FULL DC INVERTER SYSTEMS

INSTALLATION MANUAL
KNX PROTOCOL
KNX-01

COMMERCIAL AIR CONDITIONERS SDV4

sinclair
AIR CONDITIONING

- This manual gives detailed description of the precautions that should be brought to your attention during operation.

- In order to ensure correct service of KNX-01 please read this manual carefully before using the unit.

- For convenience of future reference, keep this manual after reading it.

Table of Contents

I. Safety precautions

The following contents are stated on the product and the operation manual, including usage, precautions against personal harm and property loss, and the methods of using the product correctly and safely. After fully understanding the following contents (identifiers and icons), read the text body and observe the following rules.

■ Identifier description

Identifier	Meaning
Warning	Means improper handling may lead to personal death or severe injury.
Caution	Means improper handling may lead to personal injury or property loss.

[Note]: 1. “Harm” means injury, burn and electric shock which need long-term treatment but need no hospitalization

2. “Property loss” means loss of properties and materials.

■ Icon description

Icon	Meaning
	It indicates forbidding. The forbidden subject-matter is indicated in the icon or by images or characters aside.
	It indicates compulsory implementation. The compulsory subject-matter is indicated in the icon or by images or characters aside.

WARNING

Please entrust the distributor or professionals to install the unit.
Installation by other persons may lead to imperfect installation, electric shock or fire.

Strictly follow this manual.
Imporper installation may lead to electric shock or fire.

Reinstallation must be performed by professionals.
improper installation may lead to electric shock or fire.

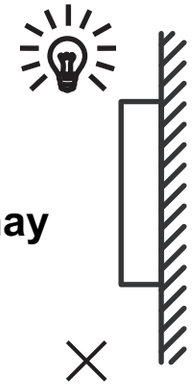
Do not disassemble your air conditioner at will.
A random disassembly may cause abnormal operation or heating, which may result in fire.

CAUTION

Do not install the unit in a place vulnerable to leakage of flammable gases.
Once flammable gases are leaked and left around the wire controller, fire may occure.

The wiring should adapt to the wire controller current.
Otherwise, electric leakage or heating may occur and result in fire.

The specified cables shall be applied in the wiring. No external force may be applied to the terminal.
Otherwise, wire cut and heating may occur and result in fire.



Do not place the wired remote controller near the lamps, to avoid the remote signal of the controller to be disturbed. (refer to the right figure)

II. Other precautions

- **Installation Location**

Do not install the unit in a place with much oil, steam, sulfide gas. Otherwise, the product may be deformed and failed.

- **Preparation before installation**

1. Check whether the following assemblies are complete.

No.	Name	Qty.	Remarks
1	KNX-01	1	————————
2	Cross round head wood mounting screw	3	GB950-86 M4X20 (For Mounting on the Wall)
3	Cross round head mounting screw	2	M4X25 GB823-88 (For Mounting on the Electrical Switch Box)
4	Installation Manual	1	————————
5	Plastic expansion pipe	3	For Mounting on the Wall
6	Plastic screw bar	2	For fixing on the 86 electrician box
7	3-core shielded cable	1	For connecting the AC unit and KNX-01

2. Prepare the following assemblies on the site.

No.	Name	Qty.(embeded into wall)	Specification (only for reference)	Remarks
1	2-core shielded cable	1	RVVP-0.5mm^{2}x2	Max 350m
2	86 Electrician box	1	————	————
3	Wiring Tube(Insulating Sleeve and Tightening Screw)	1	————	————
4	KNX power module	1	————	————
5	Communicate module	1	————	————

Note to installation of KNX-01:

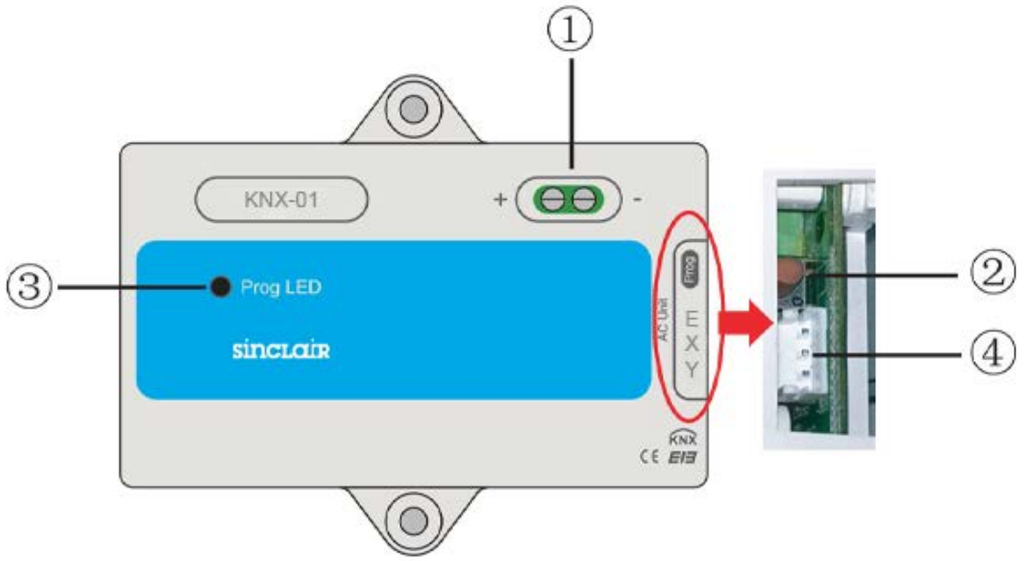
1. One KNX module can only connect with one indoor unit;The KNX module should connect to indoor XYE ports, can't connect to outdoor XYE ports.
2. Circuit of KNX-01 is low voltage circuit. Never connect it with a standard 220V/380V circuit or put it into a same Wiring Tube with the circuit.
3. Do not attempt to extend the shield cable by cutting, if it is necessary, use Terminal Connection Block to connect.
4. After finishing connection, do not use Megger to have the insulation check to the signal wire.
5. The default physical address of the KNX-01 is 15.15.255,If there are two or more KNX modules, then the physical addresses can not repeat.The physical address can be changed by ETS software.

III. Installation procedure

1.The product parameters

No.	Name	Remarks
1	Dimensions	85*51*16mm
2	Power supply	29VDC 10mA,Supplied through KNX bus
3	LED indicator	KNX programming
4	Push button	KNX programming button
5	Configuration	Configuration with ETS software.

2.The product parameters



- ① **Bus interface**：Power supply DC 29V, 10mA and connect to KNX bus；
  ② **KNX programming button**：press once to enter the programming mode, press it again will exit.
  ③ **KNX programming statues lamp**：when it is light up means programming status and can write data to the module by KNX bus
  ④ **RS485 communication ports**：Communication port between KNX module and indoor unit.

- KNX-01 is completely in conformity with EIB/KNX standard. ETS software must be used by integrator to carry out configuration and project design. For detailed information of ETS software, please contact knx association: www.knx.org.

- ETS database （*.vd*）of KNX-01 can be provide by install company.

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3. Wiring installation instruction

The Wiring diagram follows,the KNX-01 connect to the AC Unit and KNX Power.

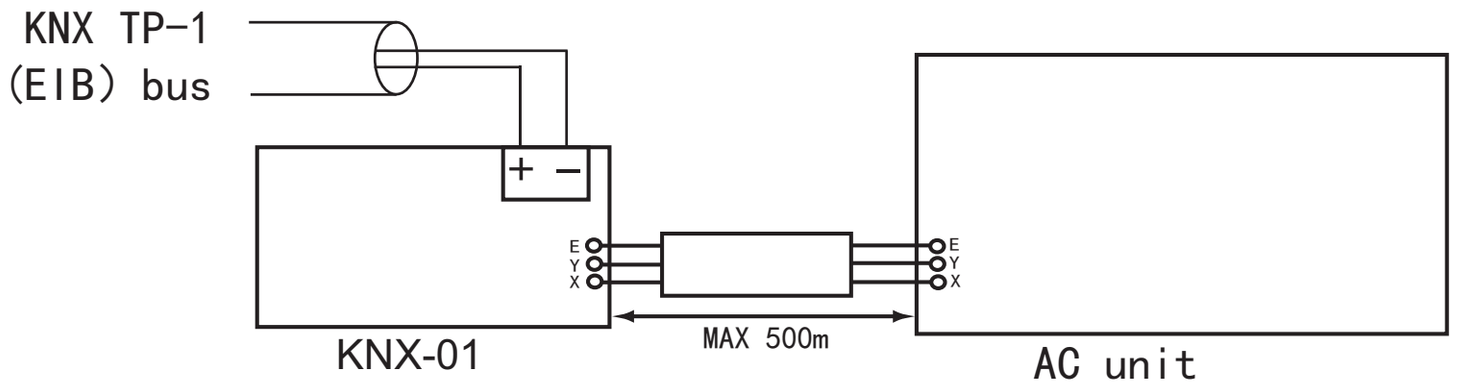


Fig.3-2

The Introduction KNX-01

- KNX-01 allows monitoring and control, fully bi-directionally, of all the functioning parameters of Sinclair SDV4 Air Conditioners from KNX installations.

- Simple installation.
  Can be installed inside the own AC indoor unit, it connects directly in one side to the electronic circuit of the AC indoor unit (cable supplied) and in the other side to the KNX TP-1 (EIB) bus.

- Great flexibility of integration into your KNX projects.
  Configuration is made directly from ETS, the database of the device comes with a complete set of communication objects allowing, from a simple and quick integration using the basic objects, to the most advanced integration with monitoring and control all the AC unit's parameters. Also available specific device's communication objects, as for example save and execute scenes.

- Allows the use of a KNX temperature sensor for the air conditioning control.

IV.ETS database group objects introduction

Number	Name	Object Function	..	..	Length	C	R	W	T
0	Control_Mode	0-Aut;1-Coo;2-Hea;3-Fan;4-OFF			1 Byte	C	R	W	T
1	Control_Setpoint Temperature	° C			2 Byte	C	R	W	T
2	Control_Fan Speed / 3 Speeds	0-Aut;2-Low;3-Mid;4-Hig			1 Byte	C	R	W	T
3	Control_Mode Switch Cool/Heat	0-Cool;1-Heat			1 bit	C	R	W	T
4	Control_Swing	0-OFF;1-ON			1 bit	C	R	W	T
5	Control_Auxiliary Heater	0-OFF;1-ON			1 bit	C	R	W	T
6	Status_Mode	1-Coo;2-Hea;3-Fan;4-OFF			1 Byte	C	R	-	T
7	Status_Setpoint Temperature	° C			2 Byte	C	R	-	T
8	Status_Fan Speed	33%-Lo;66%-Mi;100%-Hi;2%-OFF			1 Byte	C	R	-	T
9	Status_Swing	0-OFF;1-ON			1 bit	C	R	-	T
10	Status_Auxiliary Heater	0-OFF;1-ON			1 bit	C	R	-	T
11	Status_Ambient Temperature	° C			2 Byte	C	R	-	T
12	Status_Alarm	0-No Alarm;1-Alarm			1 bit	C	R	-	T
14	Control_On/Off	0-Off;1-On			1 bit	C	R	W	T
15	Control_Mode Auto	1-Set Auto Mode			1 bit	C	R	W	T
16	Control_Mode Cool	1-Set Cool Mode			1 bit	C	R	W	T
17	Control_Mode Heat	1-Set Heat Mode			1 bit	C	R	W	T
18	Control_Mode Dry	1-Set Dry Mode			1 bit	C	R	W	T
19	Control_Mode Fan	1-Set Fan Mode			1 bit	C	R	W	T
20	Control_Mode +/-	0-Down;1-Up			1 bit	C	R	W	T
21	Control_Setpoint Temperature +/-	0-Down;1-Up			1 bit	C	R	W	T
22	Control_Fan Speed Low	1-Set Fan Speed Low			1 bit	C	R	W	T
23	Control_Fan Speed Middle	1-Set Fan Speed Middle			1 bit	C	R	W	T
24	Control_Fan Speed High	1-Set Fan Speed High			1 bit	C	R	W	T
25	Control_Fan Speed +/-	0-Down;1-Up			1 bit	C	R	W	T
26	Status_On/Off	0-Off;1-On			1 bit	C	R	-	T

The instruction as follow:

0: set mode; database type: DPT_20.102 HVAC mode;
set value:0-Auto ; 1-Cool; 2-Heat; 3-Fan only ; 4-OFF
1: set temp; database type: DPT_9.001 temperature(°C).

The AC unit temperature value corresponding to ETS temperature value:

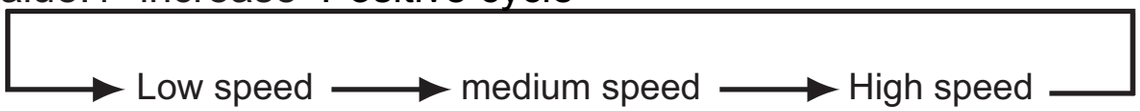
No.	Temp. value(°C)	ETS value	No.	Temp. value(°C)	ETS value
1	17	0B 52	8	24	0C B0
2	18	0B 84	9	25	0C E2
3	19	0B B6	10	26	0D 14
4	20	0B E8	11	27	0D 46
5	21	0C 1A	12	28	0D 78
6	22	0C 4C	13	29	0D AA
7	23	0C 7E	14	30	0D DC

2: Set Fan speed; data type: DPT_5.001 percentage(0..100%).
Set value:0-auto; 2-low speed; 3-mid speed; 4-high speed.
3: Set Heat/Cool mode data type: DPT_1.100 heating/cooling.
Set value: 0-Cool mode； 1-Heat mode.
4: Set swing on/off; data type: DPT_1.002 boolean.
Set value:0-OFF; 1-ON.

5: Set Auxiliary Heater ON/OFF; Data type: DPT_1.002 boolean.
Set value: 0-Auxiliary Heater ON; 1-Auxiliary Heater OFF.
This function is only available for heat mode.
6: Mode status read; data type: DPT_20.102 HVAC mode
Read value: 1-Cool mode; 2-Heat mode; 3-Fan mode; 4-OFF.
7: Set temperature read; data type: DPT_9.001 temperature(°C) .
8: Fan speed read; data type: DPT_5.001 percentage(0..100%).
Read value: 33%-low speed,67%-medium speed,100%-high speed,2%-OFF.
9: Fan swing status read; data type: DPT_1.002 boolean
Read value: 0-swing OFF,1-swing ON
10:Auxiliary Heater status read; data type: DPT_1.002 boolean.
Read value: 0-Auxiliary Heater OFF,1-Auxiliary Heater ON
11:Indoor unit ambient temp. read; data type: DPT_9.001 temperature(°C)
12:Alarm state read; data type: DPT_1.005 alarm
Read value: 0-no alarm; 1-alarm
14:ON/OFF; data type: DPT_1.001 switch
Set value: 0-OFF; 1-ON
15:Set auto mode; data type: DPT_1.002 boolean
Set value: 1-set as auto mode
16:set Cool mode; data type: DPT_1.002 boolean
Set value: 1-set as Cool mode
17:Set Heat mode; data type: DPT_1.002 boolean
Set value: 1-set as Heat mode

18:Set Dry mode; data type: DPT_1.002 boolean
Set value: 1-set as Dry mode
19:Set Fan mode; data type: DPT_1.002 boolean
Set value: 1-set as Fan mode
20:Set mode circulation; data type: DPT_1.007 step
Set value: 0-Decrease Reverse cycle
1-Increase Positive cycle

21: Set temperature increase and decrease; data type: DPT_1.007 step
Set value: 0-decrease； 1-increase
22: Set Fan low speed; data type: DPT_1.002 boolean
Set value: 1-set as low speed
23: Set Fan medium speed; data type: DPT_1.002 boolean
Set value: 1-set as mid fan speed
24: Set Fan high speed; data type: DPT_1.002 boolean
Set value: 1-set as high fan speed
25: The fan speed circle setting;data type: DPT_1.007 step
Set value:0 -decreas Reverse cycle
Set value:1 -increase Positive cycle



26: ON/OFF status; data type: DPT_1.001 switch
Read value: 0-OFF, 1-ON

NOTE CONCERNING PROTECTION OF ENVIRONMENT

This product must not be disposed of via normal household waste after its service life, but must be taken to a collection station for the recycling of electrical and electronic devices. The symbol on the product, the operating instructions or the packaging indicate such disposal procedures. The materials are recyclable in accordance with their respective symbols. By means of re-use, material recycling or any other form of recycling old appliances you are making an important contribution to the protection of our environment. Please ask your local council where your nearest disposal station is located.

In case of quality problem or other please contact your local supplier or authorized service center.
Emergency number: 112

PRODUCER

SINCLAIR CORPORATION Ltd.
1-4 Argyll St.
London W1F 7LD
Great Britain

www.sinclair-world.com

This product was manufactured in China (Made in China).

REPRESENTATIVE

SINCLAIR EUROPE spol. s r.o.
Purkynova 45
612 00 Brno
Czech Republic

TECHNICAL SUPPORT

NEPA spol. s r.o.
Purkynova 45
612 00 Brno
Czech Republic

Tel.: +420 800 100 285
Fax: +420 541 590 124

www.sinclair-solutions.com
info@sinclair-solutions.com

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