



KNX 17/19CH Mix Actuator User Manual

(Applicable model: MHR17U.1, M/MHD02R17U.1)

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Update History

The form below contains the information of every update. The latest version contains all the updates of all former versions.

No.	Version	Update Information	Date
1	V1.0.0	Initial release	Dec.06, 2019



1 Introduction

This user manual offers the information on the configuration of KNX 17/19CH Mix Actuator (Model: M/MHR17U.1, M/MHD02R17U.1, hereinafter referred to as KNX 17/19CH Actuator).

The following tools might be included:

- KNX 17CH Mix Actuator (Model: M/MHR17U.1) or KNX 19CH Mix Actuator (Model: M/MHD02R17U.1)
- > A computer with ETS5 software
- KNX USB interface (Model: M/USB.1)
- > KNX power supply and auxiliary power supply
- ➢ KNX project files
- Dedicated KNX cable(s)

Notice:

- ① Please refer to the datasheet attached to the product for the information of installation, wiring, specifications, etc.
- ② The pictures in this user manual are for reference only and the actual product should prevail.



1.1 Import Data

1.1.1 Import Database to ETS (.knxprod)

1. Import Catalogs: click "Catalogs" → "Import…" in the main page of ETS5 software and select local database files with the suffix of .knxprod, as shown in Figure 1-1.

III ETS5™	
ETS	0
Overview Bus Catalogs Settings	
La Import ≰ Export 🛆 😱 Download 📖 > HDL > Products Search	Q
Favorites See Manufacturer Name Order Mediu Application Version	
My Products HDL YEE Panel 3R M/P3 TP YEE Panel 3Rocker Con 1.0	n
B Recent Products HDL YEE Panel 2R M/P2 TP YEE Panel 2Rocker Con 1.0	
Manufacturers HDL Energy 3fold M/EA TP Energy 3fold Actuator(1.0	
P I Products	
ETS Version ETS 5.6.4 (Build 842) 1 License Demo App	s 0 active

Figure 1-1 Import catalog



2. Create Projects: as shown in Figure 1-2, in "Your Projects" tab from ETS5 software's "Overview" page, click "+" to create projects. After editing project name, please keep other setting items by default.

⊞ ETS5™					
ETS					0
Overview	Bus	Catalogs	Settings		KNX
Your Projects	Project Arc	hive		KNX News	New KNX Products
+ 🎢 📩 Create New Pr			Q	Modern, Massive, Moscow – The 15th KNX National Group Conference kicked off with many surprises 2019/10/7	True Presence® Multisensor KNX Steinel GmbH (Germany)
Name HDL Backbone IP Topology ✓ Create Line 1.1				2019/10/7 This year, the 15th KNX National Group Conference welcomed delegates from 20 countries. Hosting city was Moscow – Not known by many, but appreciated by all. The first day's agenda had various surprises for the delegates regarding the future of	
TP Group Address Style Free Two Level Three Level Create Proj				NVX Association, Tools, and upcoming events. The day after followed with additional presentations and discussion on Social Media activites, best practices and other open subject were discussed between KNX and its National Groups Although both days required the full attention of the delegates, all delegates are anticipating the next day with high excitement.	7 senses for KNX. Welcome to the new era in building sensor technology! True Presence® provides absolutely reliable information on human presence and absence. The revolutionary technology is based on ultra-sensitive high-
				NETx Multi Protocol Server	Certified KNX Products See a list of all certified KNX products here.
				ETS Version ETS 5.6.4 (Build a	842) 🛈 License Demo Apps 0 active

Figure 1-2 Create projects



3. Add Devices to Projects:

① After creating a project, the project page will show up by default. Click "Buildings" and select "Topology", as shown in Figure 1-3.

H	ETS5™ - HI	DL (3)											
	TS Edi	it Work	place Com	missioning	Diagnostics Ext	ras Wind	dow						^ ?
	Close Pr	roject	🆍 Undo	🐴 Redo	Reports	W	orkplace *	Catalogs	Diag	nostic	5		
В	iildings 🔻								▲ □	×	Prope	rties	>
	🛒 Buil	dings		Download	🔹 🚺 Info 💌	🕤 Reset	▼ S	earch		P	Ö		1
	📰 😋	up Addr	esses	Room	Descriptio	on A	pplication F	rogram		Adr	Settings	Com	Infor
	🔢 Тор	ology											
	📃 Proj	ject Roo	t										
Π.	🔲 Dev	vices											
	🚔 Rep	orts											
	🔠 Cata	alog											
	🌄 Diag	gnostics									Select see d	t an elem etails her	ent to
											₽ Find a	nd Replac	e
											Work	spaces	
											🕖 Todo	Items	
											Pendi	ng Operat	ions
			Devices	Paramet	er Building	Parts					🖍 Undo	History	
	<no interfac<="" td=""><td>ce sel</td><td>▲ 1.1 New lin</td><td>e</td><td>Buildin</td><th>ngs</th><th></th><td></td><td></td><td></td><td>Last use</td><td>d workspace</td><td></td></no>	ce sel	▲ 1.1 New lin	e	Buildin	ngs					Last use	d workspace	

Figure 1-3 Add devices to projects



② Figure 1-4 shows "Topology" page, click the arrow beside "Add Areas" and select "Devices", and the catalog page will show up below.

FTS Edit Workplace Commissioning D	iagnostics Extras Window			
🔊 Close Project 💉 Undo 🐴 Redo	Reports Workplace • Catalog	s Diagnostics		
Topology 🔻				∧ □ × <
🕂 Add Areas 🔽 🗙 Delete 🛨 Download 🖛	🕕 Info 🔻 🤦 Reset 🛛 🖗 Unload 🔻 🚔 Print		Search	
Topology Areas	Description	Mainline	Me Domain Address	~
Dynamic Dynamic Lines		TP	-	0
Devices				Õ
Areas Lines / Catalog ▼ Lines / Lines / Lines / Downle	Devices Parameter		Search	∧ □ ×
Areas Lines Catalog ▼ ▲ ▲ Import ▲ Export ★ Favorites ▼ Security	Devices Parameter	Order Number Medium	Search Type Application	Version
Areas Lines Catalog ▼ Import	Devices Parameter And Manufacturers Manufacturer* Name HDL YEE Panel 3Rocker Controller(V1.0) VEE Panel 3Rocker Controller(V1.0)	Order Number Medium M/P3R 1801 P016 TP M/P3R 1801 P016 TP	Search Type Application YEE Panel 3Rocker C YEE Panel 2Rocker C	∧ □ × Version .10 .10
Areas Lines Catalog ▼ Import £ Export ▲ Import ▲ Export △ ◆ Downke ▲ Favorites ▲ Security ▲ Security ▲ My Products ▲ ▲ ▲ Recent Products ▲ ▲ ▲ Manufacturers ▼ ▲ HDL	Devices Parameter	Order Number Medium M/P3R 1801 P016 TP M/P2R 1801 P015 TP	Search Type Application YEE Panel 3Rocker C YEE Panel 2Rocker C.	▲ □ × Version . 10 . 10
Areas Lines Catalog ▼ Import	Devices Parameter	Order Number Medium M/P3R 1801 P016 TP M/P2R 1801 P015 TP	Search Type Application YEE Panel 3Rocker C YEE Panel 2Rocker C	▲ □ × Version .10 .10

Figure 1-4 Add devices to projects



③ As shown in Figure 1-5, click "HDL" in "Manufactures" column and select devices to be added to the project on the right. Drag devices to the above area (Method 1) or click "Add" button to add devices after clicking the location needed to add projects below (Method 2).



Figure 1-5 Add devices to projects



1.1.2 Import Projects (.knxproj)

As shown in Figure 1-6. Open ETS5 and click "Import project" button of "Your Project" tab of "Overview" page and import obtained KNX project files with the suffix of .knxproj/.pr5. After importing projects, added/created projects will be listed below. Double click to edit.

⊞ ETS5™					
ETS					0
Overview	Bus	Catalogs	Settings		KNX
Your Projects	Project Arc	hive		KNX News	New KNX Products
🕂 🎢 🛃 🏦 Name Last Mod	dified ▼ Status	Search	Q	Modern, Massive, Moscow – The 15th KNX National Group Conference kicked off with many	True Presence® Multisensor KNX Steinel GmbH (Germany)
HDL 2019/10/	12 14:22 Unknown	1		Surprises 2019/10/7 This year, the 15th KNX National Group Conference welcomed delegates from 20 countries. Hosting city was Moscow – Not known by many, but appreciated by all. The first day's agenda had various surprises for the delegates regarding the future of KNX Association, Tools, and upcoming events. The day after followed with additional presentations and discussion on Social Media activites, best practices and other open subject were discussed between KNX and its National Groups Although both days required the full attention of the delegates, all delegates are anticipating the next day with high excitement.	7 senses for KNX. Welcome to the new era in building sensor technology! True Presence® provides absolutely reliable information on human presence and absence. The revolutionary technology is based on ultra-sensitive high-
				NETx Multi Protocol Server 2019/9/13	See a list of all certified KNX products here.
				ETS Version ETS 5.6.4 (Build	842) 1 License Demo Apps 0 active

Figure 1-6 Import projects



1.2 Open Configuration Window

Double click the project to be configured. Click "Workspace" \rightarrow "Open New Panel" \rightarrow "Topology" to open the window, as shown in Figure 1-7.



Figure 1-7 Open configuration window



2 General Setting

In topology skeleton on the left side of topology page, click the devices to be set and select "General" in "Parameter" option, as shown in Figure 2-1.

	ETS5™ - KNX 19 ci	rcuit			
E	TS Edit Work	place Commission	ing Diagnostics Extras Window		∧ (2)
	Close Project	🖍 Undo 🛛 🗛 R	Redo 📄 Reports 📄 Workplace 🔻	Catalogs Diagnostics	
То	opology 🔻				▲ 🗆 🗙 🧹
+	Add Channels 💌	🗙 Delete ± Dow	nload 🔹 🕜 Help 🤌 Highlight Changes 🛛	Default Parameters	
>	1.1.1 M/MHD02	2R17U.1 > Genera	ı		
1.1.1	General		System operation after a delay(2255s)	2	÷ 0
. M/Mł	Channel 1		Read objects after bus recovery	Oisable Enable	
1D02	1:function		Heartbeat telegram	Send value "1/0" inverted cyclically	-
R17U.1	1:delay		Telegram is sent time interval (165535s)	5	* *
			Relay setting		
	1:staircase		Relay pulse time	10ms	•
	Channel 2		All channels(117) operation	Oisable O Enable	
	Channel 3		-Switching ON/OFF	No Ves	
	Channel 4		->Switching value	'1'-ON,'0'-OFF '0'-ON,'1'-OFF	
	Channel 5		-Status	No response Only after chang	je
	Channel 6		->Status value	 '1'-Channels is ON,else '0' '0'-Channels is ON,else '1' 	
	Channel 7		->Status delay send[0:no delay](0255s)	0	* *
	Channel 8	1			
	Group Objects	Parameter			1
	HDL USB Interface	▲ 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 2-1 General Setting

- 1. System operation after a delay: time-delay function, namely a delay time between powering on the device and activating the system, which ranges from 2 to 255s. The default value is 2s.
- 2. Read objects after bus recovery: to enable reading objects after the bus voltage recovery.
- 3. Heartbeat telegram: choose to send "1", "0", or "1, 0" cyclically.
 - Telegram is sent time interval: to set the time interval of sending heartbeat telegram, which ranges from 1 to 65535s. The default value is 5s.



- 4. Relay pulse time: to set the pulse time of relay, which ranges from 10 to 250ms. The default value is 20ms.
- 5. All channels operation: to enable switching on/off all channels.
 - Switching ON/OFF: after "All channels operation" is enabled, all channel switches can be controlled. The data type of switch can be selected in "Switching value" below, including "1-ON, 0-OFF" and "0-ON, 1-OFF".
 - Status: to enable switch status feedback. After enabled, feedback type can be selected in "Status value" below, including "1-Channel is ON, else 0" and "0-Channel is ON, else 1". The delay time of switch status feedback can be set in "Status delay send" below.



3 Channel Setting

This chapter takes "Channel 1" as an example to introduce the function and setting of single channel.

3.1 General Setting

Click "Parameter" \rightarrow "Channel 1" to open the page, as shown in Figure 3-1.

H	ETS5™ - KNX 19 circuit				×				
	ETS Edit Workplace Commissioning Diagnostics Extras Window								
	🗞 Close Project 🛛 🎸 Undo 🛝	Redo 📄 Reports 📄 Workplace 🔻	Catalogs Diagnostics						
Т	opology 🔻			∧ □ ×	<				
+	🛚 Add Channels 🔹 🗙 Delete 🛨 Do	wnload 🛛 🔹 🕜 Help 🥒 Highlight Changes	Default Parameters						
> =	1.1.1 M/MHD02R17U.1 > Chann	nel 1							
1.1.1	General	Channel 1 output	O Disable C Enable		0				
M/MH0	Channel 1	Normally type	ON->Open,OFF->Close ON->Close,OFF->Open						
002R17	1:function	Response of switch state ON/OFF	Only after changing	•					
7U.1	1:delay	-Status value	() '1'-ON,'0'-OFF () '0'-ON,'1'-OF	F					
	1:staircase	-Status delay send[0:no delay](0255s)	0	* *					
	Channel 2	Switch state after bus voltage recovery	Recovery	*					
	Channel 3	runctions>							
	Channel 4								
	Channel 5	_							
	Channel 6								
	Channel 7								
	Channel 8								
	Group Objects Parameter								
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace					

Figure 3-1 General setting

- 1. Channel 1 output: to enable outputting Channel 1.
- 2. Normally type: to select channel output type, including "ON \rightarrow Open, OFF \rightarrow Close" and "ON \rightarrow Close, OFF \rightarrow Open". The default type is "ON \rightarrow Close, OFF \rightarrow Open".



- 3. Response of switch state ON/OFF: to select switch status feedback type, including "No response", "Always response" and "Only after changing".
 - Status value: if "Always response" or "Only after changing" is selected, feedback type can be selected, including "1-ON, 0-OFF" and "0-ON, 1-OFF".
 - Status delay send: if "Always response" or "Only after changing" is selected, the delay time of switch status feedback can be set, which ranges from 0 to 255s.
- 4. Switch state after bus voltage recovery: to select switch status after the bus voltage recovery, including "Unchange", "Recovery", "On" and "OFF".
- 5. Functions: to display/hide function setting page in parameter list, including "delay", "scene" and "staircase" setting page.

3.2 Staircase Light Setting

After "Functions" is enabled in channel general setting, click "function" tab and enable "staircase lighting" in the open page, and click "staircase" tab on the left, as shown in Figure 3-2.

I	ETS5™ - KNX 19 circu	uit				×
	TS Edit Workpla	ace Commission	ing Diagnostics Extras Window		^	
E	🔉 Close Project 🧹	🔊 Undo 🛛 🗛 R	edo 📄 Reports 📄 Workplace 🔻	Catalogs Diagnostics		
Т	opology 🔻				∧ ⊡ ×	<
+	Add Channels 🛛 🔹 💙	🕻 Delete 🛨 Dow	mload 🔹 🕜 Help 🌛 Highlight Changes - [Default Parameters		
>	1.1.1 M/MHD02R	17U.1 > 1:stairc	ase			
1.1.1	General		Control staircase lighting	Start with '1'/'0',Can't Stop	-	Ŏ
M/M	Channel 1		>>Time for OFF:(0255Min)	255	* *	¥1
HD02R	1:function		Time for OFF:(059Sec)	59	* *	
17U.1	1:delay		Change staircase lighting time via bus	No Ves		
	1:staircase		Warn staircase lighting time(ON->OFF-	No Ves		
	Channel 2		Warn before the end of time(3255Sec)	3	▲ ▼	
	Channel 3		Duration time for warning(1200Sec)	1	▲ ▼	
	Channel 4					
	Channel 5					
	Channel 6					
	Channel 7					
	Channel 8					
	Group Objects	Parameter				
	HDL USB Interface	1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace	

Figure 3-2 Staircase light setting



The setting items are explained below:

- 1. Control staircase lighting: to select staircase light control type, including "writing 1 to 1bit object to turn on staircase light, writing 0 to turn off", "writing 1 to 1-bit object to turn on staircase light, writing 0 is invalid" and "writing 1 or 0 to 1-bit object to turn on staircase light".
 - Time for OFF: to set the working duration of staircase light, which ranges from 0 to 255min 59s. The default value is 5s.
- 2. Change staircase lighting time via bus: choose to change the working duration of staircase light via the bus.
- 3. Alarm staircase lighting time to bus: choose to send an alarm to the bus when staircase light is turned on/off.
- 4. Warn staircase lighting time: set warning signal (in a flashing light) to inform staircase light will be turned off soon.
 - Warn before the end of time: to send warning signal before staircase lighting is turned off. The time interval ranges from 3 to 255s. For example, when "3s" is set, warning signal will be sent 3s before staircase light is turned off.
 - Duration time for warning: to set the working duration of warning signal, which ranges from 1 to 200s. The default value is 1s.

3.3 Scene Setting

After "Functions" is enabled in channel general setting, click "function" tab and enable "scene" in "Function" of the open page, and click "scene" tab on the left, as shown in Figure 3-3.

HDL

I	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ing Diagnostics Extras Window		^ ()
	🗞 Close Project 🛛 🎸 Undo 🛛 🔌 F	Redo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics	
Т	opology 🔻			▲ 🗇 🗙 🧹
1+	🛚 Add Channels 🔹 🗙 Delete 🛛 🛨 Dow	vnload 🔹 🕜 Help 🤌 Highlight Changes	Default Parameters	
> =	1.1.1 M/MHD02R17U.1 > 1:scene	3		
1.1.1	General	>>Output is assigned to (scene 164 or not allocate)	Not allocate	O
M/MH	Channel 1	Ouput ON/OFF:	OFF ON	
ID02R	1:function	Output Delay:	🔵 Disable 🔘 Enable	
17U.1	1:delay	ON Delay:(0255 Min)	0	* *
	1	ON Delay:(059 Sec)	5	÷.
	Liscene	OFF Delay:(0255 Min)	255	
	Channel 2	OFF Delay:(059 Sec)	59	
	Channel 3	>>Output is assigned to (scene 164 or not allocate)	Not allocate	•
	Channel 4	Ouput ON/OFF:	OFF ON	
	Channel 5	Output Delay:	🔵 Disable 🔘 Enable	
	Channel 6	ON Delay:(0255 Min)	0	*
	CI 17	ON Delay:(059 Sec)	5	÷
	Channel /	OFF Delay:(0255 Min)	0	* *
	Channel 8	OFF Delay:(059 Sec)	0	* v
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1	La	st used workspace

Figure 3-3 Scene setting

The setting items are explained below:

Output assigned to: choose to output corresponding scene number (Up to 64 scene numbers available).

- > Output ON/OFF: to switch on/off scene output.
- Output delay: after enabled, the delay time of switching on/off scene output can be set in "ON Delay" and "OFF Delay" below, which ranges from 0 to 255min 59s.

3.4 Delay Setting

After "Functions" is enabled in channel general setting, click "function" tab on the left and enable "delay" in "Functions" of the open page, and click "delay" tab on the left, as shown in Figure 3-4.

HDL

Ħ	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ning Diagnostics Extras Window		^ ()
	🗞 Close Project 🛛 🏠 Undo 🛝	Redo 🚔 Reports 📕 Workplace 🔻	Catalogs Diagnostics	
Т	opology 🔻			∧ ⊡ × <
+	• Add Channels 🔹 🗙 Delete 붗 Dor	wnload 🔹 🕜 Help 🌙 Highlight Changes	Default Parameters	
> =	1.1.1 M/MHD02R17U.1 > 1:dela	у		
1.1.1	General	>>Delay for switching On:(0255Min)	255	÷
M/N	Channel 1	Delay for switching On:(059Sec)	59	⇒ ▼
IHDO	1:function	>>Delay for switching Off:(0255Min)	0	* *
2R17L		Delay for switching Off:(059Sec)	0	▲ ▼
11	1:delay			
	1:scene			
	Channel 2			
	Channel 3			
	Channel 4			
	Channel 5			
	Channel 6			
	Channel 7			
	Channel 8			
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 3-4 Delay setting

- 1. Delay for switching On: to set the delay time of switching on a relay, which ranges from 0 to 255min 59s.
- 2. Delay for switching Off: to set the delay time of switching off a relay, which ranges from 0 to 255min 59s.



4 Dimming Setting

This chapter takes "Channel A (Dimming)" as an example to introduce the dimming and function setting.

Note: Dimming channel is only applicable for KNX 19CH Actuator.

4.1 General Setting

Click "Parameter" \rightarrow "Channel A (Dimming)" to open the page, as shown in Figure 4-1.

	ETS5™ - KNX 19 circuit				×
E	TS Edit Workplace Commission	ing Diagnostics Extras Window		/	< 🕐
	🔉 Close Project 🛛 🌾 Undo 🛛 🐴 R	edo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics		
То	opology 🔻			▲ 🗇 🗙	<
+	Add Channels 🔹 🗙 Delete 🛨 Dow	nload 🔹 🕜 Help 🥔 Highlight Changes - E	Default Parameters		
> 1	1.1.1 M/MHD02R17U.1 > Channe	l A(Dimming)			
1.1.1	Channel 16	The response of channel status(1bit)	1bit always respone	•	0
M/M	Channel 17	The response of channel status(1byte)	1byte always respone	-	×1
HDO2	Channel A(Dimming)	The status after bus voltage recovery	OFF	-	
2R170	chainerricerningy	Over temperature protection	Reduce power	•	
1	A>Dimming config	-Compare temperature for reduce power	80C	•	
	A:function	-Reduce the relative power value(-x%/5C)	-5%	•	
	A:scene	Alarm temperature(Degrees Celsius)	🔵 Disable 🔘 Enable		
	Channel B(Dimming)	-Alarm temperature time interval(1255s)	5	* *	
	B>Dimming config	Read temperature(Degrees Celsius)	🔵 Disable 🔘 Enable		
		Maximum level	84%	•	
	Channel C(Curtain)	Upper threhold level	82%	-	
	C:status	Lower threhold level	0%	-	
	C:function	Mimmum level	98%	•	
	Ciscene	Show the function page==>>	🔵 Disable 🔘 Enable		
	Group Objects / Parameter /				
-	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1	Last	used workspace	

Figure 4-1 General setting



The setting items are explained below:

- 1. The response of channel status (1bit): to set channel status feedback type, including "Invalid", "1 bit always response" and "1 bit only changed".
- 2. The response of channel status (1byte): to set channel status feedback type, including "Invalid", "1 byte always response" and "1 byte only changed".
- 3. The status after bus voltage recovery: to set the dimming status after the bus voltage recovery, including "OFF", "Defined brightness value" (The brightness value can be set in "Brightness value"), and "Last brightness value".
- 4. Over temperature protection: to set over-heating protection type, including "Invalid", "Alarm", "OFF", and "Reduce power".
 - Alarm/OFF: if "Alarm/OFF" is selected, the temperature triggering over-heating protection can be set in "Compare temperature for alarm base" (which ranges from 70°C to 90°C, the default value is 80°C). The time interval of sending temperature alarm can be set in "Alarm temperature time interval" (which ranges from 1 to 255s, the default value is 5s).
 - Reduce power: if "Reduce power" is selected, reduced power can be set in "Reduce the relative power value", which ranges from 5% to 50% per 5°C. The default value is 10%.
- 5. Read temperature (Degrees Celsius): to enable reading temperature, whose unit is celsius (°C).
- 6. Maximum level: to set the maximum dimming value.
- 7. Upper/Lower threshold level: to set the upper/lower threshold value.
- 8. Minimum level: to set the minimum dimming value.
- 9. Show the function page: to display/hide function setting page in parameter list.

4.2 Dimming Configuration (A > Dimming Config)

Click "Parameter" \rightarrow "A > Dimming config" to open the page, as shown in Figure 4-2.

HDL

Ħ	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ning Diagnostics Extras Window		^ (
	👩 Close Project 🛛 🏠 Undo 🛛 🗛 F	Redo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics	
Т	opology 🔻			∧ □ × <
+	🛚 Add Channels 🔹 🗙 Delete 🛨 Dow	vnload 🔹 🕜 Help 🌛 Highlight Changes	Default Parameters	E
> =	1.1.1 M/MHD02R17U.1 > A>Dim	ming config		
1.1.1	Channel 16	Switching ON fade time(0255s)	3	÷ 0
M/M	Channel 17	Switching OFF fade time(0255s)	3	÷ *
HD02R	Channel A(Dimming)	Enable relative dimming	Oisable O Enable	
17U.1	A>Dimming config	 -Relative(4bit) dimming fade time (brightness0%100%/2255s) 	5	* *
	A:function	-Relative dimming is saved as the brightness of the switch	No Yes	
	A:scene	Enable absolute dimming	🔵 Disable 🔘 Enable	
	Channel B(Dimming)	-Absolute(1byte) dimming fade time (brightness0%100%/0255s)	5	* *
	B>Dimming config	-Absolute dimming is saved as the brightness of the switch	No 🔘 Yes	
	Channel C(Curtain)			
	C:status			
	C:function			
	C:scene			
	Group Objects / Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 4-2 Dimming configuration

- 1. Switch ON fade time: to set the fade-in time of the light, which ranges from 0 to 255s. The default value is 3s.
- 2. Switch OFF fade time: to set the fade-out time of the light, which ranges from 0 to 255s. The default value is 3s.
- 3. Enable relative dimming
 - Relative (4 bit) dimming fade time: after relative dimming is enabled, relative dimming time can be set, which ranges from 2 to 255s. The default value is 5s.
 - Relative dimming is saved as the brightness of the switch: after relative dimming is enabled, relative dimming value can be saved as the initial brightness of lights.
- 4. Enable absolute dimming



- Absolute (1 byte) dimming fade time: after absolute dimming is enabled, absolute dimming time can be set, which ranges from 0 to 255s. The default value is 5s.
- Absolute dimming is saved as the brightness of the switch: after absolute dimming is enabled, absolute dimming value can be saved as the initial brightness of lights.

4.3 Enable Staircase Light

After "Show the function page" is enabled in dimming general setting, click "function" tab on the left and enable "staircase lighting" in the open page, and click "staircase" tab on the left, as shown in Figure 4-3.

	ETS5™ - KNX 10 circuit			
	TS Edit Workplace Commission	ing Diagnostics Extras Window		
	🔉 Close Project 🖌 🖍 Undo 🛝 F	Redo 🚔 Reports 🔛 Workplace 🔻	Catalogs Radiagnostics	
Тс	opology 🔻			∧ ⊡ × <
E+	Add Channels 🔹 🗙 Delete ± Dow	vnload 🔻 🕜 Help 🥒 Highlight Changes - I	Default Parameters	
>	1.1.1 M/MHD02R17U.1 > A:staire	case		
1.1.1	Channel 16	Staircase lighting operation	Can't stop	• O
. M/M	Channel 17	Brightness value	100%(255)	* ¥1
HD02	Channel A(Dimming)	Fade time of brighter(0255s)	3	*
R17U		Fade time of darker(0255s)	3	* *
4	A>Dimming config	Duration time for brightness(0255min)	0	* *
	A:function	Duration time for brightness(0255sec)	59	
	A:staircase	Change staircase light time via bus	Disable Enable	
	Channel B(Dimming)	Warning staircase light via bus	O Disable Enable	
	B>Dimming config			
	Channel C(Curtain)			
	Cistatus			
	C:function			
	C:scene			
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 4-3 Enable staircase light

The setting items are explained below:

1. Staircase lighting operation: to select the operation type of staircase light, including



"writing 1 to 1-bit object to turn on staircase light, writing 0 to turn off", "writing 1 to 1-bit object to turn on staircase light, writing 0 is valid" and "writing 1 or 0 to 1-bit object to turn on staircase light".

- 2. Brightness value: to set staircase light brightness value.
- 3. Fade time of brighter: to set the time of getting lights brighter, which ranges from 0 to 255s. The default value is 3s.
- 4. Fade time of darker: to set the time of getting lights darker, which ranges from 0 to 255s. The default value is 3s.
- 5. Duration time for brightness: to set the working duration of staircase light, which ranges from 0 to 255min 59s. The default value is 5s.
- 6. Change staircase light time via bus: choose to change the working duration of staircase light via the bus.
- 7. Warning staircase light via bus: choose to send warning signal via the bus before the light is turned off.

4.4 Scene Setting

After "Show the function page" is enabled in channel dimming setting, click "function" tab on the left and enable "scene" in the open page, and click "scene" tab on the left, as shown in Figure 4-4.

HDL

Ħ	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ning Diagnostics Extras Window		^ ()
	🗞 Close Project 🛛 🏠 Undo 🛛 🐴 F	Redo 🚔 Reports 🔛 Workplace 🔻	📃 Catalogs 🛛 🔤 Diagnostics	
I	opology 🔻			∧ □ × <
F	🛛 Add Channels 🔻 🗙 Delete 🛨 Dov	vnload 🔻 🕜 Help 🌛 Highlight Changes	Default Parameters	
>	1.1.1 M/MHD02R17U.1 > A:scen	e		
1.1.1	Channel 16	Fade time of scene dimming(2255s)	5	÷ ^ 0
M/MH	Channel 17	Total 10 scene, configuration as following:	Not allocate	
D02R1	Channel A(Dimming)	Output brightness value	82%	•
7U.1	A>Dimming config	Fade time for brighter/darker(0255s)	3	* *
	A:function	>>Output aasigned to(scene 164)	Scene NO.01	-
	A:scene	Output brightness value	84%	-
		Fade time for brighter/darker(0255s)	3	÷
	Channel B(Dimming)	>>Output aasigned to(scene 164)	Not allocate	-
	B>Dimming config	Output brightness value	100%(255)	•
	Channel C(Curtain)	Fade time for brighter/darker(0255s)	3	* *
	Cistatus	>>Output aasigned to(scene 164)	Not allocate	-
		Output brightness value	100%(255)	•
	C:function	Fade time for brighter/darker(0255s)	3	*
	C:scene	>>Output aasigned to(scene 164)	Not allocate	↓ ↓
	Group Objects / Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 4-4 Scene setting

- 1. Fade time of scene dimming: to set the dimming time of scene, which ranges from 2 to 255s. The default value is 5s.
 - Output assigned to: choose to output corresponding scene number (up to 64 scene numbers available).
- 2. Output brightness value: to set the brightness value of scene light.
- 3. Fade time for brighter/darker: to set the time of getting lights brighter/darker, which ranges from 0 to 255s. The default value is 3s.



5 Curtain Setting

This chapter takes "Channel C (Curtain)" as an example to introduce the curtain and function setting.

5.1 General Setting

Click "Parameter" \rightarrow "Channel C (Curtain)" to open the page, as shown in Figure 5-1.

	ETS5™ - KNX 19 circuit			
E	TS Edit Workplace Commission	ing Diagnostics Extras Window		^ ()
	🔉 Close Project 🛛 🎸 Undo 🛛 🐴 R	edo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics	
Το	pology 🔻			∧ ⊡ × <
+	Add Channels 🛛 🛪 🗙 Delete 🛨 Dow	nload 🛛 🔻 😮 Help 🥒 Highlight Changes - D	Default Parameters	E
>	1.1.1 M/MHD02R17U.1 > Channe	el C(Curtain)		
1.1.1	Channel 16	Selecting operation mode	Blinds	- O
M/M	Channel 17	Channel(Up)	Channel 1	- ·
HD02F	Channel A(Dimming)	Channel(Down)	Channel 2	•
R17U.1	A>Dimming config	l otal moving time from top to bottom (2600s)	30	* *
	A:function	Stop moving after arriving top position (010000ms)	0	* *
	A:scene	Stop moving after arriving bottom position(010000ms)	0	* *
	Channel B(Dimming)	Delay time for moving direction changed (5010000ms)	500	* *
	B>Dimming config	Start up time(010000ms)	3	* *
		Deceleration time(010000ms)	0	* *
	Channel C(Curtain)	Alignment after arriving on upper or lower position(50010000ms)	1995	* *
	C:status	Total of louvre adjustment(10010000ms)	1000	*
	C:function	Maximum number of louvre adjustment (1100)	10	* *
	C:scene	Percent of position from bus	O Disable O Enable	~
	Group Objects / Parameter			
	HDL USB Interface ▲ 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 5-1 General setting

- 1. Selecting operation mode: to select the operation type of curtain, including "Curtain" and "Blinds".
- 2. Channel (Up): to select the channel rolling up curtain. The default channel is Channel 1.



- 3. Channel (Down): to select the channel rolling down curtain. The default channel is Channel 2.
- 4. Total moving time from top to bottom: to set the time when curtain moves from the top to the bottom, which ranges from 2 to 600s. The default value is 30s.
- 5. Stop moving after arriving top position: to set the time when curtain continues moving after arriving at the top, which ranges from 0 to 10000ms. The time is used for correcting curtain top position.
- 6. Stop moving after arriving bottom position: to set the time when curtain continues moving after arriving at the bottom, which ranges from 0 to 10000ms. The time is used for correcting curtain bottom position.
- 7. Delay time for moving direction changed: to set the delay time of changing curtain direction, which ranges from 50 to 10000ms. The default value is 500ms.
- 8. Start up time: to set the time of starting up curtain, which ranges from 0 to 10000ms.
- 9. Deceleration time: to set the time when curtain decelerates before arriving at the preset position, which ranges from 0 to 10000ms.
- 10. Alignment after arriving on upper or lower position: to set the time when curtain corrects position after arriving at the top/bottom, which ranges from 500 to 10000ms. The default value is 2000ms.
- 11. Total of louvre adjustment: after "Blinds" is selected in "Selecting operation mode", user can set the total time of adjusting blinds angle, which ranges from 100 to 10000ms. The default value is 1000ms.
- 12. Maximum number of louvre adjustment: after "Blinds" is selected in "Selecting operation mode", user can set the maximum number of adjusting blinds angle, which ranges from 1 to 100. The default value is 10.
- 13. Percent of position from bus: choose to obtain curtain position via the bus.
- 14. Limit travelling range: to set the travelling range of curtain. After enabled, user can set the upper/lower limit of travelling range in "Upper limit" and "Lower limit" below.
- 15. Enable status page: to display/hide curtain status setting page in parameter list.
- 16. Reaction after bus voltage recovery: to set curtain status after the bus voltage recovery, including "no reaction", "up", "down", "stop" and "set position".
 - Output position value/Output louvre value: if "set position" is selected, curtain position and blinds angel can be set after the bus voltage recovery.
- 17. Show the function page: to display/hide function setting page in parameter list.



5.2 Curtain Status Setting

After "Enable status page" is enabled at the bottom of curtain general setting page, click "status" tab on the left, as shown in Figure 5-2.

Ħ	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ing Diagnostics Extras Window		^ ()
	🚡 Close Project 🛛 🎸 Undo 🛛 🐴 R	Kedo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics	
Т	opology 🔻			∧ □ × <
+	🛚 Add Channels 🛛 🛪 🗙 Delete 🛨 Dow	vnload 🔻 🕐 Help 🥒 Highlight Changes	Default Parameters	
> =	1.1.1 M/MHD02R17U.1 > C:statu	s		
1.1.1	Channel 16	Status of position(0%100%)	O Disable C Enable	0
M/M	Channel 17	Status of up/down	Only after change	
HD02R1	Channel A(Dimming)	->Status value	 Response value('0'-UP '1'-DOWN) Response value('1'-UP '0'-DOWN) 	
7U.1	A>Dimming config	Status of stop moving	Only upper/lower end position	•
	A:function	->Status value	○ Response value '0' ◎ Response va	lue '1'
	A:scene	Status of upper/lower position	Upper/lower position('0'-reached '1'-exited)	•
	Channel B(Dimming)	recover	🔾 False 🔘 True	
	B>Dimming config			
	Channel C(Curtain)			
	C:status			
	C:function			
	C:scene			
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1	La	st used workspace

Figure 5-2 Curtain status setting

- 1. Status of position: to enable curtain position feedback.
- 2. Status of up/down: to select curtain rolling up/down feedback type, including "No response", "Always response" and "Only after change".
 - Status value: if "Always response" or "Only after change" is selected, feedback type can be selected, including "0-UP, 1-DOWN" and "1-UP, 0-DOWN".
- 3. Status of stop moving: to select curtain stopping feedback type, including "No response", "Always response" and "Only upper/lower end position".



- Status value: if "Always response" or "Only upper/lower end position" is selected, feedback type can be selected, including "Response value 0" and "Response value 1".
- 4. Status of upper/lower position: to select curtain at the top/bottom feedback type, including "No response", "Upper/lower position, '0'-reached, '1'-exited" and "Upper/lower position, '1'-reached, '0'-exited".
- 5. Whether to send status after voltage recover: choose to enable curtain status feedback after the bus voltage recovery.

5.3 Curtain Scene Setting

After "Show the function page" is enabled at the bottom of curtain general setting page, click "function" tab and enable "scene" in the open page, and click "scene" tab on the left, as shown in Figure 5-3.

	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ing Diagnostics Extras Window		^ ()
	🔉 Close Project 🛛 🎸 Undo 🛛 🐴 R	edo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics	
Т	opology 🔻			∧ 🗇 × <
+	Add Channels 🔹 🗙 Delete 🛨 Dow	mload 🔹 🕐 Help 🌛 Highlight Changes 🛛	Default Parameters	
> 1	1.1.1 M/MHD02R17U.1 > C:scene	2		
1.1.1	A:function	Output is assigned to (scene 164 or not allocate)	Scene NO.01	- ^ O
M/Mł	A:scene	->Output position value	83%	•
HD02R	Channel B(Dimming)	->Output delay	🔵 Disable 🔘 Enable	
17U.1	B>Dimming config	Delay(0255Min)	0	* *
	(hannal (/(Custain)	Delay(059Sec)	5	÷
	Channel C(Curtain)	Output is assigned to (scene 164 or not allocate)	Not allocate	•
	C:status	->Output position value	100%(255)	•
	C:function	->Output delay	O Disable C Enable	
	C:scene	Output is assigned to (scene 164 or not allocate)	Not allocate	•
	Channel D(Curtain)	->Output position value	100%(255)	-
	Channel E(Curtain)	->Output delay	O Disable O Enable	
	Channel F(Curtain)	Output is assigned to (scene 164 or not allocate)	Not allocate	•
	HVAC	->Output position value	100%(255)	
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 5-3 Curtain scene setting



The setting items are explained below:

Output assigned to: choose to output corresponding scene number (up to 64 scene numbers available).

- > Output position value: to set the position value of scene output.
- Output Delay: after enabled, the delay time of scene output can be set, which ranges from 0 to 255min 59s. The default value is 5s.



6 HVAC Setting

6.1 HVAC Setting

Click "Parameter" \rightarrow "HVAC" and enable "HVAC function" in the open page, as shown in Figure 6-1.

	ETS5™ - KNX 19 circuit				×
I	TS Edit Workplace Commission	ing Diagnostics Extras Window		^	
	🔉 Close Project 🛛 🎸 Undo 🛛 🐴 R	Redo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics		
Тс	opology 🔻			∧ ∂ ×	<
+	Add Channels 🛛 🛪 🗙 Delete 🛨 Dow	nload 🛛 🔹 🕜 Help 🤌 Highlight Changes	Default Parameters		
>	1.1.1 M/MHD02R17U.1 > HVAC				
1.1.1	C:status	HVAC function	Oisable O Enable		0
M/N	C:function	HVAC passive control system	2 Control value/4-pipe	•	*
1HD02	Ciscene	Heating valve channel select	Channel 1	-	
R17U.	Channel D(Curtain)	Cooling valve channel select	Channel 2	•	
1	Channel E(Curtain)	Enable set default control value after system restart working	Oisable Enable		
	Channel F(Curtain)	System status recovery after power on	Oisable Enable		
	HVAC	NOTE:Two control value acts on heating and c	ooling valves independently		
	->Heating valve				
	->Cooling valve				
	->Fan				
	->Heat/Cool value status				
	->Fan status				
	Group Objects Parameter				
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace	

Figure 6-1 HVAC general setting

- 1. HVAC passive control system: include "1 Control value/2-pipe", "1 Control value/4-pipe, with switch object", "2 Control value/2-pipe", "2 Control value/2-pipe, with switch object" and "2 Control value/4-pipe".
 - Heating/Cooling valve channel select: to select the channel controlling heating/cooling valve.



- Switch object configuration:
- If "1 Control value/4-pipe, with switch object" is selected in "HVAC passive control system", switch object type can be selected, including "writing 1 to object to control heating valve, writing 0 to control cooling valve", and "writing 0 to object to control heating valve, writing 1 to control cooling valve".
- ② If "2 Control value/2-pipe, with switch object" is selected in "HVAC passive control system", switch object type can be selected, including "writing 1 to object to choose the control value A, writing 0 to choose the control value B" and "writing 0 to object to choose the control value A, writing 1 to choose the control value B".
- 2. Enable set default control value after system restart working: to enable setting the default control value after the system restarts.
- 3. System status recovery after power on: choose to recover system status after the bus voltage recovery.

6.2 Heating/Cooling Valve Setting

After "HVAC function" is enabled in HVAC setting, click "Heating/Cooling valve" tab on the left, as shown in Figure 6-2.

HDL

I	ETS5™ - KNX 19 circuit				-X
	ETS Edit Workplace Commission	ning Diagnostics Extras Window			
	🗞 Close Project 🛛 🏠 Undo 🛛 🔌 F	Redo 🚔 Reports 📕 Workplace 🔻	Catalogs Diagnostics		
Т	opology 🔻			∧ ⊡ ×	<
+	• Add Channels 🔹 🗙 Delete 🛨 Dov	wnload 🛛 🔹 🕜 Help 🌙 Highlight Changes	Default Parameters		
>	1.1.1 M/MHD02R17U.1 > ->Heat	ting/Cooling valve			
1.1	Channel C(Curtain)	Turne (and all	Two-step (ON/OFF) control		
.1 M/I	C:status	Types of control	PWM control		٩
WHD02F	C:function	Valve type	 Inverted(de-energized closed) Normal(de-energized opened) 		
R17U.1	C:scene	PWM Cycle time (130 min)	3	* *	
	Channel D(Curtain)	Minimum heating	10%	-	
	Channel E(Curtain)	Enable valve purge	🔵 No 🔘 Yes		
		>Time of valve purge (1255 min)	5	* *	
	Channel F(Curtain)	>Automatic valve purge	One times per week	•	
	HVAC	Enable control heating/cooling valve directly	🗌 No 🔘 Yes		
	->Heating/Cooling valve				
	->Fan				
	->Heat/Cool value status				
	->Fan status				
	Group Objects / Parameter				
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace	

Figure 6-2 Heating/Cooling valve setting

- Types of control: to select heating/cooling valve control type, including "Two-step control" and "PWM control". If "PWM control" is selected, PWM control period can be set in "PWM Cycle time" below. The period ranges from 1 to 30min and the default value is 3min. The minimum heating value can be set in "Minimum heating".
- 2. Valve type: to select valve type, including "Inverted" and "Normal".
- 3. Enable valve purge: to enable the self-cleaning function of heating/cooling valve.
 - Time of valve purge: to set the duration of self-cleaning, which ranges from 1 to 255min. The default value is 5min.
 - Automatic valve purge: to set the period of self-cleaning automatically, including "No",
 "One times per day", "One times per week" and "One times per month".
- 4. Enable control heating/cooling valve directly: choose to control heating/cooling valve directly.



6.3 Fan Setting

After "HVAC function" is enabled in HVAC setting, click "Fan" tab on the left, as shown in Figure 6-3.

	ETS5™ - KNX 19 circuit			
	ETS Edit Workplace Commission	ning Diagnostics Extras Window		^ ()
	g Close Project 🛛 🏠 Undo 🛝 I	Redo 🚔 Reports 🔛 Workplace 🔻	Eatalogs Diagnostics	
Т	opology 🔻			∧ □ × <
+	🛛 Add Channels 🔹 🗙 Delete 🛛 🛨 Dov	wnload 🔹 🕜 Help 🥒 Highlight Changes 🛛	Default Parameters	
>	1.1.1 M/MHD02R17U.1 > ->Fan			
	Channel C(Curtain)	Fan speed relay output	1-Speed fan	- O
L M/N	C:status	Fan control type	O Step switch O Changeover switch	*
1HD02	C:function	Fan 1 channel select	Channel 3	•
2R17U.	C:scene	Fan control encoded mode	Encoded by 1 byte constant value 0-3	•
4	Channel D(Curtain)	Fan speed on bus voltage recovery	1	•
	channel b(cantain)	Fan switch-on delay (0255 s)	5	* *
	Channel E(Curtain)	Fan switch-off delay (0255 s)	5	* *
	Channel F(Curtain)	Automatic fan control threshold		
	HVAC	Threshold for fan speed 1 (1100 %)	30	* *
		Hysteresis for fan speed (010 %)	5	* *
	->Heating/Cooling valve			
	->Fan			
	->Heat/Cool value status			
	->Fan status			
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1	Last us	aed workspace

Figure 6-3 Fan setting

- 1. Fan speed relay output: to select fan speed relay output type, including "1-Speed fan", "2-Speed fan" and "3-Speed fan".
- 2. Fan control type: to select fan control type, including "Step switch" and "Changeover switch".
- 3. Fan * channel select: to select the channel controlling fan speed levels.
- Fan control encoded mode: to select the encoding mode of fan control, including "Encoded by 1 byte percent value 0-100%", "Encoded by 1 byte constant value" and "1 bit values".
 - > Fan speed-* value: if "Encoded by 1 byte percent value 0-100%" is selected in "Fan



control encoded mode", the control value of fan speed level can be set, which ranges from 0 to 255. The control value of fan speed 1 is 85, that of fan speed 2 is 170, and that of fan speed 3 is 255.

- 5. Fan speed on bus voltage recovery: to select fan speed status after the bus voltage recovery, including "Recovery", "OFF", "1/2/3" and "Auto".
- 6. Fan switch-on/switch-off delay: to set the delay time of turning on/off fan, which ranges from 0 to 255s.
- 7. Enable start-up behavior: if "2-speed fan" or "3-speed fan" is selected in "Fan speed relay output", the start-up status of fan speed can be set.
 - Starting characteristic of fan: to select the initial fan speed level after starting up fan.
 - Minimum delay at starting speed: to set the minimum delay time of starting up fan, which ranges from 0 to 255s.
- 8. Changeover delay between fan speeds: if "2-speed fan" or "3-speed fan" is selected in "Fan speed relay output", the delay time of switching fan speeds can be set. The default value is 0.5s.
- 9. Minimum duration time on fan speed: to set the minimum working duration of fan, which ranges from 0 to 255s.
- 10. Fan automatic control is active by object: to trigger automatic fan control via object "0" or "1".
- 11. Enable limitations: if "2-speed fan" or "3-speed fan" is selected in "Fan speed relay output", the object of limiting fan speed level can be set in "Speed with limitation" below. If "unchanged" is selected, fan speed will not be limited.
- 12. Automatic fan control threshold
 - Threshold for fan speed: to set the threshold controlling fan speed, which ranges from 1 to 100. The default value is 30.
 - Hysteresis for fan speed: to set the hysteresis controlling fan speed, which ranges from 0 to 10. The default value is 5.

6.4 Heating/Cooling Valve Status Setting

After "HVAC function" is enabled in HVAC setting, click "Heat/Cool value status" tab on the left, as shown in Figure 6-4.

HDL

I	ETS5™ - KNX 19 circuit				×
	Edit Workplace Commission	ning Diagnostics Extras Window		^	0
	🗞 Close Project 🛛 🎸 Undo 🛛 🐴	Redo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics		
Т	opology 🔻			▲ □ ×	<
+	🛚 Add Channels 🔹 🗙 Delete 붗 Dov	wnload 🛛 🔹 🕜 Help 🌛 Highlight Changes	Default Parameters		
>	1.1.1 M/MHD02R17U.1 > ->Hea	t/Cool value status		i	
	Channel C(Curtain)	Enable report Heating/Cooling valve	🔿 No 🔘 Yes		0
L M/M	C:status	>Send object value	No,update only 🔘 Only after change		^
HD02R	C:function	>Type of status report	Report movement,PWM>0/PWM=0		
17U.1	Ciscene		Report position,ON/OFF		
	Channel D(Curtain)	>Object value with PWM >0			
	Channel E(Curtain)				
	Channel F(Curtain)				
	HVAC				
	->Heating/Cooling valve				
	->Fan				
	->Heat/Cool value status				
	->Fan status				
	Group Objects Parameter				
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1	Last used	workspace	.41

Figure 6-4 Heating/Cooling valve status setting

The setting items are explained below:

Enable report Heating/Cooling valve status: after enabled, the following items can be set:

- 1. Send object value: to set object sending type, including "No, update only" and "Only after change".
- 2. Types of status report: to select status report type.
 - Report movement: if "0" is set in "Object value with PWM > 0", "0" will be sent when PWM > 0, while "1" will be sent when PWM = 0. If "1" is set in "Object value with PWM > 0", "1" will be sent when PWM > 0, while "0" will be sent when PWM = 0.
 - Report position: if "1-ON, 0-OFF" is set in "State value", "1" will be sent when the relay is switched on, while "0" will be sent when the relay is switched off. If "0-ON, 1-OFF" is set in "State value", "0" will be sent when the relay is switched on, while "1" will be sent when the relay is switched off.



6.5 Fan Status Setting

After "HVAC function" is enabled in HVAC setting, click "Fan status" tab on the left, as shown in Figure 6-5.

	ETS5™ - KNX 19 circuit			
I	ETS Edit Workplace Commission	ing Diagnostics Extras Window		∧ ()
	🔉 Close Project 🛛 🎸 Undo 🛛 🐴 R	Redo 🚔 Reports 🔛 Workplace 🔻	Catalogs Diagnostics	
Тс	opology 🔻			∧ 🗇 🗡 <
+	Add Channels 🔹 🗙 Delete 🛨 Dow	vnload 🔹 🕜 Help 🥒 Highlight Changes	Default Parameters	
>	1.1.1 M/MHD02R17U.1 > ->Fan s	status		
1	Channel C(Curtain)	Enable 1Bit object "Status fan speed x"	🔵 No 🔘 Yes	
1 M/M	C:status	>Meaning	O Current fan speed 🔘 Required	fan speed
HDO	C:function	>Send object value	Only after change	-
2R17U.1	C:scene	>Object sending range	 All status object Only activated status object 	
	Channel D(Curtain)	>Valid object value	O '0' O '1'	
	Channel E(Curtain)	Enable 1Byte object "Status fan speed"	🔵 No 🔘 Yes	
	Channel F(Curtain)	>1 Byte value encode mode	 Encoded by 1 byte percent value Encoded by 1 byte constant value 	e 0-100% e 0-3
	HVAC	>Meaning	🔵 Current fan speed 🔘 Required	fan speed
	->Heating/Cooling valve	>Send object value	Always response	•
	->Fan	Enable 1Bit object "Status fan On/Off"	No OYes	
	s Hast/Cool value status	>Send object value	No,update only	•
		Enable 1Bit object "Status fan speed automatic"	No O Yes	
	->Fan status	>Send object value	No undate only	
	Group Objects Parameter			
	HDL USB Interface 🔺 1.1 新建支线	1.1.1 M/MHD02R17U.1		Last used workspace

Figure 6-5 Fan status setting

- 1. Enable 1 bit object "Status fan speed x": to enable fan speed feedback in 1-bit object.
 - Meaning: to select feedback items, including "Current fan speed" or "Required fan speed".
 - Send object value: to select object sending type, including "Always response", "No, update only" and "Only after change".
 - Object sending range: to select object sending range, including "All status object" and "Only activated status object".
 - > Valid object value: to select "1" or "0" as valid object value.



- 2. Enable 1 byte object "Status fan speed": to enable fan speed feedback in 1-byte object.
 - I Byte value encode mode: to select the type of 1-byte value encoding mode, including "Encoded by 1 byte percent value 0-100%" and "Encoded by 1 byte constant value 0-3".
- 3. Enable 1 Bit object "Status fan On/Off": to enable fan on/off feedback in 1-bit object.
- 4. Enable 1 Bit object "Status fan speed automatic": to enable automatic fan speed feedback in 1-bit object.



7 Download Data

7.1 Interface Setting

If users need to download data to KNX 17/19CH Actuator, KNX interface is necessary.

After connecting KNX interface to a computer via USB, click "Bus" tab in ETS' main page, "HDL USB Interface" will show up in "Discovered Interface". Double click to add and the interface will show up in "Current Interface", as shown in Figure 7-1.

ETS5™ ETS			
Overview Bus	Catalogs Settings		KNX
- Connections	Current Interface		📽 USB
Interfaces	HDL USB Interface (HDL) Individual Address: 0.2.255		Name
Options			HDL USB Interface
- Maritar	- comgared interfaces		Manufacturer
- Monitor	Discovered Interfaces		HDL
Group Monitor	HDL USB Interface (HDL)		Medium
Bus Monitor			ТР
			Individual Address
			0.2.255 Address free?
Unload Device			Max telegram length (APDU):
Device Info			220
 Individual Addresses 			
Programming Mo			
Individual Addres			
Line Scan			
			Test Select
		ETS Version ETS 5.6.4 (B	uild 842) 🕕 License Demo Apps 0 active

Figure 7-1 Interface setting



7.2 Download Data

Press the programming button of KNX 17/19CH Actuator, and the red indicator keeps on. Right click the database to be downloaded to KNX 17/19CH Actuator and select "download". The information indicates the end of the process on the right side of ETS, as shown in Figure 7-2.

Olose Proje	ct 🦨 Undo 🥖	🔪 Redo 🛛 🚔 Reports 📄	Workpla	ce *		Catalo	ogs	Diagnos	stics		
Add Channels	🔹 🗙 Delete 👲	Download 🔹 🌒 Info 🔹	•	Sea	rch		^	× 6	Prope Find a	rties nd Repl	ace
Number 4	Name	Object Function	Length	C R	νт	U	Data Type	Priority	Works	paces	
■‡ 11 ■‡ 12	External temperature General	Remote temperature for outdoor PM2.5	2 bytes C 2 bytes C		W T W T	U -		Low Low	🕗 Todo	ltems	
■‡ 13	General	CO2	2 bytes C	1	WΤ	52		Low	O Pendi	ng Oper	ations
∎‡ 14	General	TVOC	2 bytes C	-	ΨT	-		Low	Active		History
									Clear H	History	
									01 - 0, 17		

Figure 7-2 Download data



8 Object Instruction

KNX communication objects are used for receiving and sending data. The length of these objects is from 1 to 14 bits according to different function settings. Each object has a flag with communication property.

- 1. "C"-Communication, representing that communication objects are connected normally via the bus.
- 2. "R"-Read, representing that communication object value can be read via the bus.
- 3. "W"-Write, representing that communication object value can be rewritten via the bus.
- 4. "T"-Transmit, representing that communication objects have transmit function. When this object value is modified, send the message.
- 5. "U"-Update, representing that communication object value can be updated via the bus response message.

8.1 Objects "General"

Object	ts "General"												
序号	▲ 名称	对象功能	ł	援	С	R	w	Т	U	数据类型	优先级		
1	General	Heartbeat telegram	1	bit	it C T -		-	enable	低				
2	General	Channel switching on/off	1	bit	С	-	W	-	-	switch	低		
3	General	Channel status	1	bit	С	R	-	Т	-	switch	低		
No.	Name	Function			F	lag	l		Data Type				
1	Conorol	Hearthast talegrom		O T					DPT1.003				
I	General								1 bit				
This o	This object can be activated by selecting "Send value "0" cyclically, Send value "1" cyclically or Send value												
"1/0" ir	nverted cyclically" in th	e parameter "Heartbeat Tele	grar	n", w	hich	is	used	l fo	r cł	necking if t	he device is		
conne	cted to the system nor	mally.											
0	Conorol	Channel switching on/of	¢		0		,			DPT	1.001		
2	General	Charmer Switching On/On			Ċ	۷۷ ر			1 bit				
This o	This object is used for switching on/off channels.												
0	Conorol	Channel status			0.0.7				DPT	1.001			
3	General	Channel status			CRI			1	bit				
This o	bject is used for indicat	ting channel status.											

8.2 Objects "Channel"

Objects "C	Channel"										
(Take "Cl	hannel 1" as an exan	nple)									
11	Channel 1	Switching	1 bit	с -	W	-	-	switch	低		
12	Channel 1	Status after changed	1 bit	C R	-	Т	-	switch	低		
13	Channel 1	Staircase light	1 bit	с -	W	-	-	switch	低		
14	Channel 1	Change staircase lighting time	2 bytes	с -	W	-	-	time (s)	低		
15	Channel 1	Alarm staircase lighting	1 bit	C R	-	Т	-	alarm	低		
12	Channel 1	Status always	1 bit	C F	- \	Т	-	switch	低		
13	Channel 1	Scene(8bit)	1 byte	с -	W	-	-	scene co	ont低		
No.	Name	Function		F	lag			Dat	а Туре		
11,20,											
29,38,											
47,56,											
65,74,									4 004		
83,92,		Switching		C	C W		DPT1.001				
101,110,	(n=1, 2,,17)						1 bit				
119,128,											
137,146,											
155											
These obj	ects are used for turr	ning on/off channels.									
12,21,											
30,39,											
48,57,											
66,75,			_								
84,93,	Channel n	Status after changed	b	С	RΤ			DPT	1.001		
102,111,	(n=1, 2,,17)	Status always						1	bit		
120,129,											
138,147,											
156											
These obj	ects are used for ind	icating channel switch statu	JS.								
13,22,											
31,40,											
49,58,											
67.76.											
85.94.	Channel n	Staircase light			w:			DPT	1.001		
103.112.	(n=1, 2,,17)	Scene (8 bit)						1	bit		
121.130.											
139.148.											
157											



These objects are used for enabling staircase light and scene.										
14,23,										
32,41,										
50,59,										
68,77,	Channel n			DPT7.005 2 bytes						
86,95,	(n-1, 2, 17)	Change staircase lighting time	CW							
104,113,	(1-1, 2,, 17)									
122,131,										
140,149,										
158										
These obje	ects are used for cor	trolling the working duration of sta	aircase light.							
15,24,										
33,42,										
51,60,										
69,78,	Channel n									
87,96,	(n-1, 2, 17)	Alarm staircase lighting	CRT	01 1 1.000 1 hit						
105,114,	(11-1, 2,, 17)			1 Dit						
123,132,										
141,150,										
159										
These obje	ects are used for cor	trolling the alarm function of stair	case light.							

8.3 Objects "Dim Output"

Note: Objects "Dim Output" are only applicable for KNX 19CH Actuator.

Objects	Objects "Dim Output"									
(Take "I	(Take "Dim Output A" as an example.)									
164	Dim Output A	Channel output	1 bit	С	-	w	-	U	switch	低
165	Dim Output A	Relative dimming(4bit)	4 bit	С	-	W	-	U	dimming c.	低
166	Dim Output A	Absolute dimming(8bit)	1 byte	С	-	W	-	U	percentag	低
167	Dim Output A	Respone state(1bit)	1 bit	С	R	-	Т	-	switch	低
168	Dim Output A	Respone state(1byte)	1 byte	С	R	-	Т	-	percentag	低
169	Dim Output A	Temperature alarm	1 bit	С	R	-	Т	-	alarm	低
170	Dim Output A	Read temperature	2 bytes	C	R	-	Т	-	temperatu	. 低
171	Dim Output A	Staircase light	1 bit	С	-	W	-	U	switch	低
172	Dim Output A	Change staircase light time	2 bytes	С	-	W	-	U	time (s)	低
173	Dim Output A	Warning staircase light	1 bit	С	R	-	Т	-	alarm	低
174	Dim Output A	Scene(8bit)	1 byte	С	-	W	-	U	scene cont	低
175	Dim Output A	Scene dimming(4bit)	4 bit	С	-	W	-	U	dimming c	低



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No.	Name	Function	Flag	Data Type						
16/ 180	Dim Output A/B	Channel output	CWU	DPT1.001						
104,100			0 11 0	1 bit						
These obje	ects are used for out	putting channels.								
				DPT3.007						
165,166,		Relative dimming (4 bit)		4 bits						
181,182		Absolute dimming (8 bit)	0 11 0	DPT5.001						
				1 byte						
These objects are used for controlling relative/absolute dimming.										
				DPT1.001						
167,168,		Response state (1 bit)	СРТ	1 bit						
183,184		Response state (1 byte)	UKI	DPT5.001						
				1 byte						
These obje	ects are used for indi	cating channels status, including	"1-bit object fe	edback" and "1-byte						
object feed	back".									
169.185	Dim Output A/B	Temperature alarm	CRT	DPT1.005						
,		· • · · · · · · · · · · · · · · · · · ·		1 bit						
These objects are used for controlling temperature alarm.										
170 186	Dim Output A/B	Read temperature C. R. T.		DPT9.001						
170,100	Bin Gaparie		ÖNT	2 bytes						
These obje	ects are used for con	trolling reading temperature.								
171 197		Staircasa light		DPT1.001						
171,107		Stancase light	0.00	1 bit						
These obje	ects are used for ena	abling staircase light.								
170 100		Change steiresse light time	C)/// L	DPT7.005						
172,100		Change stancase light time		2 bytes						
These obje	ects are used for cha	inging the working duration of stai	rcase light.							
470.400			0 D T	DPT1.005						
173,189	Dim Output A/B	warning staircase light time	CRI	1 bit						
These obje	ects are used for con	trolling waring function which is de	esigned for in	forming staircase light						
will be turn	ed off soon.									
				DPT18.001						
174,175	Dim Output A/R	Scene (8 bit)	C W U	1 byte						
190,191		Scene dimming (4 bit)		DPT3.007						
		4 bits								
These obje	ects are used for con	trolling scene.								



8.4 Objects "Curtain Output" (Shutter/Blinds)

Objects "C	urtain Output"											
(Take "Bli	nd Output C" as an e	example)										
196	Blind Output C	Move blinds up/down	1 bit	C	-	W	-	U	up/down	低		
197	Blind Output C	Adjust louvre/Stop moving	1 bit	C	-	W	-	U	step	低		
198	Blind Output C	Percent of position(0%100%)	1 byte	C	-	W	-	U	percentag	. 低		
199	Blind Output C	Percent of louvre(0%100%)	1 byte	C	-	W	-	U	percentag	. 低		
200	Blind Output C	Limit travelling	1 bit	C - W -				U	up/down	低		
201	Blind Output C	Status of position(0%100%)	1 byte	C	R	-	Т	-	percentag	. 低		
202	Blind Output C	Status of louvre(0%100%)	1 byte	C	R	-	Т	-	percentag	低		
203	Blind Output C	Status 1bit(0-UP 1-DOWN)	1 bit	C	R	-	Т	-	up/down	低		
204	Blind Output C	Status 1bit('0'-stop)	1 bit	C	R	-	Т	-	step	低		
205	Blind Output C	Status of upper pos	1 bit	C	R	-	Т	-	up/down	低		
206	Blind Output C	Status of lower pos	1 bit	C	R	-	Т	-	up/down	低		
207	Blind Output C scene	Call scene number	1 byte	C	-	W	-	U	scene cont.	低		
No.	Name	Function			Fla	g		Data Type				
196,197									DPT1.0	800		
216,217	Blind Output	Move blinds up/dowr	า	CWU			1 bit					
236,237	C/D/E/F	Adjust louvre/Stop mov	ring					DPT1.007				
256,257									1 bit	t		
These obje	ects are used for rolli	ng up/down curtain, adjust	ing blin	ds a	angl	e ai	nd	stop	oping curta	in.		
198,199,												
218,219,	Blind Output	Percent of position						DPT5.001				
238,239	C/D/E/F	Percent of louvre			CW	U			1 byt	е		
258,259												
These obje	ects are used for per	centage controlling curtain/	blinds.									
200,220,	Blind Output								DPT1.0	008		
240,260	C/D/E/F	Limit travelling			СW	/ U		1 bit				
These obje	ects are used for con	trolling the travel range of	curtain.									
									DPT5.0	001		
201-206,		Status of position							1 byt	е		
221-226.	Blind Output	Status of louvre							DPT1.0	008		
241-246	C/D/F/F	Status 1 bit (0-UP, 1-DO	WN)		CR	Υ			1 bit	+		
261-266	0,0,2,2,1	Status 1 bit ('0'-stop)))07		
201 200		Status of upper/lower p	oos									
These obj	ects are used for indi	cating curtain position/rollir	ן אמ up/ro	ollin	a da	wn	/sto	וממר	ing status			
207 227	Blind Output	5 · · · · · · · · · · · · · · · · · · ·	J		5			1.16.	DPT18	001		
201,221,		Call scene number		CWU				1 hvte				
Those shi	O/D/L/I								rbyt	0		
	These objects are used for outputting scene.											

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8.5 Object "HVAC"

Objects "H	IAVC"										
276	Control value A	Heating value	1 byte	С	-	W	Т	U	percentag	低	
277	Control value B	Cooling value	1 byte	С	-	W	т	U	percentag	低	
278	Switch A/B	0'-A,'1'-B	1 bit	С	-	W	Т	U	switch	低	
279	Valve Heating	Valve status	1 bit	C	R	-	Т	-	switch	低	
280	Valve Cooling	Valve status	1 bit	С	R	-	т	-	switch	低	
281	HVAC	System ON/OFF(1-ON,0-OFF)	1 bit	С	-	W	-	-	switch	低	
282	Fan	Fan speed automatic	1 bit	C	-	W	-	-	enable	低	
283	Fan	Fan speed with % value	1 byte	С	-	W	-	-	percentag	低	
284	Fan	Fan speed 1	1 bit	С	-	W	-	-	switch	低	
285	Fan	Fan speed 2	1 bit	С	-	W	-	-	switch	低	
286	Fan	Fan speed 3	1 bit	С	-	W	-	-	switch	低	
287	Fan	Status fan speed 1	1 bit	С	R	-	т	-	switch	低	
288	Fan	Status fan speed 2	1 bit	С	R	-	т	-	switch	低	
289	Fan	Status fan speed 3	1 bit	С	R	-	т	-	switch	低	
290	Fan	Status fan speed	1 byte	С	R	-	т	-	counter pu.	低	
291	Fan	Status fan On/Off	1 bit	С	R	-	Т	-	switch	低	
292	Fan	Status fan speed automatic	1 bit	С	R	-	Т	-	enable	低	
293	Fan	Limitation 1	1 bit	С	R	W	Т	-	enable	低	
294	Fan	Limitation 2	1 bit	С	R	W	Т	-	enable	低	
295	Fan	Limitation 3	1 bit	С	R	W	Т	-	enable	低	
296	Fan	Limitation 4	1 bit	С	R	W	Т	-	enable	低	
297	Valve Heating	Trigger valve purge	1 bit	С	-	W	-	-	trigger	低	
298	Valve Heating	Status valve purge	1 bit	С	R	-	Т	-	enable	低	
299	Valve Heating	Valve open/close	1 bit	С	-	W	-	-	open/close	低	
No.	Name	Function			Fla	g		Data Type			
									DPT5.0	001	
276-278	Control value A/B	Heating/Cooling value	е	C	• ••	тп			1 byte	е	
210-210	Switch A/B	'0'-A, '1'-B		U		10			DPT1.0	001	
								1 bit			
These obj	ects are used for con	trolling heating/cooling val	ve.								
070.000	Valve				~ ¬	· -			DPT1.0	001	
279,280	Heating/Cooling	Valve status			CR				1 bit		
These objects are used for indicating heating/cooling valve status.											
201					<u> </u>	۸ <i>ι</i>		DPT1.001			
201	HAVE	System ON/OFT	System ON/OFF			/ V		1 bit			
This objec	t is used for switchin	g on/off HVAC.									
282-206	Ean	Fan speed automation	c (<u>د</u> ر	N		DPT1.003			
202-200	ιαιι	Fan speed with % valu	he			v V			1 bit		

HDL Automation Co., Ltd.



		Fan speed with 0-3 value		DPT5.001
		Fan speed 1/2/3		1 byte
				DPT5.010
				1 byte
				DPT1.001
				1 bit
These obje	ects are used for con	trolling fan speed.		
				DPT1.001
		Status fan speed 1/2/3		1 bit
007 000	F	Status fan speed	0.0.7	DPT5.001
287-292	Fan	Status fan On/Off	CRI	1 byte
		Status fan speed automatic		DPT1.003
				1 bit
These obje	ects are used for indi	cating HVAC switch and fan spee	ed status.	
202.200	Fere	Limitation 4/2/2/4		DPT1.003
293-296	Fan	Limitation 1/2/3/4	CRWI	1 bit
These obje	ects are used for limi	ting fan speed levels.		
207 200	Value besting		C W/	DPT1.017
297,300	valve heating	ringger valve purge	CVV	1 bit
These obje	ects are used for trig	gering the self-cleaning function c	of heating valv	e.
200.201	Value besting	Status value pures	ODT	DPT1.003
298,301	valve heating	Status valve purge	CRI	1 bit
These obje	ects are used for indi	cating heating valve self-cleaning	status.	
200 202	Value beeting	Valvo open/alego	C W/	DPT1.009
299,302	valve nealing	valve open/close		1 bit
These obje	ects are used for turr	ning on/off heating valve.		