

## 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  $^{\sim}$  100% parameters indicated by 0  $^{\sim}$  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.

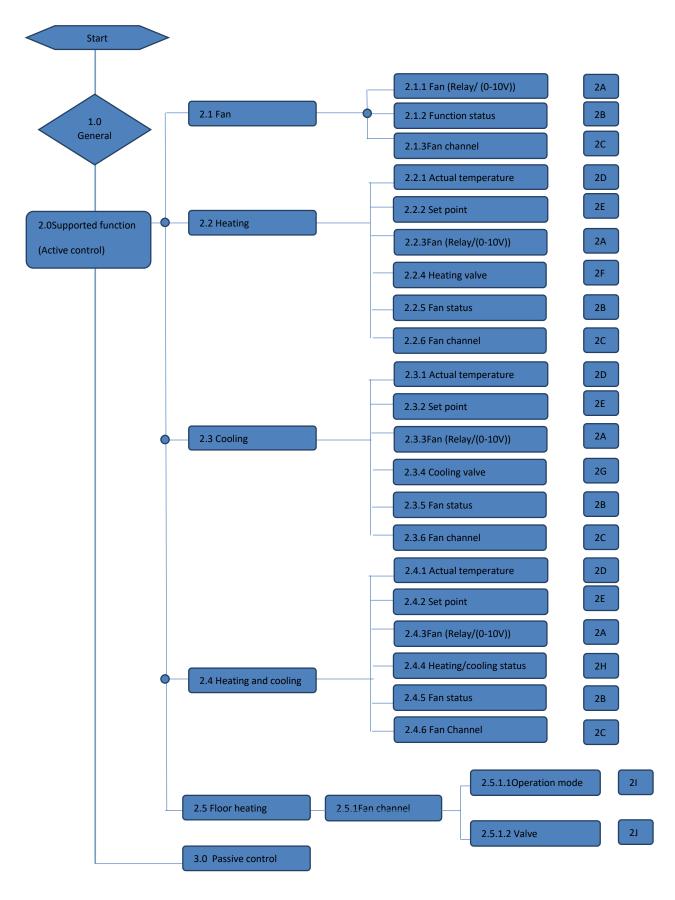
#### **Passive control**

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

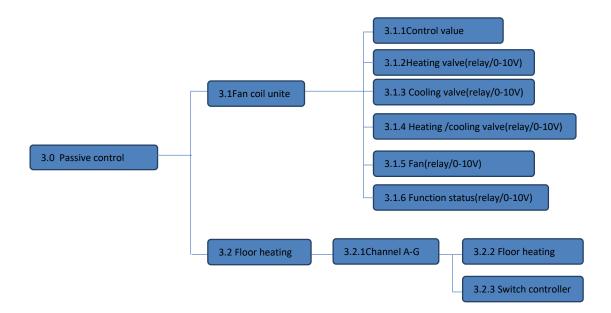
When in passive control mode, this module can work with panel with algorithm such as Siemens 5WG1.



### B. Flowchart showing module functionality

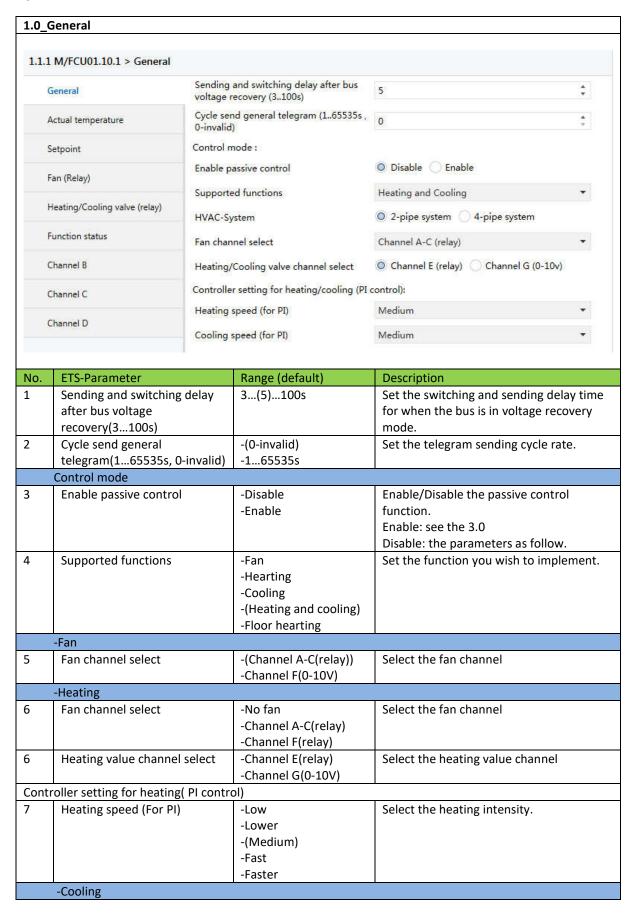








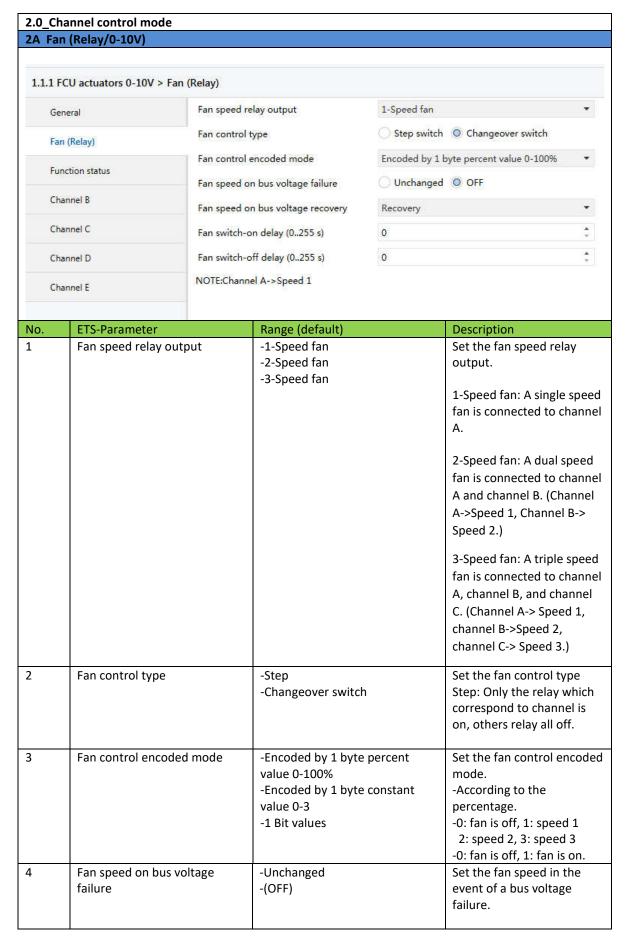
C.





8	Fan channel select	-No fan	Select the fan channel
	Tan enamer select	-(Channel A-C(relay))	Select the famelianner
		-Channel F(relay)	
9	Cooling value channel select	-(Channel D(relay))	Select the cooling value channel
		-Channel G(0-10V)	· ·
	Controller setting for cooling(PI		
10	Control speed (for PI)	-Low	Select the cooling intensity.
		-Lower	
		-(Medium)	
		-Fast	
		-Faster	
	Heating and Cooling		
11	HVAC-System	-(2-pipe system)	Select the HVAC pipe system.
		-4-pipe system	
12	Fan channel select	-No fan	Select the fan channel.
12	Fan Channel Select		Select the fan channel.
		-(Channel A-C(relay))	
13	Heating/acaling value abound	-Channel F (0-10V) -(channel E(relay))	Colort the heating/oraling changel
13	Heating/cooling value channel select	, , , , , , , , , , , , , , , , , , , ,	Select the heating/cooling channel.
1.1		-Channel G(0-10V)	Coloot the booting shown of
14	-Heating value channel select	-(Channel E(relay)) -Channel G(0-10V)	Select the heating channel.
15	-Cooling value channel select	-(Channel D(relay))	Select the cooling channel.
13	-cooming value chamiler select	-Channel F(0-10V)	Select the cooling channel.
	Controller setting for heating/co		<u> </u>
16	Heating speed (for PI)	-Low	Select the heating speed for PI.
10	ricating speed (101 1 1)	-Lower	select the heating speed for the
		-(Medium)	
		-Fast	
		-Faster	
17	Cooling speed (for PI)	-Low	Select the cooling speed for PI.
	,	-Lower	g spread
		-(Medium)	
		-Fast	
		-Faster	
	Floor Heating		
18	Enable slave clock	-(Enable)	Enable or disable the slave clock.
		-Disable	







					Unchanged: The far will remain unchang	-
5	Fan speed on bus voltage recovery		-(Recovery) -OFF		OFF: The fan will turn off.  Set the fan speed in the event of a bus voltage	
			-1 -2 -3		recovery: The fan speed will remain unchanged.	
					OFF: The fan will tu	rn off.
					1,2,3: When the far switched on, the sp be selected from 1,	eed can
6	Fan switch-on delay(0	)255s)	(0)255s		Set the fan switch of time.	n delay
7	Fan speed-off delay(C	255s)	(0)255s		Set the fan switch of time.	ff delay
	Fan(0-10V)					
1.1.1 FO	CU actuators 0-10V > Fan (0	-10v)				
Gen	eral	Fan control encoded mode		Encoded by 1 by	ncoded by 1 byte percent value 0-100%	
Fan	(0-10v)	Fan speed 1 v	oltage (0-10V)	3V		
Fun	ction status	Fan speed 2 voltage (0-10V)  Fan speed 3 voltage (0-10V)  Fan speed on bus voltage failure  Fan speed on bus voltage recovery  Fan switch-on delay (0255 s)		10V ▼ OFF   Recovery ▼ 0		*
Cha	nnel A					
						₩.
Cha	nnel B					*
Cha	nnel C					<b>.</b>
Cha	nnel D	Fan switch-off delay (0255 s)		0		<b>‡</b>
Cha	nnel E	Enable start-up behavior		Disable © Enable		
		11992	aracteristic of fan	Switch on at speed 3		•
		->Minimum delay at starting speed (2255 s)		5		
		-> Changeove (s)	r delay between fan speeds	0.0		+
		->Minimum o (2255 s)	luartion time on fan speed	5	÷	
		NOTE:Channel	F->Output 0-10v			
10	Fan control encoded	mode	-Encoded by 1 byte value 0-100% -Encoded by 1 byte value 0-3		Set the fan control mode	encoded
			-1 Bit value			
11	Fan speed 1 voltage		0(3V)10V		Set the voltage for to speed 1.	fan
12	Fan speed 2 voltage		0(5V)10V		Set the voltage for speed 2.	fan
13	Fan speed 3 voltage		0(10V)		Set the voltage for speed 3.	fan



			T
14	Fan speed on bus voltage	OFF	Set the fan speed
	failure		parameters in the event of
			bus voltage failure.
			OFF: The fan will be OFF.
1 [	Can and an hus valtage	(rosovom)	1
15	Fan speed on bus voltage	-(recovery) -OFF	Set the fan speed when the
	recovery	-1	bus is in voltage recovery mode.
		-1 -2	mode.
		-3	Recovery: The fan speed
		3	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(0255s)	(0)255s	Set the fan switch on delay
			time.
17	Fan speed-off delay(0255s)	(0)255s	Set the fan switch off delay
			time.
18	Enable start-up behavior	-Disable	Disable/Enable the function
10	-> Minimum delay at starting	-Enable	of start-up behavior Set the starting speed delay
19	speed (2255s)	2(5)255s	time.
20	->Changeover delay between	0.0	Set the fan speed
20	fan speeds(S)	0.0	changeover delay time.
21	->Minimum duration time on	2(5)255s	Set the fan speed duration
	fan speed(2255s)		time.
2B F	unction status		
	1.1.1 FCU actuators 0-10V > Funct	ion status	
	6 1	Enable 1Bit object "Status fan speed x"	No Yes
	General	Enable 15it Object Status ian speed x	
	Fan (0-10v)		
		Enable 1Byte object "Status fan speed"	No Yes
	Function status		
	Channel A	Enable 1Bit object "Status fan On/Off"	No Yes
	Channel B		
	Channel C		
	Channel C		
	Channel D		
	Channel D		
	Channel D Channel E		
1	Channel D Channel E Enable 1 Bit object "Status fan	-Yes_	Enable or disable a 1 bit
1	Channel D Channel E	-Yes -(No)	Enable or disable a 1 bit object.
1	Channel D Channel E Enable 1 Bit object "Status fan		object.
1	Channel D Channel E Enable 1 Bit object "Status fan		object. Yes: Fan speed status
1	Channel D Channel E Enable 1 Bit object "Status fan		object.
1	Channel D Channel E Enable 1 Bit object "Status fan		object.  Yes: Fan speed status x(x=1,2,3) is enabled.
1	Channel D Channel E Enable 1 Bit object "Status fan		object. Yes: Fan speed status



		-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 disat object.	ole a 1 bit
					Yes: The fan sp responds to the status.	
					No: The fan sperespond to the status.	
11						
12	> Send object value		-(No, Update only) -Always response -Only after change		Define the part for when the should be sen No, Update on is always update never sent.  Always response	object value it. ly: The status ted, but
					Only after char object value wi only when a m has been made	nge: The ill be sent odification
	1.1.1 FCU actuators 0-10V > Ch	annel A				
	1.1.1 FCU actuators 0-10V > Ch		e switch actuator	☐ Inactive ☐ Ac	tive	
		Enable Respo	nse of switch state ON/OFF	Inactive  Ac	tive	
	General	Enable Respo		No response	tive able	•
	General Fan (0-10v)	Respo Save s (hour-	nse of switch state ON/OFF tatistic for ON switching 'time	No response		*
	General Fan (0-10v) Function status	Respo Save s (hour- Switch	nse of switch state ON/OFF tatistic for ON switching 'time 2bytes)' state on bus voltage fail state after bus voltage recovery	No response  Disable En. Unchanged  Unchanged		•
	General Fan (0-10v) Function status Channel A	Respo Save s (hour- Switch	nse of switch state ON/OFF tatistic for ON switching 'time 2bytes)' state on bus voltage fail	No response  Disable En		
	General Fan (0-10v) Function status Channel A Channel B	Respo Save s (hour- Switch	nse of switch state ON/OFF tatistic for ON switching 'time 2bytes)' state on bus voltage fail state after bus voltage recovery	No response  Disable En. Unchanged  Unchanged		
	General Fan (0-10v) Function status Channel A Channel B Channel C	Respo Save s (hour- Switch	nse of switch state ON/OFF tatistic for ON switching 'time 2bytes)' state on bus voltage fail state after bus voltage recovery	No response  Disable En. Unchanged  Unchanged		
1	General Fan (0-10v) Function status Channel A Channel B Channel C Channel D	Respo Save s (hour- Switch	nse of switch state ON/OFF tatistic for ON switching 'time 2bytes)' state on bus voltage fail state after bus voltage recovery	No response  Disable En. Unchanged  Unchanged		able the
1	General Fan (0-10v) Function status Channel A Channel B Channel C Channel D Channel E	Respo Save s (hour- Switch	nse of switch state ON/OFF tatistic for ON switching 'time 2bytes)' state on bus voltage fail state after bus voltage recovery function  -(Inactive)	No response  Disable En. Unchanged  Unchanged	Enable or disa	able the or. neters for the esponse. The switch



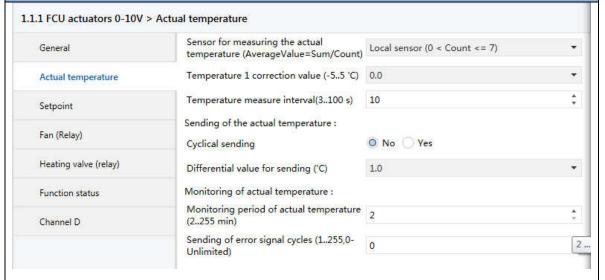
			T
			Only after change: The
			switch state will respond
			only after a modification has been made.
3	Savo statistic for ON switching	-Enable	Enable or disable the
3	Save statistic for ON switching 'time(hour-2bytes)'	-(Disable)	switch on time statistics.
4	Switch state on bus voltage	-(Unchanged)	Set the switch state in the
	fail	-On	event of a bus voltage
		-Off	failure.
			Unchanged: The switch
			state will remain
			unchanged after a bus voltage failure.
			voitage 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	-(Unchanged)	Set the switch state in the
	recovery	-On	event of a bus voltage
		-Off -recovery	recovery.
		-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
6	Time function	-(Disable)	recovery. Set the staircase lighting
	Time function	-(Disable) -Staircase lighting	timing parameters.
		-On/OFF delay	
	Staircase lighting	·	
7	Control staircase lighting	-Start with '1', stop with '0'	Set the staircase lighting
		-Start with '1', Invalid with '0'	activation and
		-(start with '1'/ '0', can't stop)	deactivation
			parameters.
			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: (0255Min)	(0)255Min	Set the time for the OFF status to be activated in minutes.
11	>Time for off: (059Sec)	(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(3255Sec)	(3)255	Define how much time



			will elapse before a warning is triggered.		
14	Duration time for warning(1200Sec)	(1)200Sec	Define how long the warning state will last.		
	ON/OFF delay	•			
15	>Delay for switching ON: (0255Min)	(0)255Min	Set the switch on delay status in minutes.		
16	>Delay for switching ON: (059Sec)	(0)59Sec	Set the switch on delay status in seconds.		
17	>Delay for switching OFF: (0255Min)	(0)255Min	Set the switch off delay status in minutes.		
18	>Delay for switching OFF:(059Sec)	(0)59Sec	Set the switch off delay status in seconds.		
2D _/	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)) (count="2)&lt;/td" -one="" -two="" eib="" sensor="" via=""><td>Set the temperature for the FCU module.  Local sensor(0<count<=7): (average<="" 7="" an="" average="" be="" by="" can="" connected="" determined="" generate="" is="" local="" sensor="" sensors="" status.="" td="" temperature="" the="" to="" up="" value.=""></count<=7):></td></count<=7))>	Set the temperature for the FCU module.  Local sensor(0 <count<=7): (average<="" 7="" an="" average="" be="" by="" can="" connected="" determined="" generate="" is="" local="" sensor="" sensors="" status.="" td="" temperature="" the="" to="" up="" value.=""></count<=7):>
			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 cor value (-5.5'C)	rection	-5.0(0.0)(5.0)		Set the temperature correction value	
21	Temperature 1 correction value (3100s)		-3(10)100		If have the mistake of the temperature, you can set this value.	
Sendi	ng of the actual tempe	rature			•	
22	Cyclical sending		-Yes -(No)		Enable or disable cyclical sending.	
23	-> Period for cyclica sending(1255S)	al	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 actu temperature(225		(2)255Min		Set the temperature monitoring period. (Local temperature sensor or via the KNX/EIB.)	
26	Sending of error sig cycles(1255, 0-Ur	_	-(0-Unlimited) -1255		Set the time interval for when the error signal is sent cyclically.	
2E_S	etpoint					
1.1.1	FCU actuators 0-10V > Setp					
G	eneral	Base setpoint te	mperature (1035 'C)	25	÷	
A	ctual temperature	· ·		Comfort mode	<b>▼</b>	
Se	etpoint	Extended comfo	rt mode time (2255 min)	2	¥	
Fa	an (Relay)	Reduced heating in standby mode (010 'C)		2	÷	
Н	eating/Cooling valve (relay)	Reduced heating during the night mode (010 'C)  Actual temperature threshold in frost protection mode (210 'C)  Limit value for maximum setpoint heating (545 'C)		4	<u>*</u>	
Fu	unction status			7	<u>*</u>	
CI	hannel D			35	÷	
		Cooling:				
		Increased coolin	g in standby mode (010	2	<u>*</u>	
		Increased cooling during the night mode (010 'C)		4	<b>‡</b>	
		Actual temperat protection mode	ure threshold in heat e (3540 'C)	40	<b>☆</b>	
		Limit value for n (545 'C)	ninimum setpoint cooling	15	* **	
1	Base set point temperature(1035'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		Set the controller status parameters. The ON commands are as follows:	
			-Frost/heat prote	ction	Comfort mode: 31	



1					
					Standby mode: 32
					Night mode: 33
					Frost protection: 34
3	Extended comfo	rt mode	(2)255min		Set the time period for the
	time(2255min)				extended comfort mode.
Heatii	ng:				
4	Reduced heating	g in standby	0(2)10		Set the temperature for
	mode(010'c)				when the reduced heating
					mode (standby mode) is
					active.
5	Reduced heating	g during the	0(4)10		Set the temperature for
	night mode(01	0'C)			when the reduced heating
					mode (night mode) is
					active.
6	Actual temperat	ure threshold	2(7)10		Set the temperature at
	in frost protection	on			which the frost protection
	mode(210'C)				mode will be activated.
7	Limit value for m	naximum set	5(35)45		Set the maximum
	point heating(5.	45'C)			temperature value.
2F H	leating valve(rela		•		
	MATERIAL CARTE OF THE STREET	275 MILE 201 MILE 201			
1.1.1	CU actuators 0-10V > Hear	ung valve (relay)			
Ge	neral	Types of control		O Two-step (ON/OFF) conti	rol
1200	Water Control of the	In Particular Council during State and		PWM control	
Act	tual temperature	Valve type		Inverted(de-energized opened)	
Set	tpoint			Normal(de-energized clo	sed)
En	n (Relay)	Reaction on bus voltage failure		Contact unchanged	•
		Enable valve purge N		No Ves	
He	eating valve (relay)	>Time of valve purge (1255 min) 5		5	<b>‡</b>
Fur	nction status	>Automatic valve purge		No	*
Ch	annel D	NOTE: No use PI control			
	1- 6		\	011/055) !)	
1	Types of control		1 1	ON/OFF) control)	Set the control type.
			-PWM contr	OI.	
					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 temp1°C
					PWM control: The control
					value is fixed and converted
					into the value used during
					initiation.
2	Valve type		-Inverted(de	e-energized opened)	Set the valve type.
			· ·	e-energized closed)	
3	Reaction on bus	voltage failure	-Contact Un		Set the bus voltage failure
		<b>J</b>	-Contact op	_	reaction.
	1		<u> </u>		



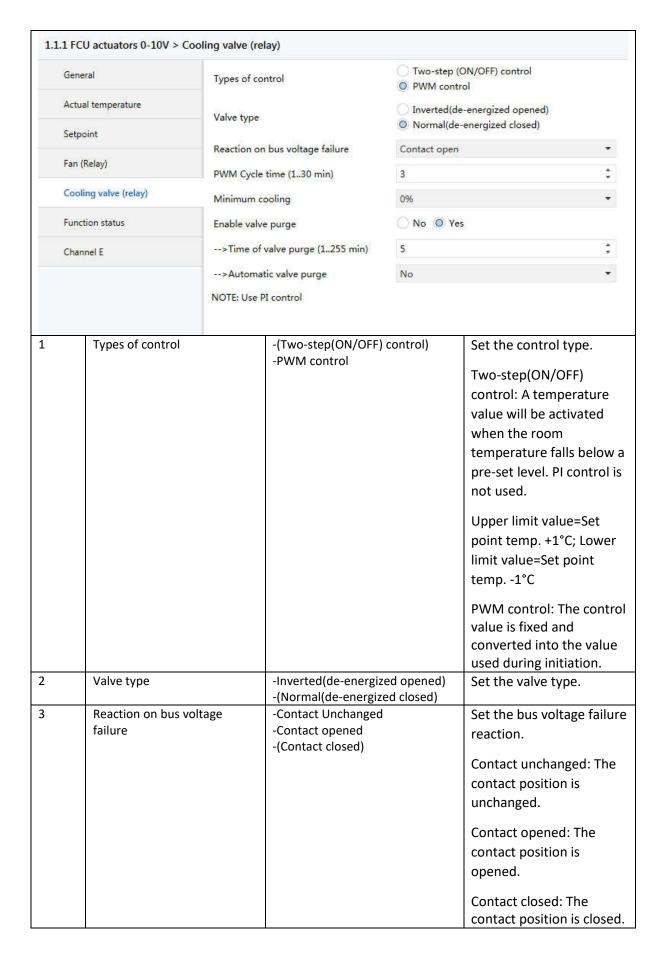
			-(Contact closed)	Contact unchanged: The	
				contact position is unchanged.	
				Contact opened: The	
				contact position is opened.	
				Contact closed: The contact position is closed.	
4	-PWM Cycle time	(130min)	1(3)30min	Set the PWM cycle time.	
5	Minimum heating		(0%)20%	Set the value for the	
			•	minimum heating	
6	Enable valve purg	ge	-Yes	Enable or disable the purge	
			-(No)	valve.	
7	>Time of valve purge(1255min)	)	1(5)255min	Set the purge valve time.	
8	Automatic valve p	ourge	-(No)	Set the parameters for the	
			-One time per day	automatic purge valve.	
			-One time per week -One time per month	One time per day: The	
			-one time per month	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(0-10	0V)			
1.1.1 FCU	actuators 0-10V > Hea	ting valve (0-10v)			
Genera	al	Types of control	ON(10v)/OFF(0V) con Continuous-action co		
Actual	temperature	Valve type	Inverted(de-energized		
Setpoi	nt	Valve adjustment	Normal(de-energized     Disable    Enable	d closed)	
Fan (R	elay)	Enable valve purge			
Heatin	ng valve (0-10v)	NOTE: Use PI contr	ol		
Function	on status				
Channel D					
Chann	el E				
9	Types of control		-(Continuous-action control)	Set the control type.	
			-On(10V)/OFF(0V) control		
				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(0100%)	(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(1255min)	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)







4	PWM Cycle time(130min)		1(3)30min		Set the PWM cycle time.
5	Minimum cooling		(0%)20%		Set the minimum cooling percentage.
6	-> Time of valve purge(1255min)		-Yes -(No)		Enable or disable the purge valve.
7			1(5)255min		Set the purge valve time.
8	purge(1255min)  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
	Cooling valve(0-10V)				once a month.
1.1.1 FC	CU actuators 0-10V > Coo	ling valve	(0-10v)		
Gen	General		control		0v)/OFF(0V) control nuous-action control
Actu	al temperature	Valve type			ted(de-energized opened) nal(de-energized closed)
Setp	point				le Enable
Fan	(Relay)	Enable valve purge O No		Yes	
Coo	ling valve (0-10v)	NOTE: Us	se PI control		
Fun	ction status				
Cha	nnel D				
Cha	nnel E				
9	Types of control		-(Continuous-action 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(0100%)	(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(1255min)	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.

1 FCU actuators 0-10V > Hea	ating/Cooling valve (relay)	
General	Types of control	Two-step (ON/OFF) control PWM control
Actual temperature	Valve type	Inverted(de-energized opened)
Setpoint	Tune type	Normal(de-energized closed)
	Reaction on bus voltage failure	Contact closed
Fan (Relay)	Enable valve purge	O No Yes
Heating/Cooling valve (relay)	NOTE: No use PI control	
Function status		
Channel D		



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 temp1°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(130min)	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(1255min)	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	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 temp1°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(130min)	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(1255min)	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.
17	Cooling value(relay)	(Two stan(ON/OFF) control)	Cat the control type
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 temp1°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.
20	DIAMA Cordo time da 20milio	1 /2) 20min	Contact closed: The contact position is closed.
20	PWM Cycle time(130min)	1(3)30min	Set the PWM cycle time.



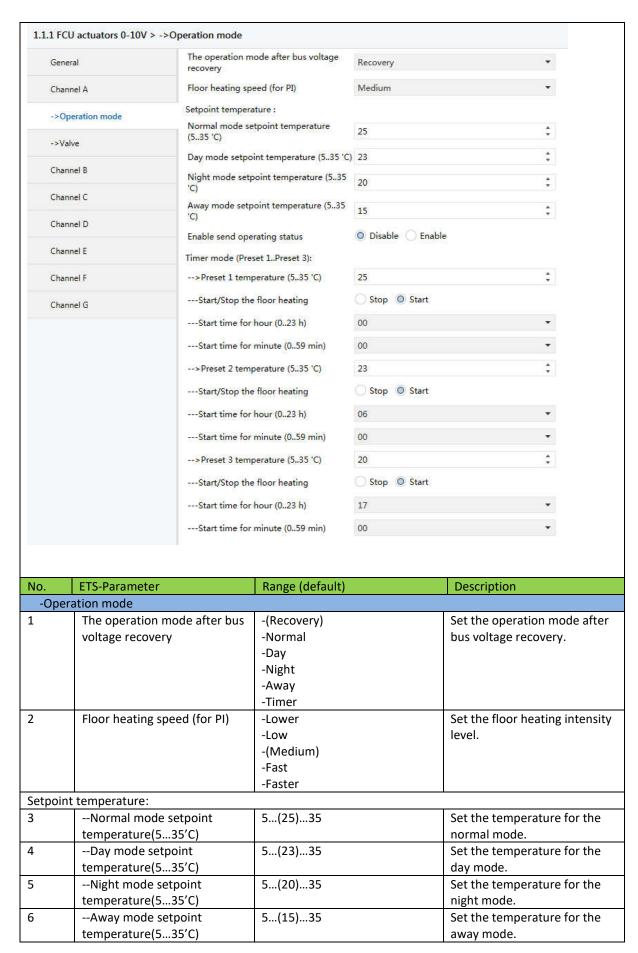
21	Minimum cooling		(0%)20%		Set the minimum cooling
22	Enable valve purge	2	-Yes -(No)		Enable or disable the
23	-> Time of valve		1(5)255min		purge valve.  Set the purge valve time.
24	purge(1255min)	ırgo	-(No)		Sat the parameters for
24	Automatic valve po	urge	-(NO) -One time per day -One time per wee -One time per mor	ek	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 val	ue(0-10V)			once a monen
1.1.1 FC	CU actuators 0-10V > Hea	ting/Cooling va	alve (0-10v)		
Gen	eral	Types of conti	rol	ON(10v)/OFF(0V Continuous-acti	
Actu	ual temperature			Inverted(de-ene	
Setp	point	Valve adjustm	ent	Normal(de-ener     Disable    Ena	
Fan	(Relay)	Enable valve purge   No Yes			
Hea	iting/Cooling valve (0-10v)	NOTE: Use PI			
Fund	ction status				
Cha	nnel D				
Cha	nnel E				
25	Types of control	1	-(Continuous-actio -On(10V)/OFF(0V)	· ·	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.
26	Valve type	-(Normal(de-energized closed))	-On(10V)/OFF(0V) control: Set the value type
20	valve type	-Inverted(de-energized opened	parameters.
27	Valve adjustment	-Enable -(Disable)	Enableor disable the value adjustment.
28	-> Lower limit for active valve opening range(0100%)	(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(1255min)	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







7	Enable send operation	n status	-Disable		Enable or disable send
			-Enable		operation status.
8	>Object sending rar	nge	-All status object		Set the object sending range.
			-Only activated sta	tus object	
	mode(Preset 1Preset 3	)	T		
9	> Preset 1		5(25)35'C		Set the temperature for pre-
	temperature(535'C				set 1.
10	Start/Stop the floor h	eating	-(Start)		Set the floor heating status.
			-Stop		
11	Start time for hour(0.	23h)	(0)23		Set the floor heating start
			(2) =2		time in hours.
12	Start time for		(0)59		Set the floor heating start
4.0	minute(059min)		5 (22) 25/0		time in minutes.
13	> Preset 2	,	5(23)35'C		Set the temperature for pre-
1.4	temperature(535'C		(C++)		set 2.
14	Start/Stop the floor h	ieating	-(Start)		Set the floor heating status.
1 [	Chart time for hereig	22h1	-Stop		Cot the fleer beeting start
15	Start time for hour(0	25N)	0(6)23		Set the floor heating start time in hours.
16	Start time for		(0) 50		
16			(0)59		Set the floor heating start time in minutes.
17	minute(059min)> Preset 3		5(20)35'C		
1/	temperature(535'C	١	5(20)35 C		Set the temperature for preset 3.
18	Start/Stop the floor h		-(Start)		Set the floor heating status.
10		icating	-Stop		Set the noor heating status.
19	Start time for hour(0.	23h)	0(17)23		Set the floor heating start
	Start time for mounto	2311,	0(17)23		time in hours.
20	Start time for		(0)59		Set the floor heating start
	minute(059min)				time in minutes.
2J Va	alve				
1.1.1 F	FCU actuators 0-10V > -> Valve	2			
					52 II 97 I 1925
Ge	eneral	/alve type		○ Normal(de-en	ergized opened)
CL	secural V			Normal(de-ene	ergized closed)
Cn	nannel A	Reaction on b	us voltage failure	Contact closed	*
->(	Operation mode	WM Cycle tir	me (130 min)	3	÷
				100	
->	Valve	Minimum hea	ting	0%	<u>*</u> !
	varve				
Ch			Heating valve status	O No O Yes	
Ch	nannel B	Enable report			
2000	nannel B	Enable report Enable valve p	ourge	No Yes	
Ch	nannel B	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	O No O Yes	
Ch	nannel B	Enable report Enable valve p	ourge ressure protection when all	No Yes	
Ch	nannel B  Inannel C  Inannel D	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	No Yes	
Ch	nannel B	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	No Yes	
Ch Ch	nannel B  Inannel C  Inannel D	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	No Yes	
Ch Ch Ch	nannel B  finannel C  finannel D  finannel E  finannel F	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	No Yes	
Ch Ch Ch	nannel B  Inannel C  Inannel D  Inannel E	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	No Yes	
Ch Ch Ch	nannel B  finannel C  finannel D  finannel E  finannel F	Enable report Enable valve p Enable pipe p	ourge ressure protection when all	No Yes	
Ch Ch Ch Ch	nannel B  Inannel C  Inannel D  Inannel E  Inannel F  Inannel G	Enable report Enable valve p Enable pipe p	ourge ressure protection when all ig OFF	O No Yes	Cabble and the grant
Ch Ch Ch Ch	nannel B  finannel C  finannel D  finannel E  finannel F	Enable report Enable valve p Enable pipe p	ressure protection when all goff	O No Yes No Yes	Set the valve parameters.
Ch Ch Ch Ch	nannel B  Inannel C  Inannel D  Inannel E  Inannel F  Inannel G	Enable report Enable valve p Enable pipe p	ressure protection when all ng OFF  -Inverted (de-ener -(Normal (de-ener	O No Yes No Yes	Set the valve parameters.
Ch Ch Ch Ch	nannel B  Inannel C  Inannel D  Inannel E  Inannel F  Inannel G  Valve type	Enable report Enable valve p Enable pipe p of floor heatin	ressure protection when all rig OFF  -Inverted (de-ener -(Normal (de-ener opened))	O No O Yes O No O Yes gized closed) gized	·
Ch Ch Ch Ch	nannel B  Inannel C  Inannel D  Inannel E  Inannel F  Inannel G	Enable report Enable valve p Enable pipe p of floor heatin	ressure protection when all ng OFF  -Inverted (de-ener -(Normal (de-ener	O No O Yes O No O Yes gized closed) gized	Set the valve parameters.  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(130min)	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(1255min)	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



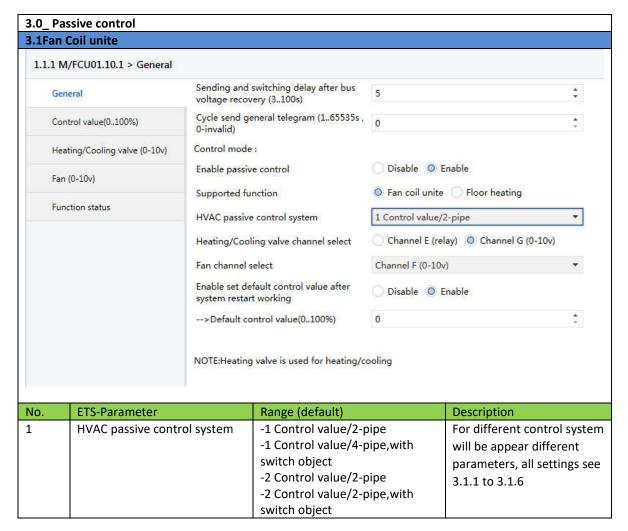
			once a month.
12	Enable pipe pressure protection when all of floor heating OFF	-Yes -(No)	Enable or disable pipe pressure protection when the floor heating is off.
13	>Valve open value	5%30%	Set the valve open parameters.
14	>Protection time(1255min,0-Unlimited)	-0-Unlimited -1(60)255	Set the protection time.
Chanr	nel 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
16	Save statistic for ON switching 'time(hour-2bytes)	-Enable -(Disable)	has been made.  Enable or disable the ON time statistics.
17	>Alarm when time out(165535h,0-invalid)	-0-invalid -13000065535	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



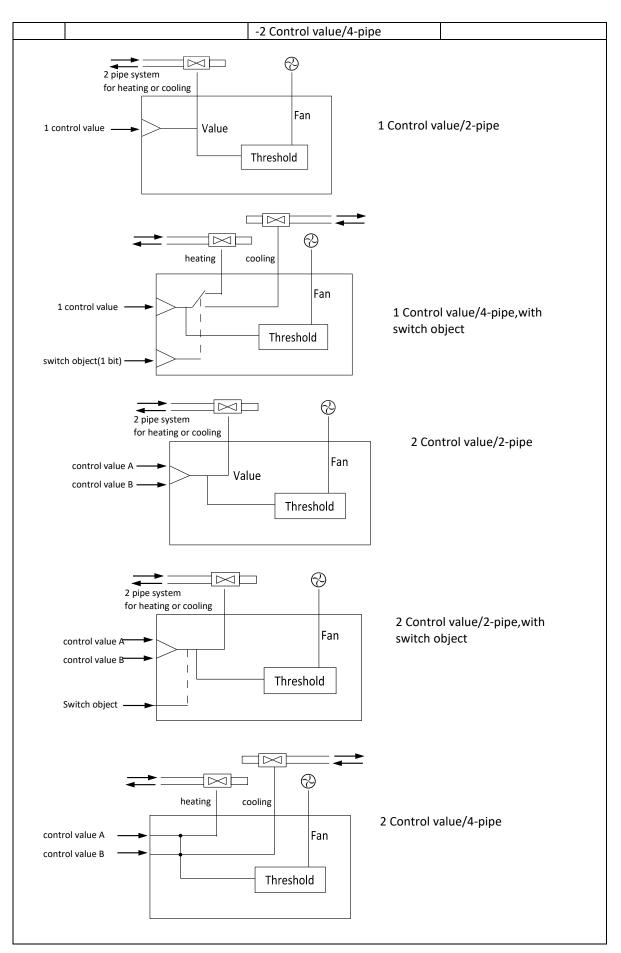
			state will remain unchanged after a bus voltage recovery.  ON: The switch state will be 'on' after a bus voltage recovery.  OFF: The switch state will be 'off' after a bus voltage recovery.
21	Time function	-(Disable)	Set the staircase lighting
		<ul><li>staircase lighting</li><li>ON/OFF delay</li></ul>	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: (0255Min)	(0)255Min	Set the time for the OFF status to be activated in minutes.
26	-> Time for off: (059Sec)	0559Sec	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(3255Sec)	(3)255	Define how much time will elapse before a warning is triggered.
29	Duration time for warning(1200Sec)	(1)200Sec	Define how long the warning state will last.



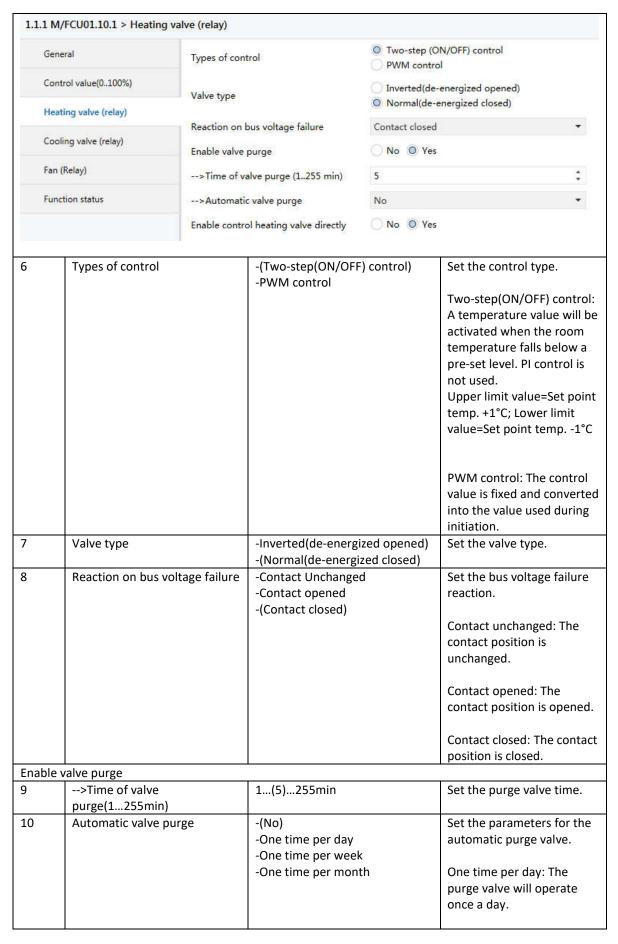






2	Heating/Cooling valve channel select		-Channel E (relay) -Channel G (0-10V)		It's used for select the channel function (heating or cooling) and the fan channel	
3	Fan channel select		-No fan -Channel A-C (relay) -Channel F (0-10V)			
4	Enable set default control value after system restart working		-Disable -Enable		Enable/Disable set default control value after system restart working	
3.1.1 (	Control value(0100%	)				
1.1.1 N	1/FCU01.10.1 > Control va	lue(0100%)				
			25000000000000000000000000000000000000		© Enable	
Cor	ntrol value(0100%)	->Monitoring interval[2,,255min]		2 *		
Hea	ating/Cooling valve (0-10v)	-> Send object value 'Control value error signal'		Only after change		
Fan (0-10v)		->Set control value during fault		Disable © Enable		
Fun	nction status	->Control vali	ue default[0100%]	10	*	
1	Enable monitoring value	control	-Disable -Enable		Enable or disable monitoring control value	
2	-> Monitoring interval (2255min)		-2255		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 statu 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	
4	->Set control value during fault		-Disable -Enable		has been made.  Whether can be set contro value during fault	
5	-> Control value default(0100%)		-0(10)100		Set the default velue.	
			i .		Î.	







					One time per week: The
					purge valve will operate
					once a week.
					One time per month: The
					purge valve will operate
11	Fueble sentual beatin		Na		once a month.
11	Enable control heating directly	g valve	-No -Yes		Whether control heating directly.
Heating	value(0-10V)		-163		unectly.
THE REMARKS OF THE	MOTOR SERVICE STATE OF THE PARTY OF THE PART	10 (0 10u)			
1.1.1 101	/FCU01.10.1 > Heating valv	ve (0-10v)			
Gen	eral	Types of con	trol		FF(0V) control
	AV	A PERSONAL PROPERTY.	75054	O Continuous	s-action control
Con	trol value(0100%)	Valve type		○ Inverted(de	e-energized opened)
Hea	ting valve (0-10v)	valve type		O Normal(de	-energized closed)
32150		Valve adjusti	ment	O Disable	Enable Enable
Coo	ling valve (relay)	>I ower lim	nit for active valve opening	Toy	
	ADVICA.	range (0100	STATE OF THE PARTY	0	Ş.,
Fan	(Relay)		nit for active valve opening	100	÷
Fund	ction status	range (0100	Default Value		•
1.00000	100000000000000000000000000000000000000	Enable valve	e purge O No O Y		S
		Enable contr	ol heating valve directly	O No Ye	s
12	Types of control		-(Continuous-action		Set the control type.
			-On(10V)/OFF(0V) co	ontrol	
					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.
					Via Pi control.
					-On(10V)/OFF(0V) control:
13	Value type		-(Normal(de-energize	ed closed))	Set the value type
			-Inverted(de-energize		parameters.
14	Value adjustment		-Enable		Enableor disable the value
			-(Disable)		adjustment.
15	-> Lower limit for act		(0)100%		Set the lower value opening
	opening range(0100		2 /2250		limit.
16	->Upper limit for acti	ve value	0(100%)		Set the upper value opening
17	opening range		Vac		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(1255min)		
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.

.1.3 <sub>_</sub>	_ Cooling valve(re	lay)			
1.1 M	/FCU01.10.1 > Cooling v	alve (relay)			
Gene	eral	Types of control		O Two-step (O	
Cont	trol value(0100%)	Valve type		A CONTRACTOR OF THE PARTY OF TH	energized opened)
Heat	ting valve (0-10v)	Reaction on bus voltage fa	ilure	O Normal(de-e	energized closed)
Cool	ling valve (relay)	Enable valve purge		No	
Fan	(Relay)	Enable control cooling val	ve directly	O No O Yes	
Fund	ction status				
	Types of control	-(Two-ste	ep(ON/OFF	) 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 temp1°C  PWM control: The contro value is fixed and converted into the value used during initiation.



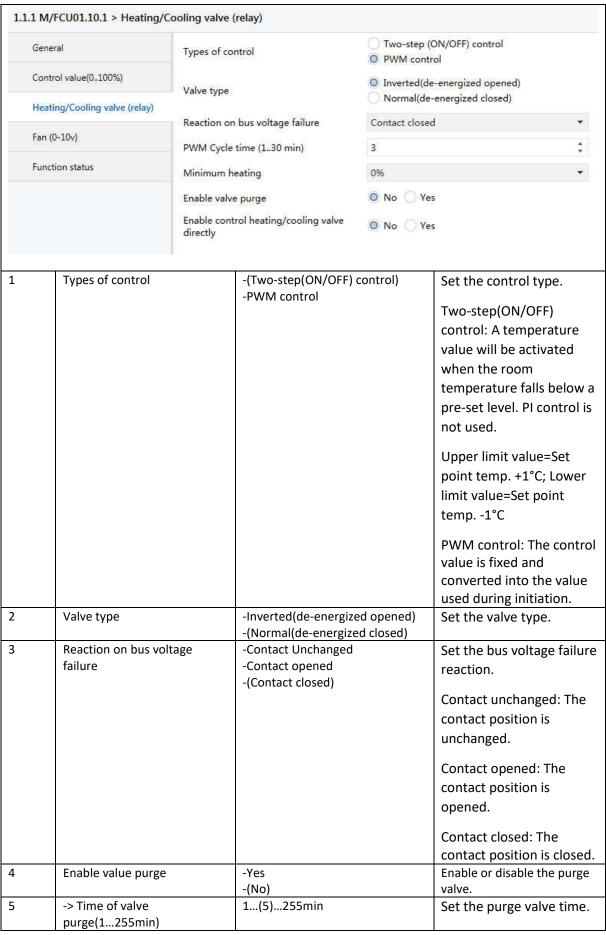
2		Valve type		<ul><li>-Inverted(de-energized c</li><li>-(Normal(de-energized c</li></ul>		Set the valve type.
3		Reaction on bus voltage failure	re.	-Contact Unchanged -Contact opened -(Contact closed)	,	Set the bus voltage failure reaction.  Contact unchanged: The contact position is unchanged.  Contact opened: The contact position is opened.  Contact closed: The
4		Enable value purge		-Yes		contact position is closed.  Enable or disable the purge
4				-(No)		valve.
5		-> Time of valve purge(1255min)		1(5)255min		Set the purge valve time.
7		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.  Whether control cooling
	•	directly		-Yes		directly.
		/alve(0-10V) //FCU01.10.1 > Cooling Va	lve (0-10v)		0	
	Ger	neral	Types of	control		/OFF(0V) control ous-action control
+		ating valve (0-10v)	Valve typ	е		(de-energized opened) de-energized closed)
		oling Valve (0-10v)	Valve adj	ustment	<ul><li>Disable</li></ul>	○ Enable
			Enable va	lve purge	O No	Yes
	Fan	(Relay)	Enable co	ontrol cooling valve directly	O No	Yes
	Fur	ction status				
8		Types of control		-(Continuous-action cont -On(10V)/OFF(0V) contro		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))	Set the value type
		-Inverted(de-energized opened	parameters.
10	Valve adjustment	-Enable	Enableor disable the value
		-(Disable)	adjustment.
11	-> Lower limit for active valve	(0)100%	Set the lower value opening
	opening range(0100%)		limit.
12	<ul><li>-&gt;Upper limit for active valve opening range</li></ul>	0(100%)	Set the upper value opening limit.
13	Enable valve purge	-Yes	Enable or disable the valve
		-(No)	purge.
14	-> Time of valve	1(5)255min	Set the purge value time.
	purge(1255min)		
15	-> Automatic valve purge	-(No)	Set the parameters for the
		-One time per day	automatic purge valve.
		-One time per week	
		-One time per month	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.
1	ĺ		
16	Enable control cooling valve	-No	Whether control cooling

# 3.1.4\_ Heating /Cooling valve(relay)







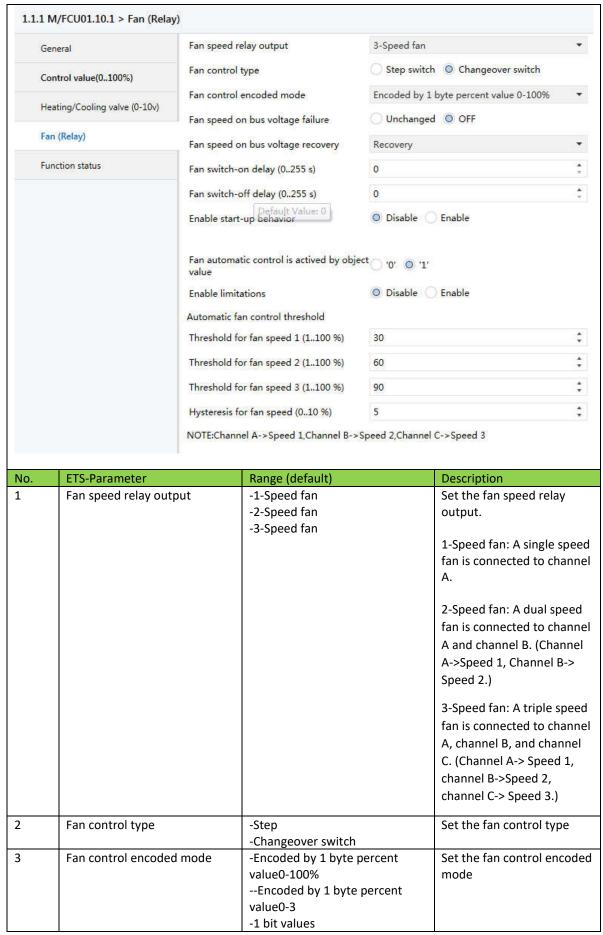
6	Automatic valve purge		-(No) -One time per day -One time per week -One time per month		Set the parameters for the automatic purge valve.  One time per day: The purge valve will operate once a day.  One time per week: The purge valve will operate once a week.  One time per month: The purge valve will operate once a month.
7	Enable control cooling va	alve	-No		Whether control cooling
	directly		-Yes		directly.
Heating	/Cooling valve(0-10V)				
1.1.1 M	I/FCU01.10.1 > Heating/Co	ooling v	valve (0-10v)		
Gen	neral	Types	s of control		ON(10v)/OFF(0V) control Continuous-action control
Con	ntrol value(0100%)	Valve	type		inverted(de-energized opened) Normal(de-energized closed)
	ating/Cooling valve (0-10v)	Valve	500 Sec. 1		Disable Enable
	(0-10v)	Enabl	le valve purge		No Yes
Fun	ction status	Enabl direct	ole control heating/cooling valve tly		No Yes
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 opene		Set the value type parameters.
10	Valve adjustment		-inverteu(de-energized opene	u	Fnable or disable the value



		-(Disable)	adjustment.
11	-> Lower limit for active valve opening range(0100%)	(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(1255min)	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)

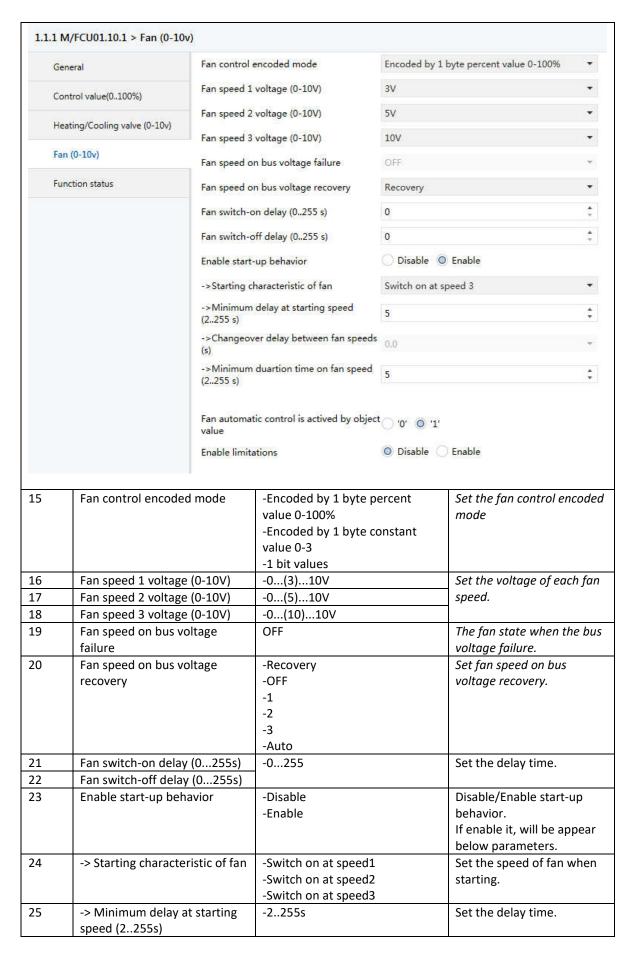






4	Fan speed on bus voltage failure	-Unchanged -(OFF)	Set the fan speed in the event of a bus voltage failure.
			Unchanged: The fan speed will remain unchanged.
			OFF: The fan will turn off.
5	Fan speed on bus voltage recovery	-(Recovery) -OFF -1 -2 -3	Set the fan speed in the event of a bus voltage 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(0255s)	(0)255s	Set the fan switch on delay time.
7	Fan speed-off delay(0255s)	(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.
Automa	tic fan control threshold		
11	Threshold for fan speed1100%	1(30)100	Set each speed threshold for fan.
12	Threshold for fan speed1100%	1(60)100	
13	Threshold for fan speed1100%	1(90)100	
14	Hysteresis for fan speed (010%)	(5)10	
Fan (0	1 ' '		
	•		







26	->changeover delay b	etween	-0		
	fan speeds				
27	->Minimum duartion fan speed (2255s)	time on	-2255s		
28	Fan automatic contro	l is	-0		Receive the 0 or 1 will
	actived by object valu	е	-1		automatic control.
29	Enable limitations		-Disable		When enabled limitation
			-Enable		function, set the speed with
31	>Speed with limitati	on 1	3,2,1,off		each limitation
32	>Speed with limitati	on 2	unchanged		
33	>Speed with limitati	on 3	off 1		
34	>Speed with limitati	on 4	1,off		
			2 2,1		
			2,1,off		
			3 3,2		
			3,2,1		
3.1.6_	Function status				
	1.1.1 M/FCU01.10.1 > Function s	status			
	General	Enable 1Bit obj	ect "Status fan speed x"	○ No ○ Yes	
	Control value(0100%)	>Meaning		Current fan speed Required	d fan speed
	Heating/Cooling valve (0-10v)	>Send object	value	No,update only	
		>Object send	ing range	All status object	
	Fan (0-10v)			Only activated status object	
	Function status	>Valid object	value	○ '0' ○ '1'	
		Enable 1Byte of	oject "Status fan speed"	○ No ○ Yes	
		(4)	ā		
		Enable 1Bit obj	ect "Status fan On/Off"	O No Yes	
		Enable 1Bit objeautomatic	ect "Status fan speed	O No Yes	
		Enable report H status	leating/Cooling valve	No Yes	
	5 11 4 50 11 1/6		T		Te 11 11 11 41 11
1	Enable 1 Bit object "S	tatus fan	-Yes		Enable or disable a 1 bit
	speed x"		-(No)		object.
					Voc. For speed status
					Yes: Fan speed status
					x(x=1,2,3) is enabled.
					No: There is no response.
2	>Meaning		-(Current fai	a chood)	Current fan speed: Respond
2	>ivicariirig		-Required fa		to the current fan speed.
			-Nequired ia	iii speeu	to the current fair speed.
					Required fan speed:
					Respond to the required
					fan speed.
3	> Send object value		-(No, Update	e only)	Define the parameters
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		-Always resp		for when the object value
			-Only after o		should be sent.
			,		
					No, Update only: The status
					is always updated, but
					never sent.
					Always response: The
	hou Hodong Floctric		1	www.hdlautomation	Aiways response. The



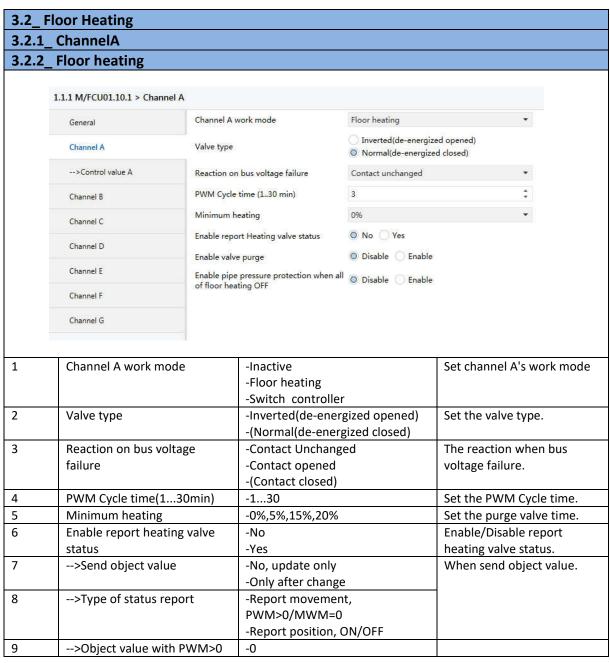
			status will always respond.
			Only after change: The object value will be sent only when a modification has been made.
4	>Object sending range	-All status object -Only activated status object	Set object send range
5	>Valid object value	-'0' -'1'	Set the object value
6	Enable 1 byte object "status fan 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.



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





			-1			
10	Enable valve purge		-1 -Disable		Set the parameters for the	
10	Litable valve parge		-Enable		automatic purge valve.	
			Litable		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		-Disable		Whether control cooling	
11	protection when all o		-Disable -Enable		directly.	
	heating OFF	71 11001	Litable		un cetty.	
Contro	I value A					
Please	reference 3.1.1					
3.2.3_5	Switch controller					
1.1.1 N	M/FCU01.10.1 > Channel A					
100000000000000000000000000000000000000		ci i i	- E - E	8 5 1 5 1	_	
Ge	neral	Channel A	work mode	Switch control	ler ▼	
Ch	nannel A	Response of switch state ON/OFF		No response		
Ch	Channel B		Save statistic for ON switching 'time (hour-2bytes)'		Enable	
Ch	Channel C		vhen time out (165535h,0-	30000	\$	
Ch	Channel D		t telegram interval when 5s)	10	\$	
Ch	annel E	Switch state on bus voltage fail		Unchanged	*	
Ch	annel F	Switch state after bus voltage recovery		Unchanged	•	
Ch	annel G	Time function>Control staircase lighting		Staircase light	ing •	
CII	arrier G			Start with '1'/'		
		>Change	staircase lighting time via bus	No Ve	s	
		>Alarm st	aircase lighting to bus	○ No ○ Yes	s	
		>Time for	off :(0255 Min)	0	\$	
			off :(059 Sec)	5	*	
		>Warning	staircase lighting (ON->OFF-	O No Yes	s	
		2011)				
4.2					6 11	
12	Response of switch st	tate	<ul><li>No response</li><li>Always response</li></ul>		Set the response of switch state.	
	ON/OFF		- Only after change		state.	
13	Save statistic for ON	switch	-Enable		Enable/disable the value	
	'time (hour-2bytes)'		-(Disable)		adjustment.	
14	>Alarm when time of	out	-0-65535		When time out will alarm.	
	(165535h, 0-invalid)		-			
15	-> transmit telegram		-1255s		Set the lower value opening	
	when alarm(1255s)				limit.	
16	Switch state after but	s voltage	-Unchanged		Set the upper value opening	
	fail		-ON			



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:(0255Min)	-0255	
23	>Time for off:(059 Sec)	-059	
24	> Warning staircase lighting (ON->OFF->ON)	-No -Yes	If you select yes, after the set time the lighting will flash.

#### 



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

### D.0 General

⊒dd Gen	eral Send cycles			1 bit CR - T -
NO.	Object name	Function	Flags	Data type
0	General	Send cycles	CRT	DPT1.003
				1bit

#### D.1 Fan

<b>⊒</b> ≵40	Fan Fan spee	d automatic		1 bit C - W - U	Lov
<b>■</b> ₹40	Fan Fan spee	d automatic		1 bit C - W - U	Lov
NO.	Object name	Function	Flags	Data type	
40	Fan	Fan speed	C W U	DPT1.003	
		automatic		1bit	
The abo	ve communication of	ject is used to control the	fan speed in automo	atic mode. If a telegram	with a
value of	'1' is sent, the fan w	ll switch on. If telegram w	ith a value of 'O' is se	ent, the fan will switch o	ff.
≓41	Fan Fan speed v	vith % value		1 Byte C - W - U	Low
검41	Fan Fan speed v	vith % value		1 Byte C - W - U	Low



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

	-		70 70.00		415 6 111 11
<b>□</b> 242	Fan	Fan speed 1			1 bit C - W - U
<b>⊒</b> ‡42	Fan	Fan speed 1			1 bit C - W - U
<b>■</b> 242	Fan	Fan speed 1			1 bit C - W - U
<b>⊒</b> ₹42	Fan	Fan speed 1			1 bit C - W - U
<b>⊒</b> ‡43	Fan	Fan speed 2			1 bit C - W - U
<b>⊒</b> ‡43	Fan	Fan speed 2			1 bit C - W - U
<b>⊒</b> ‡43	Fan	Fan speed 2			1 bit C - W - U
<b>⊒</b> 244	Fan	Fan speed 3			1 bit C - W - U
<b>⊒</b> ₹ 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.

<b>⊒</b> 2 45	Fan	Status fan speed 1			1 bit CR-T-
<b>⊒</b> ‡45	Fan	Status fan speed 1			1 bit C R - T -
<b>⊒</b> ≵46	Fan	Status fan speed 2			1 bit C R - T -
<b>⊒</b> 246	Fan	Status fan speed 2			1 bit C R - T -
<b>⊒</b> 2 47	Fan	Status fan speed 3			1 bit C R - T -
<b>⊒</b> 2 47	Fan	Status fan speed 3			1 bit C R - T -
<b>⊒</b> ≵48	Fan	Status fan speed			1 Byte C R - T -
<b>⊒</b> ‡48	Fan	Status fan speed			1 Byte C R - T -
NO.	Object n	name Fu	nction	Flags	Data type
45	Fan	Stat	us fan speed 1	CRT	DPT 1.001
					1 bit
46	Fan	Stat	us fan speed 2	CRT	DPT 1.001
					1 bit
47	Fan	Stat	us fan speed 3	CRT	DPT 1.001
					1 bit
These o	communicat	ion objects are used to	control the fan sta	itus and speed. If 2	1bit object "Status fan speed X"
			KANK FIR I I	1 (1 1.0	ation has been made. If a

 $\mathsf{C}\ \mathsf{R}\ \mathsf{T}$ 

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Status fan speed

This communication object is used to control fan status and fan speed. If 1bit object "Status fan speed X" is

48

Fan

DPT5.010 1 byte



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.

<b>⊒</b> 249	Fan	Status fan On/Off		1 bit CR-T-
<b>⊒</b> ≵49	Fan	Status fan On/Off	1 bit CR - T -	
49	Fan	Status fan On/Off	CRT	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

<b>□</b> ₹50	Fan	Status fan speed automatic	1 bit CR - T	
50	Fan	Status fan speed	CRT	D P T 1.003
		automatic		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

<b>⊒</b> ‡ 51	Fan	Limitation 1			1 bit CRWTU
<b>⊒</b> ‡ 52	Fan	Limitation 2			1 bit CRWTU
<b>⊒</b> ‡ 53	Fan	Limitation 3			1 bit CRWTU
<b>⊒</b> 2 54	Fan	Limitation 4			1 bit CRWTU
—— L			••		
NO.	Object name	е	Function	Flags	Data type
51	Fan		Limitation 1	CRWTU	DPT 1.003
					1 bit
52	Fan		Limitation 2	CRWTU	DPT 1.003
					1 bit
53	Fan		Limitation 3	CRWTU	DPT 1.003
33	1 411		Elithicacion 5		1 bit
					1 DIL
54	Fan		Limitation 4	CRWTU	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	s "value heating"				
■‡60 ■‡61 ■‡62	Valve Heating Valve Heating Valve Heating	1 bit			
NO.	Object n	ame	Function	Flags	Data type
60	Valve He	ating	Status valve	CRT	DPT 1.001



		position		1 bit				
This com	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 t	hen"Object value po	sition>0", '0'=Valve po	osition is note equal to zero, '1'=				
Valve pos	sition is equal to zero.							
61	Valve Heating	Trigger valve	CWU	DPT 1.017				
		purge		1 bit				
This com	munication object is used	to trigger the valve p	urge. The purge cycle	will automatically restart, if				
telegram	'0' is received however th	e valve purge will end	d, and the valve will b	e closed.				
If telegra	m '1' is received, the purg	e valve will initiate, a	nd the purge valve wi	ll be opened.				
62	Value Heating	Status valve	CRT	DPT 1.003				
		purge		1 bit				
This com	munication object is used j	or valve status purge	. If telegram 'O' is reco	eived the purge valve will be				
inactive,	if telegram '1' is received t	he purge valve will be	e active.					

Objects	"Valve Cooling""				
<b>교</b> ╡63 ~	Valve Cooling Status valve positio	on		1 bit C R - T	Low
No	Object name	Function	Flags	Data type	
63	Valve cooling	Status valve	CRT	DPT1.001	
		position		1 bit	
This com	nmunication obiect is used t	o indicate the statu	s of theylave position.	If value '1' is set in the	

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	"				
□試1 □試2 □式3	Slave clock Slave clock Slave clock	Network datetime Network date Network time of day	,	3 E	Byte C - W T U Byte C - W T U Byte C - W T U	Low Low Low
NO.	Ob	ject name	Function	Flags	Data type	
1	SI	lave clock	Network date time	CWTU	DPT19.001	
					8 byte	
	nmunication the system.	-	or the inputting of time an	d date information,	and to synchronise all o	of the
2	SI	ave clock	Network date time	CWTU	DPT11.001	
					3 byte	
This con	nmunication	object is used t	o synchronise all of the clo	ck input data across	the system.	
3	Slave clo	ock	Network time of day	CWTU	DPT10.001	
					3 byte	
This con	nmunication	object is used t	o synchronise all of the clo	ck input data across	the system.	

Objects	"Pipe	pressure	protection"
---------	-------	----------	-------------



<b>■</b> ‡4	Floor heating Pipe pressure pr	otection	1 bi	t CR - T -	Low
NO.	Object name	Function	Flags	Data type	
4	Floor heating	Pipe pressure protection	CRT	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)

<b>⊒</b> 25	Floor heating A	Actual temp	perature	2 Byte	C	R	W	Ī	Ü	Low
<b>■</b> ₹6	Floor heating A		o, error signal	1 bit	C	R	*	T	Ā	Low
<b>□</b> ₽7	Floor heating A		de setpoint Temp.	2 Byte	C	R	W	Œ	U	Low
<b>⊒</b> ‡8	Floor heating A		setpoint Temp.	2 Byte	C	R	W	T	U	Low
■249	Floor heating A		setpoint Temp.	2 Byte	C	R	W	Τ	U	Low
<b>□</b> 2 10	Floor heating A	70 Thurshill	e setpoint Temp.	2 Byte	C	R	W	Т	U	Low
■ 2 11	Floor heating A		mp. for timer mode	2 Byte	C	R	W	Τ	U	Low
12	Floor heating A		for preset 1	3 Byte	C	R	W	T	U	Low
■ 2 13	Floor heating A	50 368000 0	heating for preset1	1 bit	C	R	W	T	U	Low
<b>□</b> ₹14	Floor heating A	100 300	emp. for timer mode	2 Byte	C	R	W	$\blacksquare$	U	Low
■ 2 15	Floor heating A	Time of day	for preset 2	3 Byte	C	R	₩	Ŧ	U	Low
<b>□</b> □	Floor heating A	Start/Stop	heating for preset2	1 bit	C	R	W	Τ	U	Low
■ 2 17	Floor heating A	Preset 3 Te	emp. for timer mode	2 Byte	C	R	W	T	U	Low
<b>⊒</b> ‡18	Floor heating A	Time of day	/ for preset 3	3 Byte	C	R	W	Т	U	Low
四月19	Floor heating A	Start/Stop	heating for preset3	1 bit	C	R	W	Τ	U	Low
<b>□</b> \$\\$\\$\\$20	Floor heating A		ng(1-ON,0-OFF)	1 bit	C	R	W	T	U	Low
<b>□</b> 21	Floor heating A	ON CMD fo	r Normal-mode	1 bit	C	R	W	T	U	Low
<b>□</b> 22	Floor heating A	ON CMD fo	r Day-mode	1 bit	C	R	W	$\blacksquare$	U	Low
■ 23	Floor heating A	ON CMD fo	r Night-mode	1 bit	C	R	W	Ţ	U	Low
<b>□</b> 2 24	Floor heating A	ON CMD fo	r Away-mode	1 bit	C	R	W	Τ	U	Low
<b>■</b> \$\\$25	Floor heating A	ON CMD fo	r Timer-mode	1 bit	C	R	W	T	U	Low
<b>■</b> 26	Floor heating A	Status valv	e position	1 bit	C	R	3	T	- E	Low
■#27	Floor heating A	Trigger val	ve purge	1 bit	C	-	W	8	U	Low
<b>⊒</b> ‡ 28	Floor heating A	Status valv	e purge	1 bit	C	R	*	T	*	Low
<b>□</b> ‡29	Floor heating A	Instantane	ous setpoint temp.	2 Byte	C	R	2	T	Ħ	Low
Ю.	Object name	<u> </u>	Function	Flags				D	ata ty	pe
,30	Floor heating	g N	Actual temperature	CRWTU			DPT 9.001 2byte			
	=		o operate the temperature	e sensor TS/C 1	L.O.	The	actı	ual t		
	mmunication ob	-								
,31	Floor heating	g N	Actual temp. error	CRT				D	PT 1.0	05
			signal						1 bit	
	=		o send the KNX/EIB with tl ccur 1255 or cyclically. '0	<del>-</del>	Frro	ır				
,32	Floor heating		Normal-mode	C R W T		<del>''</del>			PT9.00	11
,32	FIOOI HEALING	5 1 <b>4</b>		CKWI	U			υ		
			setpoint temp.						2 byte	C



8,33				
	Floor heating N	Day-mode setpoint Temp.	CRWTU	DPT9.001 2 byte
This comm	unication object is used	to set the day mode temper	ature, the temperate	ure value an also be
	= = = = = = = = = = = = = = = = = = =	n object. The temperature s	· · · · · · · · · · · · · · · · · · ·	
segment.				,,
9.34	Floor heating N	Night-mode setpoint	CRWTU	DPT9.001
		Temp.		2 byte
This comm	unication object is used	to set the night mode tempe	erature, the tempera	ture value an also be
	= = = = = = = = = = = = = = = = = = =	n object. The temperature s		
segment.		·		·
10,35	Floor heating N	Away-mode set point	CRWTU	DPT9.001
	_	Temp.		2 Byte
This comm	unication object is used	to set the away mode temp	erature, the tempera	ature value an also be
	= = = = = = = = = = = = = = = = = = =	n object. The temperature s	· · · · · · · · · · · · · · · · · · ·	
segment.		·		·
11,36	Floor heating N	Preset 1 Temp. for	CRWTU	DPT9.001
		timer mode		2 byte
This comm	unication object is used	to set the timer mode of ten	nperature pre-set 1,	the temperature value can
		unication object. The tempe		·
memory s	=	, ,	Ü	
12,37	Floor heating N	Time of day for	CRWTU	DPT10.001
,		preset 1		3 byte
This comm	unication obiect is used	to configure the pre-set 1 til	me. the time value a	•
		settings are stored in a non-v		
13,38	Floor heating N	Start/Stop heating	CRWTU	DPT1.010
20,00		for preset 1		1 bit
This comm	unication object is used	to activate or deactivate the	heatina for pre-set	
	also be used modify the			
-	• •	igs are stored in a non-volati	le memory segment	
	Floor heating N	Preset 2 Temp. for	CRWTU	DPT9.001
14 39			C 11 11 1 C	
14,39	Tioor fiedding iv	· ·		
	_	timer mode	temperature pre-se	2 byte
This comm	nunication object is used	timer mode  I configure the time mode in		2 byte t 2 , the time value an also
This comm	nunication object is used using this communica	timer mode I configure the time mode in tion object. The time setting	gs are stored in a no	2 byte t 2 , the time value an also n-volatile memory segment
This comm	nunication object is used	timer mode  I configure the time mode in tion object. The time setting  Time of day for		2 byte t 2 , the time value an also n-volatile memory segment DPT 10.001
This comm	nunication object is used using this communica	timer mode I configure the time mode in tion object. The time setting	gs are stored in a no	2 byte t 2 , the time value an also n-volatile memory segment
This comm be modifie 15,40	nunication object is used using this communica Floor heating N	timer mode  I configure the time mode in tion object. The time setting  Time of day for	gs are stored in a no C R W T U	2 byte t 2 , the time value an also n-volatile memory segment DPT 10.001 3 byte
This comm be modified 15,40	nunication object is used using this communication Floor heating N	timer mode  I configure the time mode in tion object. The time setting  Time of day for preset 2	C R W T U	2 byte t 2, the time value an also n-volatile memory segment DPT 10.001 3 byte e value an also be modifie
This comm be modified 15,40 This comm using this	runication object is used using this communication N  Floor heating N  runication object is used to the communication object.	timer mode  I configure the time mode in ition object. The time setting  Time of day for preset 2  I d to set the time of day fo The time settings are stored	gs are stored in a no CRWTU r pre-set 2, the time in a non-volatile me	2 byte t 2 , the time value an also n-volatile memory segment DPT 10.001 3 byte e value an also be modifie
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This communication object is used to trigger switching in the night of the relegram value: "0": No function	RWTU	DPT 1.001
Telegram value: "0": No function  "1": Night mode  24,49 Floor heating N ON CMD for Away- mode  This communication object is used to trigger switching in the away relegram value: "0": No function  "1": Away mode  25,50 Floor heating N ON CMD for Timer- mode  This communication object is used to trigger switching in the timer relegram value: "0": No function  "1": Timer mode  26,51 Floor heating N Status valve position C R V  This communication object is used for the valve status position. Ifvalue with valve position>0":  Telegram value: "0" = Valve position equal to zero		1 bit
"1": Night mode  24,49 Floor heating N ON CMD for Away- mode  This communication object is used to trigger switching in the away respectively. Telegram value: "0": No function "1": Away mode  25,50 Floor heating N ON CMD for Timer- mode  This communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used for the valve position of the communication object is used for the valve status position. If value with valve position of the communication object is used for the valve status position. If value with valve position of the communication object is used for the valve status position. If value with valve position of the communication object is used for the valve status position. If value with valve position of the communication object is used for the valve status position. If value with valve position object is used for the valve status position. If value with valve position object is used for the valve status position. If value with valve position object is used for the valve status position.	nt mode.	
24,49 Floor heating N ON CMD for Awaymode  This communication object is used to trigger switching in the away relegram value: "0": No function		
This communication object is used to trigger switching in the away in Telegram value: "0": No function		
This communication object is used to trigger switching in the away recommunication object is used to trigger switching in the away recommunication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the away recommunication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the away of the communication object is used to trigger switching in the away of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to	RWTU	DPT 1.001
Telegram value: "0": No function  "1": Away mode  25,50 Floor heating N ON CMD for Timer- mode  This communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used to trigger switching in the timer of the communication object is used for the valve position C R V This communication object is used for the valve status position. If value with valve position>0":  Telegram value: '0' = Valve position equal to zero		1 bit
"1": Away mode  25,50 Floor heating N ON CMD for Timermode  This communication object is used to trigger switching in the timer of t	ıy mode.	
25,50 Floor heating N ON CMD for Timer-mode  This communication object is used to trigger switching in the timer of Telegram value: "0": No function "1": Timer mode  26,51 Floor heating N Status valve position C R V  This communication object is used for the valve status position. Ifvalue with valve position>0":  Telegram value: '0' = Valve position equal to zero		
mode  This communication object is used to trigger switching in the timer of the trigger switching in the timer of the trigger walue: "0": No function		
This communication object is used to trigger switching in the timer of Telegram value: "0": No function	RWTU	DPT 1.001
Telegram value: "0": No function		1 bit
"1": Timer mode  26,51 Floor heating N Status valve position CRV  This communication object is used for the valve status position. Ifva value with valve position>0":  Telegram value: '0' = Valve position equal to zero	er mode.	
26,51 Floor heating N Status valve position C R V This communication object is used for the valve status position. Ifva value with valve position>0": Telegram value: '0' = Valve position equal to zero		
This communication object is used for the valve status position. Ifva value with valve position>0": Telegram value: '0' = Valve position equal to zero		
value with valve position>0": Telegram value: '0' = Valve position equal to zero	RWTU	DPT 1.001
value with valve position>0": Telegram value: '0' = Valve position equal to zero		1 bit
Telegram value: '0' = Valve position equal to zero	fvalue '1' is set in	the parameter, then "Objec
'1' = Valve position not equal to zero		
If value 'O' is set in the parameter, then "Object value with valve po:	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	CWU	DPT 1.017
				1 bit
This comm	nunication object is used to	triggera valve purge, the	e purge cycle can be a	nutomatically restarted.
Telegram	value: '0' = end valve purge	e, valve will be closed		
	'1' = start valve pur	ge, valve will be opened		
28,53	Floor heating N	Status valve purge	CRT	DPT 1.003
				1 bit
This comm	nunication object is used for	r the purge valve status.		
Telegram	value: '0' = valve purge not	active		
	'1' = valve purge a	ctive		
29,54	Floor heating N	Instantaneous set	CRT	DPT 9.001
		point temp.		2 byte
This comm	nunication object is used to	create aninstantaneous	temperature set poir	nt.

## D6 HVAC

Objects "	HVAC control mode"			
は25 HVAC ci は25 HVAC ci は25 HVAC ci は27 HVAC ci は27 HVAC ci は28 HVAC ci は28 HVAC ci は29 HVAC ci は29 HVAC ci	ontrol mode HVAC control mode portrol mode HVAC control mode activation of heating portrol mode Activation of cooling portrol mode Activation of cooling portrol mode Activation of fan or portrol mode Activation	e (byte) e (byte) ig mode	1 Byte 1 Byte 1 bit 1 bit 1 bit 1 bit 1 bit 1 bit	
NO.	Object name	Function	Flags	Data type
25	HVAC control	HVAC control mode (byte)	CRWTU	DPT 20.105
	mode			1 byte
accepted		sed for the HVAC control mode. C	Jnly the following tel	egram values are
26	HVAC control	Automatic heating/cooling	CRWTU	DPT 1.003
	mode	mode		1 bit
temperat Telegram	ure will automatically value: "0": No functio "1": Automatic	neating/cooling mode		
27	HVAC control mode	Activation of heating mode	CRWTU	DPT 1.003 1 bit
	munication object is us value: "0": No functio "1": Heating mo		heating mode.	
28	HVAC control mode	Activation of cooling mode	CRWTU	DPT 1.003 1 bit
	munication object is us value: "0": No functio	sed to activate or deactivate the o	cooling mode.	



	"1": Cooling mo	de		
29	HVAC control mode	Activation of fan only	CRWTU	DPT 1.003
				1 bit
This com	munication object is us	sed to activate or deactivate	the fan.	
Telegram	value: "0": No functio	n		
	"1": Fan only m	ode		

Objects "H	VAC mode"			
THE PROPERTY OF THE PROPERTY O	orde HVAC mode (byte)  orde HVAC mode (byte)  orde HVAC mode (byte)  orde ON CMD for comfort  orde ON CMD for comfort  orde ON CMD for comfort  orde ON CMD for standby  orde ON CMD for standby  orde ON CMD for night mode  orde ON CMD for night mode  orde ON CMD for night mode  orde ON CMD for building  orde ON CMD for building  orde ON CMD for building  orde ON CMD for building	mode mode mode mode mode de de pode protection protection		1 Byte C R W T U 1 Byte C R W T U 1 Byte C R W T U 1 bit C R W T U
NO.	Object name	Function	Flags	Data type
30	HVAC mode	HVAC mode (byte)	CRWTU	DPT 20.102 1 byte
Telegram v	alue: "1": Comfort mode "2": Standby mode "3": Night mode "4": building protect	ion		
31	HVAC mode	ON CMD for comfort mode	CRWTU	DPT 1.001 1 bit
	unication object is used for value: "0": No function "1": Comfort mode/		he comfort mode.	
32	HVAC mode	ON CMD for standby mode	CRWTU	DPT 1. 001 1 bit
	unication object is for the value: "0": No function "1": Standby mode	standby mode ON comn	nand.	
33	HVAC mode	ON CMD for night mode	CRWTU	DPT 1. 001 1 bit
	unication object is used to value: "0": No function "1": Night mode	ON CMD for night mod	e	
34	HVAC mode	ON CMD for building protection	CRWTU	DPT 1. 001 1 bit
	unication object is used to value: "0": No function "1": building protect		otection.	



10 Actual	temperature Actual temperature	1		2 Byte C R W T U
■210 Actual	·			2 Byte C R W T U
型10 Actual	temperature Actual temperature	1		2 Byte C R W T U
11 Actual	· ·			2 Byte C R W T U
12 Actual				1 bit C R - T -
12 Actual		=		1 bit C R - T -
12 Actual				1 bit CR - T - 1 bit CR - T -
14 Actual	·	-		1 bit CR - T -
14 Actual	·	-		1 bit CR - T -
14 Actual	temperature Frost/heat alarm er	ror signal		1 bit C R - T -
NO.	Object name	Function	Flags	Data type
10	Actual temperature	Actual temperature 1	CRWTU	DPT 9.001
		, , , , , , , , , , , , , , , , , , ,		2 byte
temperat		d in conjunction with the mmunication object via the prated without the temper	e KNX/EIB.	
temperat	ure via KNX/EIB.		T	
	-	Actual temperature 2	C R W T U	DPT 9.001 2 byte
temperate 11 This comm	Actual temperature	Actual temperature 2 for 'actual temperature 2'	CRWTU	DPT 9.001
temperate 11 This comm	ure via KNX/EIB.  Actual temperature  munication object is used  mperature will be received	Actual temperature 2 for 'actual temperature 2' via KNX/EIB.	CRWTU	DPT 9.001 2 byte
temperat 11 This comr actual ten	Actual temperature  munication object is used	Actual temperature 2 for 'actual temperature 2' d via KNX/EIB. Actual temp. 1 error	C R W T U	DPT 9.001 2 byte ia EIB (Count=2)" is selected, the
temperat 11 This comr actual ten 12	nunication object is used nperature will be received Actual temperature	Actual temperature 2  for 'actual temperature 2' I via KNX/EIB.  Actual temp. 1 error signal	CRWTU  If "Two sensor vi	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit
temperat 11 This commactual ten 12	nunication object is used Actual temperature  Munication object is used Actual temperature  Munication object is used	for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper	CRWTU  . If "Two sensor vi CRT  ature 1 error sign	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit  al. An error signal can be sent to
This commactual ten  This commactual ten  This commathe KNX/E	munication object is used Actual temperature  Actual temperature  Actual temperature  munication object is used temperature  munication object is used temperature	Actual temperature 2  for 'actual temperature 2' I via KNX/EIB.  Actual temp. 1 error signal	CRWTU  . If "Two sensor vi CRT  ature 1 error sign	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit  al. An error signal can be sent to
This commactual ten  This commactual ten  This commathe KNX/E	nunication object is used Actual temperature  Munication object is used Actual temperature  Munication object is used	for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper	CRWTU  . If "Two sensor vi CRT  ature 1 error sign	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit  al. An error signal can be sent to
This commactual ten  This commactual ten  This commathe KNX/E	munication object is used Actual temperature  Actual temperature  Actual temperature  munication object is used temperature  munication object is used temperature	for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper	CRWTU  . If "Two sensor vi CRT  ature 1 error sign	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit  al. An error signal can be sent to
This commactual ten 12 This commactual ten 12 This commathe KNX/E	nunication object is used negrature  Actual temperature  Actual temperature  Actual temperature  nunication object is used elb, and can be sent after a value: "0": No error "1": Error	for 'actual temperature 2' d via KNX/EIB. Actual temp. 1 error signal to send the actual temperature an elapsed time (1-255 sec	CRWTU  . If "Two sensor vi CRT  ature 1 error sign conds), or cyclicall	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit al. An error signal can be sent to
This commactual ten  This commactual ten  This commathe KNX/E	munication object is used negrature  Actual temperature  Actual temperature  Actual temperature  munication object is used elb, and can be sent after a value: "0": No error	Actual temperature 2  for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper en elapsed time (1-255 sec	CRWTU  . If "Two sensor vi CRT  ature 1 error sign	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit al. An error signal can be sent to
This comractual ten  This comractual ten  This comractual ten  This comractual ten  The KNX/E  Telegram	munication object is used apperature  Actual temperature  Actual temperature  Actual temperature  munication object is used as a sella, and can be sent after a value: "0": No error     "1": Error  Actual temperature	Actual temperature 2 for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper an elapsed time (1-255 sec	CRWTU  If "Two sensor vi CRT  ature 1 error sign conds), or cyclicall	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit  al. An error signal can be sent to  DPT 1.005 1bit
This comractual ten  This comractual ten  This comractual ten  This comractual ten  The KNX/E  Telegram	munication object is used apperature  Actual temperature  Actual temperature  Actual temperature  munication object is used as a sella, and can be sent after a value: "0": No error     "1": Error  Actual temperature	Actual temperature 2 for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper an elapsed time (1-255 sec	CRWTU  If "Two sensor vi CRT  ature 1 error sign conds), or cyclicall	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit  al. An error signal can be sent to  DPT 1.005 1bit
This comractual ten  This comractual ten  This comractus comractus  This comractus  This comractus  This comractus  This comractus	nunication object is used negrature  Actual temperature  Actual temperature  Actual temperature  nunication object is used EIB, and can be sent after a value: "0": No error "1": Error  Actual temperature	Actual temperature 2 for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temper an elapsed time (1-255 sec	CRWTU  . If "Two sensor vi  CRT  ature 1 error sign conds), or cyclicall  CRT	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit al. An error signal can be sent to  DPT 1.005 1bit al. An error signal can be sent to
This comment the KNX/E Telegram  This comment the KNX/E Telegram  This comment the KNX/E Telegram	munication object is used negrature  Actual temperature  Actual temperature  Actual temperature  munication object is used EIB, and can be sent after a value: "0": No error "1": Error  Actual temperature  munication object is used EIB, and can be sent after a value: "0": Actual temperature	for 'actual temperature 2' d via KNX/EIB. Actual temp. 1 error signal to send the actual temperature (1-255 second elapsed time (1-255 second elapsed time).	CRWTU  . If "Two sensor vi  CRT  ature 1 error sign conds), or cyclicall  CRT	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, th  DPT 1.005 1bit al. An error signal can be sent to 1/2.  DPT 1.005 1bit al. An error signal can be sent to 1/2.
This comment the KNX/E Telegram  This comment the KNX/E Telegram  This comment the KNX/E Telegram	munication object is used negrature will be received Actual temperature  Munication object is used negrature will be received Actual temperature  Munication object is used EIB, and can be sent after a value: "0": No error  "1": Error  Actual temperature  munication object is used EIB, and can be sent after a value: "0": No error	for 'actual temperature 2' d via KNX/EIB. Actual temp. 1 error signal to send the actual temperature (1-255 second elapsed time (1-255 second elapsed time).	CRWTU  . If "Two sensor vi  CRT  ature 1 error sign conds), or cyclicall  CRT	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit al. An error signal can be sent to  DPT 1.005 1bit al. An error signal can be sent to
This community the KNX/E Telegram  This community the KNX/E Telegram  This community the KNX/E Telegram	munication object is used negrature  Actual temperature  Actual temperature  Actual temperature  munication object is used sella, and can be sent after a value: "0": No error "1": Error  Actual temperature  munication object is used sella, and can be sent after a value: "0": No error "1": Error  Actual temperature	Actual temperature 2 for 'actual temperature 2' d via KNX/EIB.  Actual temp. 1 error signal to send the actual temperature (1-255 second leapsed time)  Actual temp. 2 error signal to send the actual temperature signal to send the actual temperature signal	CRWTU  If "Two sensor vi CRT  ature 1 error sign conds), or cyclicall CRT  ature 2 error sign conds), or cyclicall	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit al. An error signal can be sent to  DPT 1.005 1bit al. An error signal can be sent to
This comment the KNX/E Telegram  This comment the KNX/E Telegram  This comment the KNX/E Telegram	munication object is used negrature will be received Actual temperature  Munication object is used negrature will be received Actual temperature  Munication object is used EIB, and can be sent after a value: "0": No error  "1": Error  Actual temperature  munication object is used EIB, and can be sent after a value: "0": No error	for 'actual temperature 2' d via KNX/EIB. Actual temp. 1 error signal to send the actual temperature (1-255 second elapsed time (1-255 second elapsed time).	CRWTU  . If "Two sensor vi  CRT  ature 1 error sign conds), or cyclicall  CRT	DPT 9.001 2 byte  ia EIB (Count=2)" is selected, the  DPT 1.005 1bit al. An error signal can be sent to  DPT 1.005 1bit al. An error signal can be sent to

## D8 Set point

Telegram value: "0": No frost/heat protection

"1": Frost/heat protection

Objects "S	Objects "Set point"				
⊒20 Setpoint	Base setpoint temperature			2 Byte C R W T U	
⊒20 Setpoint	Base setpoint temperate	Base setpoint temperature			
⊒‡20 Setpoint	Base setpoint temperature			2 Byte C R W T U	
⊒Z21 Setpoint	Instantaneous setpoint temp.			2 Byte C R - T -	
⊒Z21 Setpoint	Instantaneous setpoint	Instantaneous setpoint temp.			
⊒‡21 Setpoint	Instantaneous setpoint temp.			2 Byte C R - T -	
NO.	Object name	Function	Flags	Data type	



20	Set point	Base set point	CRWTU	DPT 9.001	
		temperature		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	CRT	DPT 9.001	
		point temp.		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 "C	hannel N"					
<b>□</b> ‡180 (	Dutput A Channel o	utput		1 bit C - W - U		
	Output A Always res	ponse switch state		1 bit CR-T-		
1 1		tic for time		2 Byte C R W T U		
	•	istic for time out		1 bit C R - T -		
	Output A Staircase I	•		1 bit C - W - U 2 Byte C - W - U		
	Output A Change staircase lighting time Output A Alarm staircase lighting			1 bit CR - T -		
	•	tic 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 comm	unication object is use	d for channel output, and to	turn on or off a char	inel.		
The switch	output will be ON whe	en the value '1' is received, v	vhen value '0' is rece	ved the switch output will		
be OFF.		- · · · · · · · · · · · · · · · · · · ·				
181,191	Output N	Always response	CRT	DPT 1.001		
		switch stateor		1 bit		
		Response state after				
		change				
This comm	nunication object is use	d to respond the channel N	status. If channel stat	us isON,then the response		
status valu	ie is "1", if the channel	is OFF the response status is	"0".			
182,192	Output N	Read/Write statistic	CRWTU	DPT 7.007		
		for time		2 byte		
This comm	nunication object is use	d to read and write the time	statistics.			
183,193	Output N	Alarm statistic for	CR T	DPT 1.005		
		time out		1 bit		
This comm	This communication object is used to trigger a statistic alarm when the ON period times out.					
184,194	Output N	Staircase light	CWU	DPT 1.001		
				1 bit		
This comm	nunication object is use	d to activate or deactivate th	ne staircase lighting.			
185,195	Output N	Change staircase	CWU	DPT 7.005		
•••		lighting time		2 byte		
This comm	nunication object is use	d to modify the running time	of the staircase ligh	ting.		
186,196	Output A	Alarm staircase	CRT	DPT 1.005		
		lighting		1 bit		
This comm	nunication object is use	d to activate or deactivate th	ne staircase lighting a	larm. If telegram '1' is		
received th	ne alarm will be ON, if t	elegram '0' is received the a	larm will be off.			
187,197	Relay N	R/W statistic for	CRWTU	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 ---