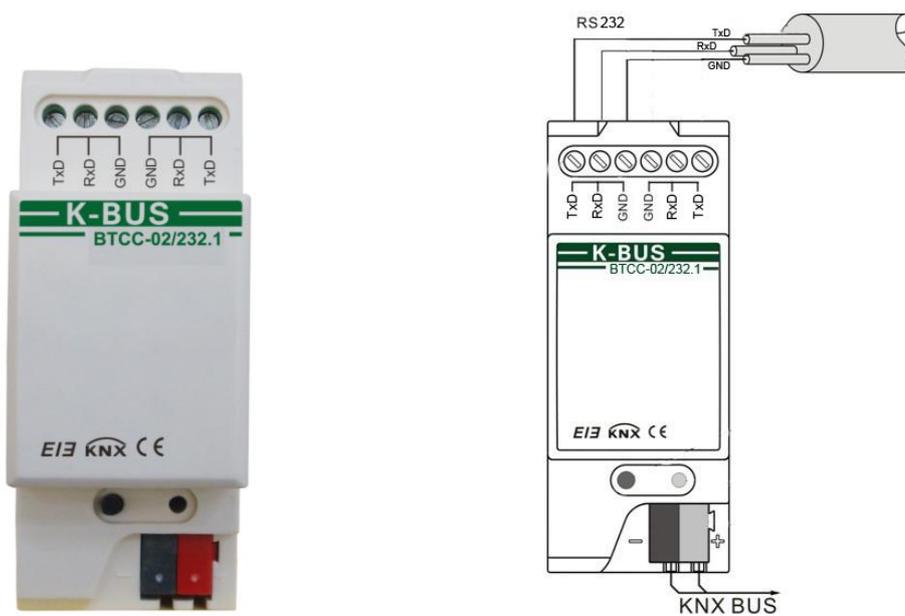


# RS232/ KNX Controller

## User manual-Ver.1

BTCC-02/232.1



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## 1. Summary

The RS232/ KNX Controller is designed for an intelligent building control system. It is point to point communication and its maximum communication distance is 15M. The KNX/EIB bus control system can send a telegram to the RS232/ KNX Controller, when the Controller receives the telegram, it will transmits the relevant command to the device with serial port connecting with it, and trigger the device with serial port output. The commands of control output and the technical data are different for different devices with serial port. It is therefore important to know its commands and technical data before using the device with serial port, such as the baud rate etc. It is the only way that the relevant parameters can be set correctly for the RS232/ KNX Controller.

The RS232/ KNX Controller has two serial ports, they are called COM1 and COM2. Each serial port has three signal wires to achieve communication. The three signal wires are TxD, RxD and GND.

The functions of the RS232/ KNX Controller are summarized as follows:

- Up to 64 serial port control command, the command length for 64 bytes
- Two standard serial ports with three wires, nonsupport flow control
- The two serial ports are independent, and their baud rate, stop bits and parity can be programmed
- Each serial port can set up to 11 baud rates at a time, and each baud rate has its own communication object.
- Via the object of the baud rate trigger the control command sent to the device with serial port

This manual provides detailed technical information about the RS232/ KNX Controller for users as well as assembly and programming details, and explains how to use the Controller by the application examples.

The RS232/ KNX Controller is a modular installation device. It can be installed in the distribution board on 35 mm mounting rails according to EN 60 715. The device adopts screw terminal to achieve connecting with other devices with serial port, using EIB bus connection terminals to connect to the KNX/EIB system, and no need an extra voltage supply.

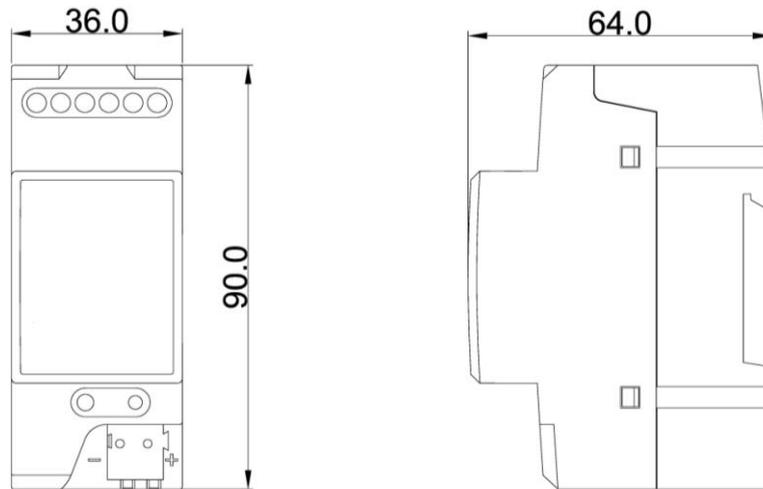
The RS232/ KNX Controller is able to use the Engineering Tool Software ETS (ETS v1.3 or later) with a VD2/VD3 file to allocate the physical address and set the parameters, but a VD3 file imported is required for EST3 software.

## 2. Technical Properties & Dimension and Circuit Diagram

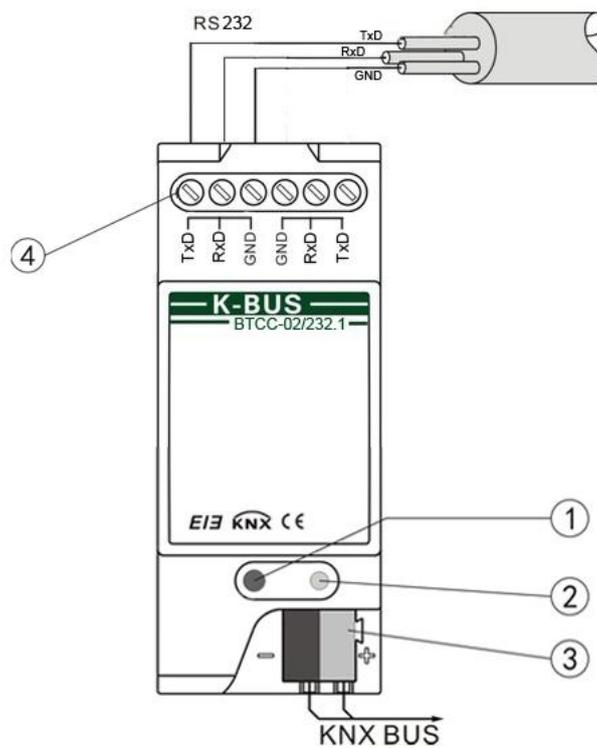
### 2.1 Technical data

<b>Power supply</b>	Operating voltage	21-30V DC, via the EIB bus
	Current consumption	<12mA
	Power consumption via EIB	<360mW
<b>Outputs</b>	Two serial ports with three lines, RxD, TxD, GND	
<b>Connections</b>	EIB / KNX	Bus connecting terminal (black/red)
	Load circuits	screw terminals
	Wire range	Single-core 0.2—6.0mm <sup>2</sup> Multi-core 0.2—4mm <sup>2</sup>
<b>Operating and display elements</b>	Red LED and push button	For assignment of the physical address
	Green LED flashing	Indicate the device running normally(OK)
<b>Temperature range</b>	Operation	-5 °C ... + 45 °C
	Storage	-25 °C ... + 55 °C
	Transport	- 25 °C ... + 70 °C
<b>Ambient condition</b>	Humidity	<93%, except dewing
<b>Design</b>	Modular installation device, on 35 mm Din rail	
<b>Baud rate</b>	1200~115200 bps	
<b>Transmission range</b>	< 15M	
<b>Working mode</b>	Full-duplex communication	
<b>Dimensions</b>	90×36×64mm	
<b>Weight</b>	0.1KG	

## 2.2 Dimension diagram



## 2.3 Circuit diagram



- ① Programming button
- ② Red LED for assigning the physical address, green LED flashing for display the application layer works normally
- ③ KNX / EIB bus connection terminal
- ④ RS232 serial ports connection terminal

### 3. Parameter setting description in the ETS

#### 4.1 Parameter window “General”

The parameter window “General” is shown in fig.4.1. Here can set whether to enable the serial ports of the RS232/KNX Controller and to activate the control command. When the serial ports are enabled, but the control command is not activated or configured, the telegram that the serial port object receives is invalid. Meantime, the command that is configured in the parameter must be same with the command that control the device with serial port output. Here also note the format of control command input for the parameter window “Telegram List” (as shown 4.3) and download times etc.

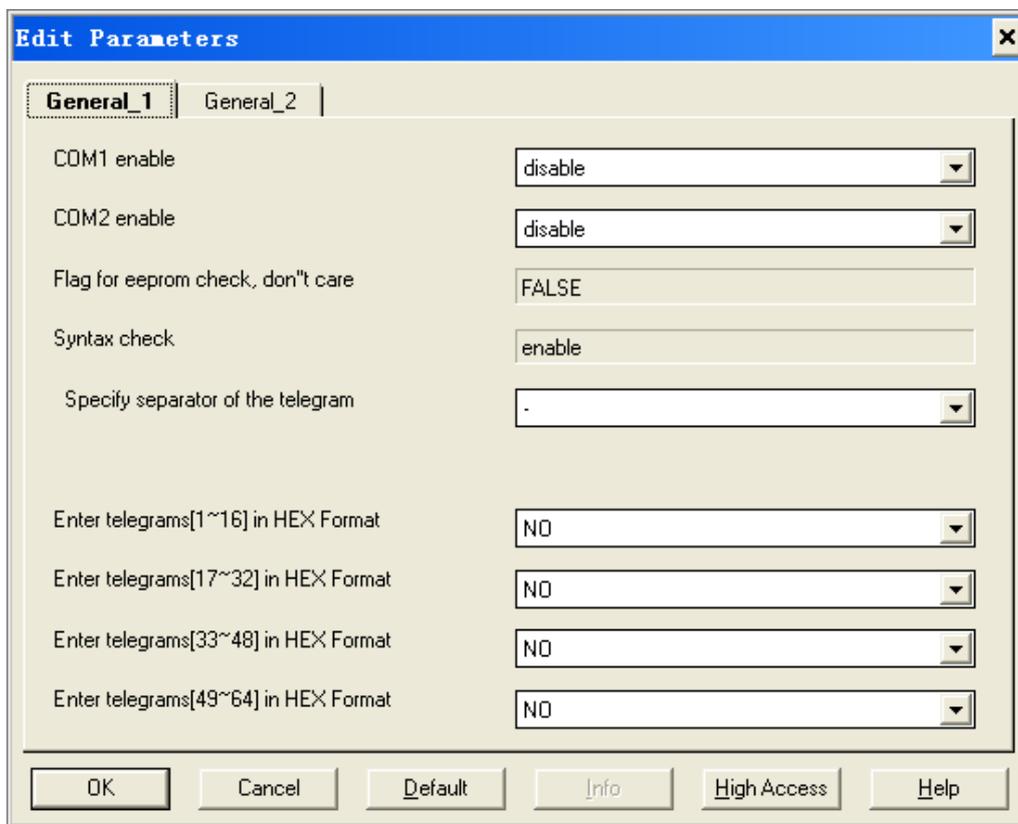


Fig.4.1 parameter window “General” (1)

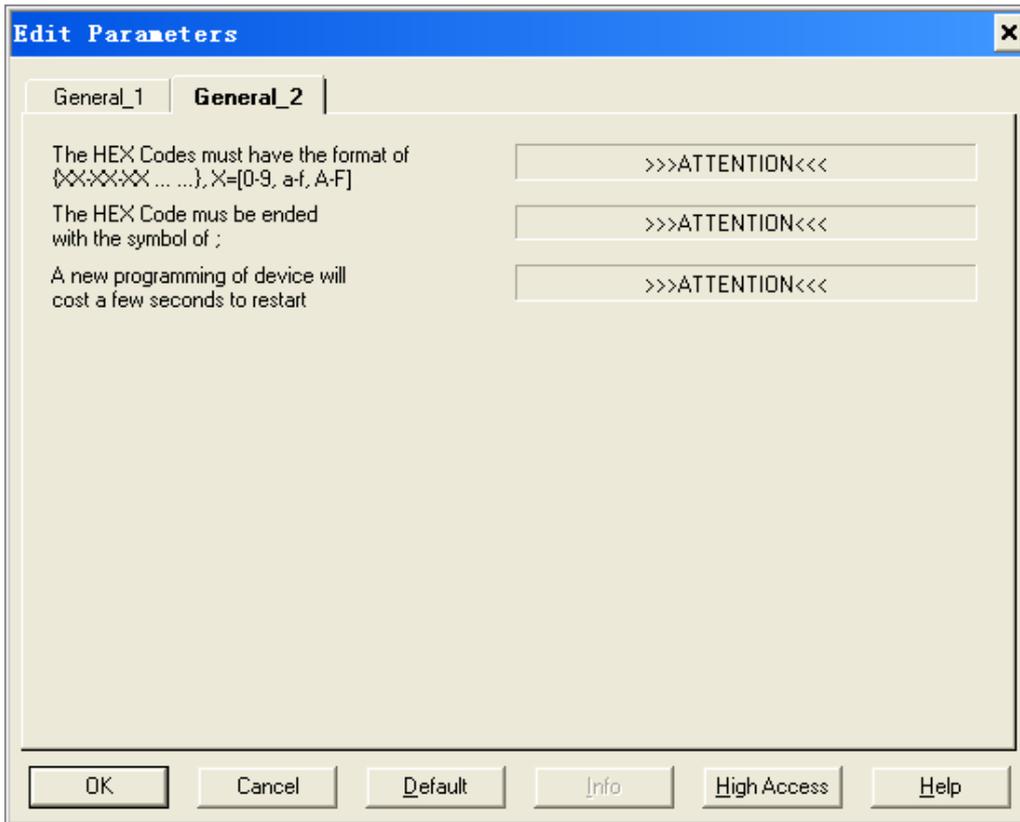


Fig.4.1 parameter window "General" (2)

**Parameter "COM1/2 enable"**

The parameter is used to enable the serial port COM1/2. Options:

- Disable
- Enable

If selecting the "enable" option, the parameter window "COM1/2 Setting" will be visible (as shown 4.2) .

**Parameter "Flag for EEPROM check, don't care"**

The parameter notes the flag of the EEPROM check. After the application program is downloaded completely, the EEPROM is signed for FLASE. User doesn't have to care the parameter.

**Parameter "Syntax check"**

The parameter notes syntax check. Therefore, you must input the control command in strict accordance with the prescribed format. The command format is described in the following parameters.

**Parameter "Specify separator of the telegram"**

The parameter is used to define the separator of the control command. Options:

Space

None

If now entering a control command in fig.4.3, according to the options, input format can have three types: “0D-2A-70-6F-77-3D-6F-6E-23-0D;” , “0D 2A 70 6F 77 3D 6F 6E 23 0D;” or “0D2A706F773D6F6E 230D;” , the command ends with a semicolon.

**Parameter “Enter telegrams [1~16]/ [17~32]/ [33~48]/ [49~64] in HEX Format”**

The parameter defines whether the control command is activated, and is inputted in hexadecimal way in the parameter (as shown 4.3). Options: YES/NO

If selecting “YES”, there will appear a telegram list window, as shown 4.3. Now the control command can be configured in the parameter window. Up to 64 commands can be set.

If selecting “NO”, the control command is not activated, the telegram that the object “COM1/2, Baud Rate: ...” receives is invalid.

**Parameter “The HEX Codes must have the format of {XX-XX-XX... ..},X=[0-9, a-f, A-F]”**

The parameter notes the code of the control command. It is composed of hexadecimal code.

**Parameter “The HEX Codes must be ended with the symbol of ;”**

The parameter notes the control command ends with the symbol “;”.

**Parameter “A new programming of device will cost a few seconds to restart”**

The parameter notes that a new programming of device will cost a few seconds to restart.

## **4.2 Parameter window “COM1/2Setting”**

The parameter window “COM1/2 Setting” is shown in fig. 4.2. When the serial port is enabled, the window is visible, here can set the baud rate of the serial port, word length, stop bits and parity.

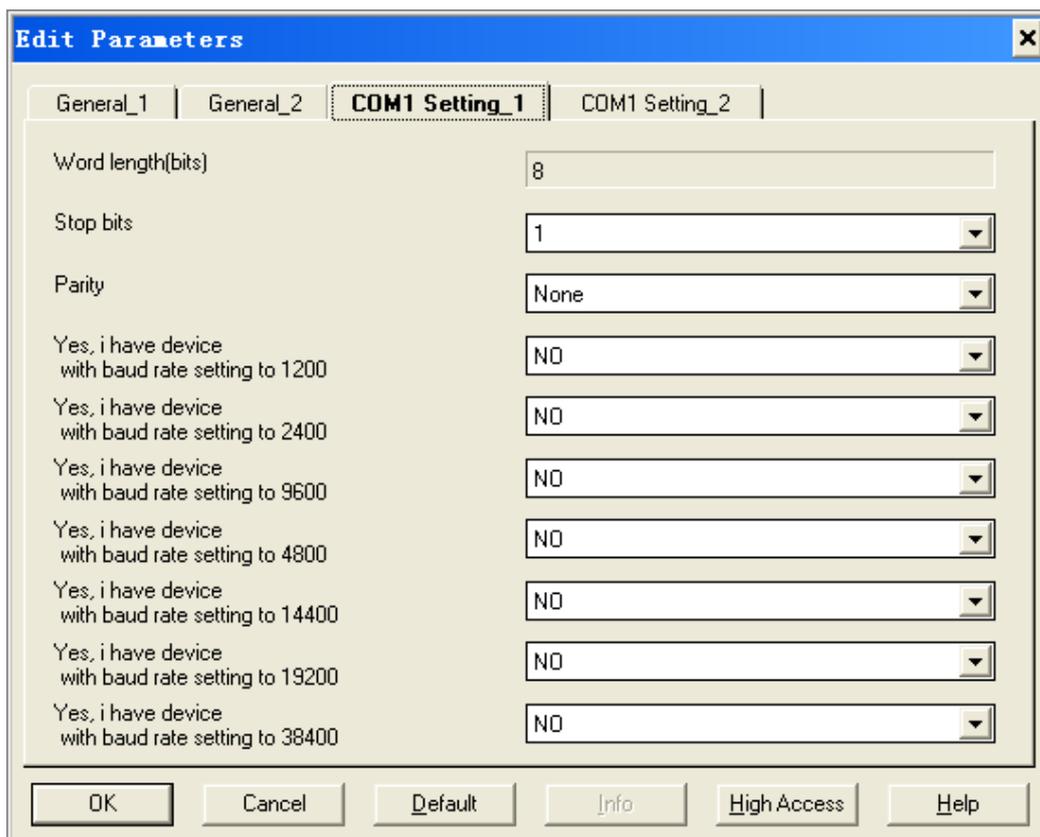


Fig. 4.2 Parameter window "COM1/2 Setting" (1)

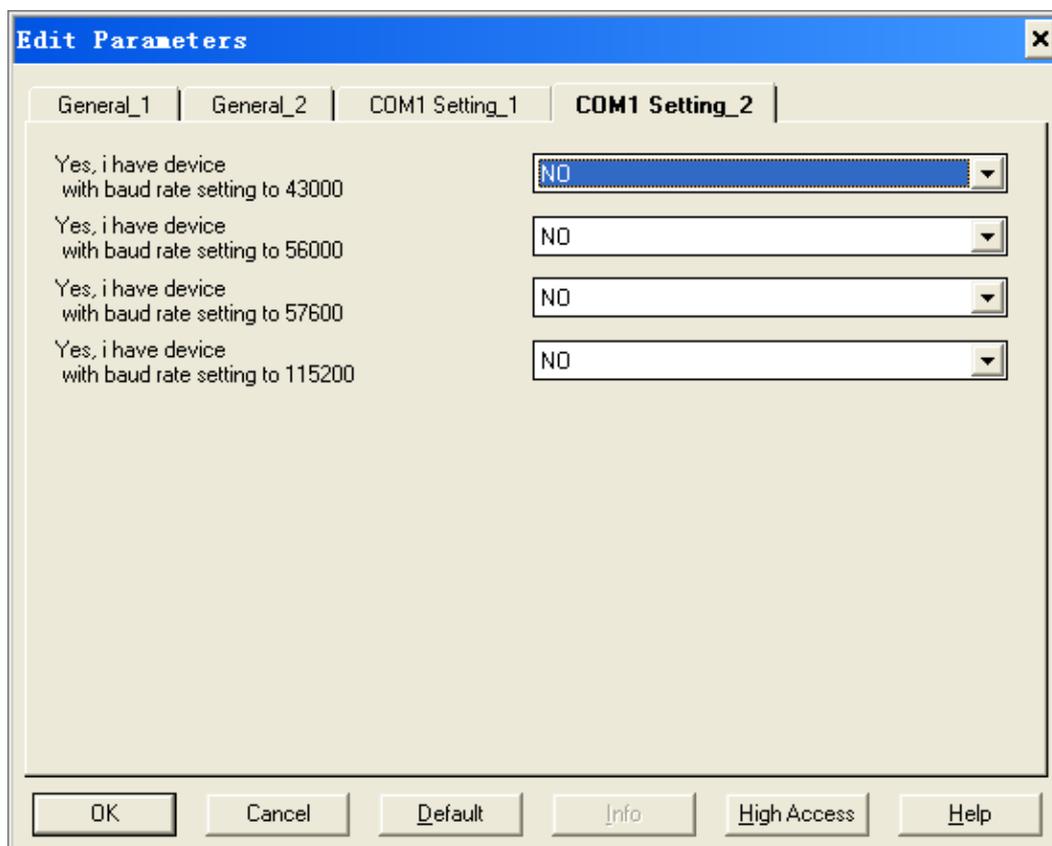


Fig. 4.2 Parameter window "COM1/2 Setting" (2)

#### **Parameter “Word length (bits)”**

This parameter defines word length of data transmission as 8bits.

#### **Parameter “Stop bits”**

This parameter defines stop bits of data transmission. Options: 0.5/1/1.5/2

#### **Parameter “Parity”**

This parameter defines parity of data transmission. Options: None/Odd/Even

#### **Parameter “Yes, I have device with baud rate setting to 1200/2400/4800/.../115200”**

The parameter is used to set the baud rate of the RS232/KNX Controller. The baud rate can be set to the same with the serial port device under control, up to 11 baud rates can be selected at a time, and each baud rate has its own communication object. Options: Yes/No

If selecting “yes”, then the baud rate is activated, and its object “COM1/2, Baud Rate: ...” will be visible. One serial port can activate up to 11 baud rates at the same time.

### **4.3 Parameter window “Telegram List”**

The parameter window “Telegram List” is shown in fig. 4.3. If the control command is activated, the window is visible. Here can set the effective telegrams that the object receive, and the telegram corresponding control command. The control command must be same with the command that control the device with serial port output, otherwise the control command from the controller will no effect.

For example, we control a projector with serial port via the RS232/KNX Controller, if the command that open the projector is “0D 2A 70 6F 77 3D 6F 6E 23 0D; ”, the command that close the projector is “0D 2A 70 6F 77 3D 6F 66 66 23 0D; ”, the baud rate is 9600. Then we can assign the command “0D 2A 70 6F 77 3D 6F 6E 23 0D;” to the telegram “1” in the parameter, and assign the command “0D 2A 70 6F 77 3D 6F 66 66 23 0D;” to telegram “2”, and set the baud rate of COM1 to 9600 in window 4.2. When the object “COM1, BaudRate:9600” receives a telegram value ‘1’, the COM1 will send the control command of telegram “1” to the projector and open it ; When the object receives a telegram value ‘2’, The COM1 will send the control command of telegram “2” to the projector and close it. Meantime, please notice that the control command must be inputted in strict accordance with the prescribed format.

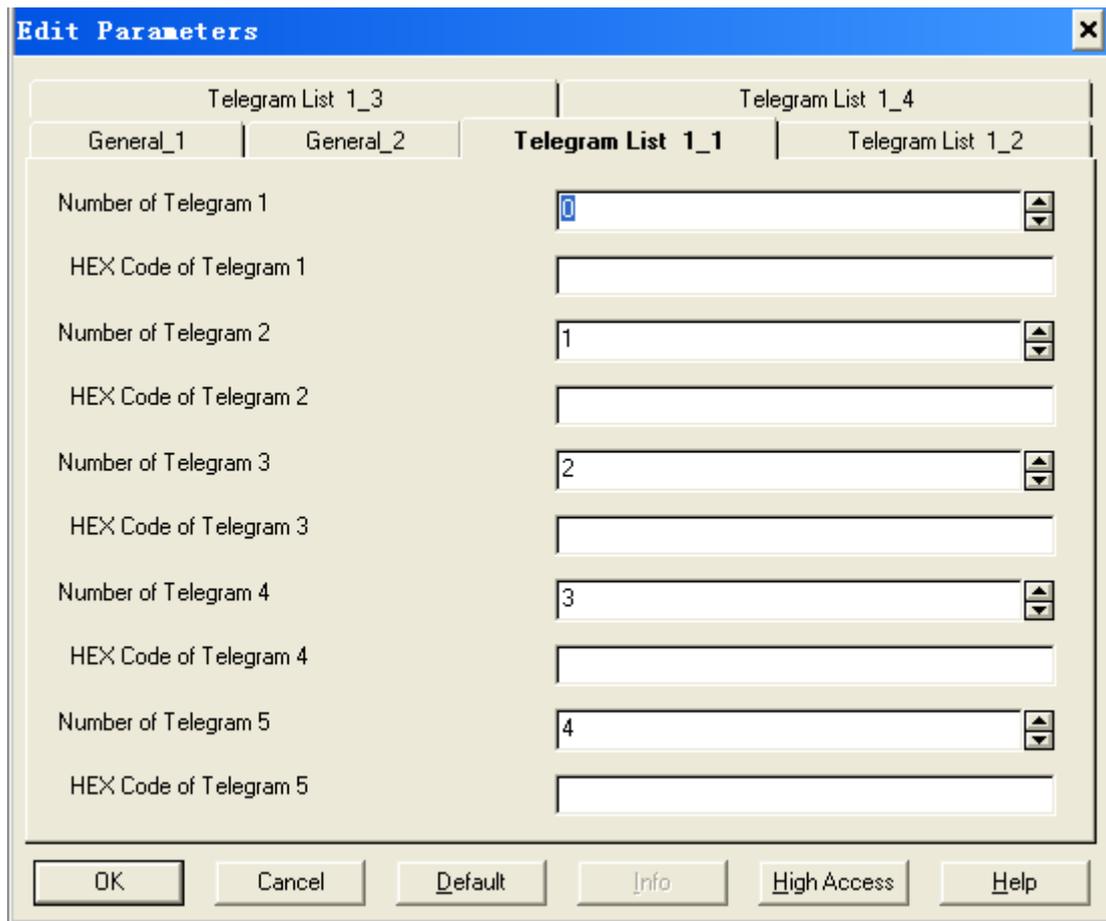


Fig. 4.3 Parameter window “Telegram List”

**Parameter “Number of Telegram X (X=1~64)”**

This parameter defines the effective telegrams that the object “COM1/2, Baud Rate: ...” receives, up to 64 telegrams. Options: 0~ 63.

**Parameter “HEX Code of Telegram X (X=1~64)”**

This parameter defines the telegram corresponding control command, these commands of serial port are hexadecimal code, and the format is described in chapter 4.1. The length of commands is 64 bytes.

**4. Description of communication objects**

The communication object is a media that the device communicates with the other devices on the bus, which means only communication objects can have the right to communicate on the bus. The following details the role of each communication object.

*Note: “C” in “Flag” column in the below table means that the object has a normal link to the bus; “W” means the object value can be modified via the bus; “R” means the value of the object can*

*be read via the bus; “T” means that a telegram is transmitted when the object value has been modified; “U” means that value response telegrams are interpreted as a write command, the value of the object is updated.*

If the COM 1/2 is enabled and the baud rate is activated, the corresponding communication object “COM1/2, Baud Rate: ...” will be visible.

No.	Function	Object name	Data type	Flags
0~10	COM1/2	COM1/2, Baud Rate: 1200/2400/.../115200	1byte	C,W
<p>The communication object is used to receive telegram value from other bus device. When the object receives a telegram, The RS232/KNX Controller will send the corresponding command on specify COM port, to control the device with serial port.</p> <p>Telegram range:0~63,64~255 Reserved</p>				