APPLICATION PROGRAM INFORMATION

HDL-EIB FCU controller

Version: V1.2

KNX/EIB-BUS

Document Version: 1.1, Date: __Oct.2017___

A. General description
B. Function overview flowchart
C. Function description
D. Communication objects

A. General description

The FCU module is capable of controlling fan coil units (heating and cooling), floor heating, and switch actuators. This manual contains the programming information for this module.

Note:

Active control and passive control:
Active control

According to the real-time temperature and set temperature deviation, then use PI calculation by itself, get the 0 ~ 100% parameters indicated by 0 ~ 255, on this basis, drive valve and fan, then change the temperature.

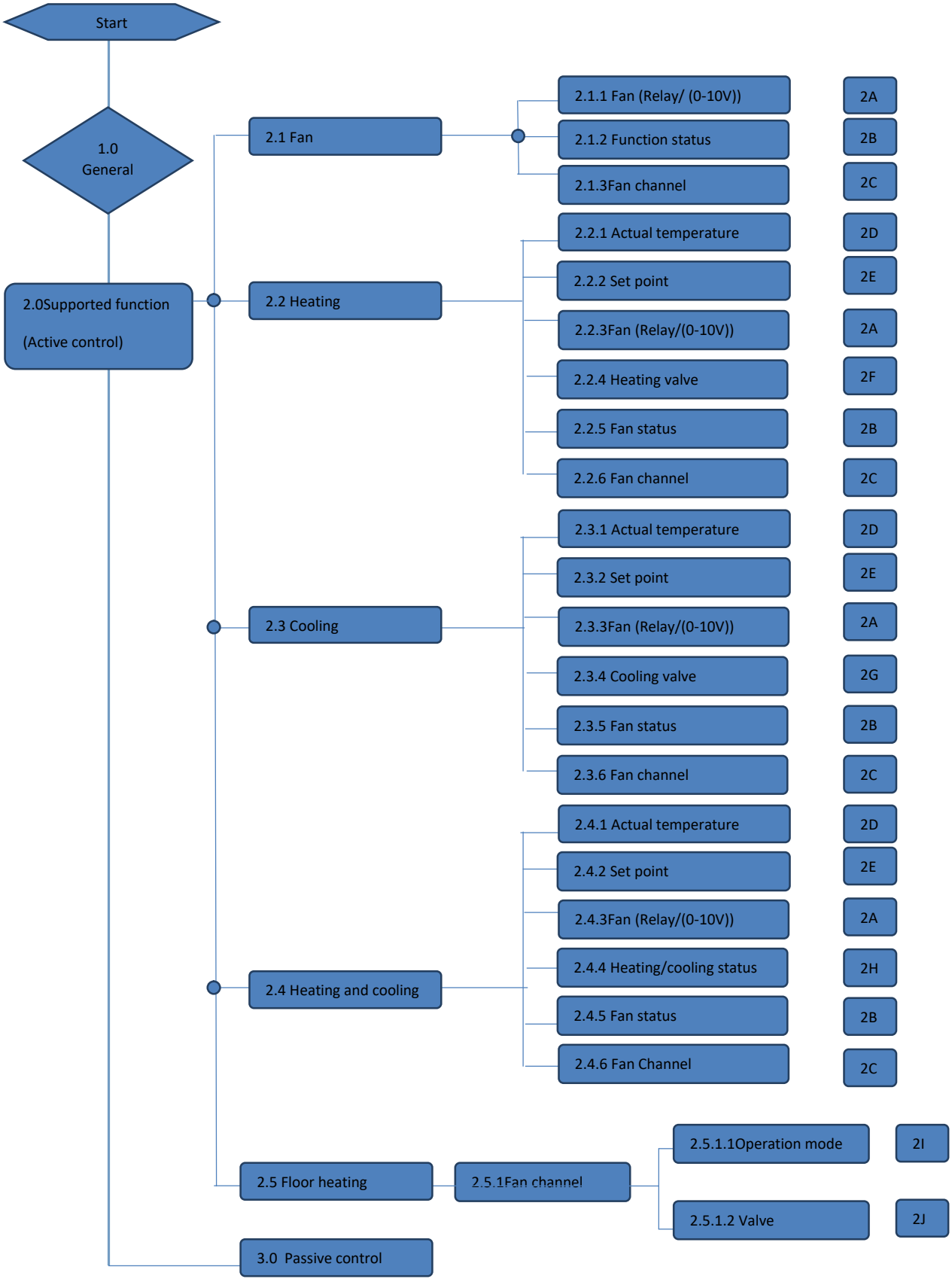
When in active control mode, this module can work with panel without PI algorithm such as HDL-M/DLP04.1.

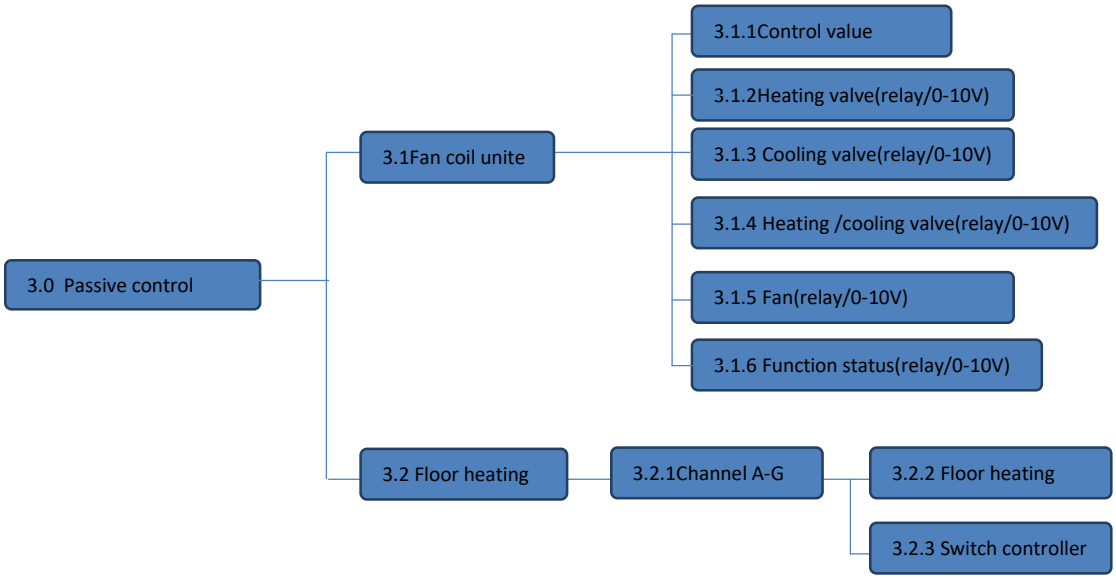
Passive control

FCU receive the 0 ~ 100% parameters indicated by 0 ~ 255 via Bus, on this basis, drive valve and fan, then change the temperature.

When in passive control mode, this module can work with panel with algorithm such as Siemens 5WG1.

B. Flowchart showing module functionality

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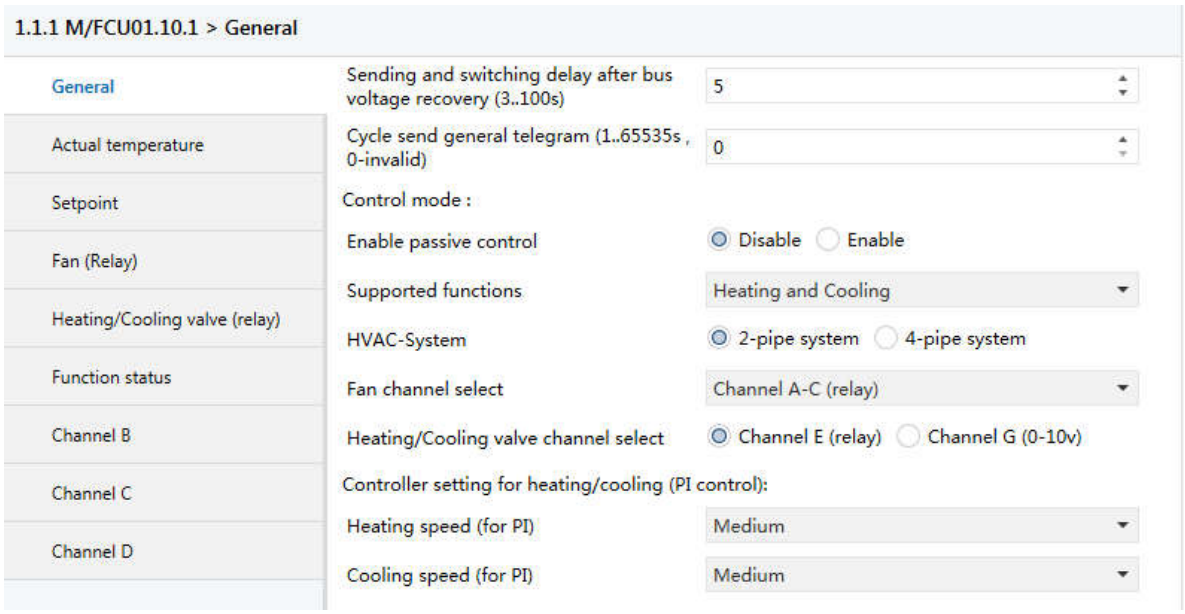
C.

1.0_General

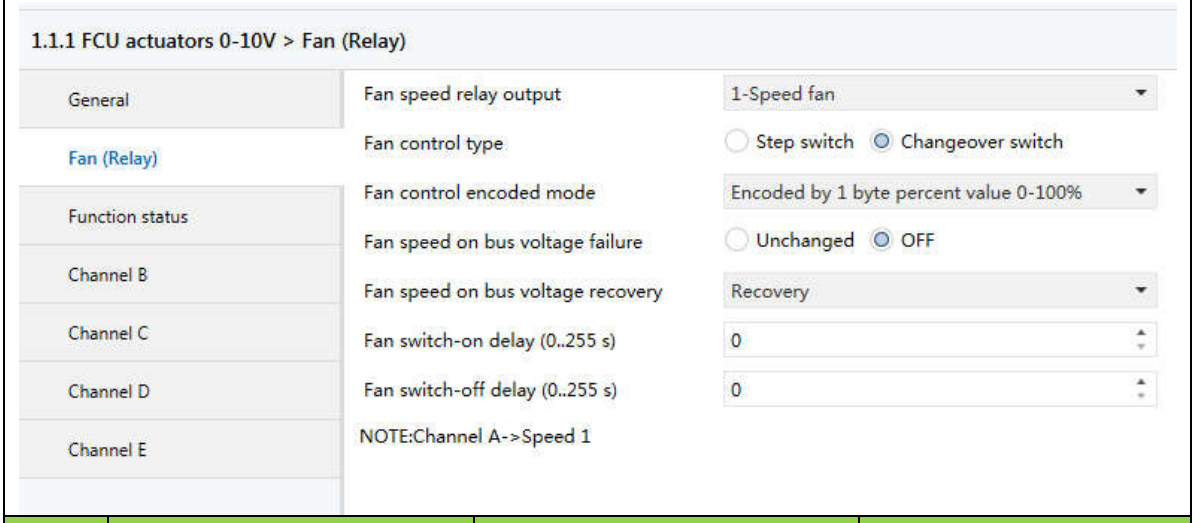


No.	ETS-Parameter	Range (default)	Description
1	Sending and switching delay after bus voltage recovery(3…100s)	3…(5)…100s	Set the switching and sending delay time for when the bus is in voltage recovery mode.
2	Cycle send general telegram(1…65535s, 0-invalid)	-(0-invalid) -1…65535s	Set the telegram sending cycle rate.
	Control mode		
3	Enable passive control	-Disable -Enable	Enable/Disable the passive control function. Enable: see the 3.0 Disable: the parameters as follow.
4	Supported functions	-Fan -Hearting -Cooling -(Heating and cooling) -Floor hearting	Set the function you wish to implement.
	-Fan		
5	Fan channel select	-(Channel A-C(relay)) -Channel F(0-10V)	Select the fan channel
	-Heating		
6	Fan channel select	-No fan -Channel A-C(relay) -Channel F(relay)	Select the fan channel
6	Heating value channel select	-Channel E(relay) -Channel G(0-10V)	Select the heating value channel
Controller setting for heating(PI control)			
7	Heating speed (For PI)	-Low -Lower -(Medium) -Fast -Faster	Select the heating intensity.
	-Cooling		

8	Fan channel select	-No fan -(Channel A-C(relay)) -Channel F(relay)	Select the fan channel
9	Cooling value channel select	-(Channel D(relay)) -Channel G(0-10V)	Select the cooling value channel
	--Controller setting for cooling(PI control)		
10	Control speed (for PI)	-Low -Lower -(Medium) -Fast -Faster	Select the cooling intensity.
	Heating and Cooling		
11	HVAC-System	-(2-pipe system) -4-pipe system	Select the HVAC pipe system.
12	Fan channel select	-No fan -(Channel A-C(relay)) -Channel F (0-10V)	Select the fan channel.
13	Heating/cooling value channel select	-(channel E(relay)) -Channel G(0-10V)	Select the heating/cooling channel.
14	-Heating value channel select	-(Channel E(relay)) -Channel G(0-10V)	Select the heating channel.
15	-Cooling value channel select	-(Channel D(relay)) -Channel F(0-10V)	Select the cooling channel.
	Controller setting for heating/cooling (PI control)		
16	Heating speed (for PI)	-Low -Lower -(Medium) -Fast -Faster	Select the heating speed for PI.
17	Cooling speed (for PI)	-Low -Lower -(Medium) -Fast -Faster	Select the cooling speed for PI.
	Floor Heating		
18	Enable slave clock	-(Enable) -Disable	Enable or disable the slave clock.

2.0_Channel control mode

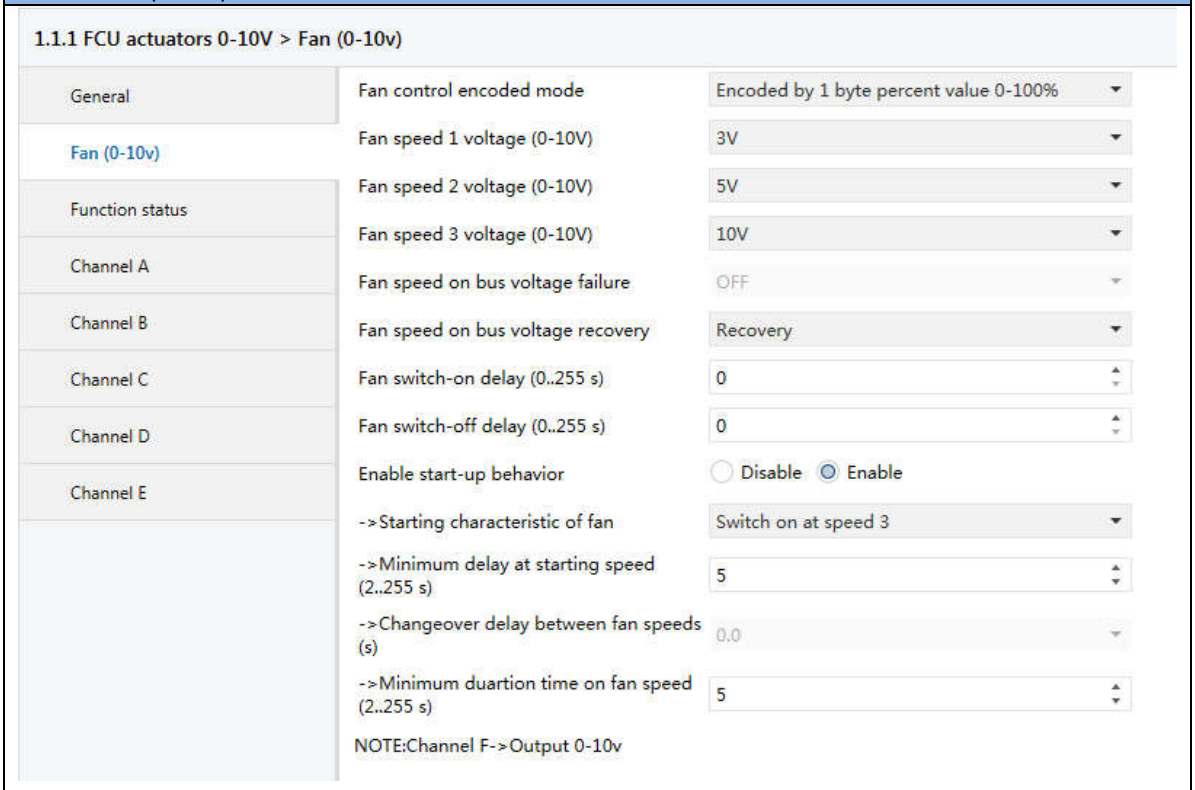
2A Fan (Relay/0-10V)



No.	ETS-Parameter	Range (default)	Description
1	Fan speed relay output	-1-Speed fan -2-Speed fan -3-Speed fan	Set the fan speed relay output. 1-Speed fan: A single speed fan is connected to channel A. 2-Speed fan: A dual speed fan is connected to channel A and channel B. (Channel A->Speed 1, Channel B-> Speed 2.) 3-Speed fan: A triple speed fan is connected to channel A, channel B, and channel C. (Channel A-> Speed 1, channel B->Speed 2, channel C-> Speed 3.)
2	Fan control type	-Step -Changeover switch	Set the fan control type Step: Only the relay which correspond to channel is on, others relay all off.
3	Fan control encoded mode	-Encoded by 1 byte percent value 0-100% -Encoded by 1 byte constant value 0-3 -1 Bit values	Set the fan control encoded mode. -According to the percentage. -0: fan is off, 1: speed 1 2: speed 2, 3: speed 3 -0: fan is off, 1: fan is on.
4	Fan speed on bus voltage failure	-Unchanged -(OFF)	Set the fan speed in the event of a bus voltage failure.

			Unchanged: The fan speed will remain unchanged. OFF: The fan will turn off.
5	Fan speed on bus voltage recovery	-(Recovery) -OFF -1 -2 -3	Set the fan speed in the event of a bus voltage recovery. Recovery: The fan speed will remain unchanged. OFF: The fan will turn off. 1,2,3: When the fan is switched on, the speed can be selected from 1,2, or 3.
6	Fan switch-on delay(0…255s)	(0)…255s	Set the fan switch on delay time.
7	Fan speed-off delay(0…255s)	(0)…255s	Set the fan switch off delay time.

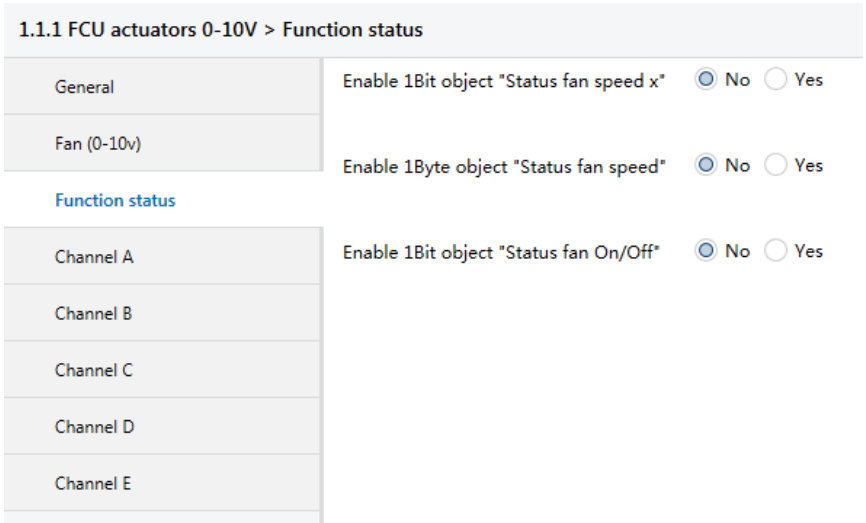
Fan(0-10V)



10	Fan control encoded mode	-Encoded by 1 byte percent value 0-100% -Encoded by 1 byte percent value 0-3 -1 Bit value	Set the fan control encoded mode
11	Fan speed 1 voltage	0…(3V)…10V	Set the voltage for fan speed 1.
12	Fan speed 2 voltage	0…(5V)…10V	Set the voltage for fan speed 2.
13	Fan speed 3 voltage	0...(10V)	Set the voltage for fan speed 3.

14	Fan speed on bus voltage failure	OFF	Set the fan speed parameters in the event of bus voltage failure. OFF: The fan will be OFF.
15	Fan speed on bus voltage recovery	-(recovery) -OFF -1 -2 -3	Set the fan speed when the bus is in voltage recovery mode. Recovery: The fan speed will be unchanged. OFF: The fan will be OFF. 1,2,3: The fan speed can be selected from 1,2, or 3.
16	Fan switch-on delay(0…255s)	(0)…255s	Set the fan switch on delay time.
17	Fan speed-off delay(0…255s)	(0)…255s	Set the fan switch off delay time.
18	Enable start-up behavior	-Disable -Enable	Disable/Enable the function of start-up behavior
19	-> Minimum delay at starting speed (2…255s)	2…(5)…255s	Set the starting speed delay time.
20	->Changeover delay between fan speeds(S)	0.0	Set the fan speed changeover delay time.
21	->Minimum duration time on fan speed(2…255s)	2…(5)…255s	Set the fan speed duration time.

2B Function status

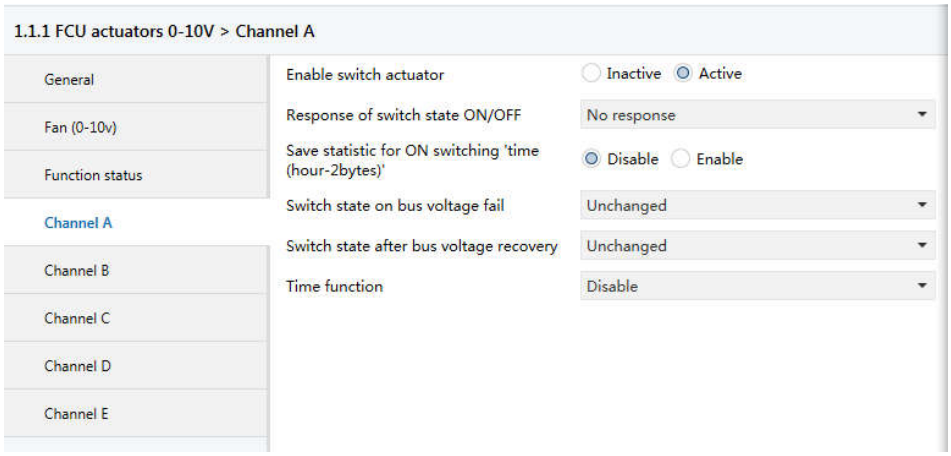


1	Enable 1 Bit object “Status fan speed x”	-Yes -(No)	Enable or disable a 1 bit object. Yes: Fan speed status x(x=1,2,3) is enabled. No: There is no response.
2	-->Meaning	-(Current fan speed)	Current fan speed:

		-Required fan speed	Respondto the current fan speed. Required fan speed: Respondto the required fan speed.
3	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
4	-->Object sending range	-All status object -Only activated status object	*Set object send range*
5	-->Valid object value	-'0' -'1'	*Set the object value*
6	Enable 1 byte object “status fan speed”	-Yes -(No)	Enable or disable a 1 bit object. Yes: The fan status speed is enabled. No: The fan status speed is disabled.
7	-->1 Byte value encode mode	-Encoded by 1 byte percent value 0-100% -Encoded by 1 byte percent value 0-3	Select the encode mode.
8	-->Meaning	-(Current fan speed) -Required fan speed	Current fan speed: Respond to the current fan speed. Required fan speed: Respond to the required fan speed.
9	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modificationhas been

			made.
10	1 bit object “status fan On/Off”	-Yes -(No)	Enable or disable a 1 bit object. Yes: The fan speed responds to the on/off status. No: The fan speed does not respond to the on/off status.
11			
12	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.

2C _Fan channel(Here take one channel as an example)



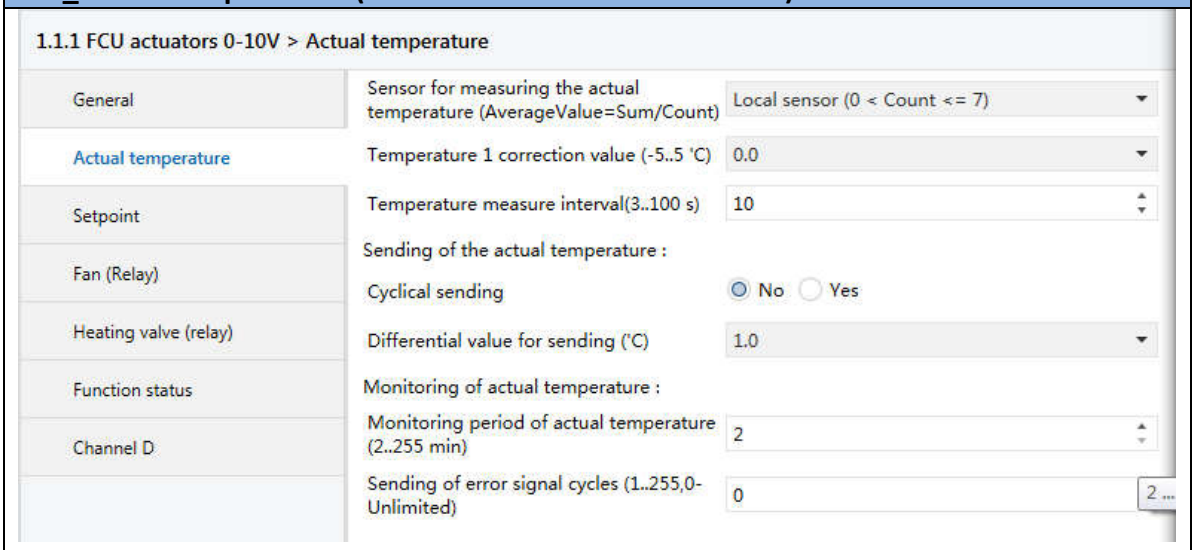
1	Enable switch actuator	-(Inactive) -Active	Enable or disable the switch actuator.
2	Response of switch state ON/OFF	-(No response) -Always response -Only after response	Set the parameters for the switch state response. No response: The switch state will not respond. Always response: The switch state will always respond.

			Only after change: The switch state will respond only after a modification has been made.
3	Save statistic for ON switching 'time(hour-2bytes)'	-Enable -(Disable)	Enable or disable the switch on time statistics.
4	Switch state on bus voltage fail	-(Unchanged) -On -Off	Set the switch state in the event of a bus voltage failure. Unchanged: The switch state will remain unchanged after a bus voltage failure. ON: The switch state will be 'on' after a bus voltage failure. OFF: The switch state will be 'off' after a bus voltage failure.
5	Switch state after bus voltage recovery	-(Unchanged) -On -Off -recovery	Set the switch state in the event of a bus voltage recovery. Unchanged: The switch state will remain unchanged after a bus voltage recovery. ON: The switch state will be 'on' after a bus voltage recovery. OFF: The switch state will be 'off' after a bus voltage recovery.
6	Time function	-(Disable) -Staircase lighting -On/OFF delay	Set the staircase lighting timing parameters.
	--Staircase lighting		
7	Control staircase lighting	-Start with '1', stop with '0' -Start with '1', Invalid with '0' -(start with '1'/ '0', can't stop)	*Set the staircase lighting activation and deactivation parameters.* Start with'1', Stop with'0'-The stair case lighting will activate when telegram '1' is

			received and deactivate when telegram ’0’ is received. Start with’0’, Stop with’1’- The stair case lighting will activate when telegram ’0’ is received and deactivate when telegram ’1’ is received. Start with’1/0’, Can’t stop- The stair case lighting will activate when telegram ’1’ or ’0’ is received and continue operating.
8	Change staircase lighting time via bus	-No -(Yes)	Enable or disable the staircase lighting time to be modified via the bus. No- Disabled Yes- Enabled
9	Alarm staircase lighting to bus	-No -(Yes)	Enable or disable the staircase lighting to be alarmed. No- Disabled Yes- Enabled
10	-->Time for off: (0...255Min)	(0)...255Min	Set the time for the OFF status to be activated in minutes.
11	-->Time for off: (0...59Sec)	(0)...59Sec	Set the time for the OFF status to be activated in seconds.
12	Warning staircase lighting(ON->OFF->ON	-Yes -(No)	Enable or disable the staircase warning lighting. Yes: Warning lighting is enabled. No: Warning lighting is disabled.
13	-Warning before the end of time(3...255Sec)	(3)...255	*Define how much time*

			will elapse before a warning is triggered.
14	Duration time for warning(1...200Sec)	(1)...200Sec	*Define how long the warning state will last.*
	ON/OFF delay		
15	-->Delay for switching ON: (0...255Min)	(0)...255Min	Set the switch on delay status in minutes.
16	-->Delay for switching ON: (0...59Sec)	(0)...59Sec	Set the switch on delay status in seconds.
17	-->Delay for switching OFF: (0...255Min)	(0)...255Min	Set the switch off delay status in minutes.
18	-->Delay for switching OFF:(0...59Sec)	(0)...59Sec	Set the switch off delay status in seconds.

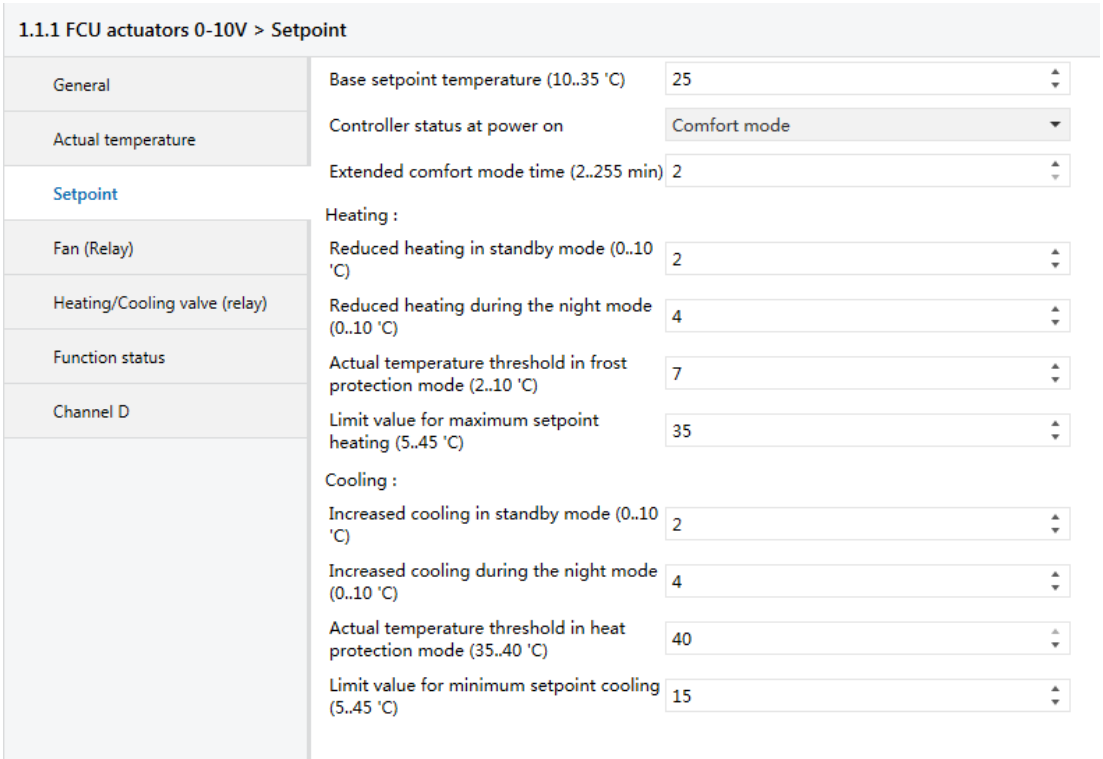
2D _Actual temperature (Fan mode has not this function.)



19	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)	Set the temperature for the FCU module. Local sensor(0<Count<=7): The temperature is determined by the local temperature sensor status. Up to 7 temperature sensors can be connected to generate an average temperature value. (Average value=Sum/Count) One sensor via EIB(Count=1): The temperature is received via the KNX/EIB. Two sensor via EIB(Count=2): The temperature is received via the KNX/EIB

20	Temperature 1 correction value (-5.5'C)	-5.0…(0.0)…(5.0)	Set the temperature correction value
21	Temperature 1 correction value (3...100s)	-3...(10)...100	If have the mistake of the temperature, you can set this value.
Sending of the actual temperature			
22	Cyclical sending	-Yes -(No)	Enable or disable cyclical sending.
23	-> Period for cyclical sending(1…255S)	1…(10)…255s	Set the time interval for when information is sent cyclically.
24	Different value for sending('C)	0.5…(1.0)…3.0	Set the difference value.
25	Monitoring of actual temperature(2…255Min)	(2)…255Min	Set the temperature monitoring period. (Local temperature sensor or via the KNX/EIB.)
26	Sending of error signal cycles(1…255, 0-Unlimited)	-(0-Unlimited) -1…255	Set the time interval for when the error signal is sent cyclically.

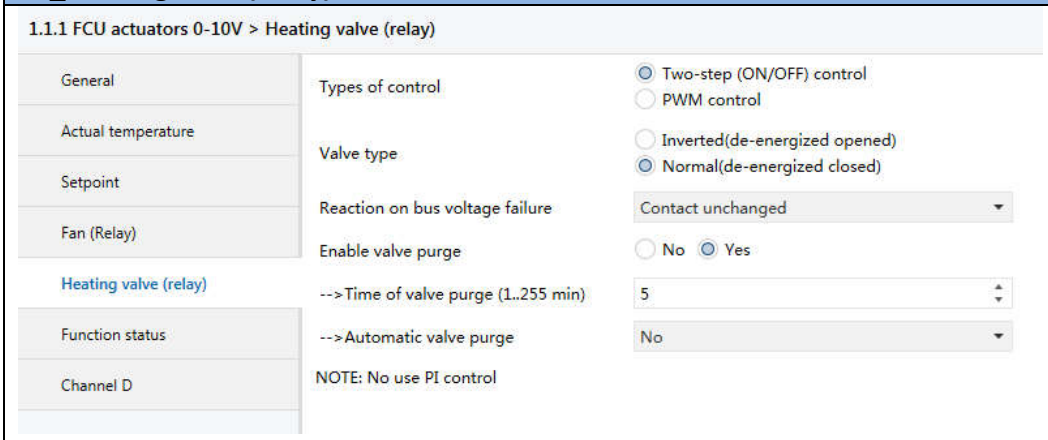
2E_Setpoint



1	Base set point temperature(10…35'C)	10…(25)…35	Set the temperature base level. (Temperature is in centigrade.)
2	Controller status at power on	-Unchanged -(Comfort mode) -Standby mode -Night mode -Frost/heat protection	Set the controller status parameters. The ON commands are as follows: Comfort mode: 31

			Standby mode: 32 Night mode: 33 Frost protection: 34
3	Extended comfort mode time(2…255min)	(2)…255min	Set the time period for the extended comfort mode.
Heating:			
4	Reduced heating in standby mode(0…10'c)	0…(2)…10	Set the temperature for when the reduced heating mode (standby mode) is active.
5	Reduced heating during the night mode(0…10'C)	0…(4)…10	Set the temperature for when the reduced heating mode (night mode) is active.
6	Actual temperature threshold in frost protection mode(2…10'C)	2…(7)…10	Set the temperature at which the frost protection mode will be activated.
7	Limit value for maximum set point heating(5…45'C)	5…(35)…45	Set the maximum temperature value.

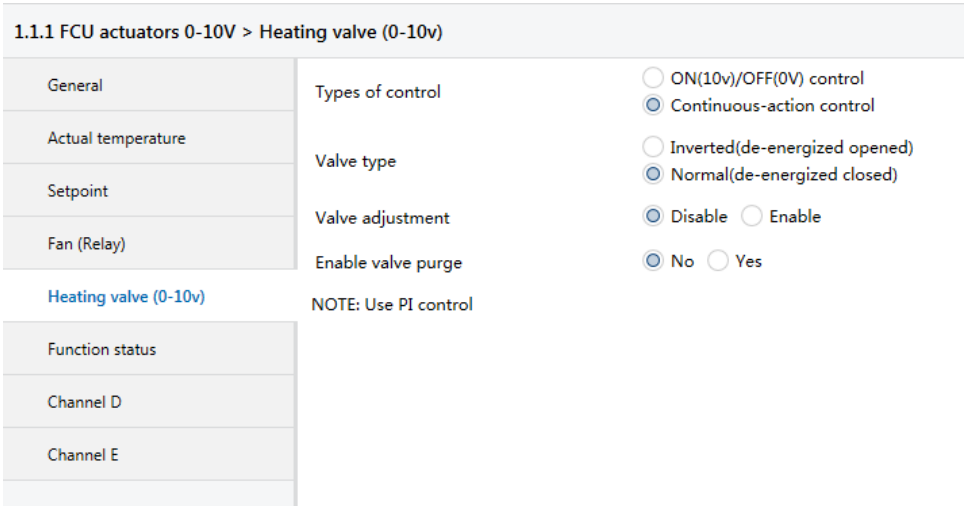
2F_Heating valve(relay)



1	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
2	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
3	Reaction on bus voltage failure	-Contact Unchanged -Contact opened	Set the bus voltage failure reaction.

		-(Contact closed)	Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
4	-PWM Cycle time(1…30min)	1…(3)…30min	Set the PWM cycle time.
5	Minimum heating	(0%)…20%	Set the value for the minimum heating
6	Enable valve purge	-Yes -(No)	Enable or disable the purge valve.
7	-->Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
8	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.

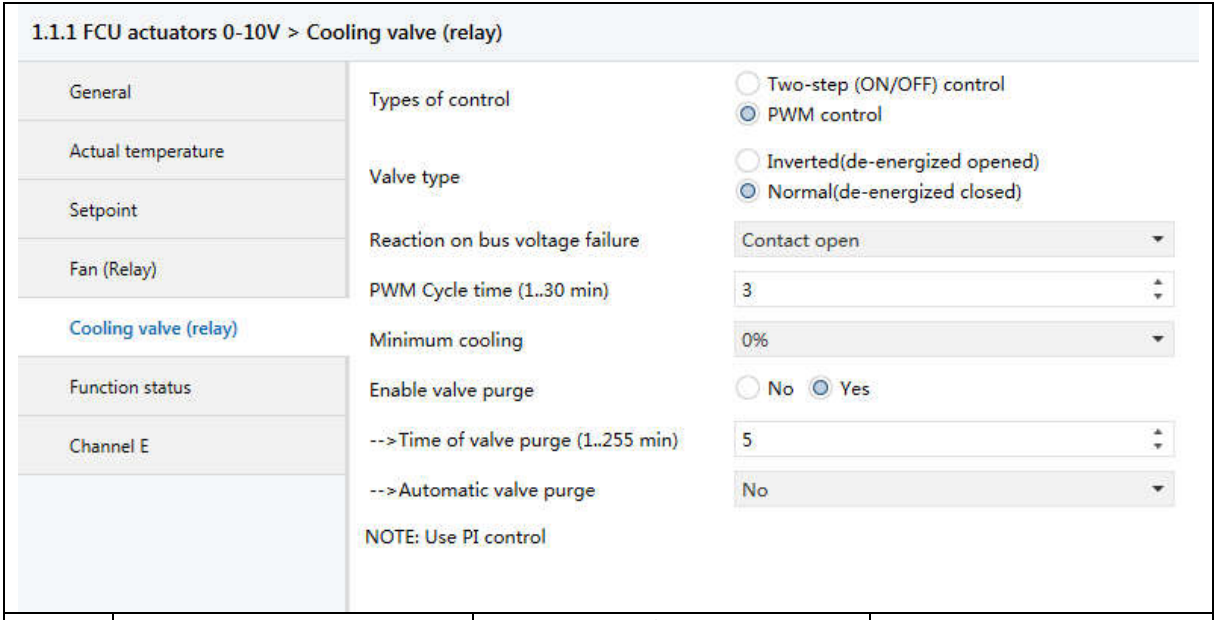
Heating value(0-10V)



9	Types of control	-(Continuous-action control) -On(10V)/OFF(0V) control	Set the control type. Continuous-action control: A continuous action controller has a control value which is continually changing. The output voltage is between 0v and

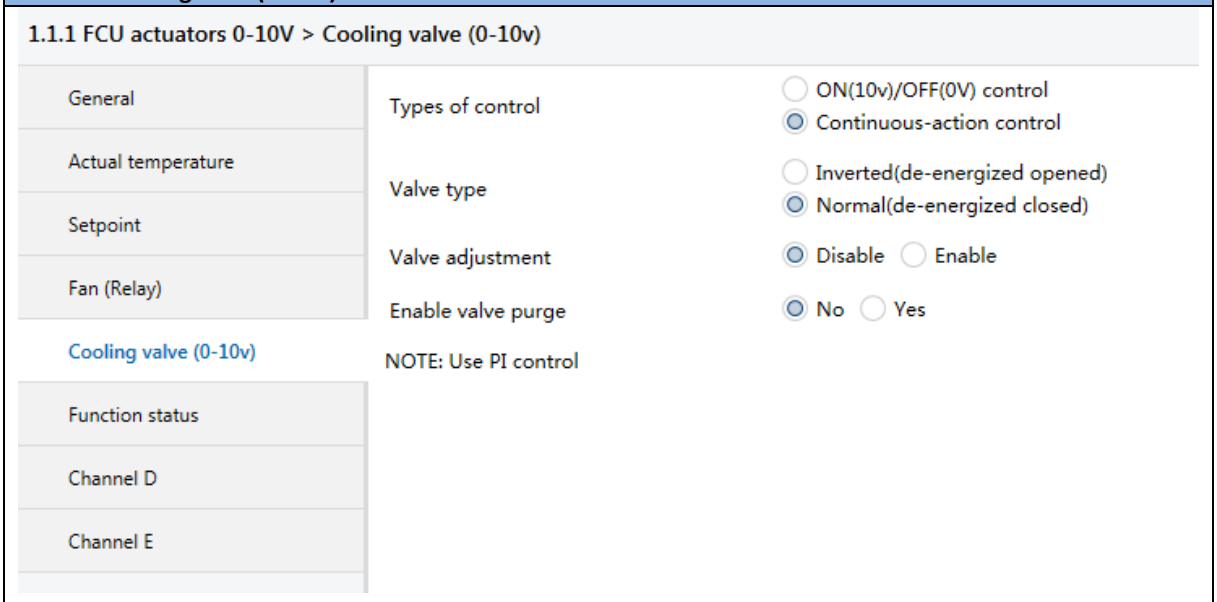
			10v and can be used to activate proportional valve drives. The valve can thereby be fully opened, or fully closed, and moved to any intermediate position. This type of control is enabled via PI control. -On(10V)/OFF(0V) control:
10	Value type	-(Normal(de-energized closed)) -Inverted(de-energized opened	Set the value type parameters.
11	Value adjustment	-Enable -(Disable)	Enableor disable the value adjustment.
12	-> Lower limit for active value opening range(0…100%)	(0)…100%	Set the lower value opening limit.
13	->Upper limit for active value opening range	0…(100%)	Set the upper value opening limit.
14	Enable value purge	-Yes -(No)	Enable or disable the purge value.
15	-> Time of value purge(1…255min)	1…(5)…255min	Set the purge value time.
16	-> Automatic value purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.

2G_ Cooling valve(relay)



1	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
2	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
3	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.

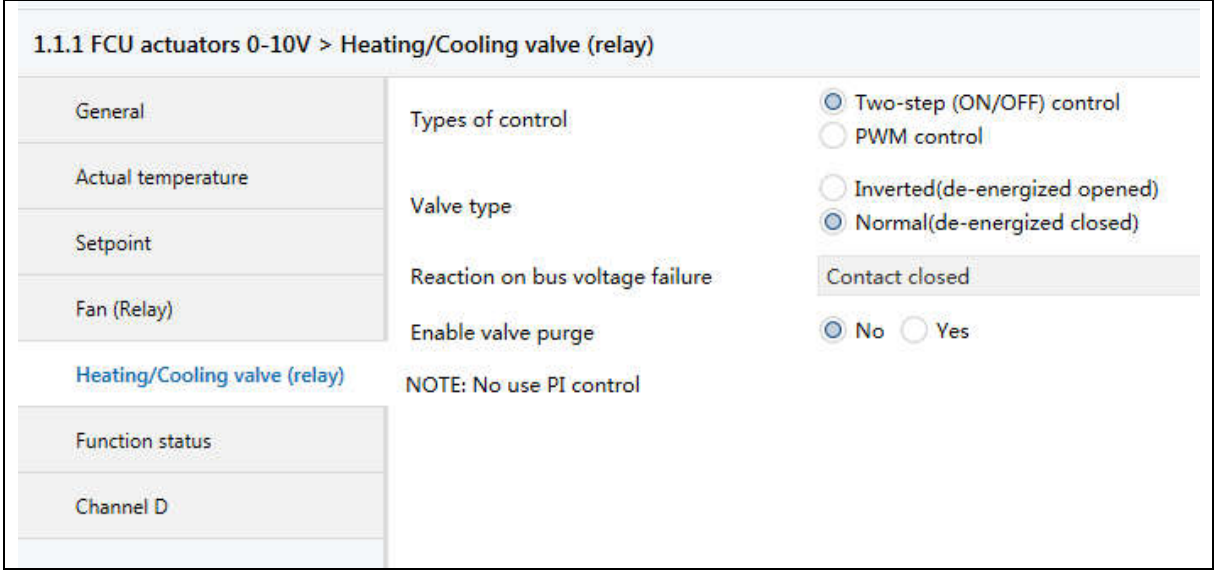
4	PWM Cycle time(1…30min)	1...(3)…30min	Set the PWM cycle time.
5	Minimum cooling	(0%)…20%	Set the minimum cooling percentage.
6	Enable value purge	-Yes -(No)	Enable or disable the purge valve.
7	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
8	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
Cooling valve(0-10V)			



9	Types of control	-(Continuous-action control) -On(10V)/OFF(0V) control	Set the control type. Continuous-action control: A continuous action controller has a control value which is continually changing. The output voltage is between 0v and 10v and can be used to activate proportional valve drives. The valve can thereby be

			fully opened, or fully closed, and moved to any intermediate position. This type of control is enabled via PI control. -On(10V)/OFF(0V) control:
10	Valve type	-(Normal(de-energized closed)) -Inverted(de-energized opened	Set the value type parameters.
11	Valve adjustment	-Enable -(Disable)	Enableor disable the value adjustment.
12	-> Lower limit for active valve opening range(0…100%)	(0)…100%	Set the lower value opening limit.
13	->Upper limit for active valve opening range	0…(100%)	Set the upper value opening limit.
14	Enable valve purge	-Yes -(No)	Enable or disable the valve purge.
15	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge value time.
16	-> Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.

2H_Heating/ Cooling value(relay)

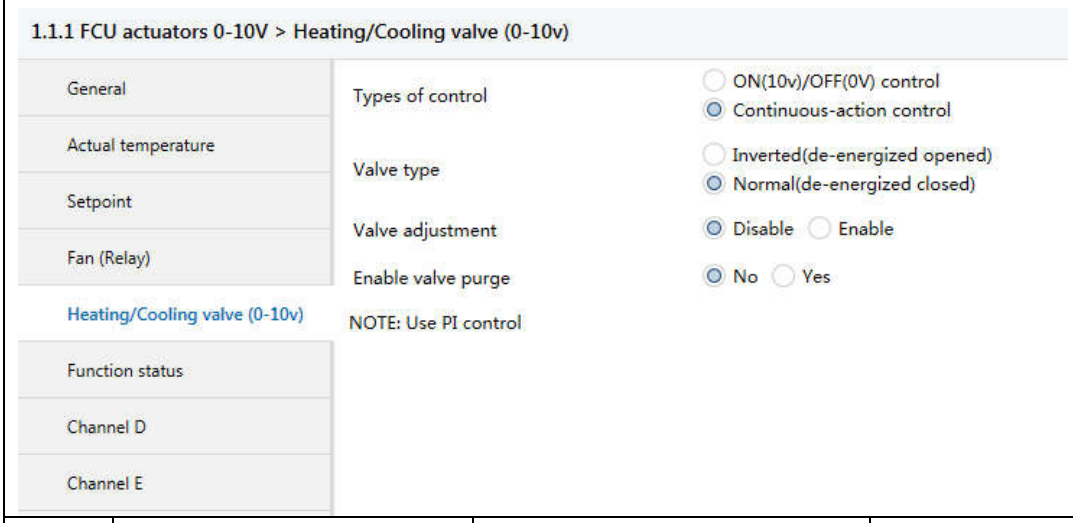


1	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
2	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
3	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
4	PWM Cycle time(1…30min)	1...(3)…30min	Set the PWM cycle time.
5	Minimum heating/cooling	(0%)…20%	Set the minimum heating/cooling parameter.
6	Enable valve purge	-Yes -(No)	Enable or disable the purge valve.
7	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
8	->Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate

			once a week. One time per month: The purge valve will operate once a month.
	Heating value(relay)		
9	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
10	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
11	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
12	PWM Cycle time(1…30min)	1…(3)…30	Set the PWM cycle time.
13	Minimum heating	(0%)…20%	Set the minimum heating value.
14	Enable valve purge	-Yes -(No)	Enable or disable the purge valve.

15	-->Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
16	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
	Cooling value(relay)		
17	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
18	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
19	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
20	PWM Cycle time(1…30min)	1...(3)…30min	Set the PWM cycle time.

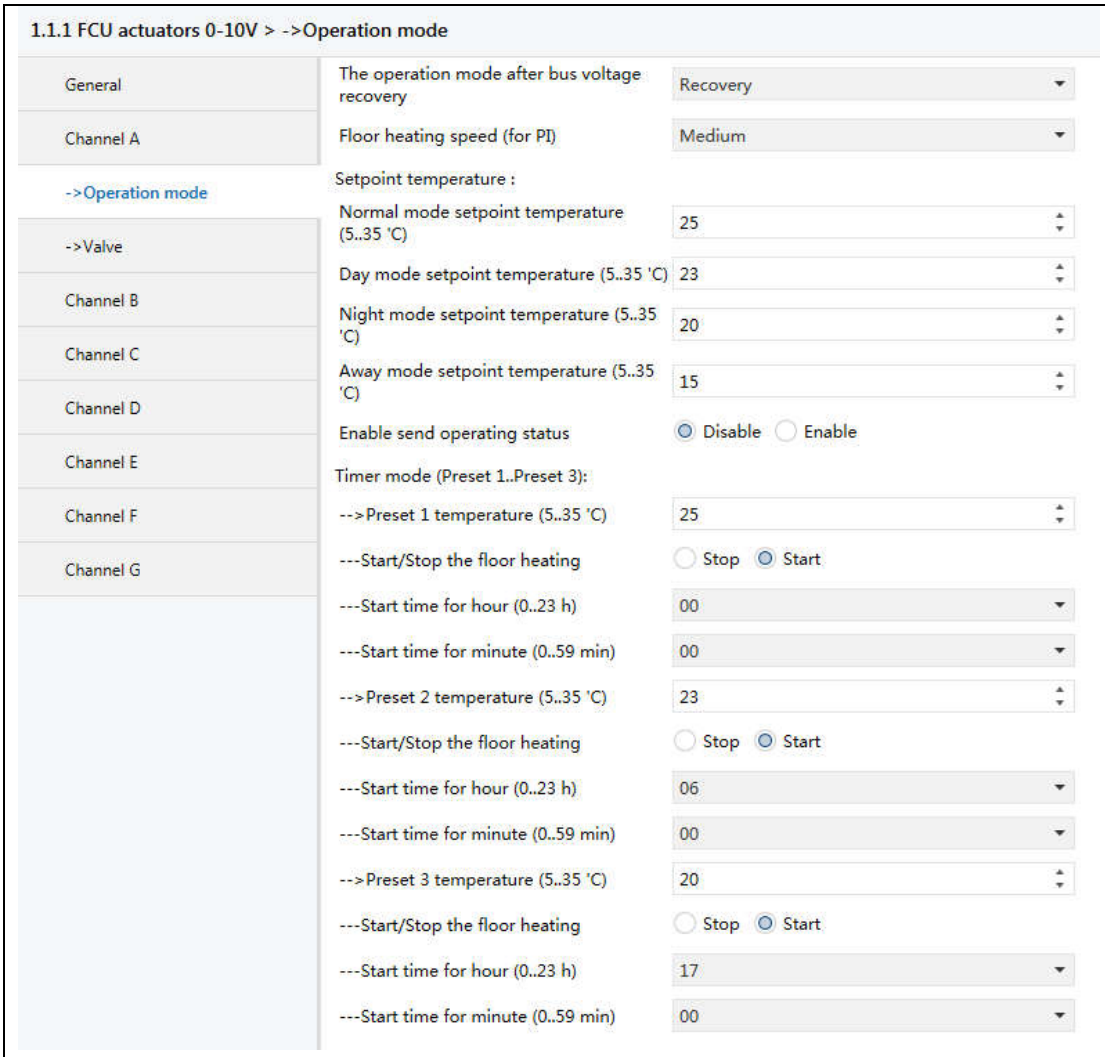
21	Minimum cooling	(0%)…20%	Set the minimum cooling percentage.
22	Enable valve purge	-Yes -(No)	Enable or disable the purge valve.
23	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
24	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
Heating/Cooling value(0-10V)			



25	Types of control	-(Continuous-action control) -On(10V)/OFF(0V) control	Set the control type. Continuous-action control: A continuous action controller has a control value which is continually changing. The output voltage is between 0v and 10v and can be used to activate proportional

			valve drives. The valve can thereby be fully opened, or fully closed, and moved to any intermediate position. This type of control is enabled via PI control. -On(10V)/OFF(0V) control:
26	Valve type	-(Normal(de-energized closed)) -Inverted(de-energized opened	Set the value type parameters.
27	Valve adjustment	-Enable -(Disable)	Enableor disable the value adjustment.
28	-> Lower limit for active valve opening range(0…100%)	(0)…100%	Set the lower value opening limit.
29	->Upper limit for active valve opening range	0…(100%)	Set the upper value opening limit.
30	Enable valve purge	-Yes -(No)	Enable or disable the valve purge.
31	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge value time.
32	-> Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.

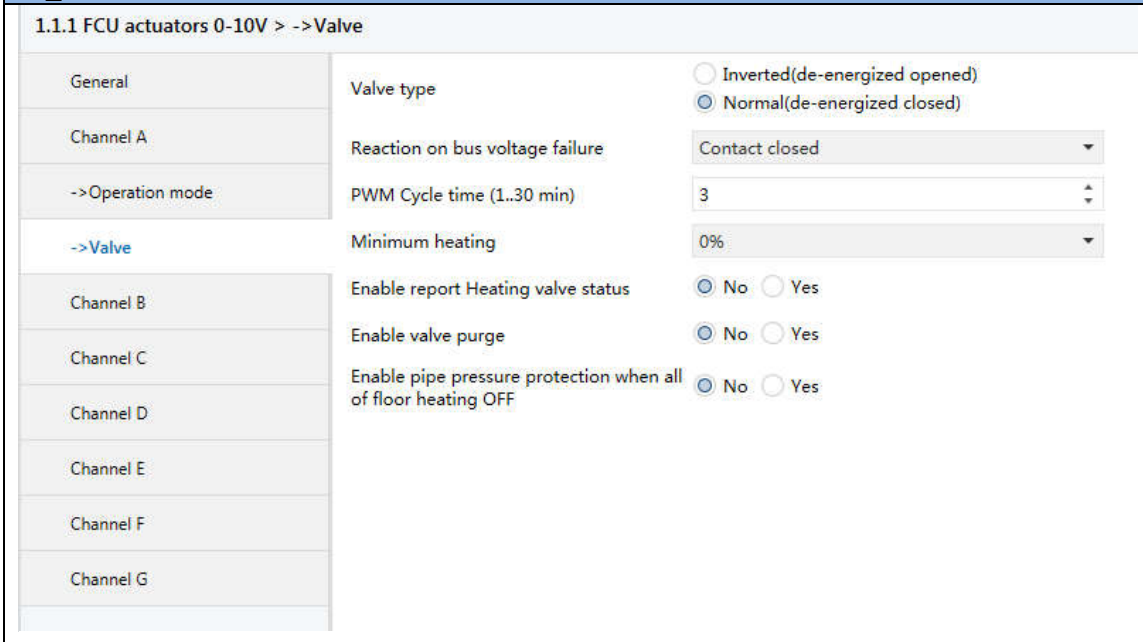
2I_ Operation mode



No.	ETS-Parameter	Range (default)	Description
-Operation mode			
1	The operation mode after bus voltage recovery	-(Recovery) -Normal -Day -Night -Away -Timer	Set the operation mode after bus voltage recovery.
2	Floor heating speed (for PI)	-Lower -Low -(Medium) -Fast -Faster	Set the floor heating intensity level.
Setpoint temperature:			
3	--Normal mode setpoint temperature(5…35’C)	5…(25)…35	Set the temperature for the normal mode.
4	--Day mode setpoint temperature(5…35’C)	5…(23)…35	Set the temperature for the day mode.
5	--Night mode setpoint temperature(5…35’C)	5…(20)…35	Set the temperature for the night mode.
6	--Away mode setpoint temperature(5…35’C)	5…(15)…35	Set the temperature for the away mode.

7	Enable send operation status	-Disable -Enable	Enable or disable send operation status.
8	-->Object sending range	-All status object -Only activated status object	Set the object sending range.
Timer mode(Preset 1…Preset 3)			
9	--> Preset 1 temperature(5…35’C)	5…(25)…35’C	Set the temperature for pre-set 1.
10	Start/Stop the floor heating	-(Start) -Stop	Set the floor heating status.
11	Start time for hour(0…23h)	(0)…23	Set the floor heating start time in hours.
12	Start time for minute(0…59min)	(0)…59	Set the floor heating start time in minutes.
13	--> Preset 2 temperature(5…35’C)	5…(23)…35’C	Set the temperature for pre-set 2.
14	Start/Stop the floor heating	-(Start) -Stop	Set the floor heating status.
15	Start time for hour(0…23h)	0…(6)..23	Set the floor heating start time in hours.
16	Start time for minute(0…59min)	(0)…59	Set the floor heating start time in minutes.
17	--> Preset 3 temperature(5…35’C)	5…(20)…35’C	Set the temperature for pre-set 3.
18	Start/Stop the floor heating	-(Start) -Stop	Set the floor heating status.
19	Start time for hour(0…23h)	0…(17)…23	Set the floor heating start time in hours.
20	Start time for minute(0…59min)	(0)…59	Set the floor heating start time in minutes.

2J_Valve



1	Valve type	-Inverted (de-energized closed) -(Normal (de-energized opened))	Set the valve parameters.
2	Reaction on bus voltage failure	-Contact unchanged -Contact open	Set the bus voltage failure

		-(Contact closed)	reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
3	PWM Cycle time(1…30min)	1..(10)…30	Set the time PWM cycle.
4	Minimum heating	(0)....20%	Set the minimum heating value.
5	Enable 1bit object 'Value position status'	-Yes -(No)	Enable or disable the value position status.
6	-->Send object value	-(No, update only) -Only after change	Set when the object value parameters are sent. No, Update only: The status is always updated, but never sent. Only after change: The object value will be sent only when a modificationhas been made.
7	-->Type of status report	-Report movement PWM>0/PWM=0 -Report position, ON/OFF	Set the type of status report
8	-->Object value with valve position>0	-0 -(1)	Set the value parameters when the valve position is >0.
9	Enable valve purge	-Yes -(No)	Enable or disable the valve purge.
10	--> Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
11	-->Automatic value purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate

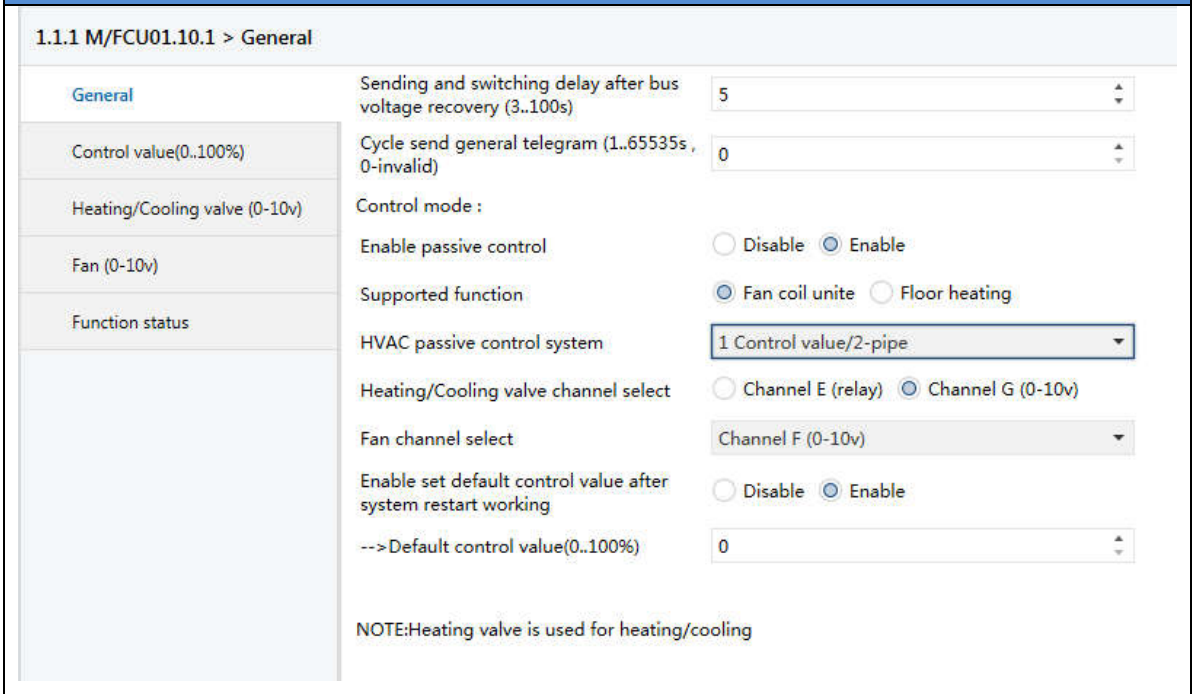
			once a month.
12	Enable pipe pressure protection when all of floor heating OFF	-Yes -(No)	Enable or disable pipe pressure protection when the floor heating is off.
13	-->Valve open value	5%....30%	Set the valve open parameters.
14	-->Protection time(1…255min,0-Unlimited)	-0-Unlimited -1…(60)…255	Set the protection time.
Channel function _ Switch controller			
15	Response of switch state ON/OFF	-(No response) -Always response -Only after change	Set the parameters for the switch state response. No response: The switch state will not respond. Always response: The switch state will always respond. Only after change: The switch state will respond only after a modification has been made.
16	Save statistic for ON switching ‘time(hour-2bytes)	-Enable -(Disable)	Enable or disable the ON time statistics.
17	-->Alarm when time out(1…65535h,0-invalid)	-0-invalid -1…30000…65535	Set the alarm time.
18	-->Transmit telegram interval when alarm	1…(10)…255	Set the telegram transmission interval when triggered by an alarm.
19	Switch state on bus voltage	-(Unchanged) -ON -OFF	Set the switch state in the event of a bus voltage failure. Unchanged: The switch state will remain unchanged after a bus voltage failure. ON: The switch state will be ‘on’ after a bus voltage failure. OFF: The switch state will be ‘off’ after a bus voltage failure.
20	Switch state after bus voltage recovery	-(Unchanged) -Recovery -ON -OFF	Set the switch state in the event of a bus voltage recovery. Unchanged: The switch

			state will remain unchanged after a bus voltage recovery. ON: The switch state will be 'on' after a bus voltage recovery. OFF: The switch state will be 'off' after a bus voltage recovery.
21	Time function	-(Disable) - staircase lighting -ON/OFF delay	Set the staircase lighting timing parameters.
Channel function _ Staircase lighting			
22	-->Control staircase lighting	-Start with '1', stop with '0' -Start with '1', Invalid with '0' -(start with '1'/ '0', can't stop)	*Set the staircase lighting activation and deactivation parameters.* Start with'1', Stop with'0'- The stair case lighting will activate when telegram '1' is received and deactivate when telegram '0' is received. Start with'0', Stop with'1'- The stair case lighting will activate when telegram '0' is received and deactivate when telegram '1' is received. Start with'1/0', Can't stop- The stair case lighting will activate when telegram '1' or '0' is received and continue operating.
23	-->Change staircase lighting time via bus	-(Yes) -No	Enable or disable the staircase lighting time to be modified via the bus. No- Disabled Yes- Enabled
24	-->Alarm staircase lighting to bus	-(Yes) -No	Enable or disable the staircase lighting to be alarmed. No- Disabled

			Yes- Enabled
25	-->Time for off: (0…255Min)	(0)…255Min	Set the time for the OFF status to be activated in minutes.
26	-> Time for off: (0…59Sec)	0…5…59Sec	Set the time for the OFF status to be activated in seconds.
27	Warning staircase lighting(ON->OFF->ON)	-Yes -(No)	Enable or disable the staircase warning lighting. Yes: Warning lighting is enabled. No: Warning lighting is disabled.
28	-Warning before the end of time(3...255Sec)	(3)...255	*Define how much time will elapse before a warning is triggered.*
29	Duration time for warning(1...200Sec)	(1)...200Sec	*Define how long the warning state will last.*

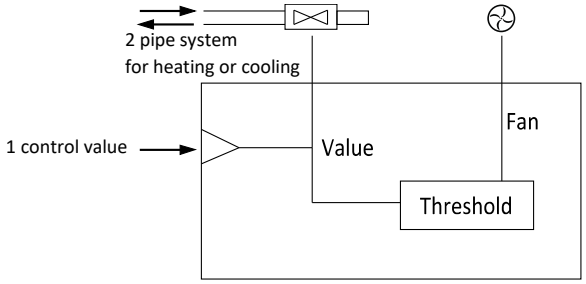
3.0_ Passive control

3.1Fan Coil unite

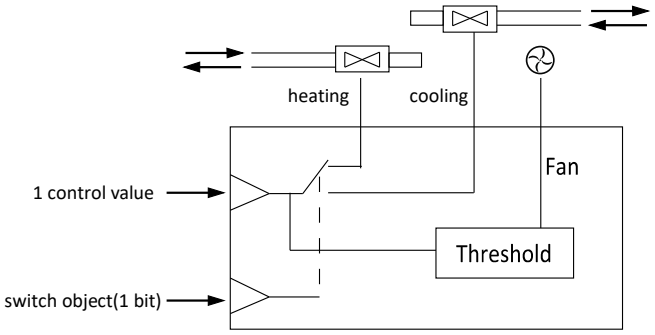


No.	ETS-Parameter	Range (default)	Description
1	HVAC passive control system	-1 Control value/2-pipe -1 Control value/4-pipe,with switch object -2 Control value/2-pipe -2 Control value/2-pipe,with switch object	For different control system will be appear different parameters, all settings see 3.1.1 to 3.1.6

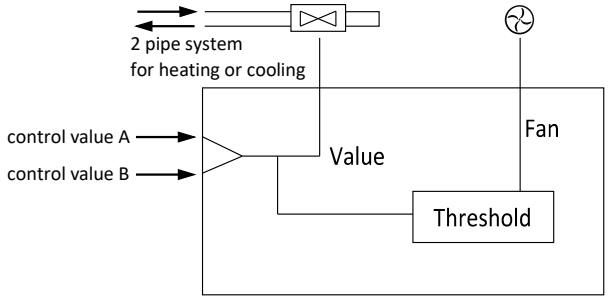
		-2 Control value/4-pipe	



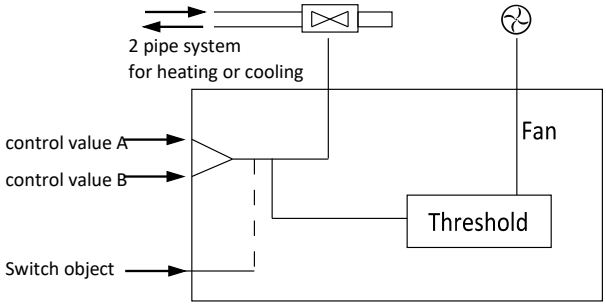
1 Control value/2-pipe



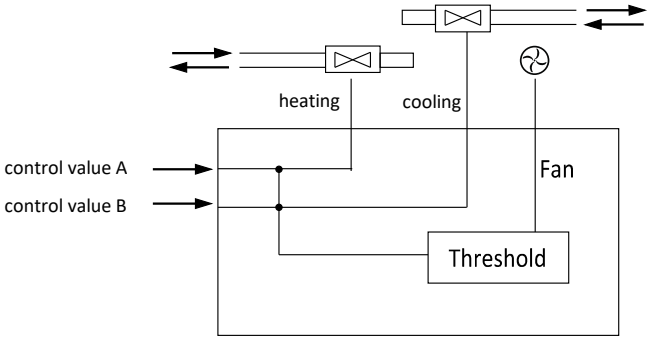
1 Control value/4-pipe,with switch object



2 Control value/2-pipe



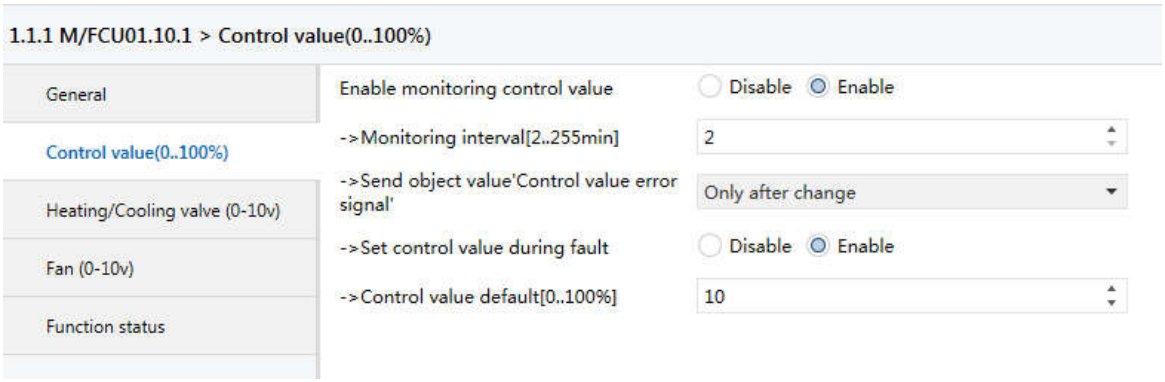
2 Control value/2-pipe,with switch object



2 Control value/4-pipe

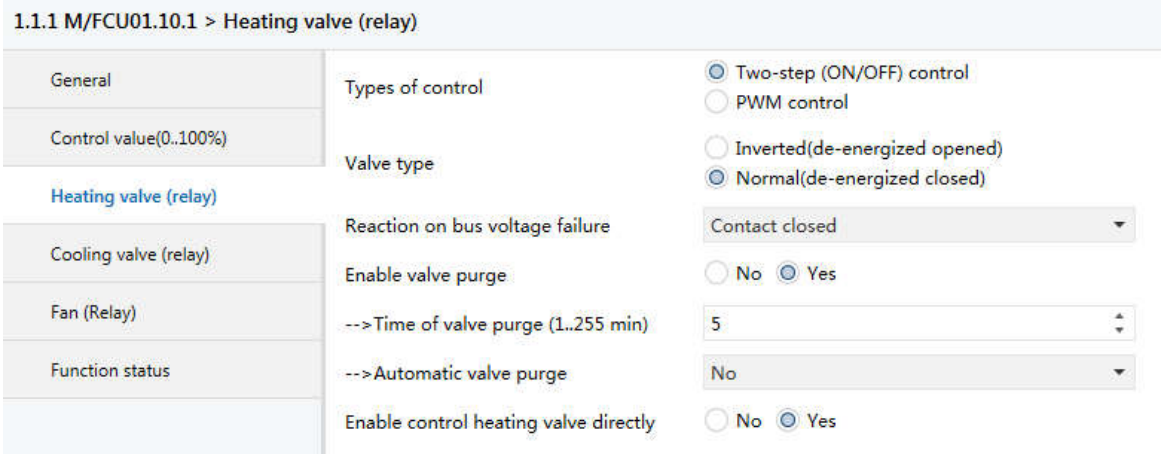
2	Heating/Cooling valve channel select	-Channel E (relay) -Channel G (0-10V)	It's used for select the channel function (heating or cooling) and the fan channel
3	Fan channel select	-No fan -Channel A-C (relay) -Channel F (0-10V)	
4	Enable set default control value after system restart working	-Disable -Enable	Enable/Disable set default control value after system restart working

3.1.1 Control value(0...100%)



1	Enable monitoring control value	-Disable -Enable	Enable or disable monitoring control value
2	-> Monitoring interval (2...255min)	-2...255	Set the time of monitoring interval
3	->Send object value control value error signal	-No, update only -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
4	->Set control value during fault	-Disable -Enable	Whether can be set control value during fault
5	-> Control value default(0...100%)	-0...(10)...100	Set the default velue.

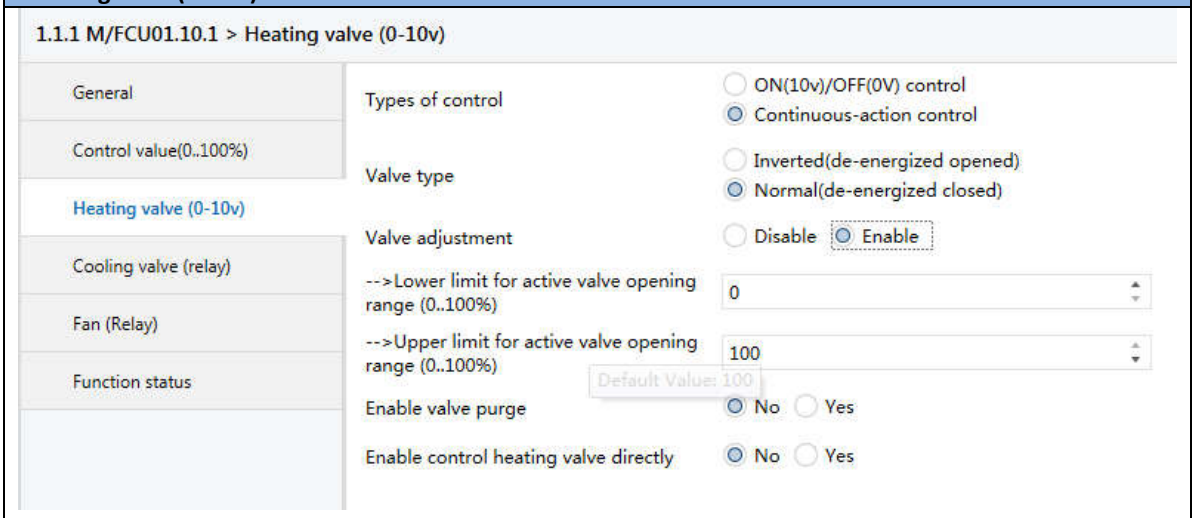
3.1.2_Heating valve(relay)



6	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
7	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
8	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
Enable valve purge			
9	-->Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
10	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day.

			One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
11	Enable control heating valve directly	-No -Yes	Whether control heating directly.

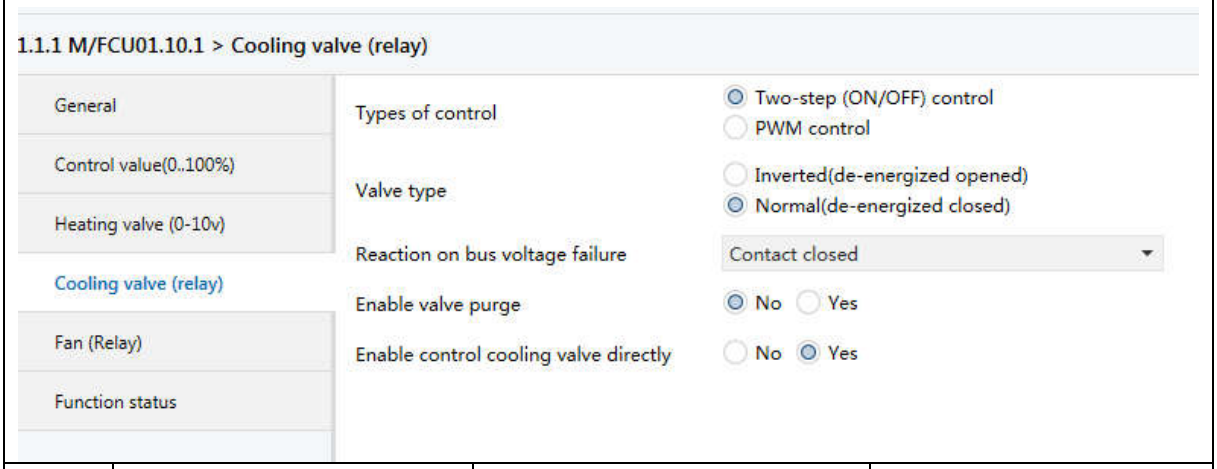
Heating value(0-10V)



12	Types of control	-(Continuous-action control) -On(10V)/OFF(0V) control	Set the control type. Continuous-action control: A continuous action controller has a control value which is continually changing. The output voltage is between 0v and 10v and can be used to activate proportional valve drives. The valve can thereby be fully opened, or fully closed, and moved to any intermediate position. This type of control is enabled via PI control. -On(10V)/OFF(0V) control:
13	Value type	-(Normal(de-energized closed)) -Inverted(de-energized opened	Set the value type parameters.
14	Value adjustment	-Enable -(Disable)	Enableor disable the value adjustment.
15	-> Lower limit for active value opening range(0…100%)	(0)…100%	Set the lower value opening limit.
16	->Upper limit for active value opening range	0…(100%)	Set the upper value opening limit.
17	Enable value purge	-Yes -(No)	Enable or disable the purge value.
18	-> Time of value	1…(5)…255min	Set the purge value time.

	purge(1…255min)		
19	-> Automatic value purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
20	Enable control heating valve directly	-No -Yes	Whether control heating directly.

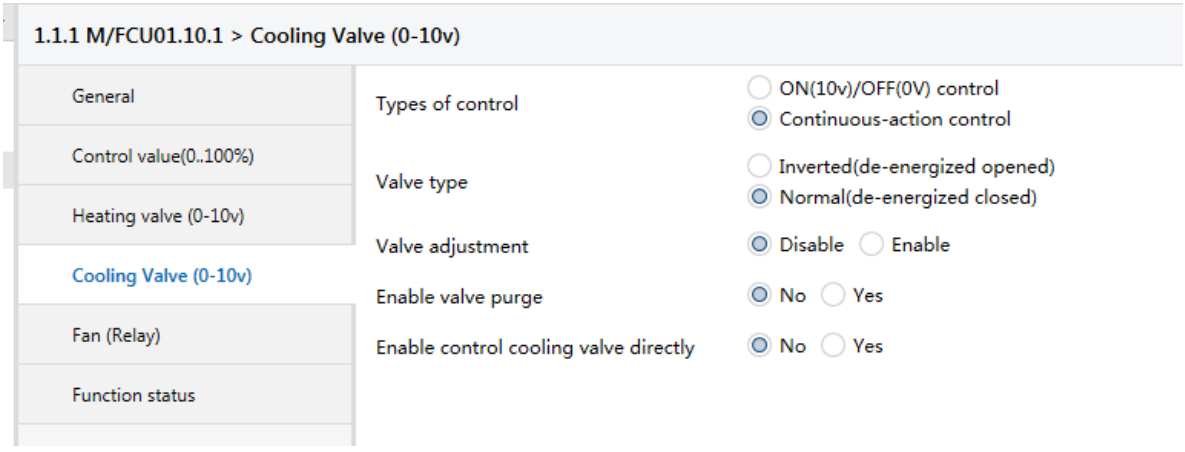
3.1.3_ Cooling valve(relay)



1	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.

2	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
3	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
4	Enable value purge	-Yes -(No)	Enable or disable the purge valve.
5	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.
6	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
7	Enable control cooling valve directly	-No -Yes	Whether control cooling directly.

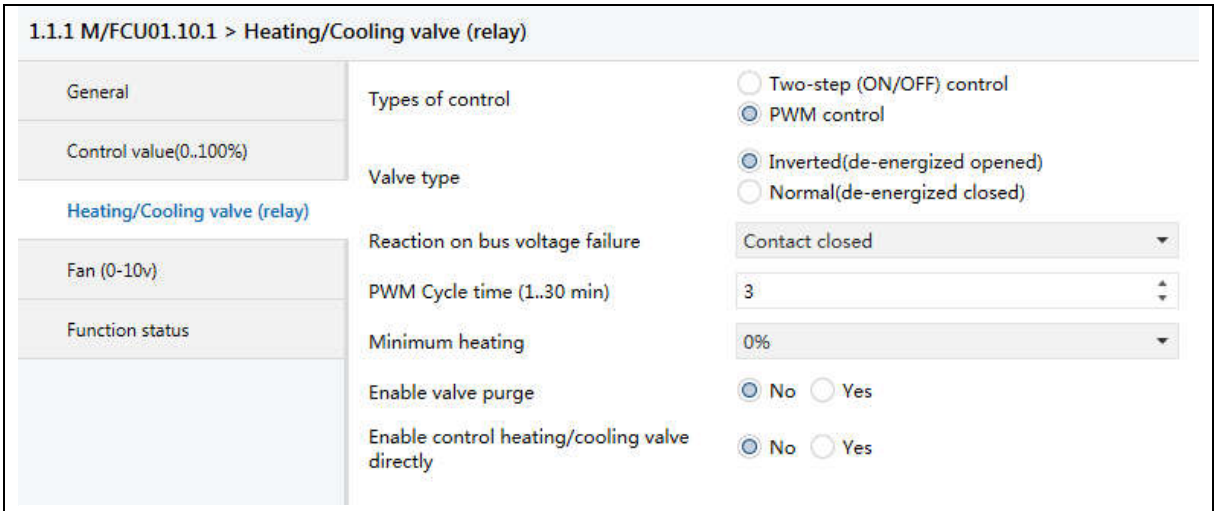
Cooling valve(0-10V)



8	Types of control	-(Continuous-action control) -On(10V)/OFF(0V) control	Set the control type.

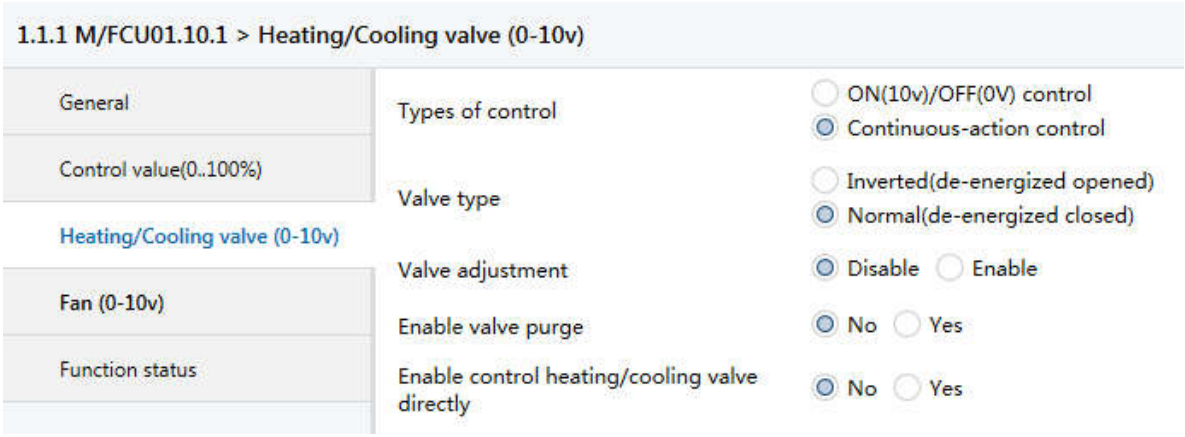
			Continuous-action control: A continuous action controller has a control value which is continually changing. The output voltage is between 0v and 10v and can be used to activate proportional valve drives. The valve can thereby be fully opened, or fully closed, and moved to any intermediate position. This type of control is enabled via PI control. -On(10V)/OFF(0V) control:
9	Valve type	-(Normal(de-energized closed)) -Inverted(de-energized opened	Set the value type parameters.
10	Valve adjustment	-Enable -(Disable)	Enableor disable the value adjustment.
11	-> Lower limit for active valve opening range(0…100%)	(0)…100%	Set the lower value opening limit.
12	->Upper limit for active valve opening range	0…(100%)	Set the upper value opening limit.
13	Enable valve purge	-Yes -(No)	Enable or disable the valve purge.
14	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge value time.
15	-> Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
16	Enable control cooling valve directly	-No -Yes	Whether control cooling directly.

3.1.4_ Heating /Cooling valve(relay)



1	Types of control	-(Two-step(ON/OFF) control) -PWM control	Set the control type. Two-step(ON/OFF) control: A temperature value will be activated when the room temperature falls below a pre-set level. PI control is not used. Upper limit value=Set point temp. +1°C; Lower limit value=Set point temp. -1°C PWM control: The control value is fixed and converted into the value used during initiation.
2	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
3	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	Set the bus voltage failure reaction. Contact unchanged: The contact position is unchanged. Contact opened: The contact position is opened. Contact closed: The contact position is closed.
4	Enable value purge	-Yes -(No)	Enable or disable the purge valve.
5	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge valve time.

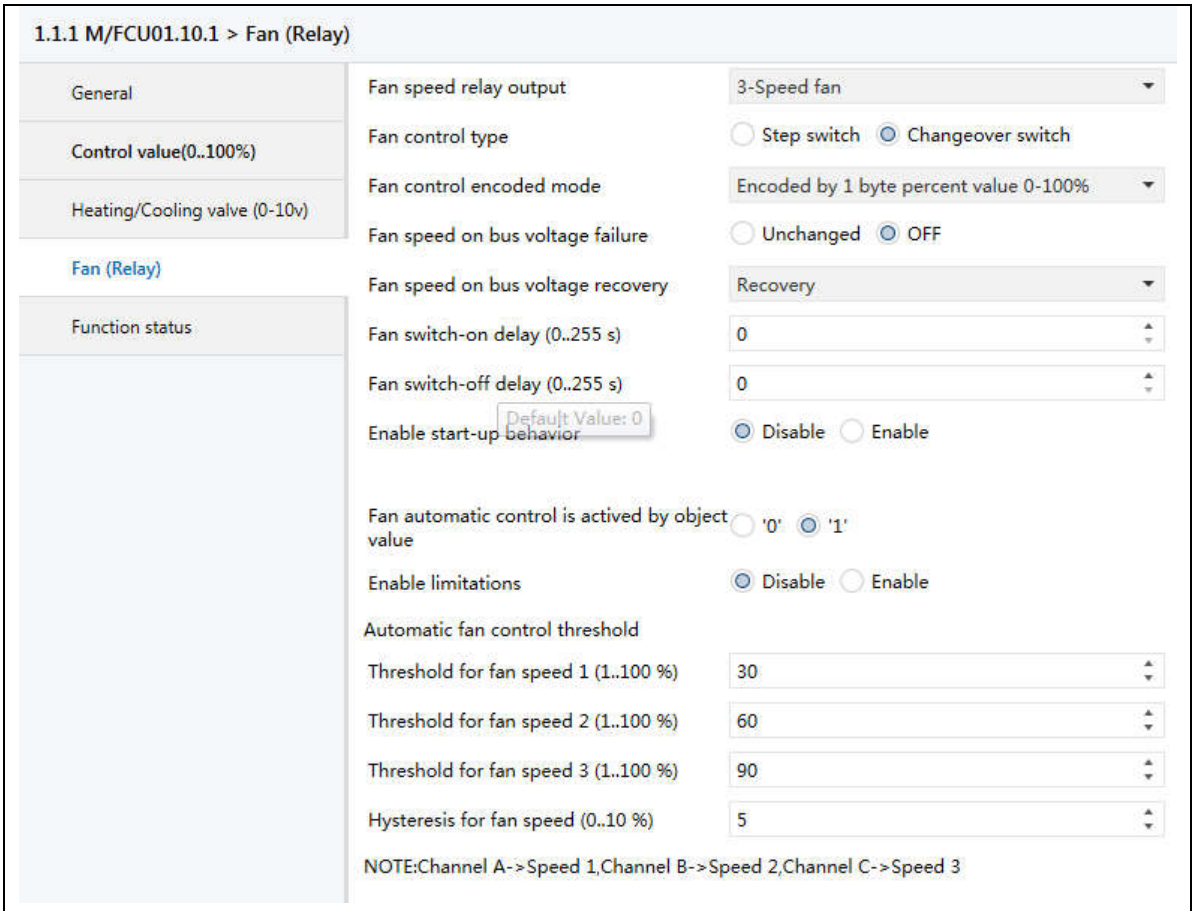
6	Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
7	Enable control cooling valve directly	-No -Yes	Whether control cooling directly.
Heating/Cooling valve(0-10V)			



8	Types of control	-(Continuous-action control) -On(10V)/OFF(0V) control	Set the control type. Continuous-action control: A continuous action controller has a control value which is continually changing. The output voltage is between 0v and 10v and can be used to activate proportional valve drives. The valve can thereby be fully opened, or fully closed, and moved to any intermediate position. This type of control is enabled via PI control. -On(10V)/OFF(0V) control:
9	Valve type	-(Normal(de-energized closed)) -Inverted(de-energized opened	Set the value type parameters.
10	Valve adjustment	-Enable	Enable or disable the value

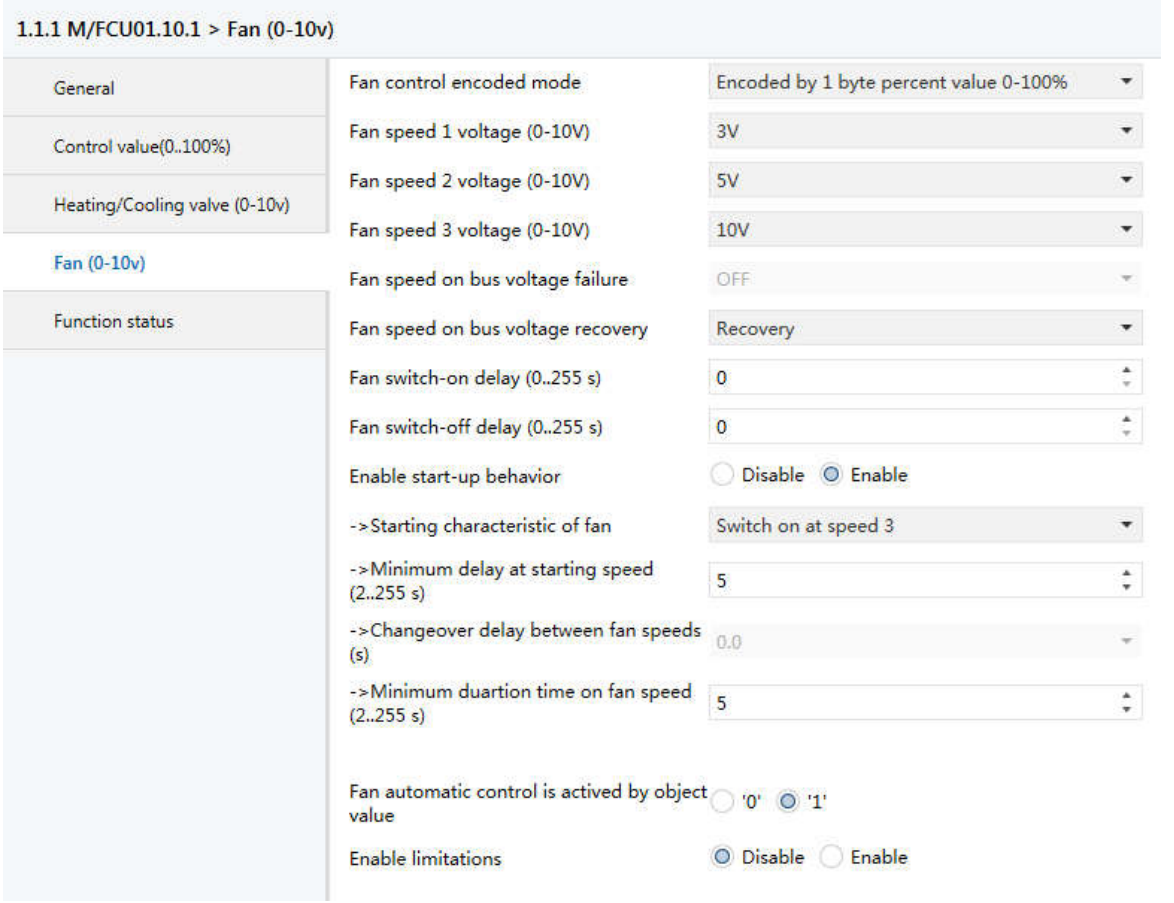
		-(Disable)	adjustment.
11	-> Lower limit for active valve opening range(0…100%)	(0)…100%	Set the lower value opening limit.
12	->Upper limit for active valve opening range	0…(100%)	Set the upper value opening limit.
13	Enable valve purge	-Yes -(No)	Enable or disable the valve purge.
14	-> Time of valve purge(1…255min)	1…(5)…255min	Set the purge value time.
15	-> Automatic valve purge	-(No) -One time per day -One time per week -One time per month	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
16	Enable control cooling valve directly	-No -Yes	Whether control cooling directly.

3.1.5_ Fan (Relay)



No.	ETS-Parameter	Range (default)	Description
1	Fan speed relay output	-1-Speed fan -2-Speed fan -3-Speed fan	Set the fan speed relay output. 1-Speed fan: A single speed fan is connected to channel A. 2-Speed fan: A dual speed fan is connected to channel A and channel B. (Channel A->Speed 1, Channel B-> Speed 2.) 3-Speed fan: A triple speed fan is connected to channel A, channel B, and channel C. (Channel A-> Speed 1, channel B->Speed 2, channel C-> Speed 3.)
2	Fan control type	-Step -Changeover switch	Set the fan control type
3	Fan control encoded mode	-Encoded by 1 byte percent value0-100% --Encoded by 1 byte percent value0-3 -1 bit values	Set the fan control encoded mode

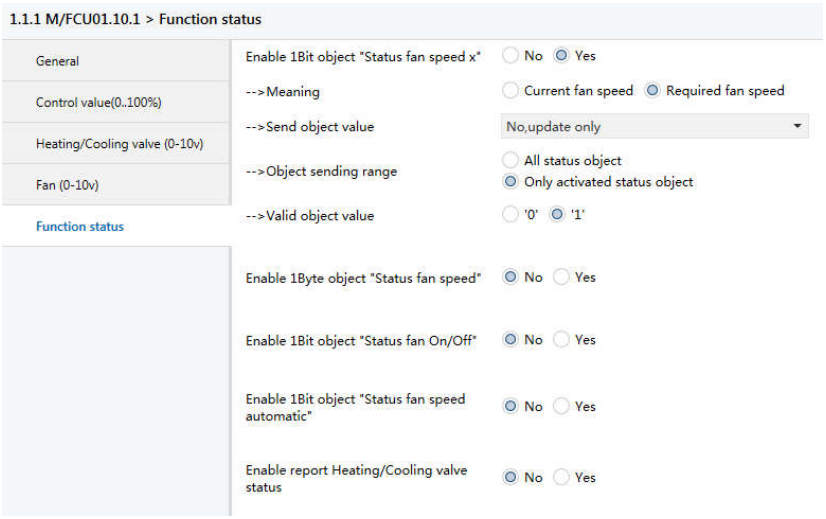
4	Fan speed on bus voltage failure	-Unchanged -(OFF)	Set the fan speed in the event of a bus voltage failure. Unchanged: The fan speed will remain unchanged. OFF: The fan will turn off.
5	Fan speed on bus voltage recovery	-(Recovery) -OFF -1 -2 -3	Set the fan speed in the event of a bus voltage recovery. Recovery: The fan speed will remain unchanged. OFF: The fan will turn off. 1,2,3: When the fan is switched on, the speed can be selected from 1,2, or 3.
6	Fan switch-on delay(0…255s)	(0)…255s	Set the fan switch on delay time.
7	Fan speed-off delay(0…255s)	(0)…255s	Set the fan switch off delay time.
8	Enable start-up behavior	-Disable -Enable	Enable or disable start-up.
9	Fan automatic control is actived by object value	-0 -1	Receive the 0 or 1 will automatic control.
10	Enable limitations	-Disable -Enable	Enable or disable limitations.
Automatic fan control threshold			
11	Threshold for fan speed1...100%	1...(30)...100	Set each speed threshold for fan.
12	Threshold for fan speed1...100%	1...(60)...100	
13	Threshold for fan speed1...100%	1...(90)...100	
14	Hysteresis for fan speed (0...10%)	(5)...10	
Fan (0-10V)			



15	Fan control encoded mode	-Encoded by 1 byte percent value 0-100% -Encoded by 1 byte constant value 0-3 -1 bit values	*Set the fan control encoded mode*
16	Fan speed 1 voltage (0-10V)	-0...(3)...10V	*Set the voltage of each fan speed.*
17	Fan speed 2 voltage (0-10V)	-0...(5)...10V	
18	Fan speed 3 voltage (0-10V)	-0...(10)...10V	
19	Fan speed on bus voltage failure	OFF	*The fan state when the bus voltage failure.*
20	Fan speed on bus voltage recovery	-Recovery -OFF -1 -2 -3 -Auto	*Set fan speed on bus voltage recovery.*
21	Fan switch-on delay (0...255s)	-0...255	Set the delay time.
22	Fan switch-off delay (0...255s)		
23	Enable start-up behavior	-Disable -Enable	Disable/Enable start-up behavior. If enable it, will be appear below parameters.
24	-> Starting characteristic of fan	-Switch on at speed1 -Switch on at speed2 -Switch on at speed3	Set the speed of fan when starting.
25	-> Minimum delay at starting speed (2..255s)	-2..255s	Set the delay time.

26	->changeover delay between fan speeds	-0	
27	->Minimum duartion time on fan speed (2..255s)	-2..255s	
28	Fan automatic control is actived by object value	-0 -1	Receive the 0 or 1 will automatic control.
29	Enable limitations	-Disable -Enable	When enabled limitation function, set the speed with each limitation
31	->Speed with limitation 1	3,2,1,off unchanged off 1 1,off 2 2,1 2,1,off 3 3,2 3,2,1	
32	->Speed with limitation 2		
33	->Speed with limitation 3		
34	->Speed with limitation 4		

3.1.6_ Function status



1	Enable 1 Bit object “Status fan speed x”	-Yes -(No)	Enable or disable a 1 bit object. Yes: Fan speed status x(x=1,2,3) is enabled. No: There is no response.
2	-->Meaning	-(Current fan speed) -Required fan speed	Current fan speed: Respond to the current fan speed. Required fan speed: Respond to the required fan speed.
3	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The

			status will always respond. Only after change: The object value will be sent only when a modification has been made.
4	-->Object sending range	-All status object -Only activated status object	*Set object send range*
5	-->Valid object value	-'0' -'1'	*Set the object value*
6	Enable 1 byte object “status fan speed”	-Yes -(No)	Enable or disable a 1 bit object. Yes: The fan status speed is enabled. No: The fan status speed is disabled.
7	-->1 Byte value encode mode	-Encoded by 1 byte percent value 0-100% -Encoded by 1 byte percent value 0-3	Select the encode mode.
8	-->Meaning	-(Current fan speed) -Required fan speed	Current fan speed: Respond to the current fan speed. Required fan speed: Respond to the required fan speed.
9	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
10	1 bit object “status fan On/Off”	-Yes -(No)	Enable or disable a 1 bit object. Yes: The fan speed responds to the on/off status. No: The fan speed does not respond to the on/off status.
11	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.*

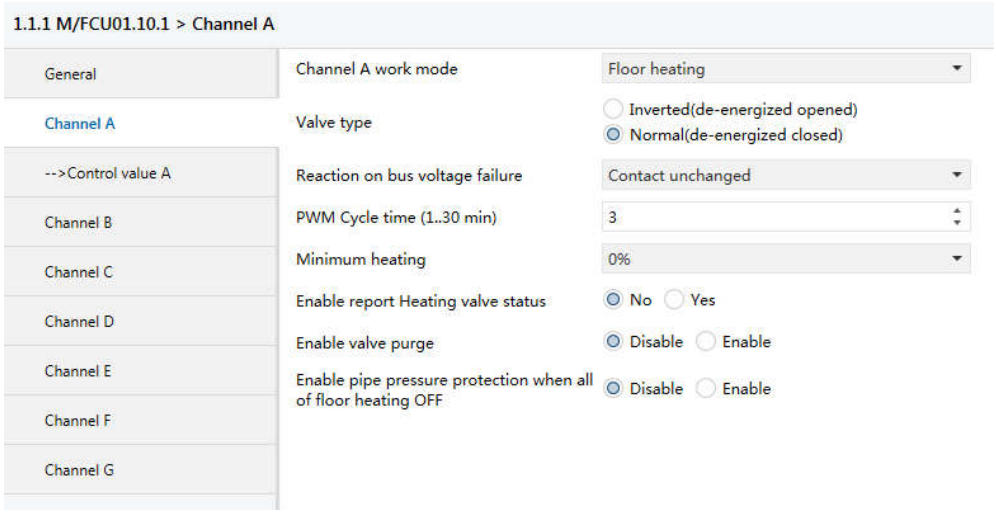
			No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
12	Enable 1 Bit object "status fan speed automatic"	-Yes -(No)	Enable or disable a 1 bit object of status fan speed automatic.
13	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
14	Enable report heating valve status	-Yes -(No)	Enable or disable report heating valve status.
15	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
16	-->Type of status report	-Report movement, PWM>0/PWM=0 -Report position, ON/OFF	Set the type of status report
17	-->Object value with PWM>0	-0 -1	When PWM>0,it will report 0 or 1.
18	Enable report Coolting valve status	-Yes -(No)	Enable or disable report heating valve status.
19	--> Send object value	-(No, Update only) -Always response -Only after change	*Define the parameters for when the object value should be sent.* No, Update only: The status

			is always updated, but never sent. Always response: The status will always respond. Only after change: The object value will be sent only when a modification has been made.
20	-->Type of status report	-Report movement, PWM>0/PWM=0 -Report position, ON/OFF	Set the type of status report
21	-->Object value with PWM>0	-0 -1	When PWM>0,it will report 0 or 1.

3.2_ Floor Heating

3.2.1_ ChannelA

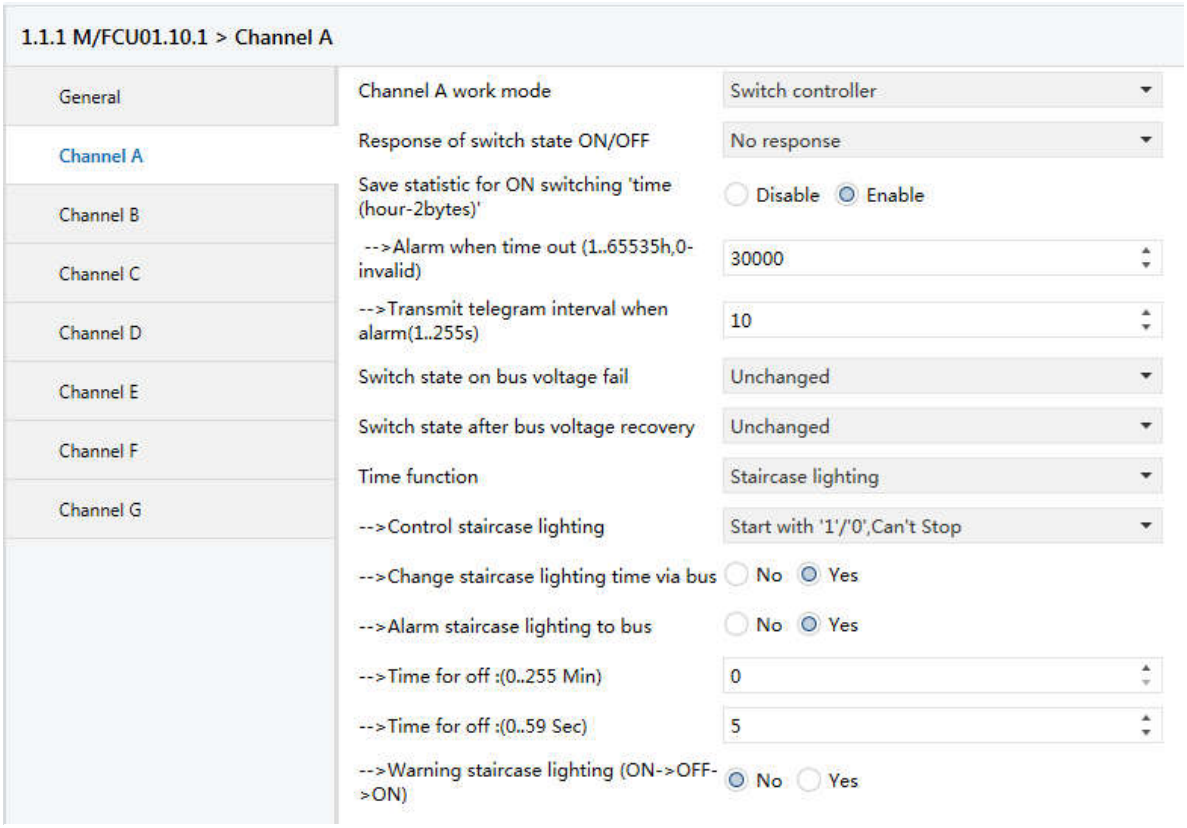
3.2.2_ Floor heating



1	Channel A work mode	-Inactive -Floor heating -Switch controller	Set channel A's work mode
2	Valve type	-Inverted(de-energized opened) -(Normal(de-energized closed)	Set the valve type.
3	Reaction on bus voltage failure	-Contact Unchanged -Contact opened -(Contact closed)	The reaction when bus voltage failure.
4	PWM Cycle time(1...30min)	-1...30	Set the PWM Cycle time.
5	Minimum heating	-0%,5%,15%,20%	Set the purge valve time.
6	Enable report heating valve status	-No -Yes	Enable/Disable report heating valve status.
7	-->Send object value	-No, update only -Only after change	When send object value.
8	-->Type of status report	-Report movement, PWM>0/MWM=0 -Report position, ON/OFF	
9	-->Object value with PWM>0	-0	

		-1	
10	Enable valve purge	-Disable -Enable	Set the parameters for the automatic purge valve. One time per day: The purge valve will operate once a day. One time per week: The purge valve will operate once a week. One time per month: The purge valve will operate once a month.
11	Enable pipe pressure protection when all of floor heating OFF	-Disable -Enable	Whether control cooling directly.
Control value A			
Please reference 3.1.1			

3.2.3_Switch controller



12	Response of switch state ON/OFF	- No response - Always response - Only after change	Set the response of switch state.
13	Save statistic for ON switch 'time (hour-2bytes)'	-Enable -(Disable)	Enable/disable the value adjustment.
14	-->Alarm when time out (1..65535h, 0-invalid)	-0-65535	When time out will alarm.
15	-> transmit telegram interval when alarm(1...255s)	-1...255s	Set the lower value opening limit.
16	Switch state after bus voltage fail	-Unchanged -ON	Set the upper value opening

17	Switch state after bus voltage recovery	-OFF	limit.
18	Time function	-Disable -Staircase lighting -ON/OFF delay	Set the time function.
19	--> Control staircase lighting	-Start with '1', Stop with '0' -Start with '1', Invalid with '0' -Start with '1/0', Can't Stop	How to control the staircase lighting.
20	--> Change staircase lighting time via bus	-No -Yes	Whether change staircase lighting time via bus.
21	-->Alarm staircase lighting to bus	-No -Yes	Whether alarm staircase lighting to bus.
22	-->Time for off:(0...255Min)	-0...255	
23	-->Time for off:(0...59 Sec)	-0...59	
24	--> Warning staircase lighting (ON->OFF->ON)	-No -Yes	If you select yes, after the set time the lighting will flash.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

D. Communication Objects (you can query from this file:  C:\Users\Administrator\Des)

D.0 General

Objects “General”				
0 General Send cycles 1 bit C R - T -				
NO.	Object name	Function	Flags	Data type
0	General	Send cycles	C R T	DPT1.003 1bit
This communication object is always valid. If telegram ‘1’ is sent, the next telegram value to be sent will be ‘0’.				

D.1 Fan

Objects “Fan”				
40 Fan Fan speed automatic 1 bit C - W - U Low 40 Fan Fan speed automatic 1 bit C - W - U Low				
NO.	Object name	Function	Flags	Data type
40	Fan	Fan speed automatic	C W U	DPT1.003 1bit
The above communication object is used to control the fan speed in automatic mode. If a telegram with a value of ‘1’ is sent, the fan will switch on. If telegram with a value of ‘0’ is sent, the fan will switch off.				
41 Fan Fan speed with % value 1 Byte C - W - U Low 41 Fan Fan speed with % value 1 Byte C - W - U Low				
NO	Object name	Function	Flags	Data type

41	Fan	Fan speed with % value	C W U	DPT5.001 1 byte
This communication object is used to set the fan speed when the automatic mode is active.				

Objects “Fan speed”

42	Fan	Fan speed 1	1 bit	C	-	W	-	U
42	Fan	Fan speed 1	1 bit	C	-	W	-	U
42	Fan	Fan speed 1	1 bit	C	-	W	-	U
42	Fan	Fan speed 1	1 bit	C	-	W	-	U
43	Fan	Fan speed 2	1 bit	C	-	W	-	U
43	Fan	Fan speed 2	1 bit	C	-	W	-	U
43	Fan	Fan speed 2	1 bit	C	-	W	-	U
44	Fan	Fan speed 3	1 bit	C	-	W	-	U
44	Fan	Fan speed 3	1 bit	C	-	W	-	U

NO.	Object name	Function	Flags	Data type
42	Fan	Fan speed 1	C W U	DPT1.001 1 bit
43	Fan	Fan speed 2	C W U	DPT1.001 1 bit
44	Fan	Fan speed 3	C W U	DPT1.001 1 bit
These communication objects are used for the FCU actuator, a speed value of X (X=1,2,3) can be received. By default the automatic operation is disabled, if a telegram with a value of ‘1’ is received, the fan will be ON. If a telegram with a value of ‘0’ is received, the fan will be off.				

Objects “Status fan”

45	Fan	Status fan speed 1	1 bit	C	R	-	T	-
45	Fan	Status fan speed 1	1 bit	C	R	-	T	-
46	Fan	Status fan speed 2	1 bit	C	R	-	T	-
46	Fan	Status fan speed 2	1 bit	C	R	-	T	-
47	Fan	Status fan speed 3	1 bit	C	R	-	T	-
47	Fan	Status fan speed 3	1 bit	C	R	-	T	-
48	Fan	Status fan speed	1 Byte	C	R	-	T	-
48	Fan	Status fan speed	1 Byte	C	R	-	T	-

NO.	**Object name**	**Function**	**Flags**	**Data type**
45	Fan	Status fan speed 1	C R T	DPT 1.001 1 bit
46	Fan	Status fan speed 2	C R T	DPT 1.001 1 bit
47	Fan	Status fan speed 3	C R T	DPT 1.001 1 bit
These communication objects are used to control the fan status and speed. If 1bit object “Status fan speed X” is enabled, telegrams will always be sent via KNX or EIB, but only after a modification has been made. If a telegram value of ‘0’ is received, the fan will deactivate. If a telegram value of ‘1’ is received, the fan will activate.				
48	Fan	Status fan speed	C R T	DPT5.010 1 byte
This communication object is used to control fan status and fan speed. *If 1bit object “Status fan speed X” is*				

enabled, telegrams will always be sent via KNX or EIB, but only after a modification has been made. If a telegram value of '0' is received, the fan will deactivate. If a telegram value of '1' is received, the fan will activate.

49	Fan	Status fan On/Off	C R T	D P T 1.001 1 bit

This communication object is used for status fan On/Off, if enable 1 bit object "Status status fan On/Off", it will always send on the KNX/EIB or only send after a change if receives telegram value '0', the fan speed will be OFF, if receives telegram value'1', the fan speed will be OFF

50	Fan	Status fan speed automatic	C R T	D P T 1.003 1 bit

This communication object is used for status fan speed automatic, if enable 1 bit object "Status fan speed automatic", it will always send on the KNX/EIB or only send after a change if receive telegram value '0', the fan will be inactive, if receives telegram value '1', the fan speed will be activated

Objects "Fan limitation"

NO.	Object name	Function	Flags	Data type
51	Fan	Limitation 1	C R W T U	DPT 1.003 1 bit
52	Fan	Limitation 2	C R W T U	DPT 1.003 1 bit
53	Fan	Limitation 3	C R W T U	DPT 1.003 1 bit
54	Fan	Limitation 4	C R W T U	DPT 1.003 1 bit

These communication objects are used to limit the fans operations. Limitation X (X=1,2,3,4) will be active if telegram '1' is received. Limitation X will be deactivated if telegram '0' is received.

'0'= All limitations disabled; '1'= Limitation X enabled

D2 Heating and cooling

Objects "value heating"

NO.	Object name	Function	Flags	Data type
60	Valve Heating	Status valve	C R T	DPT 1.001

		position		1 bit
This communication object is used for the status value position, if value '1' is set in the parameter then 'Object value with value position>0", '0'=valve position is equal to zero; '1'=valve position is not equal to zero. If value '0' is set in the parameter then"Object value position>0", '0'=Valve position is note equal to zero, '1'= Valve position is equal to zero.				
61	Valve Heating	Trigger valve purge	C W U	DPT 1.017 1 bit
This communication object is used to trigger the valve purge. The purge cycle will automatically restart, if telegram '0' is received however the valve purge will end, and the valve will be closed. If telegram '1' is received, the purge valve will initiate, and the purge valve will be opened.				
62	Value Heating	Status valve purge	C R T	DPT 1.003 1 bit
This communication object is used for valve status purge. If telegram '0' is received the purge valve will be inactive, if telegram '1' is received the purge valve will be active.				

Objects "Valve Cooling""

No	Object name	Function	Flags	Data type
63	Valve cooling	Status valve position	C R T	DPT1.001 1 bit
This communication object is used to indicate the status of thevlave position. If value '1' is set in the parameter, then "Object value with valve position>0"'0'=valve position is eaual to zero. *If value '0' is set in the parameter "Object value with valve position>0",'0'=Valve position is not equal to zero;'1'=Valve position is equal to zero*				

D3 Floor heating

Objects "Slave clock"

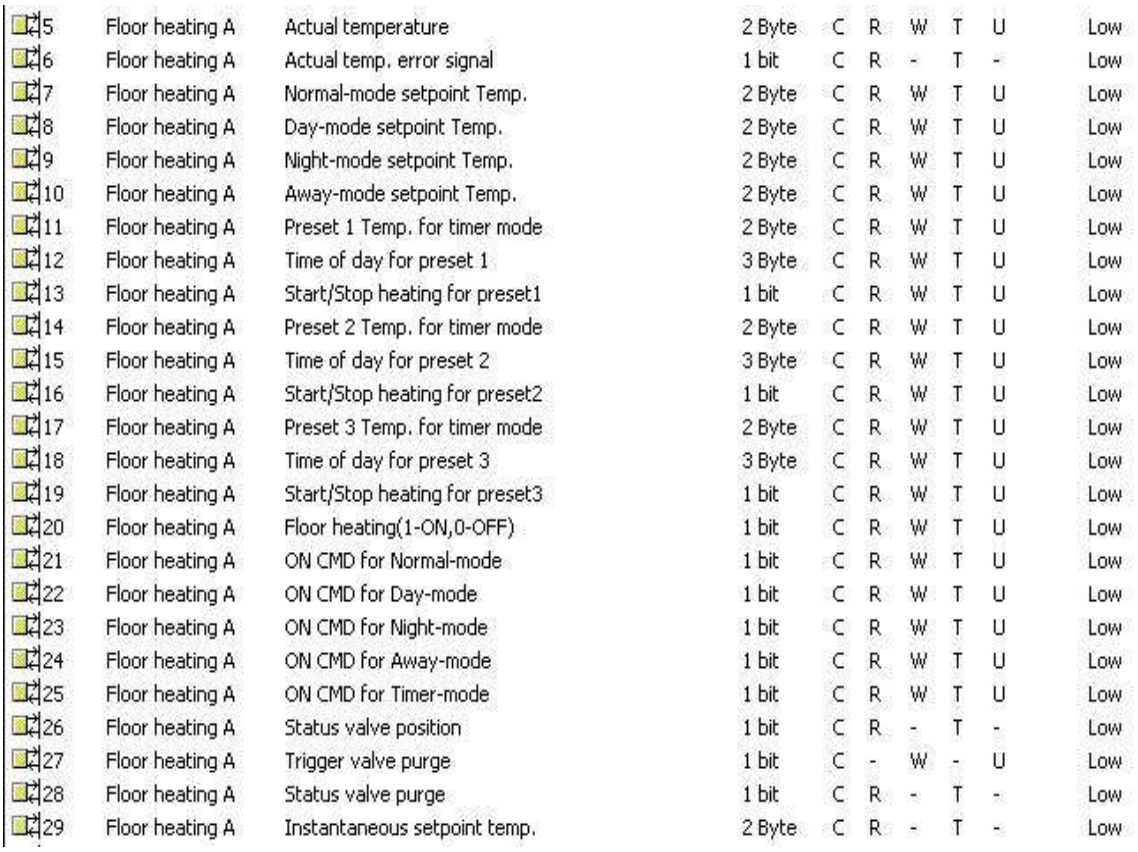
NO.	Object name	Function	Flags	Data type
1	Slave clock	Network date time	C W T U	DPT19.001 8 byte
This communication object is used for the inputting of time and date information, and to synchronise all of the clocks in the system.				
2	Slave clock	Network date time	C W T U	DPT11.001 3 byte
This communication object is used to synchronise all of the clock input data across the system.				
3	Slave clock	Network time of day	C W T U	DPT10.001 3 byte
This communication object is used to synchronise all of the clock input data across the system.				

Objects "Pipe pressure protection"

NO.	Object name	Function	Flags	Data type
4	Floor heating	Pipe pressure protection	C R T	DPT 1.001 1 bit
This communication object is used for pipe pressure protection. If all of the floor heating channels are turned off, the object status is set as ON, and will respond a telegram value '1'. If the object status is set as OFF, it will respond to a telegram vale of '0'.				

D 5 Floor heating N(N=A,B,C,D,E,F,G)

Objects 'Floor heating'



NO.	Object name	Function	Flags	Data type
5,30…	Floor heating N	Actual temperature	C R W T U	DPT 9.001 2byte
This communication object is used to operate the temperature sensor TS/C 1.0. The actual temperature is sent to this communication object via KNX/EIB.				
6,31…	Floor heating N	Actual temp. error signal	C R T	DPT 1.005 1 bit
This communication object is used to send the KNX/EIB with this object. The output of the error signal can occur 1…255 or cyclically. '0':No error '1': Error				
7,32…	Floor heating N	Normal-mode setpoint temp.	C R W T U	DPT9.001 2 byte
This communication object is used for setting the normal mode temperature, the temperature value an also be modified using this communication object. The temperature settings are stored in a non-volatile memory				

segment.				
8,33…	Floor heating N	Day-mode setpoint Temp.	C R W T U	DPT9.001 2 byte
This communication object is used to set the day mode temperature, the temperature value an also be modified using this communication object. The temperature settings are stored in a non-volatile memory segment.				
9.34…	Floor heating N	Night-mode setpoint Temp.	C R W T U	DPT9.001 2 byte
This communication object is used to set the night mode temperature, the temperature value an also be modified using this communication object. The temperature settings are stored in a non-volatile memory segment.				
10,35…	Floor heating N	Away-mode set point Temp.	C R W T U	DPT9.001 2 Byte
This communication object is used to set the away mode temperature, the temperature value an also be modified using this communication object. The temperature settings are stored in a non-volatile memory segment.				
11,36…	Floor heating N	Preset 1 Temp. for timer mode	C R W T U	DPT9.001 2 byte
This communication object is used to set the timer mode of temperature pre-set 1, the temperature value can also be modified using this communication object. The temperature settings are stored in a non-volatile memory segment.				
12,37…	Floor heating N	Time of day for preset 1	C R W T U	DPT10.001 3 byte
This communication object is used to configure the pre-set 1 time, the time value an also be modified using this communication object. The time settings are stored in a non-volatile memory segment.				
13,38…	Floor heating N	Start/Stop heating for preset 1	C R W T U	DPT1.010 1 bit
This communication object is used to activate or deactivate the heating for pre-set 1. This communication object can also be used modify the start/stop settings. The activation/ deactivation settings are stored in a non-volatile memory segment.				
14,39…	Floor heating N	Preset 2 Temp. for timer mode	C R W T U	DPT9.001 2 byte
This communication object is used configure the time mode in temperature pre-set 2 , the time value an also be modified using this communication object. The time settings are stored in a non-volatile memory segment.				
15,40…	Floor heating N	Time of day for preset 2	C R W T U	DPT 10.001 3 byte
This communication object is used to set the time of day for pre-set 2, the time value an also be modified using this communication object. The time settings are stored in a non-volatile memory segment.				
16,41…	Floor heating N	Start/Stop heating for preset2	C R W T U	DPT 1.010 1 bit
This communication object is used to activate or deactivate the heating for pre-set 2, the heating status can also be modified using this communication object. The heating settings are stored in a non-volatile memory segment.				
17,42…	Floor heating N	Preset 3 Temp. for timer mode	C R W T U	DPT9.001 2 byte
This communication is used to activate or deactivate the timer mode in pre-set 3, the heating status can also be modified using this communication object. The timer settings are stored in a non-volatile memory segment.				

18,43…	Floor heating N	Time of day for preset 3	C R W T U	DPT10.001 3 byte
This communication object is used to set the time for pre-set 3, this command can also be used to modify the time for pre-set 3. The time settings are stored in a non-volatile memory segment.				
19,44…	Floor heating N	Start/ Stop heating for preset 3	C R W T U	DPT1.010 1 bit
This communication object is used to activate or deactivate the heating for pre-set 3, the heating status can also be modified using this communication object. The heating settings are stored in a non-volatile memory segment.				
20,45…	Floor heating N	Floor heating(1-ON,0-OFF)	C R W T U	DPT 1.001 1 bit
This communication object is used to activate or deactivate the floor heating. When a telegram value of '1' is received, the floor heating will be activated. When a telegram value of '0' is received, the floor heating will be deactivated.				
21,46…	Floor heating N	ON CMD for Normal-mode	C R W T U	DPT 1.001 1 bit
This communication object is used to trigger switching in the normal mode. Telegram value: "0": No function "1": Normal mode				
22,47…	Floor heating N	ON CMD for Day-mode	C R W T U	DPT 1.001 1 bit
This communication object is used to trigger switching in the day mode. Telegram value: "0": No function "1": Day mode				
23,48…	Floor heating N	ON CMD for Night-mode	C R W T U	DPT 1.001 1 bit
This communication object is used to trigger switching in the night mode. Telegram value: "0": No function "1": Night mode				
24,49…	Floor heating N	ON CMD for Away-mode	C R W T U	DPT 1.001 1 bit
This communication object is used to trigger switching in the away mode. Telegram value: "0": No function "1": Away mode				
25,50…	Floor heating N	ON CMD for Timer-mode	C R W T U	DPT 1.001 1 bit
This communication object is used to trigger switching in the timer mode. Telegram value: "0": No function "1": Timer mode				
26,51	Floor heating N	Status valve position	C R W T U	DPT 1.001 1 bit
This communication object is used for the valve status position. Ifvalue '1' is set in the parameter, then"Object value with valve position>0": Telegram value: '0' = Valve position equal to zero '1' = Valve position not equal to zero If value '0' is set in the parameter, then "Object value with valve position>0": Telegram value: '0' = Valve position not equal to zero '1' = Valve position equal to zero				

27,52…	Floor heating N	Trigger valve purge	C W U	DPT 1.017 1 bit
This communication object is used to triggera valve purge, the purge cycle can be automatically restarted. Telegram value: ‘0’ = end valve purge, valve will be closed ‘1’ = start valve purge, valve will be opened				
28,53…	Floor heating N	Status valve purge	C R T	DPT 1.003 1 bit
This communication object is used for the purge valve status. Telegram value: ‘0’ = valve purge not active ‘1’ = valve purge active				
29,54…	Floor heating N	Instantaneous set point temp.	C R T	DPT 9.001 2 byte
This communication object is used to create aninstantaneous temperature set point.				

D6 HVAC

Objects “HVAC control mode”

NO.	Object name	Function	Flags	Data type
25	HVAC control mode	HVAC control mode (byte)	C R W T U	DPT 20.105 1 byte
This communication object is used for the HVAC control mode. Only the following telegram values are accepted. Telegram value: “0”: Auto “1”: Heat “3”: Cool “6”: Off “9”: Fan only				
26	HVAC control mode	Automatic heating/cooling mode	C R W T U	DPT 1.003 1 bit
These communication objects are used for the automatic heating/cooling modes. The current actual temperature will automatically determine which mode is used. Telegram value: “0”: No function “1”: Automaticheating/cooling mode				
27	HVAC control mode	Activation of heating mode	C R W T U	DPT 1.003 1 bit
This communication object is used to activate or deactivate the heating mode. Telegram value: “0”: No function “1”: Heating mode				
28	HVAC control mode	Activation of cooling mode	C R W T U	DPT 1.003 1 bit
This communication object is used to activate or deactivate the cooling mode. Telegram value: “0”: No function				

	"1": Cooling mode			
29	HVAC control mode	Activation of fan only	C R W T U	DPT 1.003 1 bit
This communication object is used to activate or deactivate the fan. Telegram value: "0": No function "1": Fan only mode				

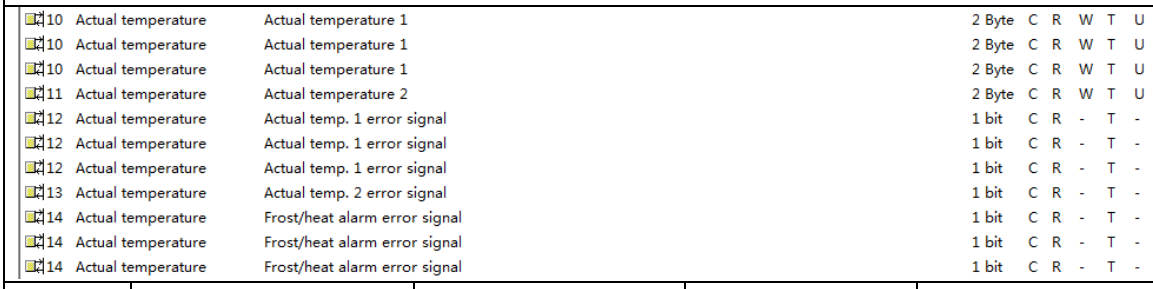
Objects "HVAC mode"

30	HVAC mode	HVAC mode (byte)	1 Byte C R W T U
30	HVAC mode	HVAC mode (byte)	1 Byte C R W T U
30	HVAC mode	HVAC mode (byte)	1 Byte C R W T U
31	HVAC mode	ON CMD for comfort mode	1 bit C R W T U
31	HVAC mode	ON CMD for comfort mode	1 bit C R W T U
31	HVAC mode	ON CMD for comfort mode	1 bit C R W T U
32	HVAC mode	ON CMD for standby mode	1 bit C R W T U
32	HVAC mode	ON CMD for standby mode	1 bit C R W T U
32	HVAC mode	ON CMD for standby mode	1 bit C R W T U
33	HVAC mode	ON CMD for night mode	1 bit C R W T U
33	HVAC mode	ON CMD for night mode	1 bit C R W T U
33	HVAC mode	ON CMD for night mode	1 bit C R W T U
34	HVAC mode	ON CMD for building protection	1 bit C R W T U
34	HVAC mode	ON CMD for building protection	1 bit C R W T U
34	HVAC mode	ON CMD for building protection	1 bit C R W T U

NO.	Object name	Function	Flags	Data type
30	HVAC mode	HVAC mode (byte)	C R W T U	DPT 20.102 1 byte
These communication objects are usedfor the HVAC Mode. Telegram value: "1": Comfort mode "2": Standby mode "3": Night mode "4": building protection				
31	HVAC mode	ON CMD for comfort mode	C R W T U	DPT 1.001 1 bit
This communication object is used for the ON command for the comfort mode. Telegram value: "0": No function "1": Comfort mode/comfort extension				
32	HVAC mode	ON CMD for standby mode	C R W T U	DPT 1. 001 1 bit
This communication object is for the standby mode ON command. Telegram value: "0": No function "1": Standby mode				
33	HVAC mode	ON CMD for night mode	C R W T U	DPT 1. 001 1 bit
This communication object is used to ON CMD for night mode Telegram value: "0": No function "1": Night mode				
34	HVAC mode	ON CMD for building protection	C R W T U	DPT 1. 001 1 bit
This communication object is used to ON CMD for building protection. Telegram value: "0": No function "1": building protection mode				

D 7 Actual temperature

Objects “Actual temperature”



10	Actual temperature	Actual temperature 1	2 Byte C R W T U	
10	Actual temperature	Actual temperature 1	2 Byte C R W T U	
10	Actual temperature	Actual temperature 1	2 Byte C R W T U	
11	Actual temperature	Actual temperature 2	2 Byte C R W T U	
12	Actual temperature	Actual temp. 1 error signal	1 bit C R - T -	
12	Actual temperature	Actual temp. 1 error signal	1 bit C R - T -	
12	Actual temperature	Actual temp. 1 error signal	1 bit C R - T -	
13	Actual temperature	Actual temp. 2 error signal	1 bit C R - T -	
14	Actual temperature	Frost/heat alarm error signal	1 bit C R - T -	
14	Actual temperature	Frost/heat alarm error signal	1 bit C R - T -	
14	Actual temperature	Frost/heat alarm error signal	1 bit C R - T -	

NO.	Object name	Function	Flags	Data type
10	Actual temperature	Actual temperature 1	C R W T U	DPT 9.001 2 byte

This communication object is used for ‘actual temperature 1’.

If the Fan Coil Unit Controller is used in conjunction with the temperature sensor (TS/C 1.0), the actual temperature will be sent to this communication object via the KNX/EIB.
If the Fan Coil Unit Controller is operated without the temperature sensor,it will receive the actual temperature via KNX/EIB.

11	Actual temperature	Actual temperature 2	C R W T U	DPT 9.001 2 byte

This communication object is used for ‘actual temperature 2’. If “Two sensor via EIB (Count=2)” is selected, the actual temperature will be received via KNX/EIB.

12	Actual temperature	Actual temp. 1 error signal	C R T	DPT 1.005 1bit

This communication object is used to send the actual temperature 1 error signal. An error signal can be sent to the KNX/EIB,and can be sent after an elapsed time (1-255 seconds), or cyclically.
Telegram value: “0”: No error
“1”: Error

13	Actual temperature	Actual temp. 2 error signal	C R T	DPT 1.005 1bit

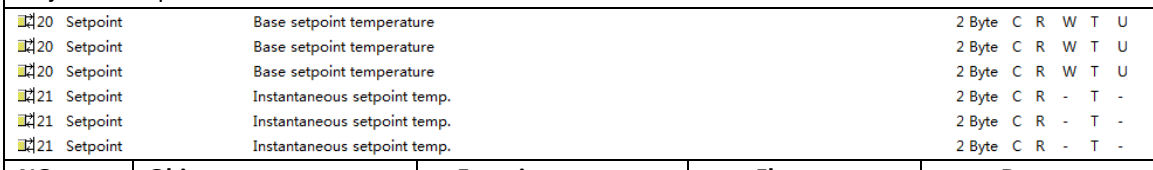
This communication object is used to send the actual temperature 2 error signal. An error signal can be sent to the KNX/EIB,and can be sent after an elapsed time (1-255 seconds), or cyclically.
Telegram value: “0”: No error
“1”: Error

14	Actual temperature	Frost/heat alarm error signal	C R T	DPT 1.005 1bit

This communication object is used for the low/high temperature alarm signal.
Telegram value: “0”: No frost/heat protection
“1”: Frost/heat protection

D8 Set point

Objects “Set point”



20	Setpoint	Base setpoint temperature	2 Byte C R W T U	
20	Setpoint	Base setpoint temperature	2 Byte C R W T U	
20	Setpoint	Base setpoint temperature	2 Byte C R W T U	
21	Setpoint	Instantaneous setpoint temp.	2 Byte C R - T -	
21	Setpoint	Instantaneous setpoint temp.	2 Byte C R - T -	
21	Setpoint	Instantaneous setpoint temp.	2 Byte C R - T -	

NO.	Object name	Function	Flags	Data type

20	Set point	Base set point temperature	C R W T U	DPT 9.001 2 byte
This communication object is used for the initial temperature level, the temperature level can also be modified using this input. The initial temperature level is stored in non-volatile memory segment.				
21	Set point	Instantaneous set point temp.	C R T	DPT 9.001 2 byte
This communication object is used to instantaneously set the initial temperature level (set point temperature). The current initial temperature level includes the reduction/increase in standby mode or during night mode.				

D 9 Switch actuator

Objects “Channel N”

180	Output A	Channel output	1 bit C - W - U
181	Output A	Always response switch state	1 bit C R - T -
182	Output A	R/W statistic for time	2 Byte C R W T U
183	Output A	Alarm statistic for time out	1 bit C R - T -
184	Output A	Staircase light	1 bit C - W - U
185	Output A	Change staircase lighting time	2 Byte C - W - U
186	Output A	Alarm staircase lighting	1 bit C R - T -
187	Relay A	R/W statistic for counter	4 Byte C R W T U

NO.	Object name	Function	Flags	Data type
180,190 …	Output N	Channel output	C W U	DPT 1.001 1 bit
This communication object is used for channel output, and to turn on or off a channel. The switch output will be ON when the value ‘1’ is received, when value ‘0’ is received the switch output will be OFF.				
181,191 …	Output N	Always response switch stateor Response state after change	C R T	DPT 1.001 1 bit
This communication object is used to respond the channel N status. If channel status isON,then the response status value is “1”, if the channel is OFF the response status is “0”.				
182,192 …	Output N	Read/Write statistic for time	C R W T U	DPT 7.007 2 byte
This communication object is used to read and write the time statistics.				
183,193 …	Output N	Alarm statistic for time out	CR T	DPT 1.005 1 bit
This communication object is used to trigger a statistic alarm when the ON period times out.				
184,194 …	Output N	Staircase light	C W U	DPT 1.001 1 bit
This communication object is used to activate or deactivate the staircase lighting.				
185,195 …	Output N	Change staircase lighting time	C W U	DPT 7.005 2 byte
This communication object is used to modify the running time of the staircase lighting.				
186,196 …	Output A	Alarm staircase lighting	C R T	DPT 1.005 1 bit
This communication object is used to activate or deactivate the staircase lighting alarm. If telegram ‘1’ is received the alarm will be ON, if telegram ‘0’ is received the alarm will be off.				
187,197	Relay N	R/W statistic for	C R W T U	DPT 12.001

…		counter		4 byte
This communication object is used for the ON time statistics for channel “N”, it can be read and written to via the bus.				

--- End of Document ---