

Description

The interface is a modular KNX S-mode device developed in collaboration by Ekinex S.p.A. and RDZ S.p.A. It allows bidirectional communication between RDZ air handling units, equipped with control board with RS-485 Modbus communication port, and the KNX system (TP). Thanks to the interface, the functions performed by the air handling units can be controlled and monitored by KNX devices. The unit has an integrated KNX bus communication module and is realized for mounting on a 35 mm rail. Power is supplied via the KNX bus.

Function

The interface represents a node on the KNX network and performs the Master function on the Modbus network to which the control board of the air handling unit is connected as the only Slave. The interface manages a bidirectional data flow between Modbus RTU (Remote Terminal Unit) and KNX. The Modbus registers are read cyclically and their value can be sent as a communication object on the KNX bus. The data update on the KNX network can take place cyclically and/or on variation event of the data acquired by the Modbus network. The interface acquires the value of KNX communication objects during the exchange of telegrams on the bus. The acquired value is converted and written on the appropriate Modbus register. The configuration is carried out by ETS by means of the corresponding application program.

RDZ air handling units

RDZ mechanical ventilation units supported by the interface are specific machines for the residential sector to be installed horizontally on false ceilings vertically in suitable cabinets or inside dedicated technical rooms. Available in different sizes according to the volume of air to be treated, they require ducting and are suitable for both new and renovated buildings. For use in combination with radiant systems, Comfort Units are also available, which perform the dual function of air renewal and summer dehumidification. Available in different models and powers, they ensure maximum comfort in every room, both in summer and winter.

Supported RDZ units

The interface supports RDZ air handling units for use in residential buildings listed in the following table.

Family	Set	Function
REFLAIR	(*)	Mechanical ventilation with heat recovery
CHR		
WHR		
UAP PDC		Air renewal with dehumidification
UC		

(*) DIP-SWITCH SETTING

for: REFLAIR 150-250, CHR 400 Core, WHR 150

Set **DIP 8** (SW1 and SW2) to **ON** position



(**) STOP BIT VALUE SET

for: UC 300 V2, UC 360 V1

Set **Stop Bit Value** to **1**
see Technical Menu/Communication Parameter:
UC 300 V2: <http://pf.rdz.it/?pr=93>
UC 360 V1: <http://pf.rdz.it/?pr=96>

For more information on RDZ air handling units, MVHR and dehumidification systems, please refer to the corresponding catalogue and technical documentation on www.rdz.it/en.

Main characteristics

- Housing in plastic material
- Mounting on 35 mm rail (according to EN 60715)
- Protection degree IP20 (installed device)
- Safety class II
- Weight 70 g
- 2 modular units (1 unit = 18 mm)
- Dimensions 36 x 94 x 71 mm (WxHxD)

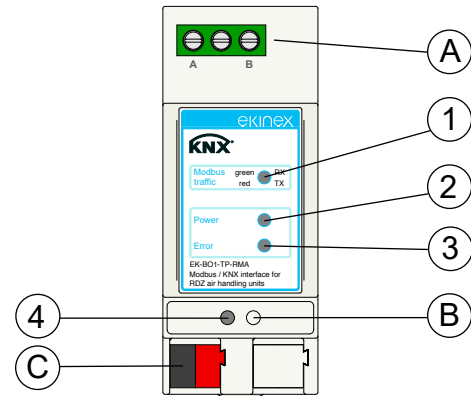
Technical data

Power supply

- 30 Vdc from KNX bus line
- Current consumption (from main bus line) < 13 mA

Environmental conditions

- Operating temperature: - 5 ... + 45°C
- Storage temperature: - 20 ... + 60°C
- Transport temperature: - 20 ... + 60°C
- Relative humidity: 5 - 95% not condensing



1. LED for Modbus traffic
 2. LED for device state
 3. LED for error signalling
 4. LED for KNX programming
- A. Modbus terminal block
B. Programming pushbutton
C. KNX terminal block

Switching, display and connection elements

The device is equipped with 3 signalling LEDs, a terminal for connection to the KNX bus line, a 3-pole screw terminal for connection to a Modbus RTU line, a pushbutton and a programming LED.

Switching elements

Pushbutton (B) for switching between normal operation and programming mode

Display elements

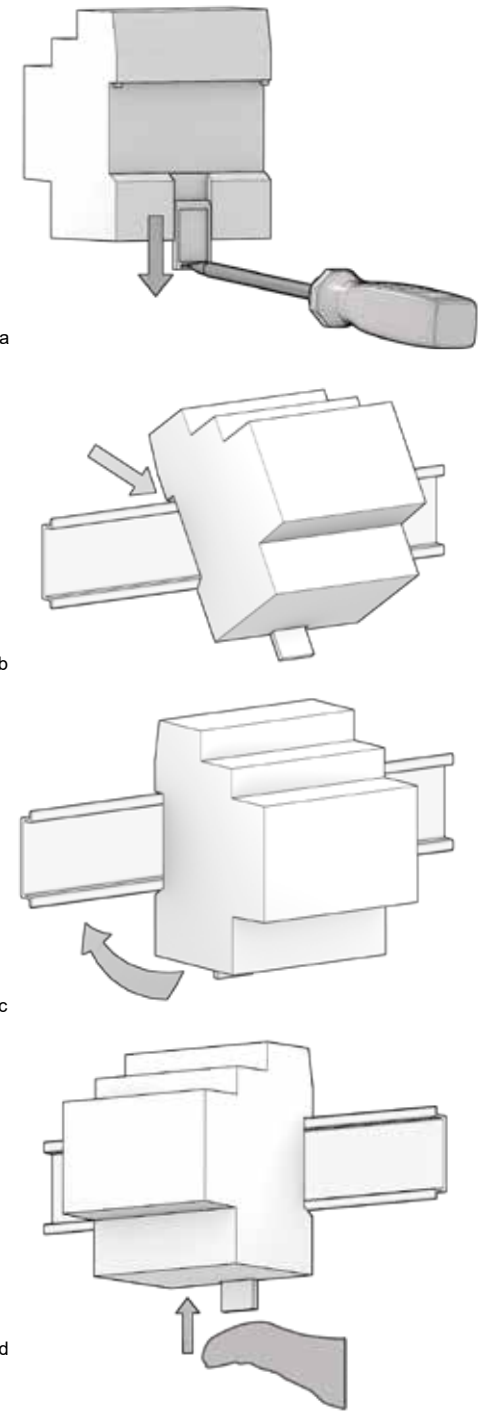
- LED Modbus traffic (1)
 - red on: transmitting (TX)
 - green on: receiving (RX)
- LED power (2)
 - on: active device
 - off: not active device
- LED error (3)
 - on (fixed): the air handling unit configured in ETS does not correspond to the connected unit
 - on (blinking): communication error on Modbus line
- LED programming KNX (4)
 - display of the active mode: on = programming, off = normal operating

Mounting

The device has degree of protection IP20, and is therefore suitable for use in dry interior rooms. The housing is made for rail mounting according to EN 60715 in boards or cabinets for electrical distribution. The correct position is when the KNX bus terminal is located at the bottom. For the installation of the device on the rail proceed as follows.

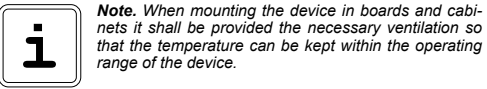
- with the aid of a tool bring the locking device in the fully lowered position (a);
- place the upper edge of the rear inner profile on the upper edge of the rail (b);
- rotate the device towards the rail (c);
- push the locking device upward until it stops (d).

Before removing the device, be sure the Modbus cable has been disconnected and the KNX bus terminal has been extracted from its slot. Use a screwdriver to slide down the locking device and remove the device from the rail.



Connection of the KNX bus line

The connection of the KNX bus line is made with the terminal block (red / black) included in delivery and inserted into the slot at the bottom of the housing.

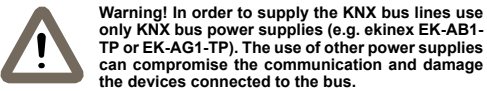


Characteristics of the KNX terminal block

- spring clamping of conductors
- 4 seats for conductors for each polarity
- terminal suitable for KNX bus cable with single-wire conductors and diameter between 0.6 and 0.8 mm
- recommended wire stripping approx. 5 mm
- color codification: red = + (positive) bus conductor, black = - (negative) bus conductor

Connection to the Modbus network

The connection to the Modbus network is made via the screw terminal located on the top front of the device. The poles marked with the letters "A" and "B" are used for the connection.

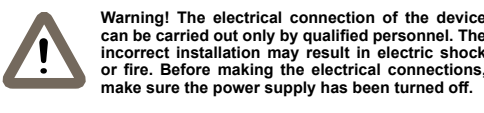


Warning! In order to supply the KNX bus lines use only KNX bus power supplies (e.g. ekinex EK-AB1-TP or EK-AG1-TP). The use of other power supplies can compromise the communication and damage the devices connected to the bus.



Characteristics of the Modbus terminals

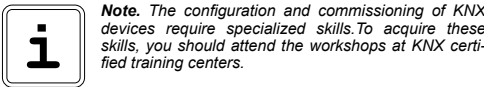
- screw clamping of conductors
- maximum cross section of conductor 2,5 mm² (single wire) or 1,5 mm² (multiwire)
- recommended wire stripping approx. 6 mm
- torque max 0,8 Nm



Warning! The electrical connection of the device can be carried out only by qualified personnel. The incorrect installation may result in electric shock or fire. Before making the electrical connections, make sure the power supply has been turned off.

Configuration and commissioning

Configuration and commissioning of the device require the use of the ETS® (Engineering Tool Software) program V4 or later releases. These activities must be carried out according to the design of the building automation system done by a qualified planner.



Note. The configuration and commissioning of KNX devices require specialized skills. To acquire these skills, you should attend the workshops at KNX certified training centers.

Configuration

For the configuration of the device parameters the corresponding application program or the whole ekinex® product database must be loaded in the ETS program. For detailed information on configuration options, refer to the application manual of the device available on the website www.ekinex.com.

Code	Application program (## = version)
EK-BO1-TP-RMA	APEKBO1RMATP##.knxprod

Commissioning

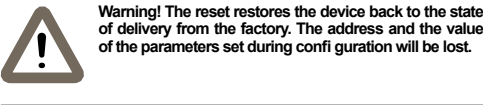
For commissioning the device the following activities are required:

- make the electrical connections as described above;
- turn on the bus power supply;
- switch the device operation to the programming mode
- by pressing the programming pushbutton located on the front side of the housing. In this mode of operation, the programming LED is turned on;
- download into the device the physical address and the configuration with the ETS® program.

At the end of the download the operation of the device automatically returns to normal mode; in this mode the programming LED is turned off. Now the bus device is programmed and ready for use.

Reset of the device

To reset the device remove the bus connection by extracting the bus terminal from its seat. Keeping pressed the programming pushbutton, reinsert the bus terminal in his seat; the programming LED blinks fast. Release the programming button and remove the bus terminal again; the reset was carried out. Now you need to address and configure again the device via ETS.



Warning! The reset restores the device back to the state of delivery from the factory. The address and the value of the parameters set during configuration will be lost.

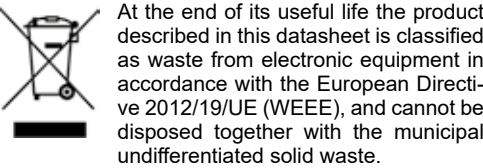
Marks

- KNX
- CE: the device complies the Electromagnetic Compatibility Directive (2014/30/UE), Standard EN 63044-2:2019 and EN 63044-5:2019

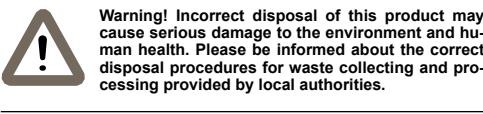
Maintenance

The device is maintenance-free. To clean use a dry cloth. It must be avoided the use of solvents or other aggressive substances.

Disposal



At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Directive 2012/19/UE (WEEE), and cannot be disposed together with the municipal undifferentiated solid waste.



Warning! Incorrect disposal of this product may cause serious damage to the environment and human health. Please be informed about the correct disposal procedures for waste collecting and processing provided by local authorities.

Warnings

- Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the applicable technical standards and laws of the respective countries
- Opening the housing of the device causes the immediate end of the warranty period
- In case of tampering, the compliance with the essential requirements of the applicable directives, for which the device has been certified, is no longer guaranteed
- Defective devices must be returned to the supplier

Other information

- The instruction sheet must be delivered to the end customer with the project documentation
- For further information on the product, please contact the ekinex® technical support at the e-mail address: support@ekinex.com or visit the website www.ekinex.com
- KNX® and ETS® are registered trademarks of KNX Association cvba, Brussels

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EN

Modbus / KNX interface for RDZ air handling units

Code: EK-BO1-TP-RMA



Instructions



Ekinex S.p.A.

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The Modbus / KNX interface for air handling units was developed in collaboration by Ekinex S.p.A. and RDZ S.p.A.



Since 1978 RDZ is the leading company in Italy on the heating and cooling market of radiant systems. Its daily task is to improve indoor comfort in residential, commercial and industrial buildings, both for new constructions and for renovation projects. The company has been always using innovative materials to reach high quality standards and has been always focusing on developing solutions which can meet even the most demanding requirements.

For further information about RDZ air handling and dehumidification systems, please contact RDZ technical support at info@rdz.it or visit the website www.rdz.it/en

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