FANCOIL CONTROLLER UNIT

TC17B01KNX

Product Handbook

Product:
TC17B01KNX

Description:
FANCOIL CONTROLLER UNIT

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Exclusion of liability:
Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this.
Any necessary corrections will be incorporated into newer versions of this manual.

Symbol for relevant information 

Symbol for warning 

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1. General Introduction

This manual is intended to be used by installers and describes functions and parameters of the device TC17B01KNX and how is possible to change settings and configurations using ETS software tool.

2. Product and functional overview

The Fan Coil Unit Controller is used to control fan coil units, floor heating or switch actuators. Depending on the design of the device, fan coil units are used in 2-pipe systems (heating only, cooling only, or heating and cooling via a common piping system) or alternatively in 4-pipe systems (heating and cooling via separate pipes).It controls up to 3 fan speeds (Relay or 0-10V outputs) as well as heating or cooling valves (Proportional or electrothermal valve) respectively. The mode of control is based on two-step control or a time-discrete PI controller with setpoint / actual value comparison. The valves and the fan can be regulated directly by devices via the closed loop of this controller. When the Fan Coil Unit Controller is used in floor heating, it is the maximum control seven channel output respectively. All of the floor heating channel control is used a time-discrete PI controller with setpoint / actual value comparison.

1. The following functions can be set in different functions: Five channel 10A relay outputs
2. Two channel 0-10V DC outputs
3. Fan speed: High, Medium, Low
4. HVAC working mode: Heating, Cooling
5. HVAC operation mode: Standby mode, Comfort mode, Night mode, Frost protection
6. Fan speed and Valve status report
7. Seven local temperature sampling
8. BUS temperature sampling
9. Local temperature report
10. Seven channel floor heating outputs
11. Five control mode each floor heating channel
12. Seven channel output independently
13. Channel statistics total ON time
14. Channel state response
15. Channel state after bus voltage failure and recovery
16. Staircase light
17. Delay
18. PWM control output

3. Application Program

All Interface and the functions apply parameters please overview the following description of the paragraph.

Some function of the Fan Coil Unit Controller is the same. So, following paragraph will description of the function in detail.

3.2. Database function overview

The following table provides an overview of the functions and some parameters with the Fan Coil Unit Controller:

Function	***Description***
Fan/Fan coil controller	**Fan, Heating, Cooling, Heating and Cooling**
System type	*2-pipe system:* There is one single water circuit that is filled with cooling or heating medium according to the season. *4-pipe system:* The system consists of two separate water circuits for heating and cooling.
Actual temperature	Read actual temperature via the KNX/EIB or local sensor, response and monitoring the temperature
Setpoint	Base setpoint temperature, different operation mode (Comfort mode, Standby mode, Night mode, Frost/heat Protection mode) corresponding to different setpoint temperature.
Fan (Relay or 0-10v)	3-speed fan, Automatic or manual fan control
Heating valve (Relay or 0-10v) Base settings for heating valve (Electrothermal	Heating valve (Relay or 0-10v) Base settings for heating valve (Electrothermal valve or Proportional valve)
Cooling valve (Relay or 0-10v) Base settings for cooling valve (Electrothermal	Cooling valve (Relay or 0-10v) Base settings for cooling valve (Electrothermal valve or Proportional valve)
Heating/Cooling valve	Base valve settings for 2-pipe systems
(Relay or 0-10v)	(Electrothermal valve or Proportional valve)
Function status	Response fan status and valve position status
Floor heating	
Slave clock	Used for floor heating time synchronized.
Actual temperature	Read actual temperature via the KNX/EIB or local sensor, response and

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	monitoring the temperature
Operation mode	Base setting for the operation mode setpoint temperature.(Normal mode, Day mode, Night mode, Timer mode)
Valve	Base settings for floor heating valve
Switch Controller	**Use of auxiliary relay**
Time function	Staircase lighting and ON/OFF delay
	Statistics total ON time
	Voltage recovery state and Voltage fail state

3.3. General parameters configuration

In the parameter of the general windows can set the control mode and other parameters.

KNX PARAMETER	SETTINGS
Sending and switching delay after bus voltage recovery [3..100s]	3..100 sec.
Telegrams are only received during the send and switching delay. The telegrams are not processed, however, and the outputs remain unchanged, no telegrams are sent on the bus. After the sending and switching delay, telegrams are sent and the states of the outputs are set to correspond to the parameterization or the communication object values.	
Cycle send general telegram (1..65535s,0-invalid)	0…65535 sec
The range of the parameter is 0 to 65535s. Zero of parameter disable the function, other of parameter enable this function. The parameter set to nonzero, Device will send a telegram data cyclically when time out. Send the value alternately between 0 and 1.	
Control Mode	Fan Heating Cooling Heating and cooling Floor heating

In the *General* parameter window, the basic settings for the Fan Coil Unit Controller which affect the device and all its outputs can be defined.

The Fan Coil Unit Controller has five control modes. You can select the one of them. Through functional selection and download the database to the device and device will work in accordance with the selected function.

Fan: The Fan Coil Unit Controller has fan function only. The free channels are available as independent switch outputs.

Heating: The Fan Coil Unit Controller has fan and heating functions. The free channels are available as independent switch outputs.

Cooling: The Fan Coil Unit Controller has fan and cooling functions. The free channels are available as independent switch outputs.

Heating and cooling: The Fan Coil Unit Controller has fan, heating and cooling functions. The free channels are available as independent switch outputs.

Floor heating: The Fan Coil Unit Controller has maximum seven channels floor heating. The free channels are available as independent switch outputs.

Fan, Heating or **Cooling** functions are the same with **Heating and Cooling** functions. So, the following paragraph wills description of the **Heating and Cooling** and **Floor heating** functions in detail.

3.4. Heating and Cooling parameters configuration

KNX PARAMETER	SETTINGS
HVAC-System	2-pipe system 4-pipe system
2-pipe system*:* There is one single water circuit that is filled with cooling or heating medium according to the season. The following points must be observed for use in a 2 pipe	

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heating/cooling system:

4.2.1 In the 2-wire system heating and cooling mediums (depending on the season) are fed through the same channels and controlled by the same valve.

4.2.2 The switchover between heating and cooling mediums is performed by the system and must therefore be passed on to the controller.

4-pipe system: The system consists of two separate water circuits for heating and cooling.

Fan channel select	Channel A-C (relay) Channel F (0-10V)

The Fan Coil Unit Controller has two ways of the fan channel output.

Channel A-C (relay): Channels A, B and C with 3-Speed fan relay output. The free channels are available as independent switch outputs.

Channel F (0-10V): This channel is an analogue signal (0-10 V) used to controls fan speed.

Heating/Cooling valve channel select	Channel E (relay) Channel G (0-10V)

Only warm or only cold water is supplied centrally to the pipe system (2-pipe system). Depending on this setting one control value acts on one valve. According to the valve characteristic choose corresponding channel.

Channel E (relay): This channel is relay output, suitable for electrothermal valve drives.

Channel G (0-10V): This channel is an analogue signal (0-10 V) output, suitable for proportional valve drives.

Heating valve channel select	Channel E (relay) Channel G (0-10V)

Only warm water is supplied centrally to the pipe system (4-pipe system or heating only system). According to the valve characteristic choose corresponding channel.

Channel E (relay): This channel is relay output, suitable for electrothermal valve drives.

Channel G (0-10V): This channel is an analogue signal (0-10 V) output, suitable for proportional valve drives.

Cooling valve channel select	Channel D (relay) Channel F (0-10V)

Only cold water is supplied centrally to the pipe system (4-pipe system or cooling only system). According to the valve characteristic choose corresponding channel.

Channel D (relay): This channel is relay output, suitable for electrothermal valve drives.

Channel F (0-10V): This channel is an analogue signal (0-10 V) output, suitable for proportional valve drives.

Heating speed (for PI)	Lower Low Medium Fast Faster

If you have sufficient knowledge in heating technology so that the appropriate settings are carried out correctly. The options are suitable for standard applications. It is only effective in valve types of control is "*PWM control*" or "*Continuous-action control*"

Lower: Setting the PI controller response to lower for heating.

Low: Setting the PI controller response to low for heating.

Medium: Setting the PI controller response to medium for heating.

Fast: Setting the PI controller response to fast for heating.

Faster: Setting the PI controller response to faster for heating.

Cooling speed (for PI)	Lower Low Medium Fast Faster

If you have sufficient knowledge in cooling technology so that the appropriate settings are carried out correctly. The options are suitable for standard applications. It is only effective in valve types of control is "*PWM control*" or "*Continuous-action control*

Lower: Setting the PI controller response to lower for cooling.

Low: Setting the PI controller response to low for cooling.

Medium: Setting the PI controller response to medium for cooling.

Fast: Setting the PI controller response to fast for cooling. **Faster:** Setting the PI controller response to faster for cooling.

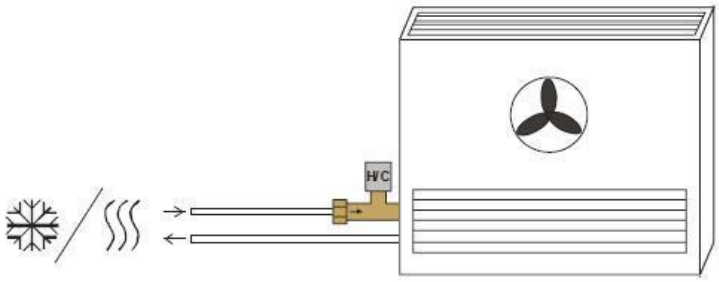

Fig.1: 2-pipe system

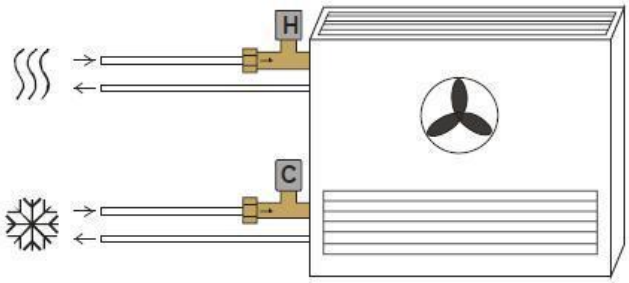

Fig.2: 4-pipe system

3.4.1. Actual temperature

KNX PARAMETER	SETTINGS
Sensor for measuring the actual temperature (Average Value = Sum / Count)	Local sensor (0 < Count <= 7) One sensor via EIB (Count = 1) Two sensor via EIB (Count = 2) .

Local sensor (0 < Count <= 7): the temperature sensor TS01F01ACC is must connected to the Fan Coil Unit Controller. Maximum can connect seven temperature sensor, the results take the average (Average Value = Sum / Count). In this case, the three parameters for *Sending of the actual temperature* become visible.

One sensor via EIB (Count = 1): The temperature is received via the KNX/EIB. Object 10 is the information input for KNX/EIB sensors.

Two sensors via EIB (Count = 2): The temperature is received via the KNX/EIB. Object 10 and 11 are the information input for KNX/EIB sensors. The results take the average (Average Value = Sum / Count).

Temperature 1 correction value (-5..5 'C)	5.0…5.0 (0.0) [°C]
Correction of the value measured by the temperature sensor TS01F01ACC or the actual value received via the KNX/EIB.	
Temperature 2 correction value (-5..5 'C)	5.0…5.0 (0.0) [°C]
Correction of the value measured by the actual value received via the KNX/EIB. This parameter is only visible if the option “Two sensor via EIB (Count = 2)” has been selected for the parameter *Sensor for measuring the actual temperature (Average Value = Sum / Count).*	
Cyclical sending of the actual temperature	NO YES
Activation of the cyclical transmission function for the actual temperature. This parameter is only visible if the option “Local sensor (0 < Count <= 7)” has been selected for the parameter *Sensor for measuring the actual temperature (Average Value = Sum / Count)*.	
Period for cyclical sending (1..255 s)	1..255s (2) ('C)
Setting the cyclical transmission period for the actual temperature. This parameter is only visible if the option “YES” is selected for the parameter *Cyclical sending*.	
Differential value for sending	0.5..3 (1) ('C)
Setting the temperature change at which the actual temperature is sent in addition to being sent after a change in value. This parameter is only visible if the option “Local sensor (0 < Count <= 7)” has been set for the parameter *Sensor for measuring the actual temperature (Average Value =Sum / Count)*.	
Read temperature cyclically via EIB	NO YES
Activation of the cyclical reading function for the actual temperature via KNX/EIB. This parameter is only visible if the option “One sensor via EIB (Count = 1)” or “Two	

sensor via EIB (Count = 2)" is set for the parameter *Sensor for measuring the actual temperature (Average Value =Sum / Count)*.	
Period for cyclical reading (1..255 s)	1..255s (2)
Setting the cyclical reading period for the actual temperature via KNX/EIB. This parameter is only visible if the option "YES" is selected for the parameter *Read temperature cyclically via EIB.*	
Monitoring period of actual temperature (2..255 min)	2..255 min (2)
Setting the monitoring period for the actual temperature (local temperature sensor or via the KNX/EIB).	
Sending of error signal cycles (1..255,0-Unlimited)	0..255 (0)

3.4.2. Setpoint

KNX PARAMETER	SETTINGS
Base setpoint temperature (10..35 'C)	10..35 'C (25)
Setting the base setpoint temperature. This is stored in non-volatile memory. Can be modified with a telegram to the communication object "*Setpoint – Base setpoint temperature*".	
Insensitive zone between heating and cooling (1..10 'C)	1..10 'C (5)
Setting the insensitive zone in degrees centigrade. The insensitive zone is a buffer area between heating and cooling operation. Neither heating nor cooling takes place within this insensitive zone. Without this buffer zone, the system would switch continuously between heating and cooling. As soon as the set point value has been under-run, the heating is activated and the set point value would not be achieved. If cooling were then to be started immediately, the temperature would fall below the set point value and switch on the heating again. This parameter is only visible if the option "4-pipe system" is selected for the parameter *HVAC-System.*	
Controller status at power on	Unchanged Comfort mode Standby mode Night mode Frost/heat Protection
When the installation is switched on, the device is set to the required HVAC mode. During operation, a selection can be made via the KNX/EIB. The ON commands are entered via the following objects: Comfort mode: 31 Standby mode: 32 Night mode: 33 Frost protection: 34	
Extended comfort mode time (2..255 min)	2..255 min (2)
Setting the duration of the comfort extension mode. If the device has been switched from comfort mode to night mode, the comfort extension is activated for the parameterized time by a telegram to the communication object "HVAC mode– ON command for comfort mode "and then switched back automatically to night mode.	
Reduced heating in standby mode (0..10 'C)	0..10 'C (2)
For setting the temperature reduction when heating in standby mode The reduction in temperature is calculated starting with the base setpoint temperature.	
Reduced heating during the night mode (0..10 'C)	0..10 'C (4)
For setting the temperature reduction when heating during night mode. The reduction in the temperature is calculated starting with the base setpoint temperature.	
Actual temperature threshold in frost protection mode (2..10 'C)	2..10 'C (7)
Setting the minimum frost protection temperature. When this temperature is reached, the heating is automatically turned up to prevent the temperature falling below the threshold value.	
Limit value for maximum setpoint heating (5..45	5..45 'C (35)

'C)	
Setting the maximum setpoint temperature for heating. The room is not heated above this temperature.	
Increased cooling in standby mode (0..10 'C)	0..10 'C (2)
For setting the temperature increase when cooling in standby mode. The increase in temperature is calculated starting with the base setpoint temperature.	
Increased cooling during the night mode (0..10 'C)	0..10 'C (4)
For setting the temperature increase when cooling during night mode. The increase in the temperature is calculated starting with the base setpoint temperature.	
Actual temperature threshold in heat protection mode (35..40 'C)	35..40 'C (40)
Setting the maximum heat protection temperature. When this temperature is reached, the cooling is automatically switched on to prevent the threshold value from being exceeded.	
Limit value for minimum setpoint cooling (5..45 'C)	5..45 'C (15)
Setting the minimum setpoint temperature for cooling. The room is not cooled below this temperature.	

The toggling between the HVAC modes is carried out via communication objects:

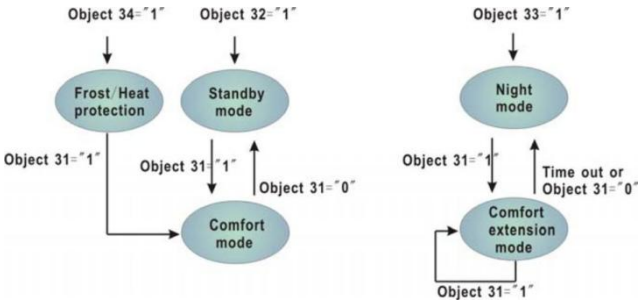

Fig.3: HVAC mode selection via communication objects

Object 31: HVAC mode – ON CMD for comfort mode
Object 32: HVAC mode – ON CMD for standby mode
Object 33: HVAC mode – ON CMD for night mode
Object 34: HVAC mode – ON CMD for building protection (Frost/Heat protection) mode
Time out: Parameterised *Extended comfort mode time* has elapsed

The difference between comfort mode and comfort extension is that the toggling from comfort mode to another mode is triggered via a communication object while switching from comfort extension mode to another mode also takes place automatically once the parameterized
Extended comfort mode time has elapsed.

Calculation of the setpoints for the various HVAC modes:

Comfort mode:
Heating setpoint temperature = Base setpoint temperature
Cooling setpoint temperature = Base setpoint temperature

In the 4-pipe system automatic heating/cooling mode:
Cooling setpoint temperature = Base setpoint temperature + Insensitive zone

Standby mode:
Heating setpoint temperature = Base setpoint temperature - Reduced heating in standby mode
Cooling setpoint temperature = Base setpoint temperature +Increased cooling in standby mode
In the 4-pipe system automatic heating/cooling mode:
Cooling setpoint temperature = Base setpoint temperature + Insensitive zone + Increased cooling in standby mode

Night mode:
Heating setpoint temperature = Base setpoint temperature - Reduced heating during night mode
Cooling setpoint temperature = Base setpoint temperature +Increased cooling during night mode
In the 4-pipe system automatic heating/cooling mode:
Cooling setpoint temperature = Base setpoint temperature + Insensitive zone + Increased cooling during night mode

Frost/Heat protection:
Heating setpoint temperature = Threshold value for frost protection
Cooling setpoint temperature = Threshold value for heat protection

The setpoint temperature is restricted by the setpoint limit value. The setpoint limit for heating defines the maximum temperature for heating the room. The setpoint limit for cooling defines the minimum temperature for cooling the room.

3.4.3. Fan

The fan coil actuator can be adapted very flexibly to the specific fan coil application required by means of parameter configurations. Thus initially the number of fan level required for the connected devices can be

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defined. Fan coil actuator has two channel can choose, one of channel is a relay output, the other is an analogue signal (0-10 V) output. According to the fan characteristic choose corresponding channel.

KNX PARAMETER	SETTINGS
Fan speed relay output	1-Speed fan 2-Speed fan 3-Speed fan
Setting the number of fan speeds. This parameter is only visible if the option “Channel A-C (relay)” has been selected for the parameter *Fan channel select.* The maximum number of usable fan levels depends on this parameter. In the configuration with *Channel A-C (relay)* a maximum of 3 fan levels can be used. Fan level outputs of a fan coil channel which are not used can optionally be used as switching outputs with a simple switching function. **1-Speed fan:** The fan has only 1-speed connect to the channel A (Channel A -> Speed 1). **2-Speed fan:** The fan has 2-speed connect to the channel A and channel B (Channel A -> Speed 1, Channel B -> Speed 2). **3-Speed fan:** The fan has 3-speed connect to the channel A, channel B and channel C (Channel A -> Speed 1, Channel B -> Speed 2, Channel C -> Speed 3).	
Fan speed 1 voltage (0-10V) **Fan speed 2 voltage (0-10V)** **Fan speed 3 voltage (0-10V)**	0v..10v
Setting the voltage of fan speeds. This parameter is only visible if the option “Channel F (0-10v)” has been selected for the parameter *Fan channel select.* The fan has connect to the channel F..	
Fan speed on bus voltage failure	Unchanged OFF
The behavior of the fan with a bus voltage failure is defined here. **Unchanged:** The fan speeds of the fan remain unchanged. **OFF:** The fan is switched off.	
Fan speed on bus voltage recovery	Recovery OFF
	1 2 3
Set the speed of the fan when voltage recovery. **Recovery:** After bus voltage recovery, the fan speed will be back to the speed of the power-down previous. **Off:** The fan will switch OFF after bus voltage recovery. **1, 2 or 3:** The fan switches to fan speed 1, 2 or 3.	
Fan switch-on delay (0..255 s)	0..255s
Set the delay of switch-on. The range is 0…255.	
Fan switch-off delay (0..255 s)	0..255s
Set the delay of switch-off. The range is 0…255..	
Starting characteristic of fan	Switch on at speed 1 Switch on at speed 2 Switch on at speed 3
Setting the speed at which the fan switches on. To ensure that the fan motor starts reliably, it is advisable to start at a higher speed initially, depending on the type, in order to maintain a higher torque at start-up. Once the *Minimum delay at starting speed* has elapsed, the fan is switched to the speed that corresponds to the control value. Fig. 3 shows an example of the response for the option “switch on at speed 3”.	
Minimum delay at starting speed(2…255s)	2…255s
The starting time of the fan is entered here which can vary from fan to fan depending on the inertia of the rotating components	
Changeover delay between fan speeds(s)	0.5…10s
Setting the changeover delay between the fan speeds. This parameter is only effective if the option “Channel A-C (relay)” has been set for the parameter *Fan channel select*.	
Minimum duration time on fan speed (2…255 s)	2…255s
Used to prevent frequent toggling between fan speeds which can be detrimental to comfort levels.	
Enable limitations (Automatic fan control)	Disable Enable

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Disable: Disable the fan limitations function.

Enable: Further parameters become visible, set as follows

At the same time, four communication objects for limitation of the fan speed are enabled:

Limitation 1, e.g. for frost/heat protection

Limitation 2, e.g. for comfort operation

Limitation 3, e.g. for night shutdown

Limitation 4, e.g. for standby operation

Important

The parameterized starting behavior which is a technical characteristic of the fan has a higher priority than a limitation operation, i.e. if a limitation is activated in fan speed 2 and a start-up behavior is parameterized via fan speed 3, the following behavior will result: The fan is in the OFF state and receives a control signal for fan speed 1. Initially the fan operates at fan speed 3 (start-up speed) and then proceeds to fan speed 2 which is defined by the limitation. The actual required fan speed 1 will not be achieved due to the limitation.

Speed ranges (limitations) are defined for the fan with the speed limitation function that may not be exceeded or undershot. Four limitations are available. This can be used for example for the control of various operating modes, e.g. frost/heat protection, comfort, night shut down and standby. In normal cases the thermostat takes these operating modes into account in its control variable for the actuator.

When automatic mode is exited, e.g. by a manual action, the limitations become inactive. The set limitations are reactivated after automatic operation is reactivated.

The following points apply for limitations:

The fan speed and valve position can be parameterized independently. *The limitation need not necessarily apply to one fan speed only. It can also encompass another range of the fan speeds, i.e. only certain fan speeds can be set if the limitation is active. In this way a limited control is also possible.

*The limitation is activated if a telegram with the value 1 is received on the limitation object. The limitation is deactivated if a telegram with the value 0 is received on the limitation object. A manual action ends automatic mode. *If a limitation is activated, the Fan Coil Controller switches to the parameterized fan speed regardless of the control value. If during the activation of the limitation another fan speed or a fan speed outside the range of the “limitation range” is set, the required fan speed or the limit fan speed of the range is set.

*After switch off of the limitations, the fan speed and the communication objects for valve control are recalculated and executed, This means that during limitation the actuator operates normally in the background, the

Outputs are not changed and implementation only occurs after the end of limitation.

There are the same parameters and priority for each of the individual four limitations used to limit the fan speeds. If several ON commands 1 are received by the various fan speed limitation objects, the value that was last received for the fan limitation control is decisive. This is also applies for the OFF command 0.

	3, 2, 1, OFF
	unchanged
	OFF
Speed with limitation 1	1
Speed with limitation 2	1, OFF
Speed with limitation 3	2
Speed with limitation 4	2, 1
	2, 1, OFF
	3
	3, 2
	3, 2, 1

With this parameter you set the fan speed that is set with active limitation, and the fan speed is set with automatic control.

3, 2, 1, OFF: Everything is possible.

Unchanged: The state is retained.

OFF: Off.

1: limited to speed 1.

1, OFF: limited to speed 1 and off.

2: limited to speed 2.

2, 1: limited to speed 2 and 1.

2, 1, OFF: limited to speed 2, 1 and off.

3: limited to speed 3.

3, 2: limited to speed 3 and 2.

3, 2, 1: limited to speed 3, 2 and 1.

: The control value is ignored.

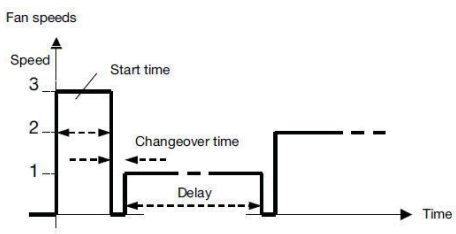

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Fig.3: Switch fan on at speed 3

3.4.4. Valve

The Fan Coil Unit Controller can control the following valve drives:
Electromotive valve drives: Electromotive valve drives close and open valves via a small electric motor. It is available as proportional valve drives. Proportional valve drives are controlled via an analogue signal (0...10 V).
Electrothermal valve drives: Electrothermal valve drives are adjusted via the heat expansion of a material as a result of a flow of electrical current. Electrothermal valve drives are regulated via two-step control or pulse width modulation.

3.4.4.1. Heating/Cooling valve (relay) window

This parameter window is only visible if the option “Channel E(relay)” has been selected for the parameter *Heating/Cooling valve channel select* in the 2-pipe system.
The parameter windows “Heating/Cooling valve (relay)” , “Heating valve (relay)” and “Cooling valve (relay)” are largely similar. Only the default values for the cycle time differ from each other.

KNX PARAMETER	SETTINGS
Types of control	Twostep(ON/OFF)control PWM control
Two-step (ON/OFF) control: the valve is fully opened if the room temperature falls below a lower limit value while the valve is fully closed if the room temperature exceeds an upper limit value. These types of control is not used PI control. Upper limit value=Setpoint temp. + 1°C Lower limit value=Setpoint temp. – 1°C **PWM control:** The control value is fixed for a cyclic period and converted into the valve opening duration. For example, the control value 20 % is converted at a cyclic period of 15 minutes into a valve opening time of 3 minutes. The control value 50 % produces a valve opening time of 7.5 minutes. These types of control is used PI control. In fig.5 is the PWM control diagram:	
Valve type	Inverted (de-energized opened) Normal (de-energized closed)
Setting the control direction of the valve.	
Reaction on bus voltage failure	Contact unchanged Contact open Contact closed
Contact unchanged: No change of the contact position. **Contact opened:** The contact is opened with bus voltage failure. **Contact closed:** The contact is closed with bus voltage failure.	
Enable valve purge	NO Yes
NO: Disable valve purge. **YES:** The 1 bit *Trigger valve purge* communication object is enabled. With this parameter, the function of a valve purge of the output can be enabled. Regular purging of a heating valve can prevent deposits from forming in the valve area and restricting the valve function. At the same time it is assured that the heating element is purged which simplifies the bleeding of trapped air. This is particularly important at times when the valve position does not change very much. The valve is opened to the maximum during a valve purge. It can be triggered via the object *Trigger valve purge* and/or automatically at adjustable intervals. With the option *yes*, the objects *Trigger valve purge* and *Status valve purge* are enabled. Also the parameter *Time of valve purge in minutes (1...255)* and *Automatic valve purge* are enabled.	
Time of valve purge(1..255min)	1..255min
Set the time for the valve purge. In this time the valve is fully opened. When the time has elapsed, the state before the purge is re-established.	
Automatic valve purge	NO One times per day One times per week One times per month
Set the automatic valve purge frequency. **One time per day:** Automatic valve purge every day. **One time per week:** Automatic valve purge every week. **One time per month:** Automatic valve purge every	

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month.

A purge can be initiated by the object *Trigger valve purge*. The counter for automatic purging starts to run when the parameter is loaded in the actuator. The time is reset each time it is downloaded. The time is reset as soon as purging is completed. This can occur either through automatic purging or via the object *Trigger valve purge*.

The parameter windows “Heating/Cooling valve (relay)”, “Heating valve (relay)” and “Cooling valve (relay)” with the both of control type functions are largely similar. Only the following functions differ from each other.

PWM Cycle time(1..30min)	1..30min

This is used to set the cycle time of the PWM control.

An actuation cycle consists of one on and one off process and forms a PWM period. Example: Actuating value= 20%, PWM time = 10 min: In an actuating cycle of 10 min, 2 min switched on and 8 min switched off (i.e. 20% on/ 80% off). To fully open an electrothermal control valve takes approximately 2-3 minutes. That is why a cycle time of less than 15 minutes is not practical.

If a PWM cycle time of 15 minutes has been selected, this means that 4 switching operations (switching on/off) occur each hour. 96 in a day; 3000 in a month. About 36,000 switching operations are achieved annually. With a relay life of 10^5 switching operations, this means a switch actuator life of less than 3 years.

If however, the cycle time is set to just 3 minutes, this means about 150,000 switching operations annually, which normally means the life of the switch actuator, would be less than a year.

This observation assumes an AC1 (practically ohmic load) switch loading at rated current. If the maximum number of switching operations for a purely mechanical relay loading is assumed, the life of the switch actuator is extended. This has an inherent risk, as the contact materials will wear prematurely and cannot safely guarantee conduction of current.

In the following table, conventional cycle times for control of various heating and air-conditioning systems are listed:

Heating system	Control type	Cycle time
Hot water Supply temperature 45 °C – 70 °C	PWM	15 minutes
Hot water Supply temperature < 45 °C	2-step PWM	- 15 minutes
Underfloor/wall heating	PWM	30-20 minutes
Electric underfloor heating	PWM	30-20 minutes
Electric fan heating	2-step	-
Electric convection heating	PWM 2-step	10-15 minutes -

Minimum heating	0%,5%,10%,15%,20%
Minimum permissible valve setting with actuating value.	

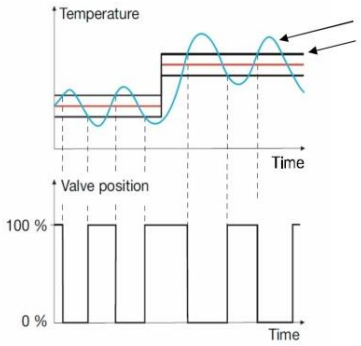

Fig.4: Diagram for 2-step control

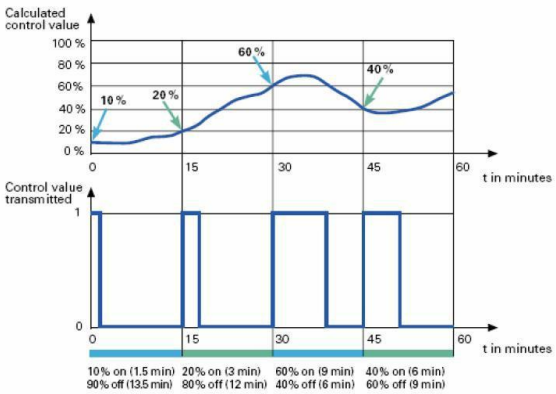

Fig.5: PWM control diagram

3.4.4.2. Heating/Cooling valve (0-10v)

This parameter window is only visible if the option “Channel G (0-10v)” has been selected for the parameter *Heating/Cooling valve channel select* in the 2-pipe system.

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The parameter windows “Heating/Cooling valve (0-10v)”, “Heating valve (0-10v)” and “Cooling valve (0-10v)” are largely similar.

KNX PARAMETER	SETTINGS
Types of control	ON(10V)/OFF(0V) control Continuous-action control
ON(10V)/OFF(0V) control: the valve is fully opened (10v) if the room temperature falls below a lower limit value, while the valve is fully closed (0v) if the room temperature exceeds an upper limit value. These types of control is not used PI control. It used the same with *Two-step (ON/OFF) control*. Upper limit value=Setpoint temp. + 1°C Lower limit value=Setpoint temp. – 1°C **Continuous-action control**: A continuous controller has a continuously changing control value which can output voltage between 0v to 10v, it can be used to activate proportional valve drives. The valve can thereby be fully opened, fully closed and moved to any intermediate position. This types of control is used PI control.	
Valve type	Inverted (de-energized opened) Normal (de-energized closed)
Setting the control direction of the valve.	
Valve adjustment	Disable Enable
User-defined adjustment of the valve characteristics **Disable**: Disable the valve adjustment. **Enable**: Enable the valve adjustment. Only select the option “Enable” if you have sufficient knowledge in heating and cooling technology so that the appropriate settings are carried out correctly. The option “Disable” is suitable for standard applications.	
Lower limit for active valve opening range (0..100%) **Upper limit for active valve opening range (0..100%)**	0..100%
For setting the valve characteristic curve i.e. the valve position dependent on the control value..	
Enable valve purge	NO Yes
NO: Disable valve purge. **YES:** The 1 bit *Trigger valve purge* communication object is enabled With this parameter, the function of a valve purge of the output can be enabled. Regular purging of a heating valve can prevent deposits from forming in the valve area and restricting the valve function. At the same time it is assured that the heating element is purged which simplifies the bleeding of trapped air. This is particularly important at times when the valve position does not change very much. The valve is opened to the maximum during a valve purge. It can be triggered via the object *Trigger valve purge* and/or automatically at adjustable intervals. With the option *yes*, the objects *Trigger valve purge* and *Status valve purge* are enabled. Also the parameter *Time of valve purge in minutes (1..255)* and *Automatic valve purge* are enabled. 	
Time of valve purge(1..255min)	1..255min
Set the time for the valve purge. In this time the valve is fully opened. When the time has elapsed, the state before the purge is re-established.	
Automatic valve purge	NO One times per day One times per week One times per month
Set the automatic valve purge frequency. **One time per day:** Automatic valve purge every day. **One time per week:** Automatic valve purge every week. **One time per month:** Automatic valve purge every month. A purge can be initiated by the object *Trigger valve purge*. The counter for automatic purging starts to run when the parameter is loaded in the actuator. The time is reset each time it is downloaded. The time is reset as soon as purging is completed. This can occur either through automatic purging or via the object *Trigger valve purge*.	

3.4.5. Function statue

KNX PARAMETER	SETTINGS
Enable 1Bit object “Status fan speed x” (x:1,2,3)	NO Yes
Set the enable of the response about the fan speed’s status. **NO**: There is no response. **Yes**: Three 1 bit communication objects, *Status fan speed x*, x = 1 to 3 are enabled 	

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Meaning	Current fan speed Required fan speed

This parameter defines whether the status of the *current fan speed* or the *required fan speed* is displayed.
Current fan speed: it response the fan speed is actually operating.
Required fan speed: it response the fan speed has to be achieved

Send object value	No, update only Always response Only after change

No, update only: The status byte is always updated but never sent.
Always response: The status byte is always sent regardless whether the status changes.
Only after change: Status changes are sent to the status bit on the KNX...

Enable 1Byte object "Status fan speed "	NO Yes

This status byte defines the figure value of the fan speed.

Yes: The object *Status fan speed* is enabled. This status byte defines the numerical value of the fan speed. This can be the actual or target speed depending on the parameterization.

The following value assignment is applied:

1-byte values	Hex	Bin. value	Speed
0	00	00000000	0(off)
1	01	00000001	Speed 1
2	02	00000010	Speed 2
3	03	00000011	Speed 3

With the enabling of the 1-byte status display *Status fan speed*, two further parameters appear: "Meaning" and "Send object value"

Meaning	Current fan speed Required fan speed

This parameter defines whether the status of the *current fan speed* or the *required fan speed* is displayed.
Current fan speed: it response the fan speed is actually operating.

Required fan speed: it response the fan speed has to be achieved.

Send object value	No, update only Always response Only after change

No, update only: The status byte is always updated but never sent. **Always response:** The status byte is always sent regardless whether the status changes.
Only after change: Status changes are sent to the status bit on the KNX.

Enable 1Bit object "Status fan On/Off"	NO Yes

NO: there is no response.

Yes: it response the fan speed status On or Off.

Some fans initially require an ON telegram before they are set to a fan speed from the OFF state. This ON telegram affects a main switch which has to be switched on.

This demand can be implemented with any switch output which is controlled via the *Status fan* communication object. The corresponding switch communication object of the switch actuator should be connected with the *Status fan* communication object.

Send object value	No, update only Always response Only after change

No, update only: The status is always updated but not sent.

Always response: The status is always sent regardless whether the status changes.

Only after change: Status changes are sent to the status bit on the KNX

Enable 1Bit object "Status fan speed automatic"	NO Yes

NO: There is no response.

Yes: It response the fan speed automatic status.

Send object value	No, update only Always response

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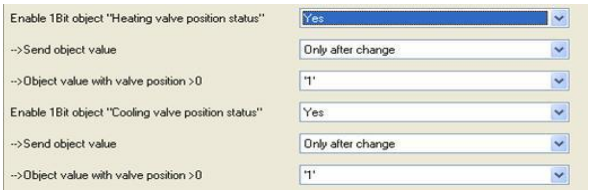
	Only after change
No, **update only**: The status is always updated but not sent. **Always response**: The status is always sent regardless whether the status changes. **Only after change**: Status changes are sent to the status bit on the KNX.	
Enable 1Bit object "Heating valve position status" **Enable 1Bit object "Cooling valve position status"**	NO Yes
NO: there is no response. **Yes**: it response the valve position status. 	
Send object value	No, update only Only after change
No, update only: The status is always updated but not sent. **Only after change:** Status changes are sent to the status bit on the KNX.	
Object value with valve position >0	'0' '1'

3.5. Function parameter "Floor Heating"

Setting the functions of the floor heating. This parameter is only visible if the option "Floor Heating" has been selected for the parameter *Supported functions.* It can be configured maximum seven channels and parameterised independently. Each channels can be read the temperature via the KNX/EIB or the local temperature sensors.

KNX PARAMETER	SETTINGS
Enable slave clock	Disable Enable
Disable: Disable the slave clock. **Enable:** Enable the slave clock, only used for timer mode. At the same time, three communication objects for activation of the slave clock are enabled. The local clock of slave system clock shall be synchronized by reception of a 'System Clock' information from the master system clock.	

3.5.1. Channel A (Floor heating)

Each channel (A,B,C,D,E) output of the Floor heating are independent and the same. So, Understand only one channel output is enough. The following paragraph will description of the first channel output in detail.

KNX PARAMETER	SETTINGS
Channel A work mode	Inactive Floor heating Switch controller
Inactive: The channel inactive. **Floor heating: The** channel is used to floor heating**.** **Switch controller:** The channel is used to switch controller. If the channel select the floor heating, the following parameter will appears.	
Sensor for measuring the actual temperature	Local sensor Via EIB
Local sensor: The temperature sensor TS01F01ACC is must connected to the Fan Coil Unit Controller. One local temperature sensor corresponds to one channel. In this case, some parameters for local sensor become visible. **Via EIB:** The actual temperature is get from the other devices via KNX/EIB. One temperature sensor object corresponds to one channel. In this case, some parameters for KNX/EIB temperature sensor become visible.	
Local sensor:	
Temperature sensor serial number (1..255)	1..255
Each temperature sensor has a serial number. The number is the temperature sensor's address.	
Temperature correction value(-5..5°C)	-5…5
Correction of the value measured by the temperature sensor	

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Sending of the actual temperature:	
Cyclical sending	NO YES
NO: Don't sending the actual local temperature to the KNX /EIB bus. **YES:** Sending the actual local temperature to the KNX/EIB bus. Activation of the cyclical transmission function for the actual local temperature..	
Period for cyclical sending (1..255s)	1…255s
Setting the cyclical transmission period for the actual temperature.	
Differential value for sending(°C)	0.5 1.0 1.5 2.0 2.5 3.0
Setting the temperature change at which the actual temperature is sent in addition to being sent after a change in value	
Via EIB:	
Temperature correction value(-5..5°C)	-5…5
Correction of the value measured by the actual temperature received via the KNX/EIB.	
Read temperature cyclically via EIB	NO YES
NO: Does not read temperature via EIB. **YES:** Read temperature cyclically via EIB. Activation of the cyclical reading function for the actual temperature via KNX/EIB.	
Period for cyclical reading (1..255s)	1…255s
Setting the cyclical reading period for the actual temperature via KNX/EIB.	
Monitoring of actual temperature:	
Monitoring period of actual temperature (2…255min)	2…255min
Setting the monitoring period for the actual temperature (local and via the KNX).	
Sending of error signal cycles (1..255,0-Unlimited)	0..255 (0)
For setting the send repetition in the event of an error message. If the option "1..255" is selected, the error signal is only sent 1..255 counts if there is a change in the object value. If the option "0-Unlimited" is set, the object value is sent according to the parameterized *Monitoring period of actual temperature (2..255 min)*.	

3.5.1.1. Operation mode

The parameters are the channel A's floor heating functions.

KNX PARAMETER	SETTINGS
The operation mode after bus voltage recovery	Recovery Normal Day Night Away Timer
After bus voltage recovery channel A's operation modes. **Recovery:** After bus voltage recovery the mode which existed before bus voltage failure is set. **Normal, Day, Night, Away, Time:** Each operation mode has different setpoint temperature, you can select the operation mode with the actual situation.	
Floor heating speed (for PI)	Lower Low Medium Fast Faster
If you have sufficient knowledge in heating technology so that the appropriate settings are carried out correctly.	

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The options are suitable for standard applications. Setting the PI controller response for heating. There is 5 speeds for the heating.
Setpoint temperature:

• **Normal mode setpoint temperature(5..35°C)** • **Day mode setpoint temperature(5..35°C)** • **Night mode setpoint temperature(5..35°C)** • **Away mode setpoint temperature(5..35°C)**	5..35
Setting the floor heating's setpoint temperature. Each operation mode has different setpoint temperature. When you want to change the room temperature only need a simple change operating mode can change to the corresponding temperature.	
Timer mode (Preset 1…Preset 3): Setting the floor heating's timer mode preset (Preset 1, Preset 2, and Preset 3). Each timer mode preset set a different temperature and different start time. When the slave clock running to any of the preset time, it is working to the corresponding preset mode.	
• **Preset 1 temperature (5..35°C)** • **Preset 2 temperature (5..35°C)** • **Preset 3 temperature (5..35°C)**	-5…5
24 hours a day is divided into three preset time corresponding three temperature point, so it in different period of time can automatic switching to different temperature.	
Start/Stop the floor heating	Stop Start
Start or stop the floor heating in current slave clock.	
Start time of hour (0..23h)	0..23
Setting the start time of hour for the preset 1(2, 3).	
Start time of minute (0..59min)	0..59
Setting the start time of minute for the preset 1(2, 3).	

3.5.1.2. Valve

KNX PARAMETER	SETTINGS
Valve type	Inverted(de-energized opened) Normal(de-energized closed)
Setting the control direction of the valve.	
Reaction on bus voltage failure	Contact unchanged Contact open Contact closed
Setting the valve position after the bus voltage failure. **Contact unchanged:** The valve remains unchanged at bus voltage failure. **Contact open:** The valve remains opened at bus voltage failure. **Contact closed:** The valve remains closed at bus voltage failure.	
PWM Cycle time (1..30min)	1..30min
This is used to set the cycle time of the PWM control An actuation cycle consists of one on and one off process and forms a PWM period. Example: Actuating value= 20%, PWM time = 10 min: In an actuating cycle of 10 min, 2 min switched on and 8 min switched off (i.e. 20% on/ 80% off).	
Minimum heating	**0%, 5%, 10%. 15%, 20%**
Minimum permissible valve setting with actuating value.	
Enable 1Bit object Valve position status	NO Yes
NO: there is no response. **Yes**: it response the valve position status.	
If you select yes , **Send object value** and **Object value with valve position>0** appear	

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Send object value	No, update only Only after change

No, update only: The status is always updated but not sent.

Only after change: Status changes are sent to the status bit on the KNX.

Object value with valve position>0	’0’ ’1’
Enable valve purge	NO Yes

NO: Disable valve purge.

YES: The 1 bit *Trigger valve purge* communication object is enabled. With this parameter, the function of a valve purge of the output can be enabled. Regular purging of a heating valve can prevent deposits from forming in the valve area and restricting the valve function. At the same time it is assured that the heating element is purged which simplifies the bleeding of trapped air. This is particularly important at times when the valve position does not change very much. The valve is opened to the maximum during a valve purge. It can be triggered via the object *Trigger valve purge* and/or

Automatically at adjustable intervals. With the option *YES*, the objects

Trigger valve purge and *Status valve purge* are enabled. Also the parameter *Time of valve purge in minutes (1...255)* and *Automatic valve purge* are enabled.

Time of valve purge(1..255min)	1..255min

Set the time for the valve purge. In this time the valve is fully opened. When the time has elapsed, the state before the purge is re-established.

Automatic valve purge	NO One times per day One times per week One times per month

One time per day: Automatic valve purge every day.

One time per week: Automatic valve purge every week.

One time per month: Automatic valve purge every month.

A purge can be initiated by the object *Trigger valve purge*. The counter for automatic purging starts to run when the parameter is loaded in the actuator. The time is reset each time it is downloaded. The time is reset as soon as purging is completed. This can occur either through automatic purging or via the object *Trigger valve purge*.

Enable pipe pressure protection when all of floor heating OFF	NO Yes

NO: Disable this channel pipe pressure protection.

YES: Enable this channel pipe pressure protection when all of room floor heating turn off.

When all of room floor heating turn off, pipe pressure will increase, easy to cause the damage, so must carry on the timing of the reduced pressure, this process in order to prevent a room temperature is too high, and each channel can timing take turns exhaust pressure work. At the same time only one channel will be open. When one of the room floor heating is turn on, all of the pipe pressure protection will end.

Valve open value	**5%** **10%** **15%** **20%** **25%** **30%**

Setting the valve’s position open value

Protection time (1..255min,0-Unlimited)	0-Unlimited 1..255min

A channel to protect time, when time end turn to the next channel reduced pressure protection. If the option “1..255 min” is selected, the channel is only working 1..255 min then turn to the next channel. If the option “0-Unlimited” is set, the channel is working all the time until one of the room turn on the floor heating.

The floor heating parameter windows “Channel A,B,C,D,E,F,G” , “Operation mode” and “Valve” with the parameter of control functions are largely similar. Only the following functions channel F,G’s valve differ from channel A,B,C,D,E’s valve.

Valve adjustment	Disable Enable

User-defined adjustment of the valve characteristics.

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Disable: Disable the valve adjustment. **Enable:** Enable the valve adjustment. Only select the option “Enable” if you have sufficient knowledge in heating technology so that the appropriate settings are carried out correctly. The option “Disable” is suitable for standard applications.	
Lower limit for active valve opening range (0..100%) **Upper limit for active valve opening range (0..100%)**	(0..100%)
For setting the valve characteristic curve i.e. the valve position dependent on the control value.	

3.6. Function parameter “Switch actuator”

Each relay channel (A,B,C,D,E) whether in HVAC or floor heating function, no use channel can be configured to switch controller. It can used to control light or other switch products.

More functions setup in this mode, the following section will description detailed of the Switch Actuator mode.

KNX PARAMETER	SETTINGS
Response if switch state ON/OFF	No response Always response Only after change
This parameter determine the work mode of response **No response:** No response switch state. **Always response:** Always response switching state when receive the channel telegram data. **Only after change:** Only response switch state of the channel when change state changed.	
Save statistic for ON switching “time (hour-2bytes)"	Disable Enable
This function is used to calculate the total ON time for channel output, The maximum time is 65535h. This function is very useful, Because can know channel work status through this function. **Disable:** Disable Statistics ON time. **Enable:** Enable Statistics ON time.	
Alarm when time out(1…65535,0-invalid)	1..65535h, 0-invalid
This parameter set the ON time alarm overflow time. When the device's operating time arrive the setting value will alarm. The value rang is 1…65535h, 0 is invalid.	
Transmit telegram interval when alarm(1…65535,0-invalid)	1..65535, 0-invalid
Set the alarm time interval.	
Switch state on bus voltage fail	Unchanged ON OFF
When bus voltage failure and the function will be executed. Three choices will be available as following: Unchanged: The channel switch position unchanged after bus voltage failure **ON**: The channel position will be switch ON after bus voltage failure **OFF**: The channel position switch OFF after bus voltage failure	
Switch state after bus voltage recovery	Unchanged Recover ON OFF
When power on and the bus voltage recovery, This function will be executed. four selection will be available as following: **Unchanged**: The channel switch position unchanged after bus voltage recovery. **Recovery**: After bus voltage recovery, The channel switch position will be back to the state of the power-down previous. **ON**: The channel position will switch ON after bus voltage recovery. OFF: The channel position will switch **OFF** after bus voltage recovery	
Time function	Disable Staircase lighting ON/OFF delay
Disable: disable time function. **Staircase lighting:** Control staircase light. **ON/OFF delay:** This function is including switch ON	

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delay and switch OFF delay.	
Staircase lighting:	
Control staircase lighting	Start with “1”, Stop with“0” Start with“1”, Invalid with“0” Start with“1/0”,Can’t stop
Start with “1”, stop with“0”: When receive data 1 and the staircase light start run automatic, stop with time out or stop with 0. **Start with“1”, invalid with“0”**: When receive data 1 and the staircase light start run automatic, 0 is invalid. **Start with“1/0”, can’t stop**: When receive data 1/0 and the staircase light start run automatic, Can’t stop.	
Change staircase lighting time via bus	NO YES
NO: Can’t modify staircase lighting delay off time via bus, only can be set by database. **YES:** Allow modify staircase lighting delay off time via bus by user.	
Alarm staircase lighting to bus	NO YES
NO: Prohibition alarm. **YES:** Allow send out warning state use alarm data point for ON/OFF staircase light	
Time for off : (0..255 Min)	0..255 min
Duration minutes of the staircase lighting delay off time.	
Time for off : (0..59 Sec)	0..59 Sec
Duration seconds of the staircase lighting delay off time.	
Warning staircase lighting (ON->OFF->ON)	NO YES
NO: Not allow alarm **YES:** Allow alarm.	
Warning before the end of time (sec)	3..100 sec
If this time out range of the total staircase light time, then the warning function is invalid.	
Duration time for warning (sec)	1..10 sec
If this time out range of the total staircase light time, then the warning function is invalid	
ON/OFF delay:	
Delay for switching ON : (0..255 Min)	0..255 Min
Duration minutes of the ON delay.	
Delay for switching ON : (0..59 Sec)	0.. 59 Sec
Duration seconds of the ON delay.	
Delay for switching OFF : (0..255 Min)	0..255 Min
Duration minutes of the OFF delay.	
Delay for switching OFF : (0..59 Sec)	0.. 59 Sec
Duration seconds of the OFF delay.	

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4. Communication objects description

In this section will introduce the communication objects, the objects will show by setting the function enable. In the Fan/Fan coil controller: fan, Heating or cooling communication objects are the same with Heating and cooling. So, the following paragraph will description of the Heating and cooling and Floor heating communication objects in detail.

4.1. Objects “General”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
General (OBJ # 0)	Send cycles	C R T	DPT 1.003 1bit
This communication object is always active and valid. invert the value send telegram to bus in next frame. e.g. last telegram value is “1”, the next telegram value is “0”			

4.2. Fan/Fan coil controller

4.2.1. Objects “Actual temperature”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Actual temperature (OBJ # 10)	Actual temperature 1	C R W T U	DPT 9.001 2 byte
If the Fan Coil Unit Controller is operated with the temperature sensor TS01F01ACC connected, the actual temperature is sent to this communication object via the KNX/EIB. Cyclical sending can also be set in the parameters. The parameterized *Temperature 1 Correction value* is included. If the Fan Coil Unit Controller is operated without the temperature sensor, it receives the actual temperature via the KNX/EIB at this communication object.			
Actual temperature (OBJ # 11)	Actual temperature 2	C R W T U	DPT 9.001 2 byte
This object is only visible if the option “Two sensor via EIB (Count=2)” is selected, it receives the actual temperature via the KNX/EIB at this communication object.			
Actual temperature (OBJ # 12)	Actual temp. 1 error signal	C R T	DPT 1.005 1bit
An error signal can be sent to the KNX/EIB with this object if the space temperature 1 has not been refreshed within a set period. The output of the error signal can occur 1..255 or cyclically. Telegram value: “0”: No error “1”: Error			
Actual temperature (OBJ # 13)	Actual temp. 2 error signal	C R T	DPT 1.005 1bit
An error signal can be sent to the KNX/EIB with this object if the space temperature 2 has not been refreshed within a set period. The output of the error signal can occur 1..255 or cyclically. Telegram value: “0”: No error “1”: Error			
Actual temperature (OBJ # 14)	Frost/heat alarm error signal	C R T	DPT 1.005 1bit
The Fan Coil Controller sends information via this communication object about whether frost protection mode is active. Telegram value: “0”: No frost/heat protection “1”: Frost/heat protection			

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4.2.2. Objects “Setpoint”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Setpoint (OBJ # 20)	Base setpoint temperature	C R W T U	DPT 9.001 2 byte
The base setpoint value can be modified via this input. It is stored in non-volatile memory.			
Setpoint (OBJ # 21)	Instantaneous setpoint temp.	C R T	DPT 9.001 2 byte
This object is only visible if the option “Two sensor via EIB (Count=2)” is selected, it receives the actual temperature via the KNX/EIB at this communication object.			
Actual temperature (OBJ # 12)	Actual temp. 1 error signal	C R T	DPT 9.001 2 byte
The current setpoint (base setpoint including the reduction/increase in standby mode or during night mode) can be read out from this communication object.			

4.2.3. Objects “HVAC control mode”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
HVAC control mode (OBJ # 25)	HVAC control mode (byte)	C R W T U	DPT 20.105 1 byte
HVAC control mode conversion. Only the following telegram value is effective. Telegram value: “0”: Auto “1”: Heat “3”: Cool “6”: Off “9”: Fan only			
Setpoint (OBJ # 21)	Instantaneous setpoint temp.	C R T	DPT 9.001 2 byte
This object is only visible if the option “Two sensor via EIB (Count=2)” is selected, it receives the actual temperature via the KNX/EIB at this communication object.			
HVAC control mode (OBJ # 27)	Activation of heating mode	C R W T U	DPT 1.003 1 bit
Heating mode is activated via these communication objects. Telegram value: “0”: No function “1”: Heating mode			
HVAC control mode (OBJ # 28)	Activation of cooling	C R W T U	DPT 1.003 1 bit
Cooling mode is activated via these communication objects. Telegram value: “0”: No function "1”: Cooling mode			
HVAC control mode (OBJ # 29)	Activation of fan only	C R W T U	DPT 1.003 1 bit
Fan only mode is activated via these communication objects. Telegram value: “0”: No function “1”: Fan only mode			

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4.2.4. Objects “HVAC mode”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
HVAC mode (OBJ # 30)	HVAC mode (byte)	C R W T U	DPT 20.102 1 byte
Input object shall be used to the HVAC Mode. Telegram value: “1”: Comfort mode “2”: Standby mode “3”: Night mode “4”: building protection			
HVAC mode (OBJ # 31)	ON CMD for comfort mode	C R W T U	DPT 1.001 1 bit
The Fan Coil Controller is switched to comfort mode via this communication object. If the device has been switched from comfort mode to night mode, the comfort extension is activated for the duration of the parameterized Extended comfort mode time by a telegram at this communication object. The comfort extension is restarted by each subsequent telegram. Telegram value: “0”: No function “1”: Comfort mode/comfort extension			
HVAC mode (OBJ # 32)	ON CMD for standby mode	C R W T U	DPT 1.001 1 bit
Input object for switching to standby mode. Telegram value: “0”: No function “1”: Standby mode			
HVAC mode (OBJ # 33)	ON CMD for night mode	C R W T U	DPT 1.001 1 bit
Input object for switching to night mode. Telegram value: “0”: No function “1”: Night mode			
HVAC mode (OBJ # 34)	ON CMD for building protection	C R W T U	DPT 1.001 1 bit
Input object for switching to building protection mode. Telegram value: “0”: No function “1”: building protection mode			

4.2.5. Objects “Fan”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Fan (OBJ # 40)	Fan speed automatic	C W U	DPT 1.003 1 bit
If fan speed automatic mode is activated, it will be activated on this communication object with the value ‘1’ after a download, bus reset or via a telegram. Automatic mode is switched off, if a signal is received on this communication object with the value ‘0’ , a Fan speed with % value or Fan speed 1(2,3) communication object. Fan speed limitation only used for fan speed automatic mode.			
HVAC mode (OBJ # 41)	Fan speed with % value	C W U	DPT 5.001 1 byte

With the coding below combinations of devices with different number of steps is possible. The stop of the actuator is defined and the highest speed of the controller always results in highest speed of the actuator. Steps in between are interpreted to the best. Fan speed automatic mode becomes inactive.

1-Speed		
Speed	**Percent (%)**	**Value**
0	**0**	**0**
I	**1 - 100**	**1 - 255**

2-Speed		
Speed	**Percent (%)**	**Value**
0	**0**	**0**
I	**1 - 50**	**1 - 128**
II	**51 - 100**	**129 - 255**

3-Speed		
Speed	**Percent (%)**	**Value**
0	**0**	**0**
I	**1 - 33**	**1 - 85**
II	**34 - 67**	**86 - 170**
III	**68 - 100**	**171 - 255**

Fan (OBJ # 42)	Fan speed 1	C W U	DPT 1. 001 1 bit
Fan (OBJ # 43)	Fan speed 2	C W U	DPT 1. 001 1 bit
Fan (OBJ # 44)	Fan speed 3	C W U	DPT 1. 001 1 bit

Via the 1 bit communication object the Fan Coil Actuator can receive a control value

for fan speed x (x=1,2,3). Automatic operation is disabled. A renewed activation

occurs via the communication objects Fan speed automatic.

If several ON commands ‘1’ are received by the various fan speed objects, the value

that was last received for the fan control is decisive. This also applies for the OFF

command ‘0’. If the actuator for a speed that has been switched off receives another

OFF command, it is carried out, i.e. a speed that is currently switched on is switched

off, even though the corresponding fan speed object does not act directly on the

speed. The last command – in this case the OFF command of another speed – is

always executed.

Telegram value: “0”: Fan OFF

“1”: Fan speed x ON

4.2.6. Objects “Fan status”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Fan (OBJ # 45)	Status fan speed 1	C R T	DPT 1.001 1 bit
Fan (OBJ # 46)	Status fan speed 2	C R T	DPT 1.001 1 bit
Fan (OBJ # 47)	Status fan speed 3	C R T	DPT 1.001 1 bit
These objects are enabled if the parameter *Enable 1bit object “Status fan speed x”* is enabled in the parameter window *Function status*. It can be parameterized (see parameter window *Function status*) whether the object value is only updated, always sent on the KNX/EIB or only sent after a change. It can be parameterized for the status to indicate a current fan speed or a required fan speed. With this object, is possible to display the fan speed in a visualization program or to indicate it using a diode. Telegram value: ‘0’ = fan speed OFF ‘1’ = fan speed ON			
Fan (OBJ # 48)	Status fan speed	C R T	DPT 5. 010 1 byte
This object is enabled if the parameter Enable 1-byte object “Status fan speed” is enabled in the parameter window Function status. It can be parameterized (see parameter window Function status) whether the object value is only updated, always sent on the KNX/EIB or only sent after a change. It is possible to parameterize if the actual or required speed are displayed with the status object. With this object it is possible for example to display the fan speed on the display as a direct numerical value The following telegram values apply for the 1-byte object			

Numerical value	Hexadecimal	Binary value	Speed
0	00	00000000	0 (off) Speed
1	01	00000001	1 Speed
2	02	00000010	2 Speed
3	03	00000011	3

Fan (OBJ # 49)	Status fan On/Off	C R T	DPT 1. 001 1 bit
This object is enabled if the parameter Enable 1Bit object “Status fan On/Off” is enabled in the parameter window Function status. It is possible to parameterise if an object value is only updated, always sent on the KNX/EIB or only sent after a change.			
Fan (OBJ # 50)	Status fan speed automatic	C R T	DPT 1. 003 1 bit
This object is enabled if the parameter Enable 1Bit object “Status fan speed automatic” is enabled in the parameter window Function status. It is possible to parameterise if an object value is only updated, always sent on the KNX/EIB or only sent after a change. The object indicates the status of the fan speed automatic mode. Telegram value: ‘0’ = inactive ‘1’ = activated			

4.2.7. Objects “Fan limitation”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Fan (OBJ # 51)	Limitation 1	C R W T U	DPT 1.003 1 bit
Fan (OBJ # 52)	Limitation 2	C R W T U	DPT 1.003 1 bit
Fan (OBJ # 53)	Limitation 3	C R W T U	DPT 1.003 1 bit
Fan (OBJ # 54)	Limitation 4	C R W T U	DPT 1.003 1 bit
These objects are enabled if the parameter Enable limitations (Automatic fan control) is enabled in the parameter window Fan (Relay) or Fan (0-10v). The limitation x (x=1, 2, 3, 4) is active if a telegram with the value ‘1’ is received on the communication object Limitation x. All the Limitation x is deactivated if a telegram with the value ‘0’ is received on the communication object Limitation x. When Limitation x is activated, the fan can only assume the set fan speed or fan speed range in the parameter window Fan (Relay) or Fan (0-10v). The valve position is			

independently programmable from the fan limitation. If several Enable commands '1' are received by the various limitation objects, the value that was last received for the fan speed limitation control is decisive. This also applies for the Disable command '0'. If the fan speed for a limitation function that has been inactive receives another Disable command, it is carried out, i.e. a limitation function that is currently is inactive, even though the corresponding limitation function object does not act directly on the limitation object. The last command – in this case the Disable command of another limitation object– is always executed. Telegram value: '0' = All limitation disable '1' = limitation x enable

4.2.8. Objects "Valve Heating"

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Valve Heating (OBJ # 60)	Status valve position	C R T	DPT 1.001 1 bit
This communication object is visible if the parameter window Enable 1Bit object "Heating valve position status" is enabled in the parameter window Function status. The status of the valve position is visible via this communication object. Hereby, the target position where the valve should move to is always transferred. If the value '1' is set in the parameter "Object value with valve position>0": Telegram value: '0' = Valve position equal to zero '1' = Valve position not equal to zero If the value '0' is set in the parameter "Object value with valve position>0": Telegram value: '0' = Valve position not equal to zero '1' = Valve position equal to zero			
Valve Heating (OBJ # 61)	Trigger valve purge	C W U	DPT 1.017 **1 bit**
The heating valve purge is triggered using this communication object. The purge cycle with automatic purge will be restarted. Telegram value: '0' = end valve purge, valve will be closed '1' = start valve purge, valve will be opened			
Valve Heating (OBJ # 62)	Status valve purge	C R T	DPT 1.003 1 bit
The status of the heating valve purge is visible via this communication object. Telegram value: '0' = valve purge not active '1' = valve purge active			

4.2.9. Objects "Valve Cooling"

SETPOINT OBJECTS			
Name (NO)	Function	Flags	Data type
Valve Cooling (OBJ # 63)	Status valve position	C R T	DPT 1.001 1 bit
This communication object is visible if the parameter window Enable 1Bit object "Cooling valve position status" is enabled in the parameter window Function status. The status of the valve position is visible via this communication object. Hereby, the target position where the valve should move to is always transferred. If the value '1' is set in the parameter "Object value with valve position>0": Telegram value: '0' = Valve position equal to zero '1' = Valve position not equal to zero If the value '0' is set in the parameter "Object value with valve position>0": Telegram value: '0' = Valve position not equal to zero '1' = Valve position equal to zero			
Valve Cooling (OBJ # 64)	Trigger valve purge	C W U	DPT 1.017 1 bit
The cooling valve purge is triggered using this communication object. The purge cycle with automatic purge will be restarted. Telegram value: '0' = end valve purge, valve will be closed '1' = start valve purge, valve will be opened			
Valve Cooling (OBJ # 65)	Status valve purge	C R T	DPT 1.003 1 bit
The status of the cooling valve purge is visible via this communication object. Telegram value: '0' = valve purge not active			

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'1' = valve purge active

object status is sent ON, then the response status value is "1", Otherwise the status value is "0"

4.3. Floor heating

4.3.1. Objects "Slave clock"

The local clock of slave system clock shall be synchronized by reception of a 'System Clock' information from the master system clock.

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Slave clock (OBJ # 1)	Network datetime	C W T U	DPT 19.001 8 byte
Input time & date information synchronization of clocks in the system			
Slave clock (OBJ # 2)	**Network date**	**C W T U**	DPT 11.001 **3 byte**
Input for date synchronization of clocks in the system.			
Slave clock (OBJ # 3)	Network time of day	C W T U	DPT 10.001 3 byte
Input for time synchronization of clocks in the system.			

4.3.2. Objects "Pipe pressure protection"

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Floor heating (OBJ # 4)	Pipe pressure protection	C R T	DPT 1.001 1 blt
This communication object is used for pipe pressure protection. If all of the floor heating channel are turn off, this			

4.3.3. Objects "Floor heating N"

In this section will introduce the floor heating N communication objects,

The objects will show by setting the floor heating N function enable.

In following sections the N=A,B,C,D,E,F,G

SETPOINT OBJECTS			
Name (NO)	Function	Flags	Data type
Floor heating N (OBJ # 5, 30...)	Actual temperature	C R W T U	DPT 9.001 2 byte
If the Floor heating N is operated with the temperature sensor TS01F01ACC connected, the actual temperature is sent to this communication object via the KNX/EIB. Cyclical sending can also be set in the parameters. The parameterized Temperature 1 Correction value is included. If the Floor heating N is operated without the temperature sensor, it receives the actual temperature via the KNX/EIB at this communication object.			
Floor heating N (OBJ # 6, 31...)	Actual temp. error signal	C R T	DPT 1.005 1 bit
An error signal can be sent to the KNX/EIB with this object if the space temperature has not been refreshed within a set period. The output of the error signal can occur 1...255 or cyclically. Telegram value: "0": No error "1": Error			
Floor heating N (OBJ # 7, 32...)	Normal-mode setpoint Temp.	C R W T U	DPT 9.001 2 byte
The Normal-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Floor heating N	Day-mode setpoint	C R W T U	DPT 9.001

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(OBJ # 8, 33...)	Temp.		2 byte
The Day-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 9, 34...)	Night-mode setpoint Temp.	C R W T U	DPT 9.001 2 byte
The Night-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 10, 35...)	Away-mode setpoint Temp.	C R W T U	DPT 9.001 2 byte
The Away-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 11, 36...)	Preset 1 Temp. for timer mode	C R W T U	DPT 9.001 2 byte
The Time-mode preset 1 temperature can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 12, 37...)	Time of day for preset 1	C R W T U	DPT 10.001
The Time-mode preset 1 start time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 13, 38...)	Start/Stop heating for preset 1	C R W T U	DPT 1.010 1 bit
The Time-mode floor heating start or stop in this preset 1 time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 14, 39...)	Preset 2 Temp. for timer mode	C R W T U	DPT 9.001 2 byte
The Time-mode preset 2 temperature can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 15, 40...)	Time of day for preset 2	C R W T U	DPT 10.001 3 byte
The Time-mode preset 2 start time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 16, 41...)	Start/Stop heating for preset 2	C R W T U	DPT 1.010 1 bit
The Time-mode floor heating start or stop in this preset 2 time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 17, 42...)	Preset 3 Temp. for timer mode	C R W T U	DPT 9.001 2 byte
The Time-mode preset 3 start time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 18, 43...)	Time of day for preset 3	C R W T U	DPT 10.001 3 byte
The Time-mode preset 3 start time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 19, 44...)	Start/Stop heating for preset3	C R W T U	DPT 1.010 1 bit
The Time-mode floor heating start or stop in this preset 3 time can be modified via this input. It is stored in non-volatile memory.			
Floor heating N (OBJ # 20, 45...)	Floor heating(1-ON,0-OFF)	C R W T U	DPT 1.001 1 bit
Floor heating N start working when the object receive the value is “1”, and stop working when the object receive the value is “0”.			
Floor heating N (OBJ # 21, 46...)	ON CMD for Normal-mode	C R W T U	DPT 1.001 1 bit
Input object for switching to Normal-mode. Telegram value: “0”: No function “1”: Normal mode			
Floor heating N (OBJ # 22, 47...)	ON CMD for Day-mode	C R W T U	DPT 1.001 1 bit
Input object for switching to Day -mode. Telegram value: “0”: No function “1”: Normal mode			
Floor heating N	ON CMD for	C R W T U	DPT 1.001

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(OBJ # 23, 48...)	Night-mode		1 bit
Input object for switching to Night -mode. Telegram value: “0”: No function “1”: Normal mode			
Floor heating N (OBJ # 24, 49...)	ON CMD for Away-mode	C R W T U	DPT 1.001 1 bit
Input object for switching to Away -mode. Telegram value: “0”: No function “1”: Normal mode			
Floor heating N (OBJ # 25, 50...)	ON CMD for Timer-mode	C R W T U	DPT 1.001 1 bit
Input object for switching to Timer -mode. Telegram value: “0”: No function “1”: Normal mode			
Floor heating N (OBJ # 26, 51...)	Status valve position	C R T	DPT 1.001 1 bit
This communication object is visible if the parameter window Enable 1Bit object “Valve position status” is enabled in the parameter window Valve. The status of the Valve position is visible via this communication object. Hereby, the target position Where the valve should move to is always transferred. If the value ‘1’ is set in the parameter “Object value with valve position>0”: Telegram value: ‘0’ = Valve position equal to zero ‘1’ = Valve position not equal to zero If the value ‘0’ is set in the parameter “Object value with valve position>0”: Telegram value: ‘0’ = Valve position not equal to zero ‘1’ = Valve position equal to zero			
Floor heating N (OBJ # 27, 52...)	Trigger valve purge	C W U	DPT 1.017 1 bit
The Floor heating N valve purge is triggered using this communication object. The Purge cycle with automatic purge will be restarted. Telegram value: ‘0’ = end valve purge, valve will be closed ‘1’ = start valve purge, valve will be opened			
Floor heating N (OBJ # 28, 53...)	Status valve purge	C R T	DPT 1.003 1 bit
The status of the Floor heating N valve purge is visible via this communication Object. Telegram value: ‘0’ = valve purge not active ‘1’ = valve purge active			
Floor heating N (OBJ # 29, 54...)	Instantaneous Setpoint temp.	C R T	DPT 9.001 2 byte
The instantaneous setpoint (current mode setpoint temperature) can be read out from this communication object.			

4.4. Switch actuator

In this section will introduce the switch actuator communication objects, the objects will show by setting the switch actuator function enable.

:
In following sections the N=A, B, C, D, E

4.4.1. Objects “Output N”

SETPOINT OBJECTS			
Name (NO)	**Function**	**Flags**	**Data type**
Output N (OBJ # 180,190...)	Channel output	C W U	DPT 1.001 1 bit
These communication objects of the channel output used for ON/OFF an channel, the switch output ON when the			

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object receive the value is “1”. the switch output OFF when the object receive the value is “0”			
Output N (OBJ # 181,191...)	Always response switch state or Response state after change	C R T	DPT 1.001 1 bit
This communication object used response the channel N status, If channel status is ON, then the response status value is “1”, Otherwise the status value is “0”			
Output N (OBJ # 182,192...)	Read/Write statistic for time	C R W T U	DPT 9.001 2 byte
The Normal-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Output N (OBJ # 183,193...)	Alarm statistic for time out	C R W T U	DPT 9.001 2 byte
The Day-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Output N (OBJ # 184,194...)	Staircase light.	C R W T U	DPT 9.001 2 byte
The Night-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Output N (OBJ # 185,195...)	Change staircase lighting time	C R W T U	DPT 9.001 2 byte
The Away-mode setpoint temperature can be modified via this input. It is stored in non-volatile memory.			
Output A (OBJ # 186,196...)	Alarm staircase lighting	C R W T U	DPT 9.001 2 byte
The Time-mode preset 1 temperature can be modified via this input. It is stored in non-volatile memory.			
Relay N (OBJ # 187,197...)	R/W statistic for counter	C R W T U	DPT 10.001

The Time-mode preset 1 start time can be modified via this input. It is stored in non-volatile memory.

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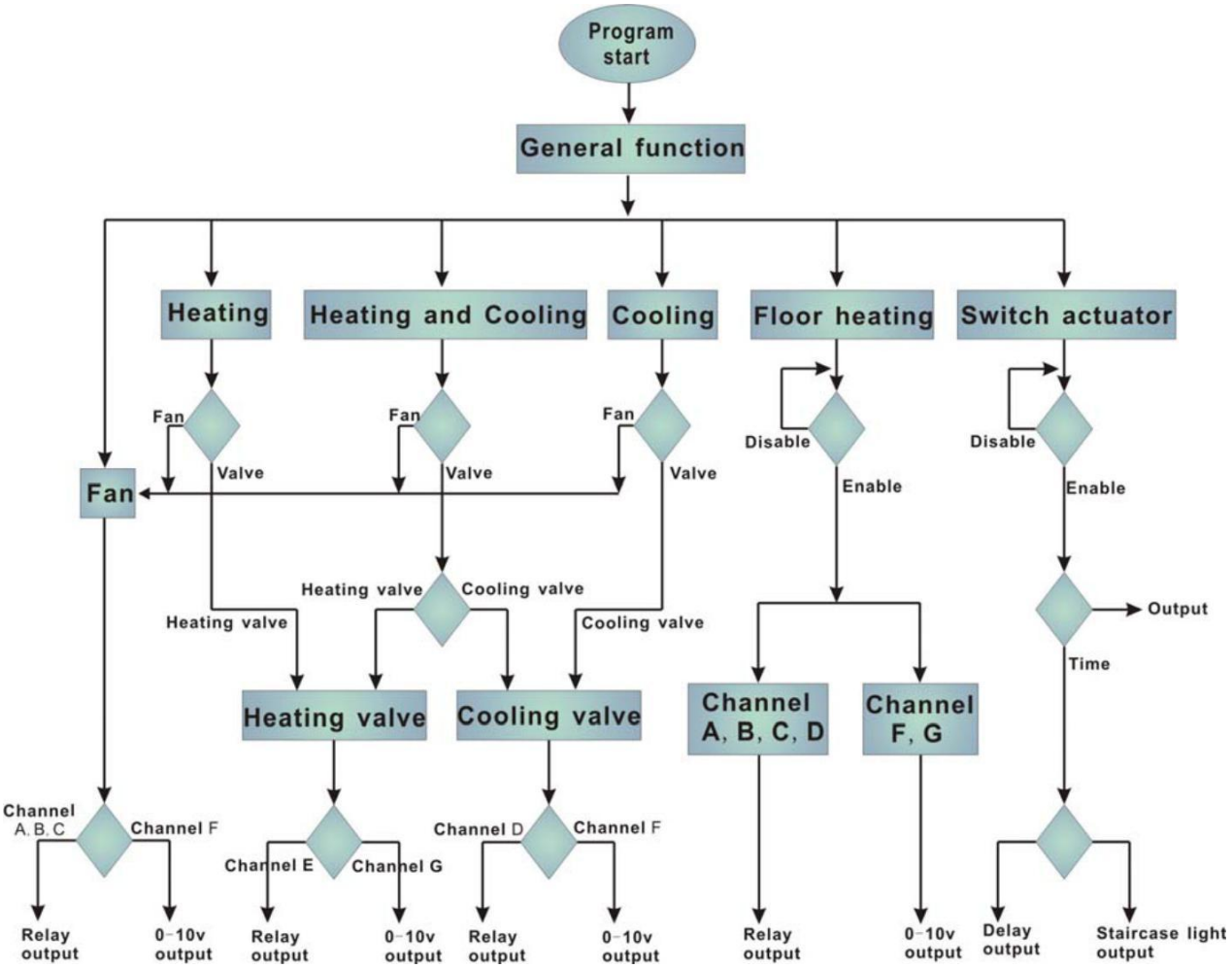
5. Application

5.1. Program functions diagram



6. Hardware

The technical properties of TC17B01KNX Fan coil controls as following sections

6.1. Technical data

Power supply

Power supply	
Operating voltage(supply by the bus)	21...30 V DC
Current consumption EIB / KNX(operate)	< 20 mA
Current consumption EIB / KNX(standby)	< 5 mA
Power consumption EIB / KNX(operate)	< 600 mW
Power consumption EIB / KNX(standby)	< 150 mW
Output nominal values Number of contacts In rated current	5 relay and 2 channel 0-10v Relay 10 A and 0-10v 5mA
Power loss per device at max. load	3.3 W
Unrated voltage	250/440V AC (50/60 Hz)
Output switching life expectancy:	
Mechanical Life	> 1000000
Electrical Life (240 V/cos = 0.8)	> 100000
Connections	
EIB / KNX	Bus Connection Terminal 0.8 mm Ø, single core
Load circuits	Screw terminal with Slotted head 0.2...4 mm² multi-core
Cable shoe	0.4...6 mm² single-core
Tightening torque	12 mm Max. 0.8 Nm

Temperature input	
Local temperature sensor	TS01F01ACC (max. 7 sensor)
Via EIB/KNX	Cable length max. 50 m One or two object
Operating and display	
Red LED and EIB / KNX program button for assignment of the physical address.	
Green LED flashing on the EIB / KNX program button is read back the local temperature.	
Green LED flashing on the top shell show that the device is working.	
Temperature range	
Operation	– 5 °C ~ + 45 °C
Storage	– 25 °C ~ + 55 °C
Transport	– 25 °C ~ + 70 °C
Connections	
EIB / KNX	Bus Connection Terminal 0.8 mm Ø, single core
Load circuits	Screw terminal with Slotted head 0.2...4 mm² multi-core
Cable shoe	0.4...6 mm² single-core
Tightening torque	12 mm Max. 0.8 Nm
Environment conditions	
humidity	Max. 95 % Non-condensing)
Appearance design	
Modular	DIN-Rail Modular installation
Dimensions (H x W x D)	90 mm x 72 mm x 64 mm

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Weight (unit kg)	0.26
Installation	
Use 35 mm mounting rail	
Mounting position	
Electric switch box	
Material and Color	
Plastic, Black	
Standard and Safety	**Certificated**
LVD Standard	EN60669-2-1 , EN60669-1
EMC Standard	EN50090-2-2
CE mark	
In accordance with the EMC guideline and low voltage guideline	
Pollutant	
Comply with RoHS	

: Press the EIB / KNX program button 3 seconds to refresh the local temperature sensor.

Application table	
Type	TC17B01KNX
Max. number of communication objects	230
Max. number of group addresses	254
Max. number of associations	**254**

:

The programming requires the EIB Software Tools ETS2 V1.3 or ETS3.0. If use ETS2 V1.3, then import "*.vd2". If use ETS3.0, then Import "*.vd3

6.2. Product and functional description TS01F01ACC

The temperature sensor measures the ambient temperature. It is connected to the Fan Coil Unit Controller via screw terminals.
The temperature sensor can only be used in combination with the Fan Coil Unit Controller.

Technical data for TS01F01ACC

Cable	
Cable type	3-core cable
Cable length	1 m
Cable colour	black
Connections	
Yellow cable	Screw terminal “DIGIT TEMP”
Red cable	Screw terminal “COM”
Black cable	Screw terminal “COM”
Ambient temperature range	
Operation	– 25 °C ~ + 60 °C
Storage	– 25 °C ~ + 60 °C
Transport	– 25 °C ~ + 70 °C
Weight	0.05kg

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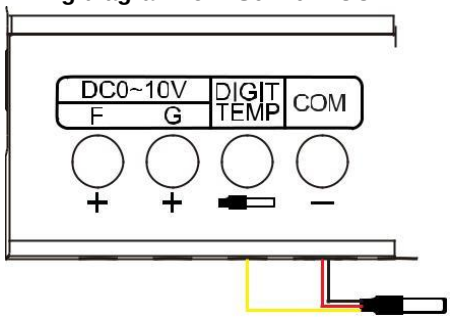
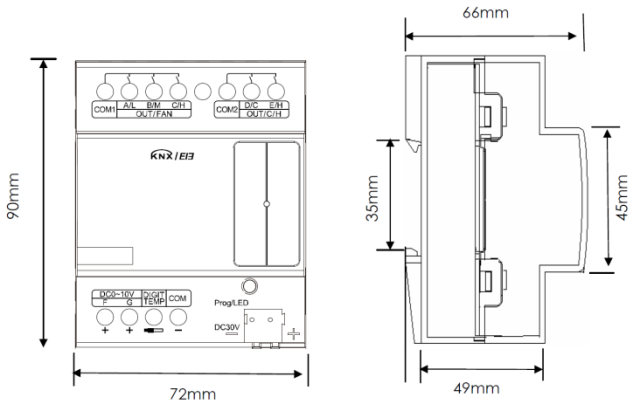
Sensor serial number
The local temperature sensor serial number (e.g. 188) is used for the floor heating, setting it to the parameters Temperature sensor serial number (1..255) in the parameter window “Floor heating – Channel A (B,C,D,E,F,G)”. One local temperature sensor correspond to one floor heating room temperature, so it can’t connect the same serial number sensor on a TC17B01KNX

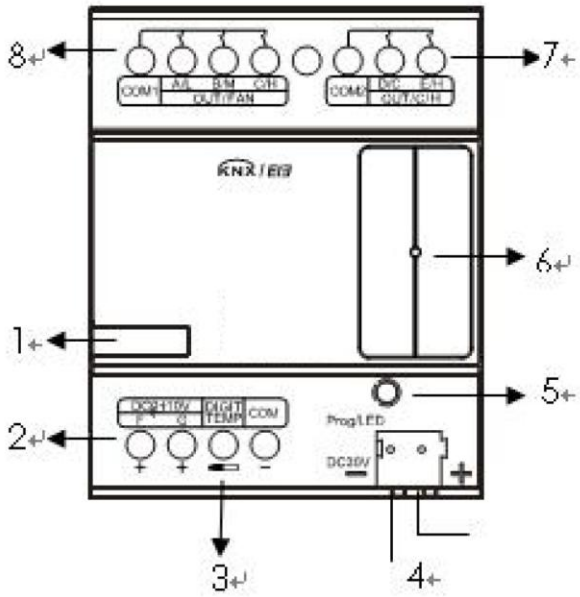
Wiring diagram for TS01F01ACC



6.3. Dimension drawings



6.4. Wiring diagram

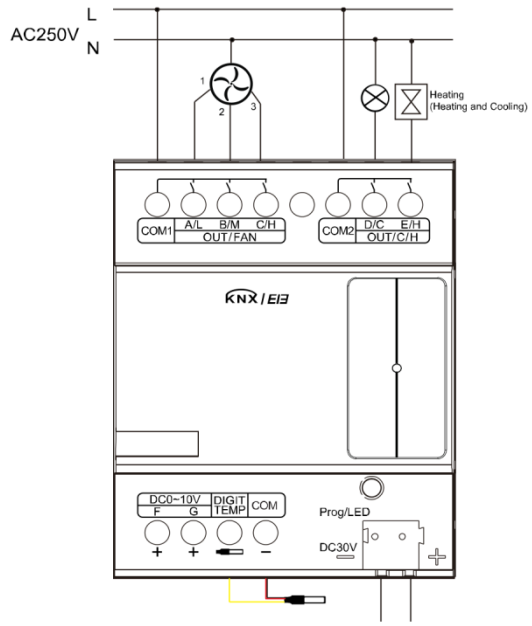


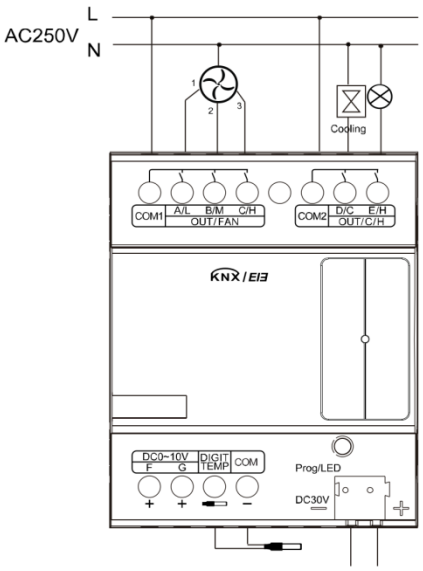
1- Label area
2- Channel F,G , output DC0-10 voltage
3- Local temperature ,can connect 7 temperature sensor
4- KNX/EIB Bus Connector
5- Programming button＆Red programming LED＆Green Local temperature LED 6- Green working LED
7- Channel D,E (Relay output)
8- Channel A,B,C (Relay output).

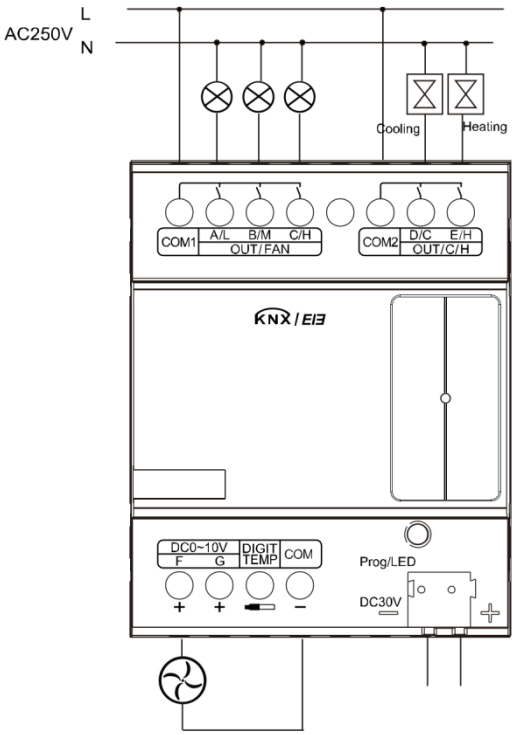
Examples for application

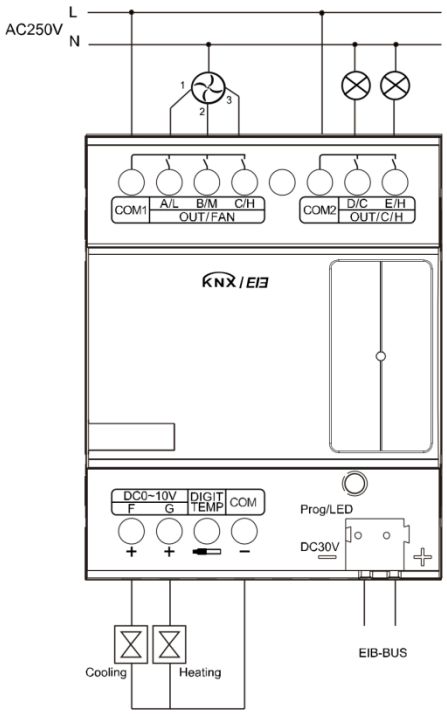
Different configuration corresponding different wiring diagram.

1、Fan coil units:









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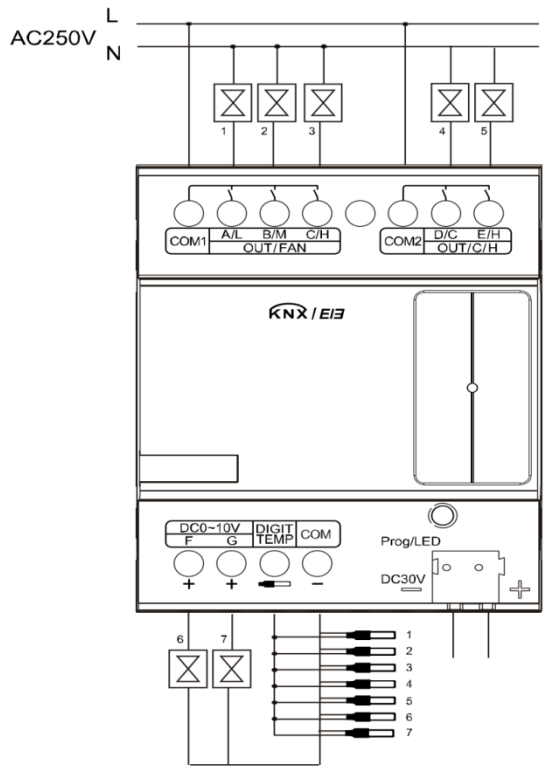
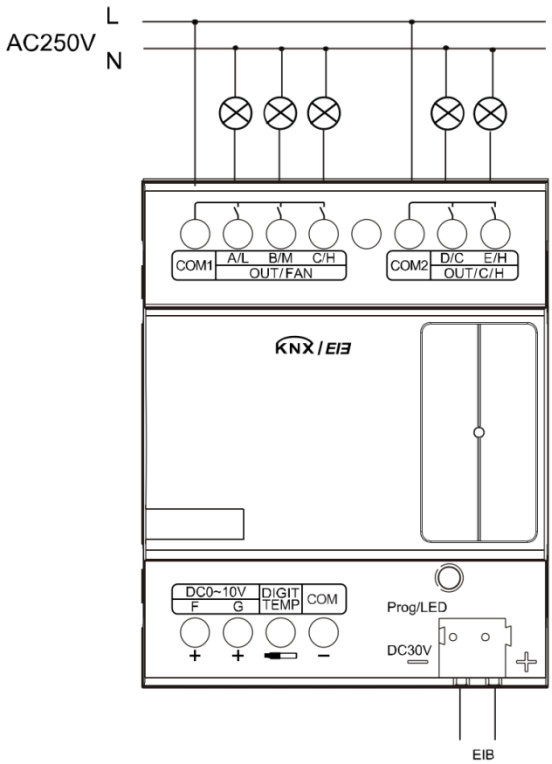
2、Floor heating and switch actuators:





:

a) Dimensions of the space to be provided for each device.

b) Dimensions and position of the means for supporting and fixing the DMX Recorder within this space

c) Minimum clearance between the various parts of the DMX Recorder and the surrounding parts where fitted

d) Minimum dimensions of ventilating opening, if needed, and their correct arrangement.

6.5. Maintenance and Cautions

Please read this user manual carefully before any operation. *Don't close to the interfering devices.

The site should be ventilated with good cooling environment. *Pay attention to damp proof, quakeproof and dustproof. Avoid rain, other liquids or caustic gas.

Please contact professional maintenance staff or HDL service center for repair or fix.

Remove the dust regularly and do not wipe the unit with the volatile liquids like alcohol, gasoline, etc.

If damaged by damp or liquid, turn off it immediately.

Regularly check the circuitry and other related circuit or cables and replace the disqualified circuitry on time.

For security, each circuit to connect an MCB or fuse

Installation location should be well-ventilated, pay attention to moisture, shock, dust proof.

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