KNX M/RS485MNI.1
KNX-RS485 Interface Mini
User Manual

Version：V1.0.0

Release Date：2021/12/28

Content

Copyright Notice

Our company has all intellectual property rights to this document and its contents. Without the written authorization of the company, it is forbidden to copy or distribute to a third party. In case of infringement of intellectual property rights such as the company's copyright, the company will investigate its legal liability according to law.

Due to product version upgrade or other reasons, the contents of this document will be updated from time to time. Unless otherwise agreed, this document is only used as a guide, and all statements, information and suggestions in this document do not constitute any express or implied warranty.

GZ HDL Technology Co., Ltd

Modification Record

This record accumulates instructions for each document update. The latest version of the document contains updates from all previous document versions。

Num	Version	Modification Content	Date
1	V1.0.0	First official release	2021/12/28

1. Overview

1.1. General Information

1.1.1. Description

KNX-RS485 Interface Mini (See Figure 1-2) is a small module that used for bidirectional data exchange between KNX and RS485. Accordingly, the module has two interfaces, RS485 and KNX. Its small size makes it easy to install and greatly increases space utilization.

Figure 1. KNX-RS485 Interface Mini

Figure 2. Base

1.1.2. Function

- 3 working modes: String mode, Hexadecimal mode, Data mode
- Baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps. Users can choose baud rates according to their requirements.
- Gateway between KNX and RS485: RS485 (string mode or hexadecimal mode, data mode) <-> KNX/EIB.
- Supports up to 200 control targets
- Up to 200 characters for each target (varies from different targets)
- 24 sequences supported

1.1.3. Important Notes

- Installation - Distribution box
- Programming - The device is compliant with the KNX standard and the parameters are set by the Engineering Tool Software (ETS).
- KNX Bus voltage - 21~30V DC, no AC power supply allowed

1.1.4. Product Information

- Dimensions & Components

  Dimensions of KNX-RS485 Interface Mini - See Figure 3 - 4

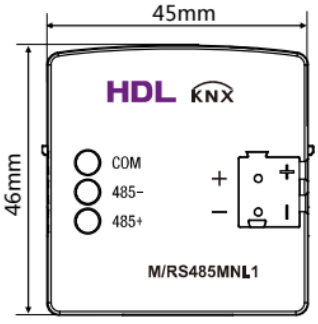


Figure 3. Dimensions - Front View

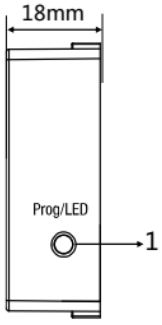


Figure 4. Dimensions - Side View

KNX-RS485 Interface Mini

Dimensions of Base - See Figure 5 – 6

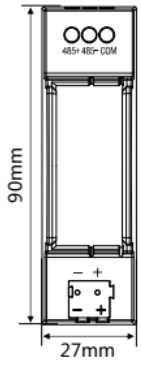


Figure 5. Base - Front View

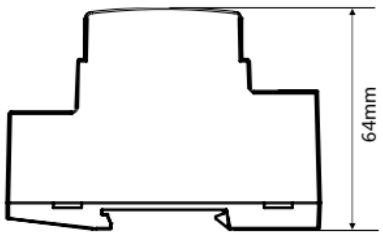


Figure 6. Base - Side View

Wiring - See Figure 7

1. Programming button / LED indicator

The red LED indicator indicates programming mode.

When the module is running normally, the indicator is green and flashing once for 1s.

2. RS485 connector

3. KNX interface

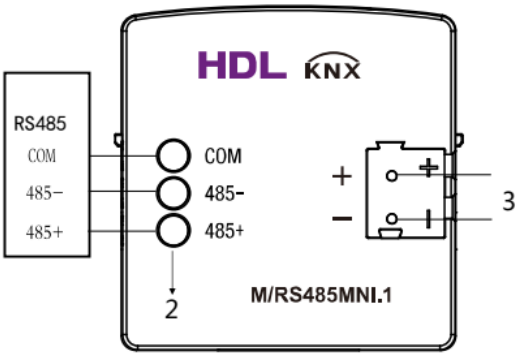


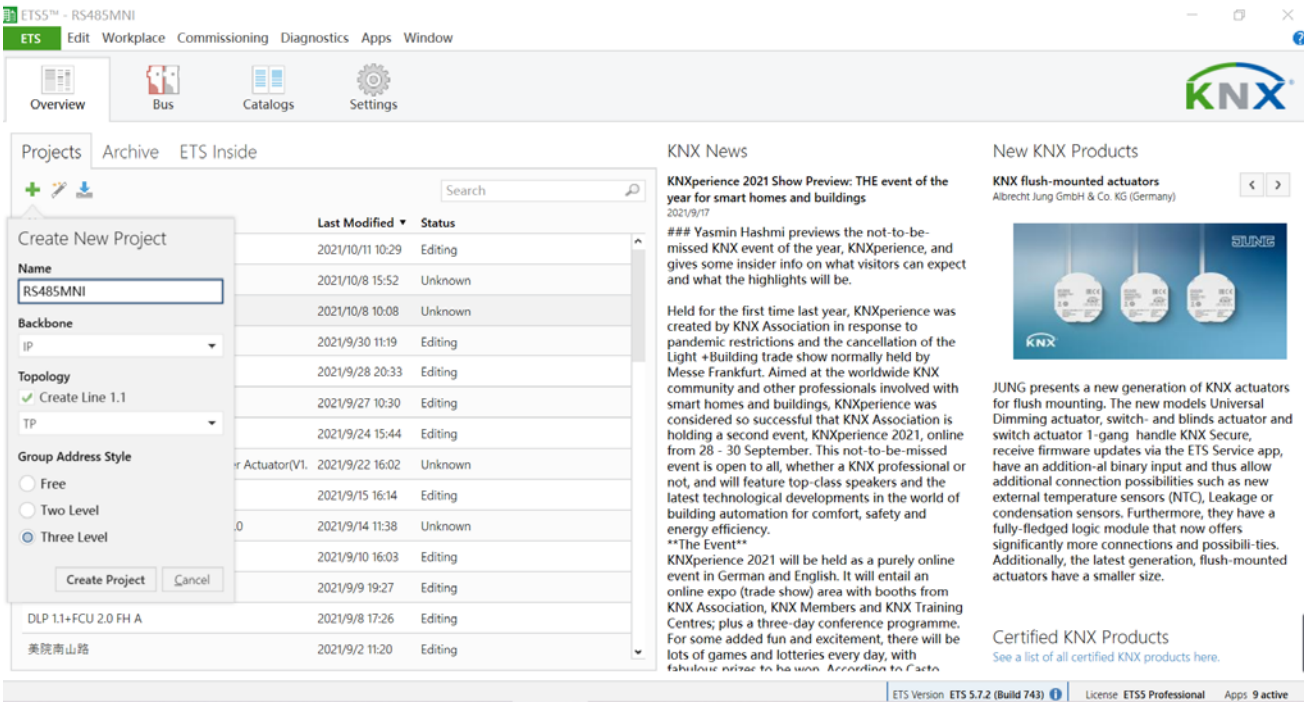
Figure 7. Wiring

2. Configurations

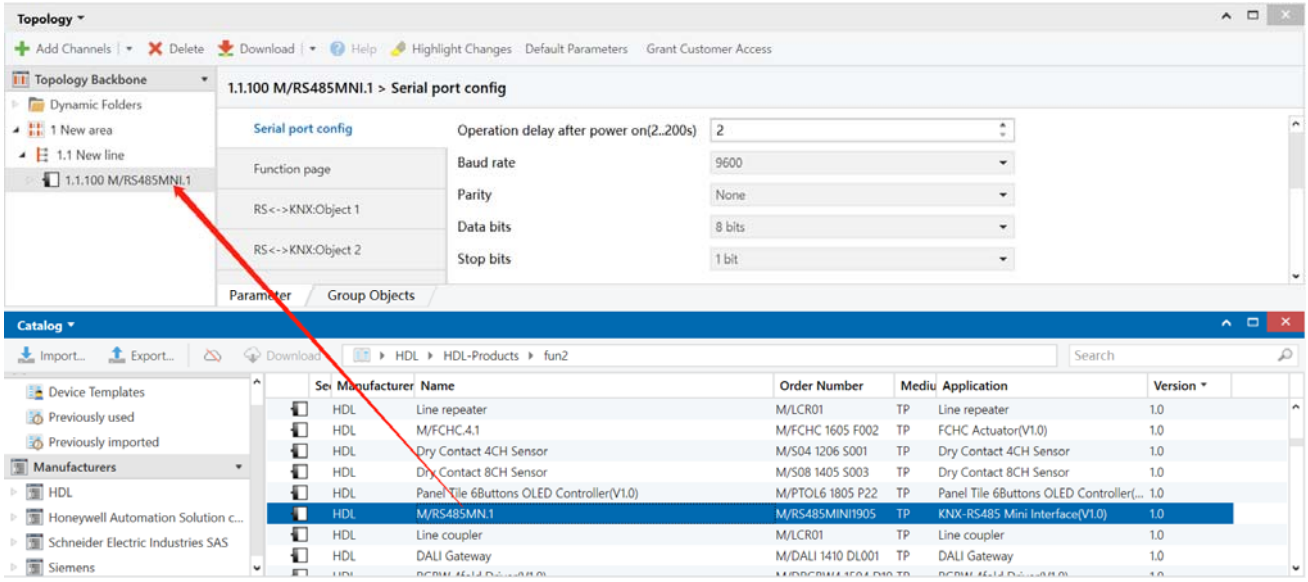
2.1. Import Device

Add device/database before program it.

(1) Create project in ETS5, if you have project, ignore it. Select three level group address style when create project.

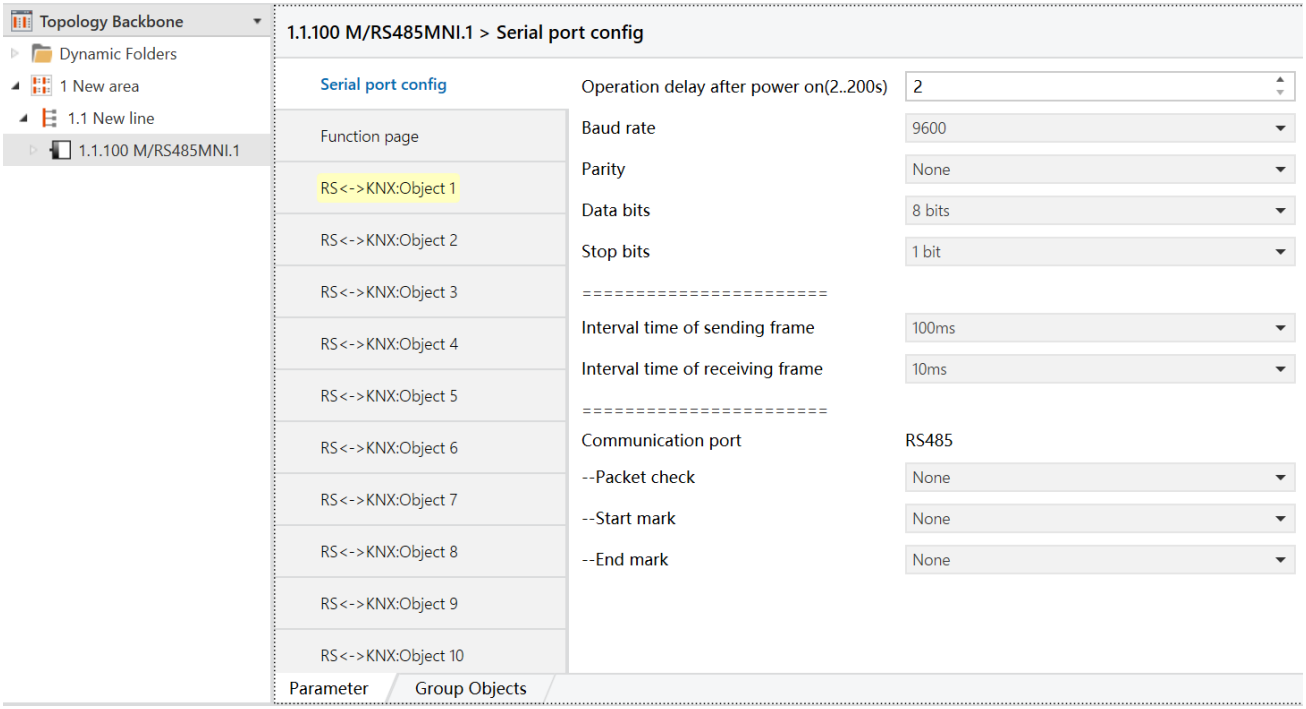


(2) Refer to the device version from the label, select Catalog, drag the database to current Line. According to the label of device, you can ask HDL technical support for corresponding database.



2.2. Serial Port Configuration

This document mainly describes 1.0 version KNX M/RS485MNI.1.



The setting items are explained below:

(1) Operation delay after power on (2...200s): time-delay function, namely a delay time between powering on the device and activating the system, which ranges from 2 to 200s. The default value is 2s.

(2) Baud rate: the default value is 9600.

(3) Parity: to set parity check. The converter disables parity check by default (None).

- None: to disable parity check.
- ODD: to enable odd parity.
- EVEN: to enable even parity.

(4) Data bits: the default value is 8 bits.

(5) Stop bits: the default value is 1 bit.

(6) Interval time of sending frame: the default value is 100ms.

(7) Interval time of receiving frame: the default value is 10ms.

(8) Communication port: set communication port, only including port RS485.

- Packet check: to set packet check. The converter disables packet check by default (None).
  a) None: to disable packet check.
  b) Xor check
  c) And check
  d) CRC-16, High-byte-front
  e) CRC-16, Low-byte-front
- Start mark: the converter disables start mark by default (None).
  a) None: to disable start mark.
  b) Any: any hexadecimal number can be set to start mark.
  c) Any start mark (hexadecimal): enter hexadecimal number, which can be up to 2 bytes. 1 byte consists of two characters and two bytes are separated by one space. Namely up to 5 characters can be entered. The default value is “aa 03”, namely “0xaa0x03”.
  d) aa (hexadecimal): hexadecimal number “0xaa” is set to start mark.

- End mark: the converter disables end mark by default (None).

a) None: disable end mark.

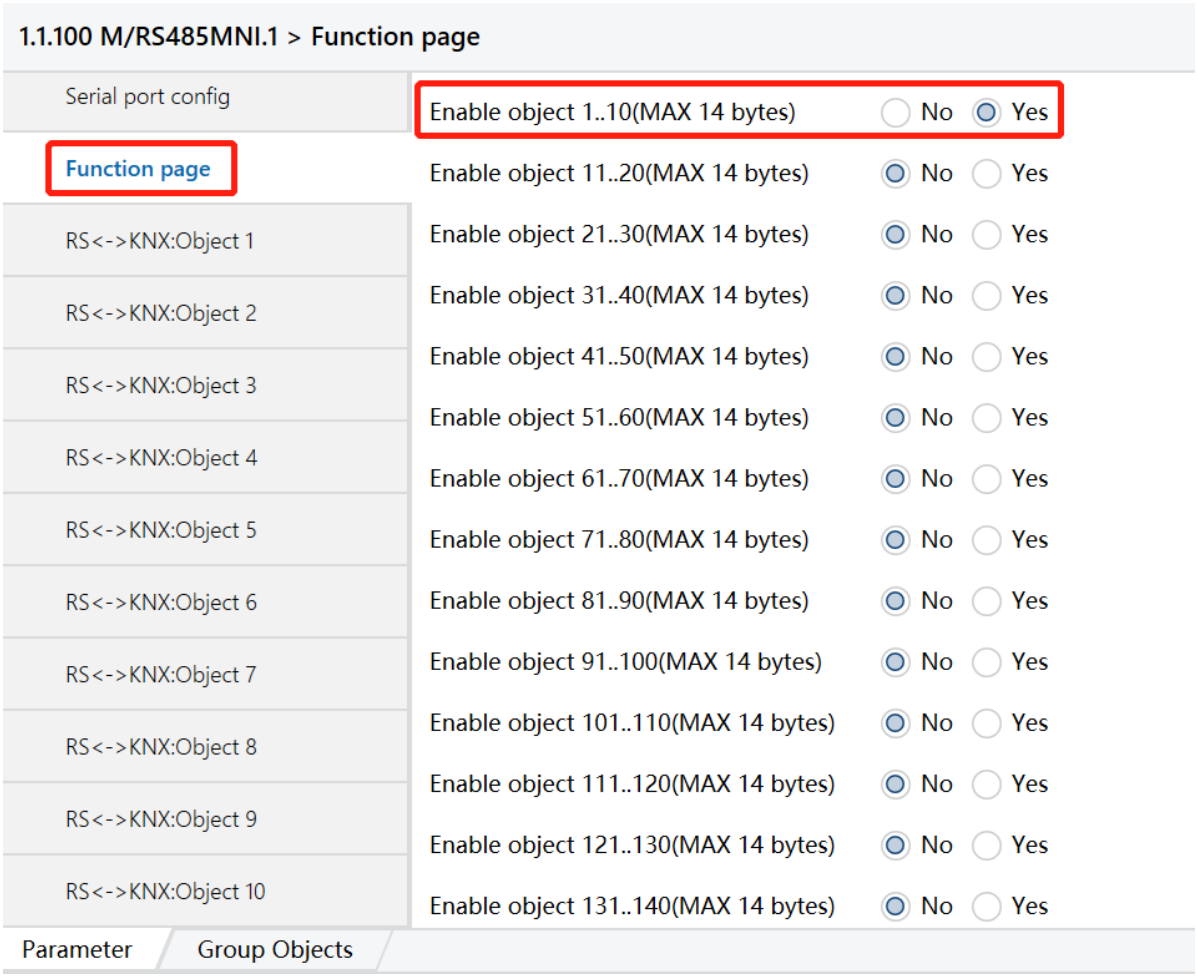
b) Any: any hexadecimal number can be set to end mark.

c) Any end mark (hexadecimal): enter hexadecimal number, which can be up to 2 bytes. 1 byte consists of two characters and two bytes are separated by one space. Namely up to 5 characters can be entered. The default value is “0d 0a”, namely “0x0d0x0a”.

d) 0d (hexadecimal): hexadecimal number “0x0d” is set to end mark.

2.3. Function Selection

Click “Function page” in the left parameter list and enable/disable corresponding function of the converter in the open page.



The setting items are explained below:

(1) Enable object: object function. The converter enables object 1-10 by default. Up to 200 objects are supported.

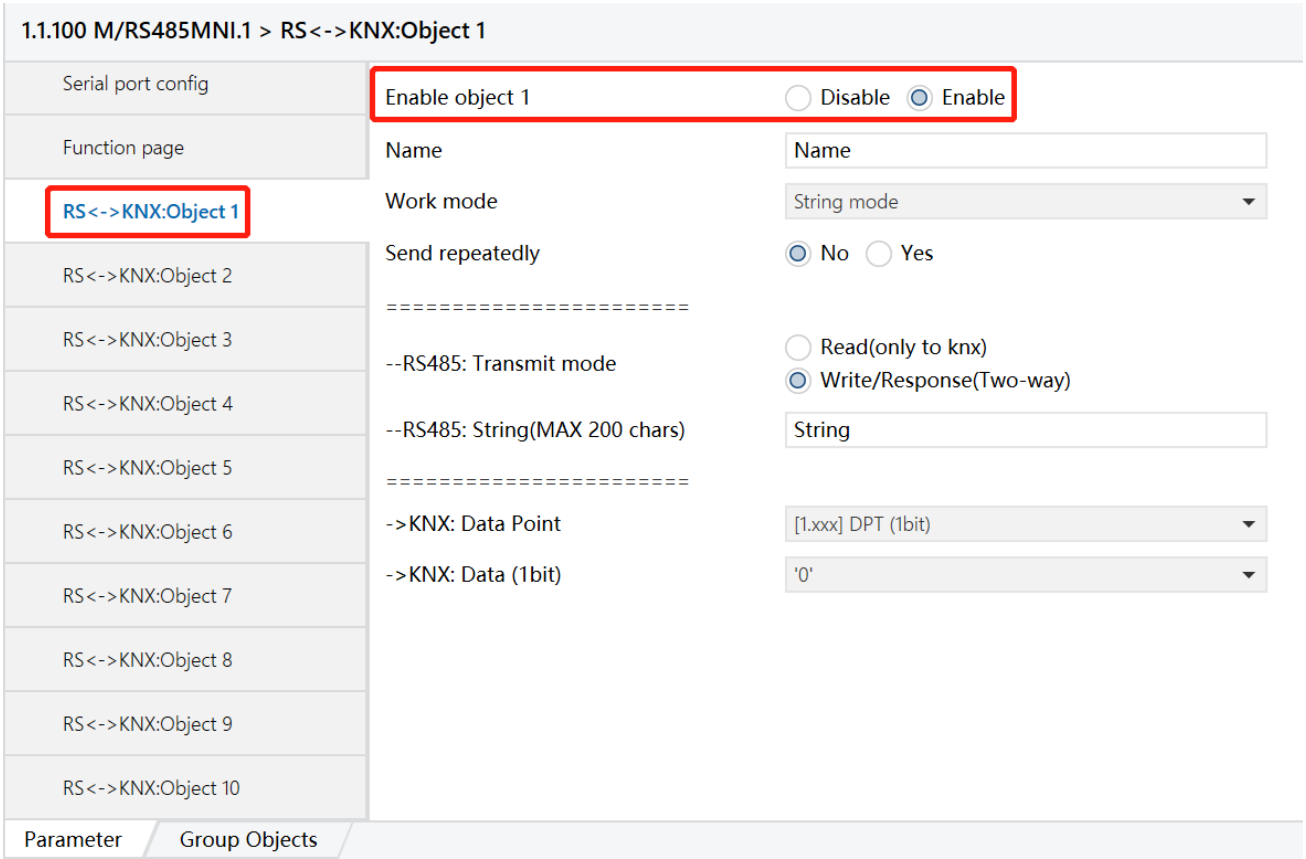
- No: to disable object function.
- Yes: to enable object function.

(2) Enable Sequence: sequence function. Sequence number ranges from 1 to 24. The converter disables sequence function by default.

- No: to disable sequence function.
- Yes: to enable sequence function.

2.4. Object Settings & Example Description of Work Mode

2.4.1. RS<->KNX: Object 1(n)



(1) After the first option in the Function page (take "enable object 1.. 10 (max 14 bytes)" as an example here), click the "RS < - > KNX: object 1" tab in the parameter list on the left to enable the single target function in the open page.Enable object N (N=1, 2, …, 200) : select “Enable” to enable this object function.

(2) Name: edit the object name.

(3) Send repeatedly: No: the converter will not send data repeatedly; Yes: the converter will send data repeatedly

- Repeatedly send to：the converter can send data to port RS485 or KNX bus repeatedly.
- Interval time of repeat (2..255s)：set the time interval of sending data repeatedly, which ranges from 2 to 255s. The default value is 10s.
- Repeat times：set the number of sending data repeatedly. The default value is once.

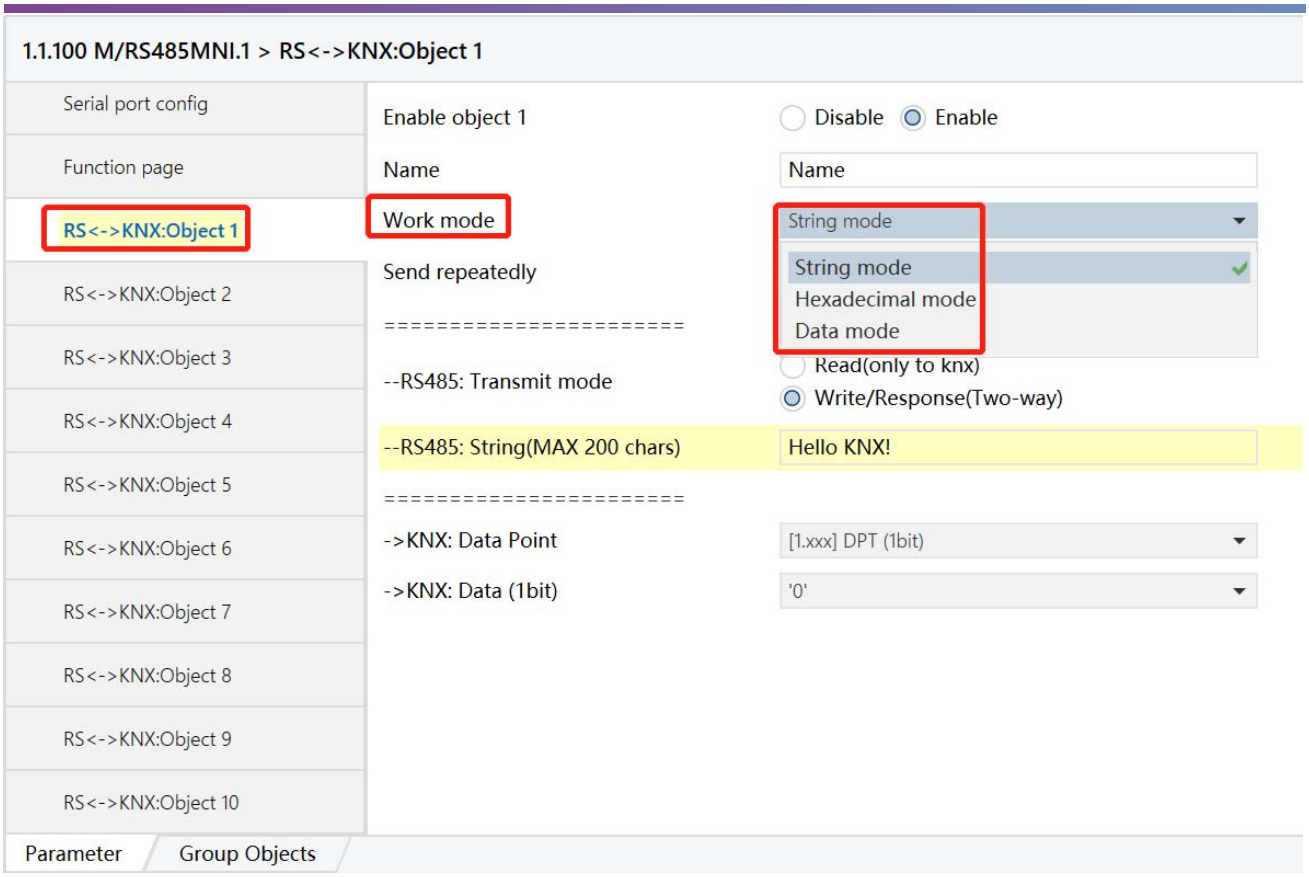
(4) RS485: Transmit mode：set the data transmission mode of the converter.

"Write/Response (Two-way)" is the default mode.

- Read (only to knx): the converter will only send "read request" to KNX bus without sending converted data. This configuration is not available for the data transmission between the converter and port RS232/RS485.
- Write/Response (Two-way): the converter will send converted data to port RS485 or KNX bus.

2.4.2. Work mode

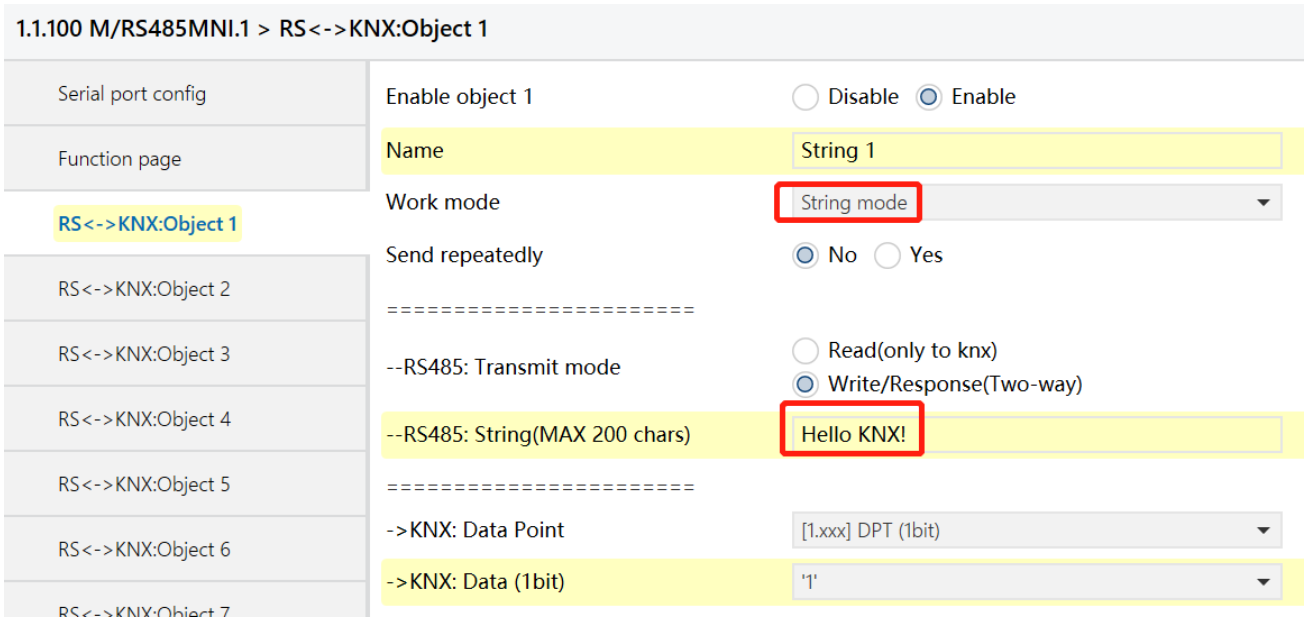
String mode, Hexadecimal mode and data mode can be selected.



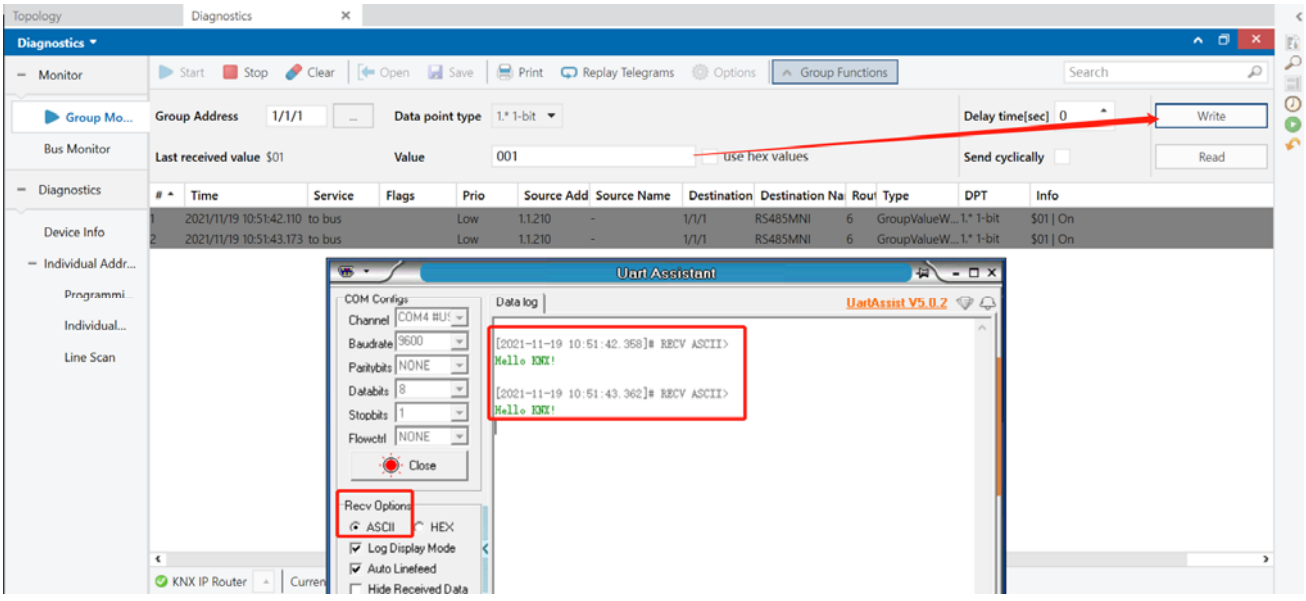
2.4.2.1. String mode

RS485: String (MAX 200 chars): set the string transmitted at the 485 port of the converter (no more than 200 characters), and the default value is "string".

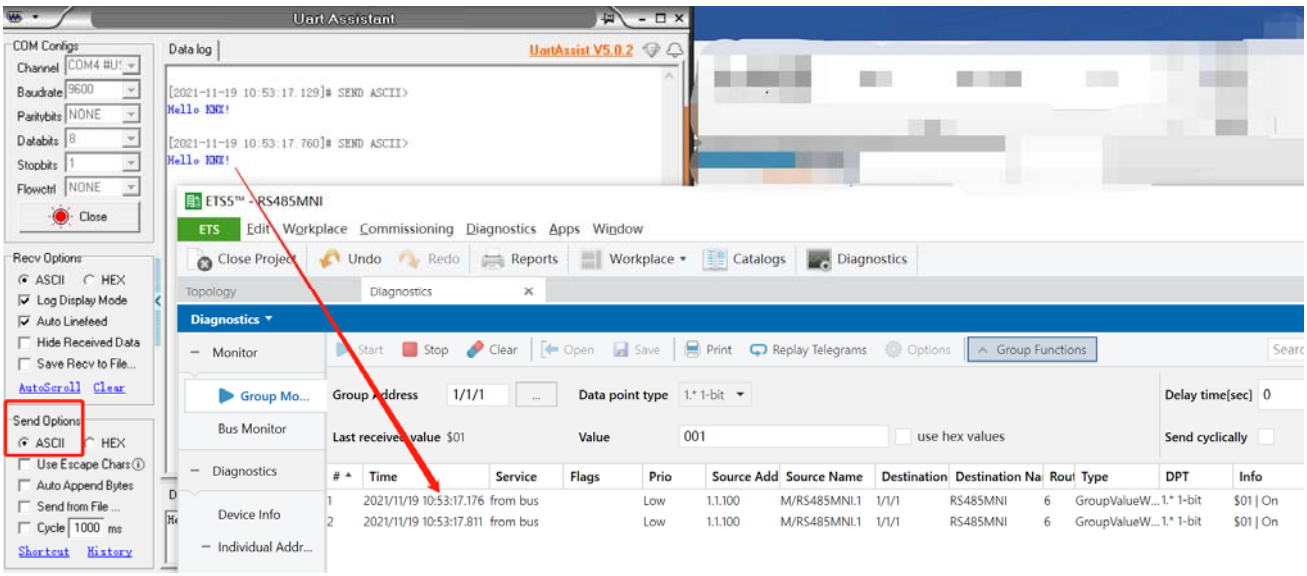
Example：Select string mode, the data point is “[1. XXX] DPT (1 bit)”and the value is 1, fill in "Hello KNX!", and create a new group address 1/1/1 and link to object 1. Partial download to M/RS485MNI.1as shown in the following figure:



After sending value “1” to group address “1/1/1”, the serial port software will receive a string “Hello KNX!”, as shown in the figure below.



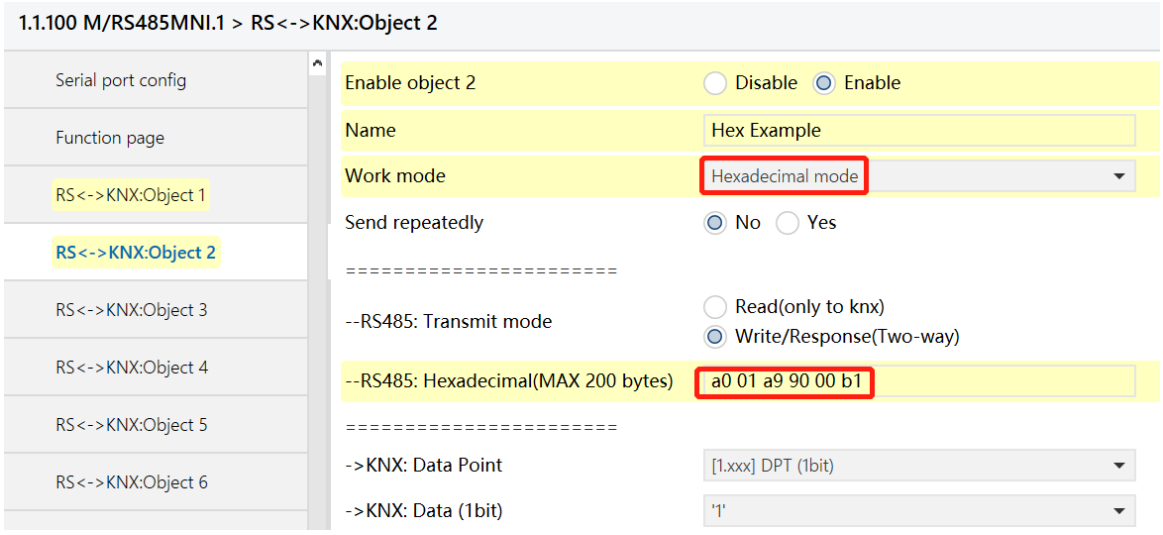
When sending string “Hello KNX!” from serial port software to M/RS485MNI.1, group address “1/1/1” will receive value “1”. As shown in the figure below.



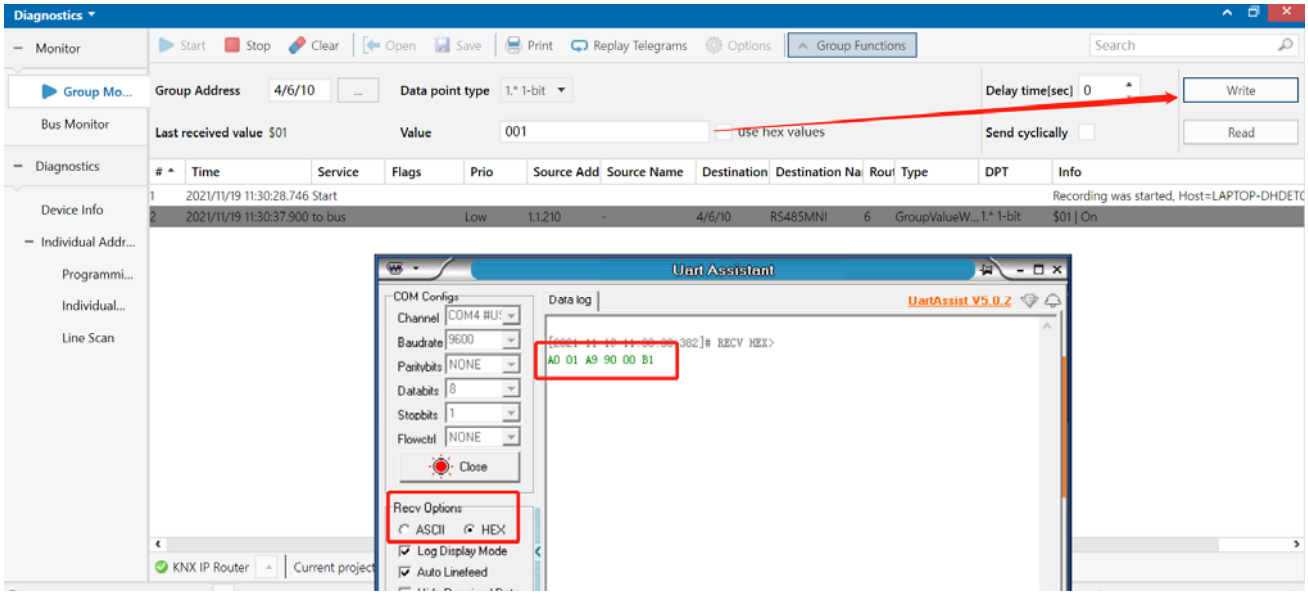
2.4.2.2. Hexadecimal mode

RS485: Hexadecimal (MAX 200 chars)：the hexadecimal number transmitted at the 485 end of the converter can be set. Every two characters form a hexadecimal number. The hexadecimal numbers can be separated by spaces. The data length shall not exceed 200 characters (including spaces). The default value is 102030, i.e., "0x10", "0x20", "0x30".

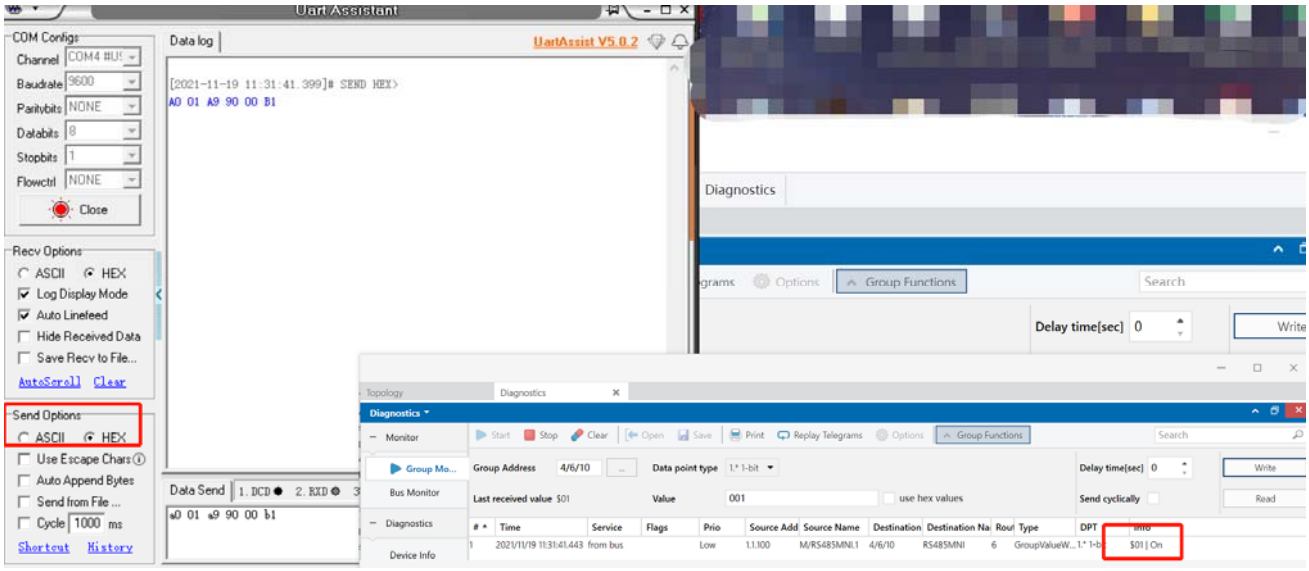
For example, select Hexadecimal mode，data point is [1.xxx] DPT (1 bit) and data(1bit) value is 1，fill “a0 01 a9 90 00 b1”，create a new group address 4/6/10 and link to object 2. Then partial download to M/RS485MNI.1.



When sending value 1 to group address “4/6/10”, serial port software will receive a string of hexadecimal codes “A0 01 A9 90 00 B1”. As shown in the figure below.



Send a string of hexadecimal codes “a0 01 a9 90 00 b1” from serial port software, the group address will receive value 1 as you can see the feedback from ETS Diagnosis interface.

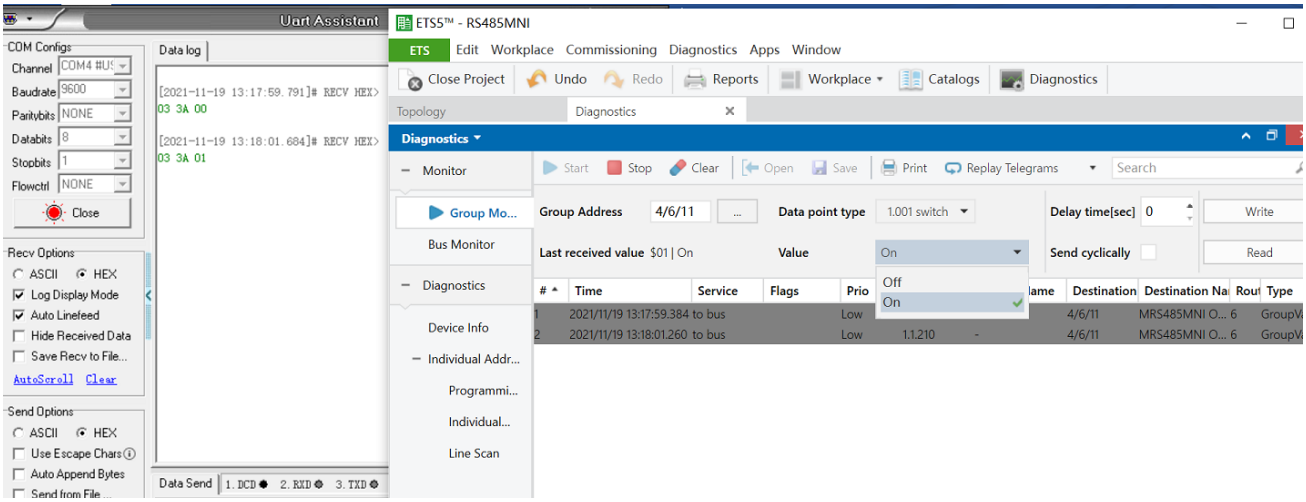


2.4.2.3. Data mode

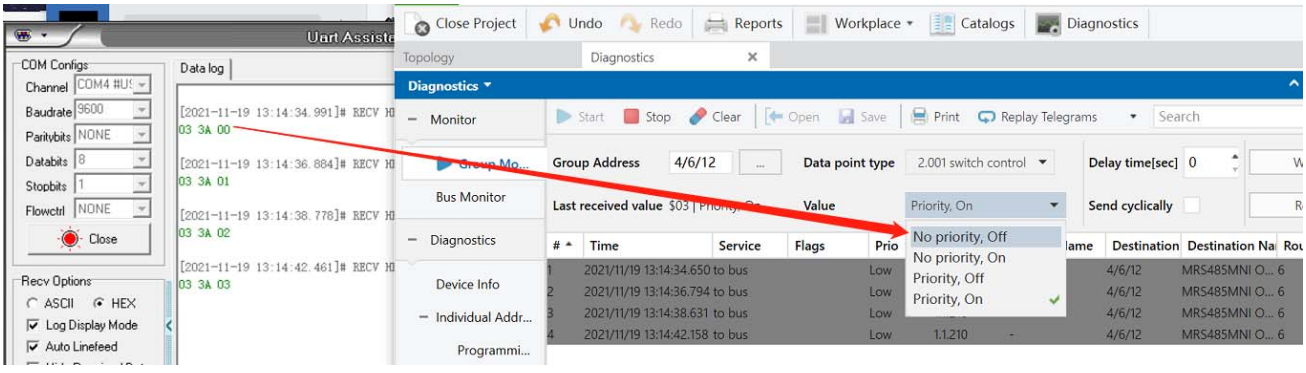
Data transmit format: The data transmission format is object + data by default（Object + Data）

a) Object+Data: What data is received by the corresponding group address, and the output object + the same data.。

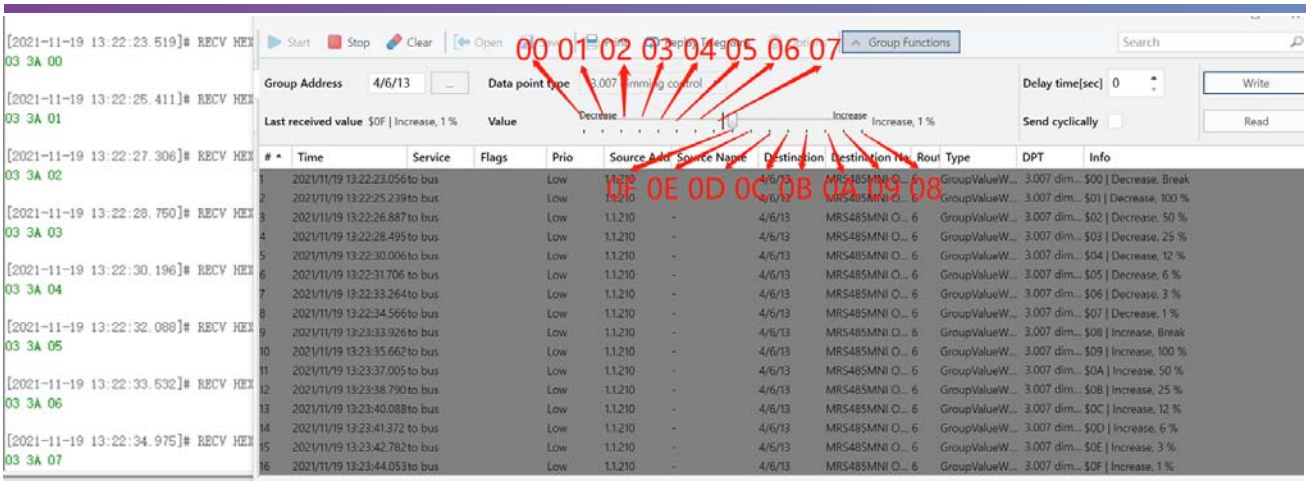
For example, select [1.xxx] DPT(1bit) , send value 0 to group address 4/6/11, serial port software receives “03 3A 00”; send value 1 to group address 4/6/11, serial port software receives “03 3A 01”



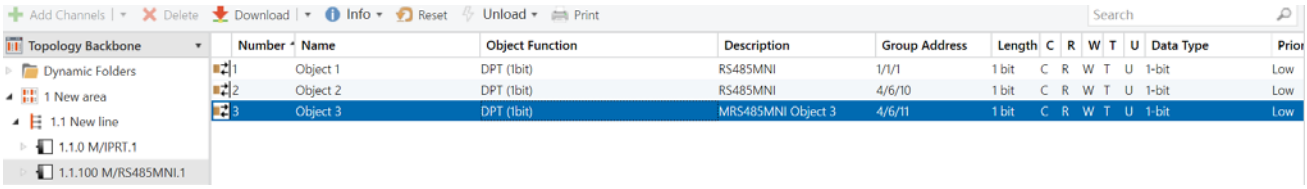
[2.xxx] DPT (2bits)

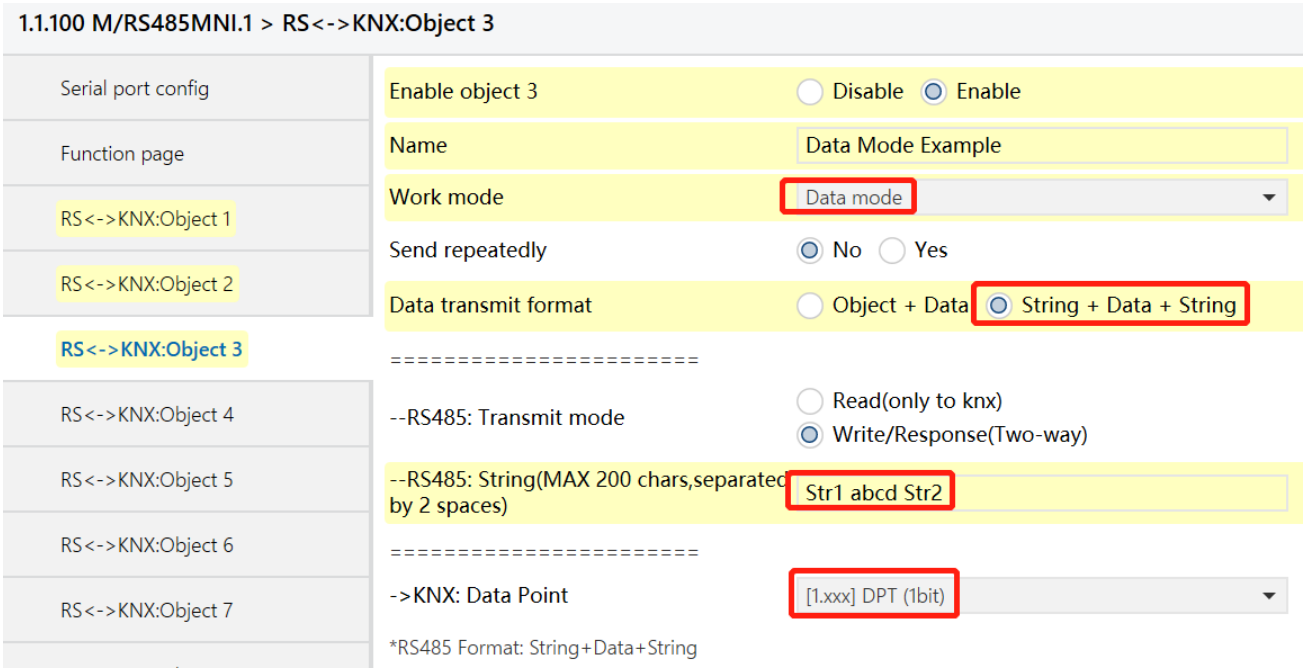


[3.007] DPT_Control_Dimming (4bits)



b) String+Data+String: The string header (STR1) and string tail (STR2) are fixed, and only data can be changed. Each time the converter transmits data, it will transmit it together with STR1 and STR2. The total length of the string cannot exceed 200 characters.

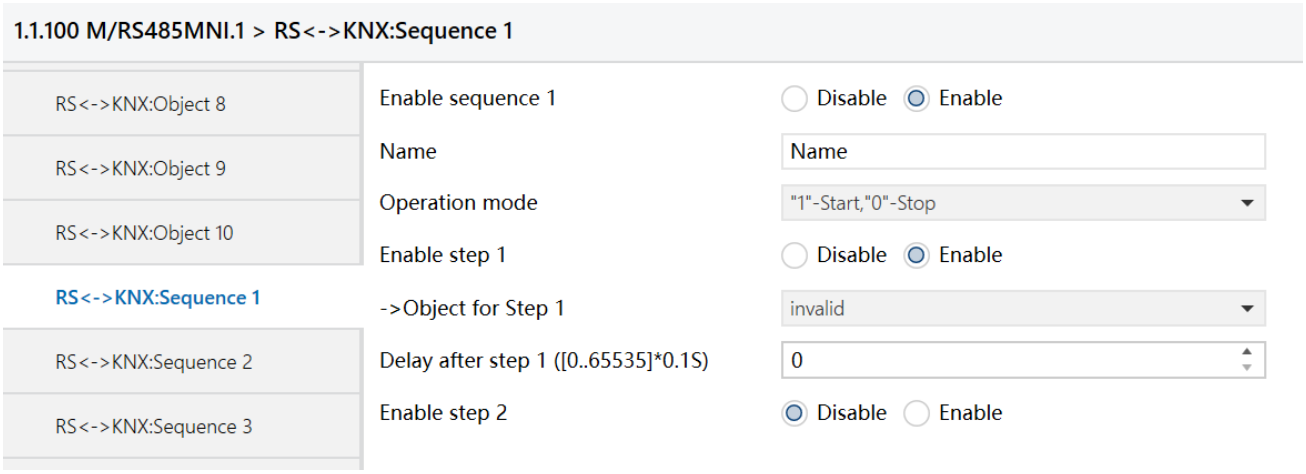




2.5. Sequence Control

After sequence function is enabled in function selection page (Take “Enable Sequence 1...8” as an example), click “RS<->KNX: Sequence 1”, as shown in Figure 5-1.

Note: sequence function is only available for string mode or hexadecimal mode (invalid for data mode). Sequence function is only available for data transmission between the converter and serial port RS485 (invalid for data transmission between the converter and KNX bus).



The setting items are explained below:
Enable sequence N (N=1, …, 24): enable/disable sequence function. If “Disable” is selected, none of the following options will appear.

(1) Name: to edit the sequence name.

(2) Operation: set the control type of sequence, the default type is “‘1’-Start, ‘0’-Stop”

- “1”-Start, “0”-Stop: the sequence will start running after “1” is received, while the sequence will stop after “0” is received.
- “0”-Start, “1”-Stop: the sequence will start running after “0” is received, while the sequence will stop after “1” is received.
- “0/1”-Start, can’t stop: the sequence will start running until power down after “1” or “0” is received.

(3) Enable step 1：

- Disable: disable the step 1 of sequence.
- Enable: enable the step 1 of sequence。

a) Object for Step 1：set object data to be sent by the step 1 of the sequence or disable sending data (invalid).

b) Delay after step 1 ([0..65535]*0.1s)：set the time interval between step 1 ends and

step 2 starts, which ranges from 0.1 to 6553.5. The default value is 0s.

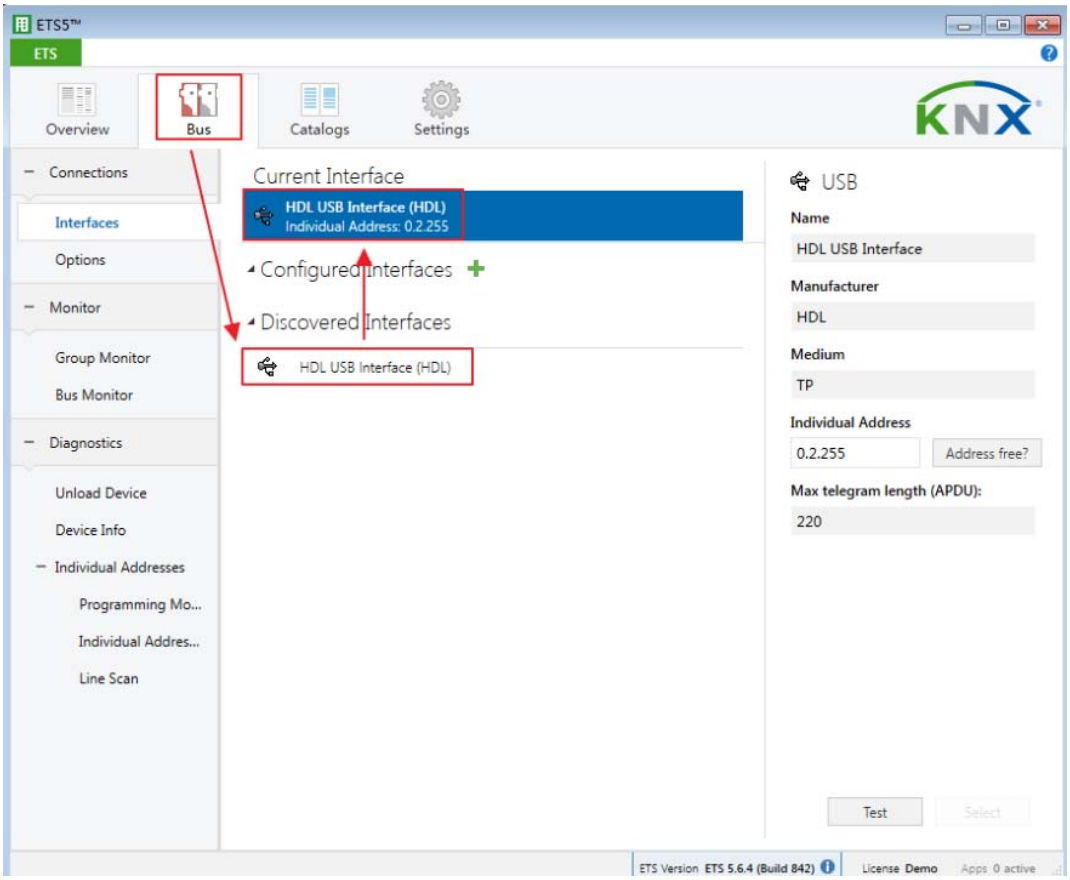
(4) Enable step N (N=2, …, 10): please refer to the settings in the third point “Enable step 1”

3. Download Data

3.1 Interface Setting

If users need to download data to the converter, 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 Interfaces”. Double click to add and the interface will show up in “Current Interface”.



3.2 Download Data

Press the programming button of the converter, and the red indicator keeps on. Right click the database to be downloaded to the converter and select “Download->Fully download”. The information indicates the end of the process on the right side of ETS.

After each modification, it should be downloaded and applied to the M/RS485MNI.1. You can use “partial download” or “download application”.