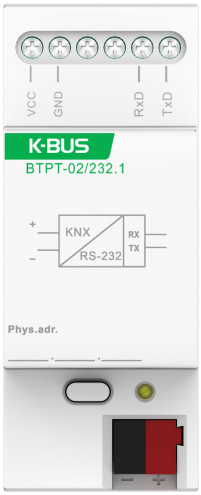
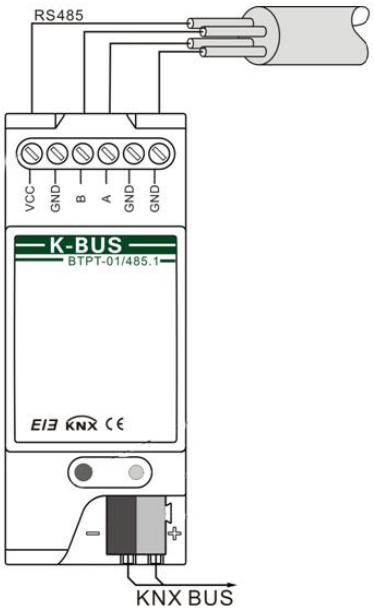
K-BUS® RS232/KNX Bidirectional Converter

User manual-Ver.1

BTPT-02/232.1

KNX/EIB Intelligent Installation System





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Contents

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1. Summary

The RS232/ KNX Bidirectional Converter is designed for intelligent building control system,which supports bidirectional communication. It has built-in 2000V ESD protection. Because of RS232 Bus and EIB bus following different protocol and working principle, a converter is needed to make sure their communication.(EIB bus is a standard bus control system with peer control method;while RS232 bus adopts the traditional master-slave control method). This device can connect the devices from the RS232 bus and EIB Bus into one network system.

No standardized higher layer protocol for RS232 bus, we define one in the chapter 4 of this manual for RS232 devices to control KNX/EIB devices. The users can configure or program the RS232 devices according to the protocol to achieve the control.

Here is the way of controlling the KNX devices from the EIB bus by devices from RS232 bus. First,using the configuration software to set the protocol. Then the devices from the RS232 bus send the telegram to the RS232/ KNX Bidirectional Converter.Third the converter transfer it into the telegram that can be delivered in the EIB bus;vice verse for controlling the devices from the RS232 bus by KNX devices

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

- Free setting of the RS232 communication interface
- By the configuration software of setting the telegram receiving and transferring.
- Converting the telegram from the RS232 bus to the KNX/EIB telegram, and sending to the KNX/EIB system, to control the KNX devices.
- Converting the telegram from the KNX/EIB bus to the RS232 telegram, and sending to the RS232 system, to control the RS232 devices.
- RS232 telegram supporting 1-64 byte ,the format can be self-defined.
- RS232 telegram supporting 0-32byte ACK report,the format can be self-defined.
- Supporting 1 bit,2 bit,4 bit,6 bit,1 byte,2 byte KNX group address writing.
- Supporting converting the RS232 telegram to KNX/EIB telegram,including reading and writing.
- Supporting RS232 telegram to be converted into 1 byte KNX/EIB telegram,which can do the calculation of plus and minus.
- Supporting converting KNX/EIB telegram to RS232 telegram,including reading,writing and responding.

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- Supporting max.512 pieces conversion between the RS232 and KNX/EIB telegram, max 256 group is supported for 1byte KNX/EIB plus and minus telegram.

This manual provides technical information as well as assembly and programming in detail about the RS232/KNX Bidirectional Converter for users, and explains how to use the converter by the application examples.

The RS232/KNX Bidirectional Converter 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 the RS232 bus connection, the power supply for RS232 interface is provided by RS232 system. The RS232/KNX Converter is connected to the KNX/EIB system using EIB bus connection terminals, and no need any extra voltage supply.

The RS232/KNX Bidirectional Converter is able to use the Engineering Tool Software ETS (ETS3 or later) with a VD4 file to allocate the physical address and use the configuration software to set the other parameters.When using the ETS for downloading physical address and application,there is no need of setting the other parameters in the database.

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2. Technical data

Power supply	Operating voltage	21-30V DC，via the EIB bus
	Current input, EIB	<12mA
	Power consumption, EIB	<360mW
Outputs	RS232 BUS interface channel	1 channel
	VCC（DC）	9V<VCC<40V(recommend DC12V/24V)
	Power consumption	42mW(12V),75mW
	Max. power consumption	120mW(12V),144mW(24V) (24V)
Connections	EIB / KNX	Bus connecting terminal (black/red)
	Load output	Use screw terminals for connection
	Wire range	Single-core 0.2—6.0mm^2
		Multi-core 0.2—4mm^2
Operating and display elements	Red LED and push button	For assignment of the physical address
	Green LED flashing	Indicate the device running normally(OK)
Temperature range	Operation	–5 °C ... + 45 °C
	Storage	–25 °C ... + 55 °C
	Transport	– 25 °C ... + 70 °C
Ambient condition	Humidity	<93%, except dewing
Design	Modular installation device, on 35 mm Din rail, to DIN EN 60 715	
Interface protection	Built-in 2000V ESD protection	
Baud rate	4800~115200 bps	
Transmission range	< 1 KM	
Transmitting media	Twisted pair or shielded wire	
Working mode	Asynchronous full-duplex differential transmission	
Dimensions	90×36×64mm（H×W×D）	
Weight	0.1KG	

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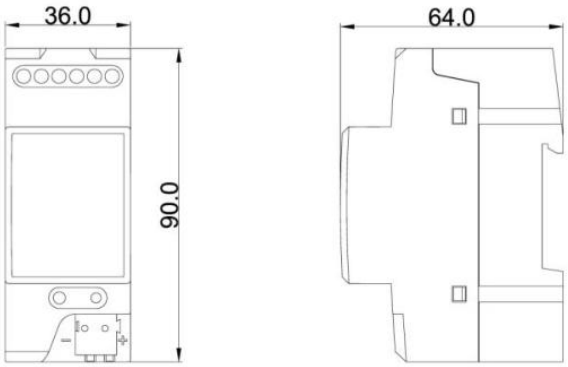
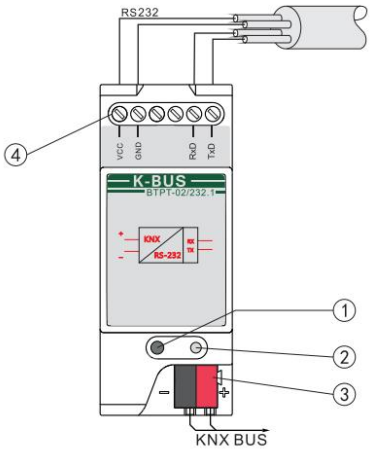
3. Circuit Diagram and Dimension Diagram

3.1 Dimension Diagram



3.2 Circuit Diagram



① Programming button

②Programming LED, red LED for assigning the physical address, green LED for indicating the application layer works normally

③ KNX / EIB bus connection terminal

④ RS232 bus connection terminal,VCC and GND connected to DC 9~40V,TX,RX,GND connected to RX,TX,GND of Target Device

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4. Project Design and Programming

Overview of the function：

Protocol for RS232 is configured according to users' requirements, which won't be restricted by limited protocol, and maximum configured to 512 KNX telegrams converted by 232, 256 groups connected increasing/decreasing KNX telegrams(1 byte) converted by 232, and 512 KNX telegrams(writing, reading, response) be converted to 232 telegram. Each 232 telegram can configure the length from 1 byte to 64 byte, and 0 to 32 byte response telegrams. Each KNX telegram can configure data type of 1 1 bit,2 bit,4 bit,6 bit,1 byte,2 byte.

232 converts KNX telegrams(writing, reading)

It is mainly used for 232 telegram(writing, reading) converting into KNX telegram, which is used to control KNX/EIB devices. Meanwhile, there is another function, which is used to feedback telegram to KNX/EIB, and update the status of KNX devices.

232 converts KNX(1 byte)

It's mainly used for 232 to control KNX/EIB 1 byte communication object, such as, controlling dimming, the change of sound volume. One "plus" telegram is used to send value which starts from the minimum, while adding interval , each "plus" telegram being sent, will accumulate to the maximum value. The gateway will save the current value. Similarly, when sending "Minus" telegram, it will send decreasing telegram, and decrease from saving to gateway value.

KNX telegram(writing, reading, response) converts 232 telegram

It's mainly used for KNX telegram(writing, reading, response) converting into corresponding 232 telegram, and also be used as feedback status, sending to 232.

Setting Description of Configuration Software

Please check User Manual of RS232 bi-direction gateway configuration instrument.

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