

KNX Multi-protocol Communication Control Gateway

Manual-Ver2.1

MG0201

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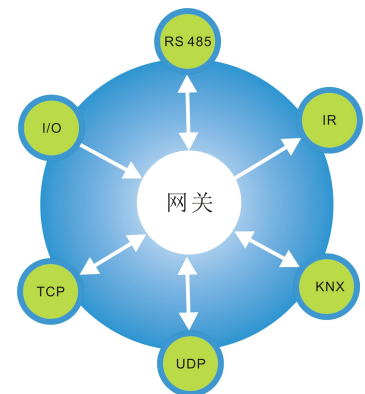
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1 Overview

This manual provides you with detailed technical information of the KNX multiprotocol communication control gateway (SC-GW-2.1.1), including installation and programming details, and explains how to use the KNX multiprotocol communication control gateway host based on actual examples (SC-GW-2.1.1). In order to facilitate installation to the distribution box, the KNX multi-protocol communication control gateway host (SC-GW-2.1.1) is designed as a modular installation device that can be installed on a 35 mm DIN rail.

Functions:

- (1) With coupler function, coupling different KNX branches;
- (2) KNX lines with the same group ID can be set to communicate with each other, and KNX communication with different group IDs will not interfere with each other;
- (3) It can communicate with the upper computer WINCONTROL intelligent lighting system integrated control software;
- (4) 4-way RS485 standard interface (customizable)
- (5) 4-way dry contact I/O contact signal input interface;
- (6) 3-way infrared IR emission;
- (7) 2-way LAN network interface (built-in 8-way TCP/IP or UDP port, can be used as server or client, 2-way LAN port with switch function);
- (8) All interfaces can be mixed with each other for communication;
- (9) All protocol or interface data are uniformly defined by the upper-layer software sub-action library, event library, and time action execution library, and functional modules such as clock, timing, data processing, bus transceiver, and scene are added to realize central control;
- (10) With clock timing management function: you can freely define the clock management of the KNX branch line scene, add time control for specific occasions, and switch the light timing through the schedule; the system comes with a calendar, and you can choose the year, month, day, week and The setting of a specific day can set up to 128 event time management;
- (11) Scope of use: projector, air conditioning system, background music system, landscape lighting system, fire emergency lighting system, I/O signal input system, security access control system, infrared equipment system, geothermal heating system, lighting management control software , teaching platform software system, central control system, warehouse management system, hospital medical management system;
- (12) Open connection with third-party software platform systems;



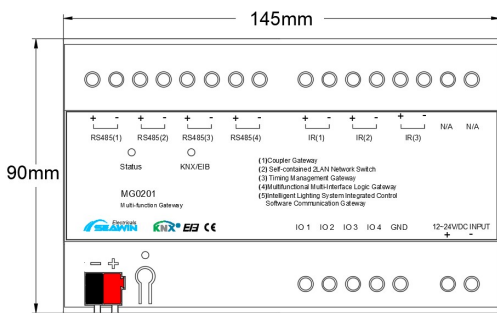
2 Detailed parameters

| | |
|--------------------|--|
| Bus input | 21-30V DC |
| Bus current | ≤10mA |
| Auxiliary voltage | 24 VDC |
| Auxiliary current | < 75mA |
| Function interface | 4-way RS485 (Custom Interface) 3-way IR interface 2-way LAN network (8-way TCP/IP/UDP) 4-way I/O ports 1-way KNX/EIB interface |

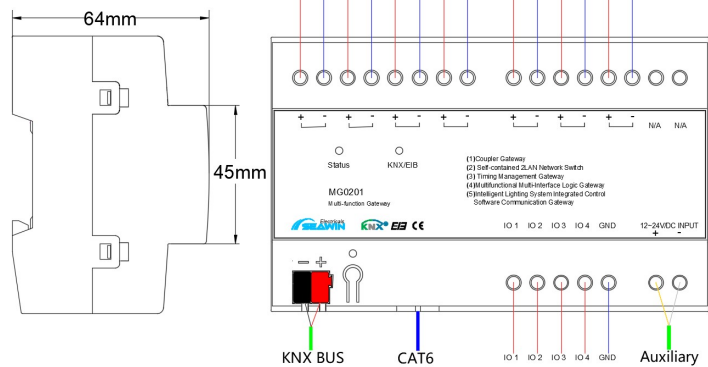
| | |
|----------------------------|------------------------|
| Shell material | PA66 |
| Dimension (H x W x D) | 90mmX144mmX64mm |
| Weight (approx.) | 0.3KG |
| Installation method | 35mm DIN rail mounting |
| Operating temperature | -5°C- 45°C |
| Storage temperature | -20°C- 70°C |
| Transportation temperature | -25°C...+ 70°C |
| Relative humidity | max 90% |

3 Dimension diagram and wiring diagram

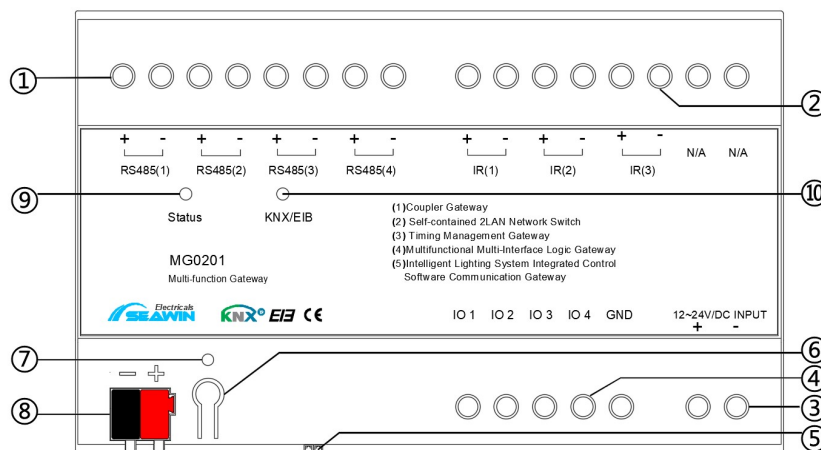
dimension diagram



wiring diagram



4 Product Operating Instructions



- ①Description: RS485 terminal block: one in and one out, the aperture can be connected to $\varphi 4$ wires;
- ②Description: IR terminal: one in and one out, the aperture can be connected to $\varphi 4$ wires;
- ③Description: 12~24VDC power supply wiring port, the aperture can be connected to $\varphi 4$ wire;
- ④Description: IO terminal: including 4-way IO, the aperture can be connected to $\varphi 4$ wires;
- ⑤Description: Network LAN port, with switch function, can be connected with CAT6 network cable;
- ⑥Description: Reset button, press and hold for 10s to complete the reset operation;
- ⑦Description: Reset indicator light, when the reset operation is completed, the indicator light flashes red;
- ⑧Description: KNX terminal block, KNX bus connection, the red line is connected to "+", and the black line is connected

to "-";

⑨Explanation: Device power status indicator, when the indicator is green, the device bus power supply status is normal;

⑩Explanation: KNX bus status indicator light, the indicator light is green in normal state, and the indicator light is off in abnormal state;

5 Software Introduction

5.1 Interface introduction

5.1.1 New project interface

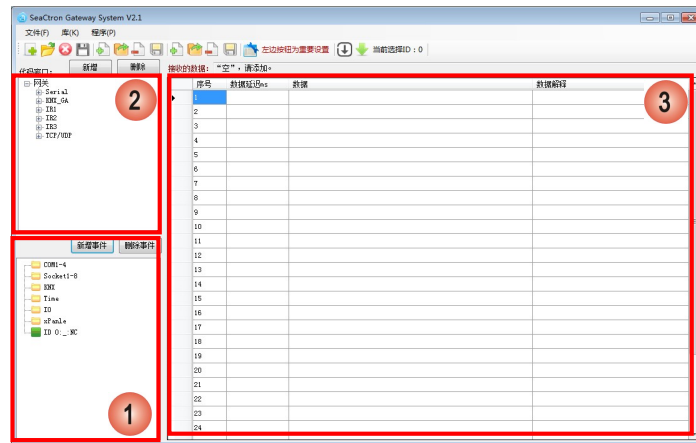


Figure 5.1

(1) ①: Event setting area

(2) ②: Action library

(3) ③: Event action correlation setting area

5.1.2 Basic information setting interface



Figure 5.2



Figure 5.3

(1) **1**: 8-way socket settings. Click "Settings" in the lower right corner of the corresponding socket to pop up the setting interface (as shown in Figure 4.3), check "Enable this socket", each socket has "TCP Client", "TCP Service" and "UDP" three working modes, select the required mode and set the corresponding IP address, port and other parameters;

(2) Heartbeat packet settings: To active the heartbeat packet, check "Enable heartbeat packet", set the heartbeat packet execution cycle, and fill in the heartbeat packet data. After the setting is completed, the socket will continuously send the set data according to the set heartbeat packet execution cycle.

(3) **2**: Parameter setting of 4-way RS485 serial ports. "baud rate", "parity" and "stop bit" can be set.

5.1.3 Gateway settings interface

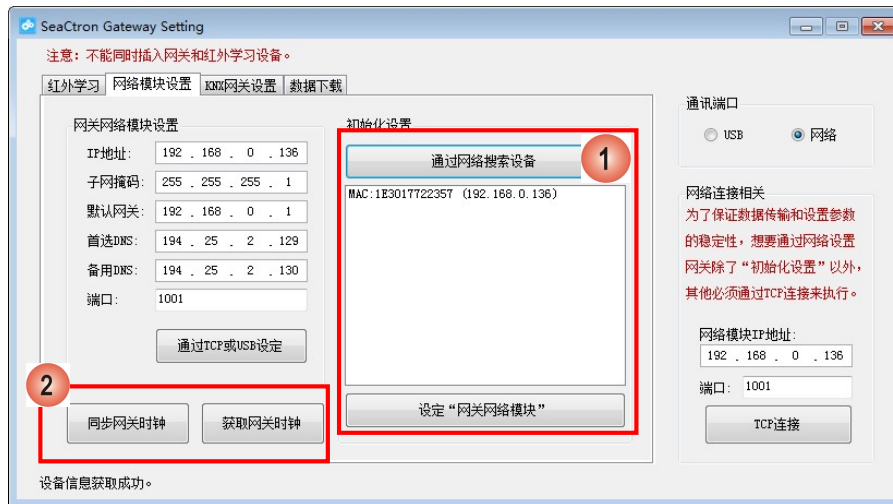
1) Click "IR Learning" to perform IR learning on IR1, IR2 and IR3 channels.



Example: IR learning for IR1_ID0.

- (1) Connect the infrared learning device;
- (2) Open the infrared learning interface;
- (3) New infrared data;
- (4) Select IR1;
- (5) Select the corresponding ID;
- (6) Click "Enter Learning (General)" or "Enter Learning (Air Conditioning)", and the LED on the infrared learning device is blinking;
- (7) Point the learned infrared device (such as a TV remote control) at the infrared learning device, press the button, the LED on the infrared learning device stops flashing, and the "*" symbol appears in the upper right corner of the corresponding ID (IR1_ID0), which represents the infrared Learning success

- (8) Click on the infrared test;
 - (9) After the test is correct, enter the infrared learning of the next ID;
 - (10) After learning, click "Data Save";
 - (11) Unplug the infrared learning device. **(Note: the gateway and infrared learning device cannot be inserted at the same time)**
- 2) Click "Network Module Settings"



1: Click "Search for devices through the network", you can search all online devices on the same local area network. Double-click the device you want to edit. You can change the parameters such as IP address and port in the "Gateway Network Module Settings" . After completing the settings, click Set "Gateway Network Module" to change its parameters

Network connection: Double-click the device you want to edit from the searched devices and click "TCP connection" in the lower right corner to connect the devices.

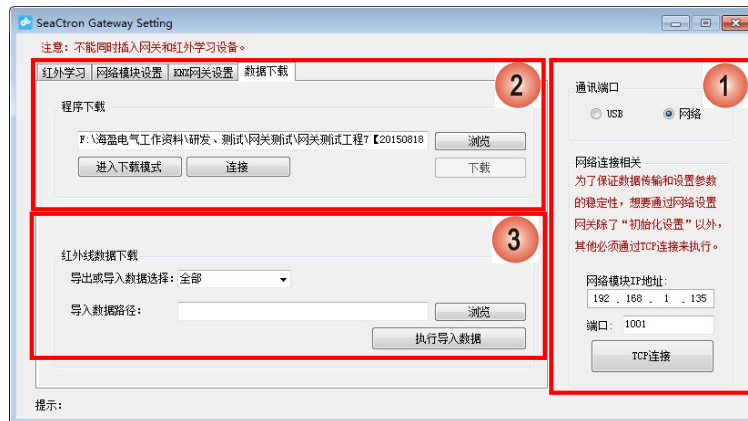
2: After the device is connected to the network, click "Get Gateway Clock", the current time of the gateway is displayed in the lower left corner of the interface; click "Synchronize Gateway Clock" to synchronize the clock on the gateway and the computer.

- (3) Click on "KNX Gateway Settings"



After the network connection is successful, click "Get Device Information" to get the parameters in the setting of KNX module , and you can also set the parameters of the KNX gateway network module. After setting all parameters, click "Set". If you need to restart the KNX gateway, click "Device Restart".

(4) Click "Data Download"



① : Communication port setting area

Download data commonly used internet connection.

② : Program download area

Network download: After setting the IP address and port, click "Connect", after the "Network connection succeeded" is displayed in the lower left corner, click "Download" directly.

③ : Infrared data download area

Export or import data selection ", optional: all, infrared group 1, infrared group 2, infrared group 3; path of import data, click" execute import data "

5.2 Programming example

5.2.1 Example of data conversion between different protocols



- 1) Double-click to open the software CtrlDataSetting.exe , pop-up programming interface
- 2) "File" → "New Project";
- 3) Click "Basic Information Settings", if you need to use socket or RS485 port, first set the basic information of the corresponding interface;
- 4) Click "Add event", empty folder appears, as shown below.



Double-click the folder, the following interface appears



Select the receiving source, fill in the receiving code and name, and click OK to finish. Example: Click "COM1" , and enter "11" in the receiving code. When the data is hexadecimal, you need to select "HEX" .

5) Drag the port that needs to send data to "Data" in the table, for example: send port is "KNX_GA", drag "GA" to "Data" in the table, and the following window pops up:



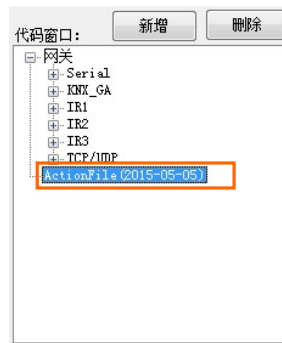
Fill in the group address, data length and data sent, and click OK. Appropriate data appears in the table

| 序号 | 数据延迟ms | 数据 | 数据解释 |
|-----|--------|----------------------------------|---------------|
| 1 | 5 | P2 13 00 05 01 00 03 F5 00 00 00 | KNX: 0/0/0:00 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| ... | | | |

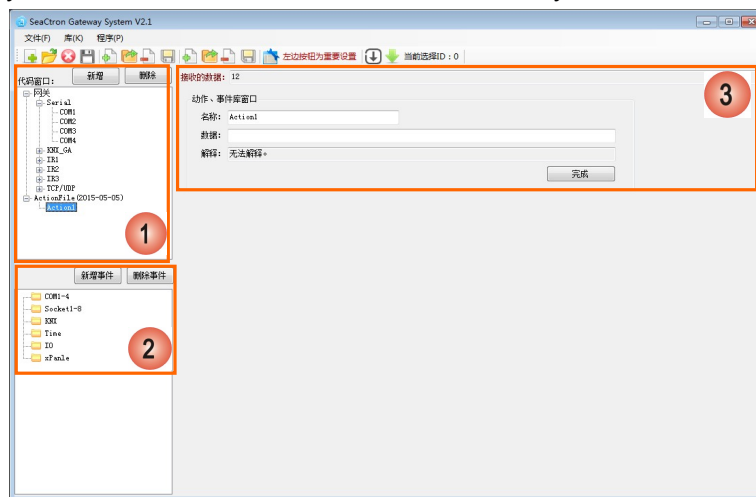
You can drag up to 30 sent data into the table. If you need to delete some, delete the data under "Data" corresponding to the transmission instruction in the table.

The action library can also be set in advance, and all the actions to be used are written into the action library. When the events and actions need to be associated, drag the corresponding action to the event action association setting table of the corresponding event. The steps to build an action library are as follows:

- (1) Pull down the "Library" in the menu bar to create a new action library;
- (2) After the new action library is created, the newly created action library will be generated in the interface, as shown below:



- (3) Select the action library and click "Add" above to pop up the newly added action "Action".
- (4) Double click "Action" 2, the action and event library window appears on the right 3, drag the action in 1 you want to set to the data in 3, a data filling box pops up, after completing, click OK, the data and explanation of this action will be displayed automatically in 3. Click Finish to save this action.
- (5) Pull down the "Library" in the menu bar and click "Save Action Library" to save the entire action library.



- 6) After writing, open "Program" → "Basic Information Settings"



After setting the corresponding information, click OK

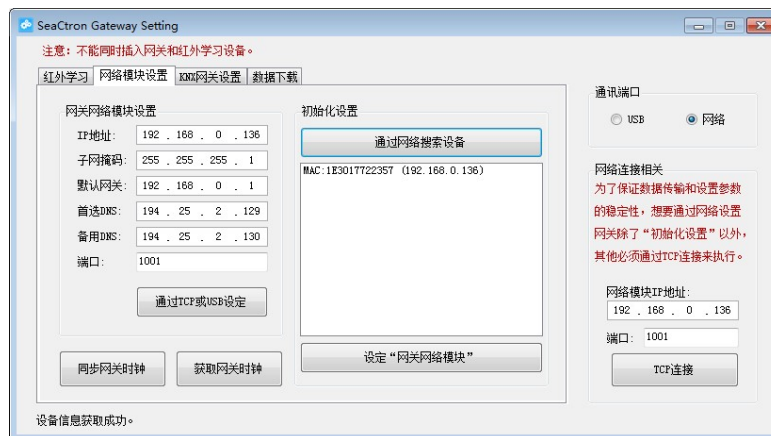
- 7) Click "Program" → "Gateway Settings", the following interface appears



If the IR data is set in the sending data, click "IR learning" → "New IR data" → select the corresponding IR → "Enter learning" → point the remote controller you want to learn to the infrared learning device and press the button until the corresponding ID "*" appears in the upper right corner → "Infrared test" → "Data save". After the infrared learning is completed, unplug the infrared learning device. (Note: the gateway and infrared learning device cannot be inserted at the same time)

8) Connect to the network and configure the network module.

After setting, click "Settings". Select "Network" on the right, change the IP address and port of the network module to the corresponding IP address and port on the left, and click "Connect". "Network connection succeeded" is displayed at the bottom left.



9) Click "KNX Gateway Settings" → "Get Device Information" to set the gateway network module. After setting, click "Set".

10) Click "Data Download". If IR is set, you need to download infrared data first, and then download program.

5.2.2 Example of timing settings




- 1) Double-click to open the software CtrlDataSe tting.exe, pop-up programming interface
- 2) "File" → "New Project";
- 3) Click "Basic Information Settings", if you need to use socket or RS485 port, first set the basic information of the corresponding interface;
- 4) Click "Add event", empty folder appears, as shown below



Double-click the folder, the following interface appears



Click the Time icon  and the following figure will pop up. Fill in or tick the timing of the time.



For example:

- (1) Set the timing every Monday to Friday at 8:30 in the morning, then set 8:30:00 at the date field, and check "Monday", "Tuesday", "Wednesday", "Thursday" and "Friday" "
- (2) Set the timing of every Saturday at 12:00 in August 2019, then set 2019-08-** 12:00:00 (** is any number) at the date field, and check "Specify the year" "Specify the month" " Saturday" .
- (3) Drag the port that needs to send data from the code window to "Data" in the table, for example: the sending port is "KNX_GA", drag "GA" to "Data" in the table, and the following window pops up:



Fill in the group address, data length and data that you want to send, and click OK. The corresponding data appears in the table

| 序号 | 数据延迟ms | 数据 | 数据解释 |
|----|--------|----------------------------------|--------------|
| 1 | 5 | P2 13 00 05 01 00 03 F5 00 00 00 | KNX:0/0/0:00 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| .. | | | |

You can drag up to 30 sent data into the table. If you need to delete some transmissions, delete the data under "Data" corresponding to the transmission instruction in the table.

- (4) After setting, save the project file
- (5) Click "Program" → "Gateway Settings", the following interface pops up:



Click "Network Module Settings" above, as shown below:



Click "Search for devices through the network", after searching, click the searched IP, set the required network address, subnet mask, etc., click "Settings", "Gateway Network Module", and after setting is completed, connect to "TCP Connect". The network connection is complete.

(6) Click "data download" above, in the program download, select the saved project in program download, click download.

6 Safe use and maintenance

- (1) Read all instructions carefully before use.
- (2) Create a good ventilation environment.

- (3) During use, pay attention to moisture, shock and dust.
- (4) Strictly forbid to rain, contact with other liquids or corrosive gases.
- (5) If it is wet or attacked by liquid, it should be dried in time.
- (6) When the machine fails, please contact professional maintenance personnel or our company.

7 Contact

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