling valve closed) E reserved; shall be 0

(1) B = 1 if MOE or FFSE = 1

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

Format:	1 octet 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

3.3 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	MOE (Manual_Overide_Enable)	disable	enable
1.003	TFACSE (Transmit On Change Enable)	disable	enable
1.003	FFSE (Forced Fan Speed Enable)	disable	enable