Bidirectional gateway for the integration of serial Modbus and IP networks

Code: EK-BU1-485-TCP

Datasheet STEKBU1485TCP_EN

Modular bus device designed to enable bidirectional communication between devices equipped with a Modbus RS-485 port and the IP data network. Used in home and building automation systems.

REFLEKBU1485TCP

Description

The Ekinex EK-BU1-485-TCP interface is a modular device designed to enable bi-directional communication between equipment equipped with an RS-485 Modbus port and the IP data network. Thanks to its versatility, the gateway allows serial Modbus devices to be easily integrated into Ethernet network infrastructures, ensuring a reliable and stable connection.

The device features:

- 1x RS-485 serial port for connecting Modbus devices;
- 1x RJ45 connector for interfacing with the IP data network.

The interface is designed for 35 mm DIN-rail mounting, suitable for switchboards or distribution cabinets. Power can be supplied in two modes: via PoE (Power over Ethernet) directly from the LAN cable, or via an auxiliary DC power supply (6-36Vdc).

Operation

The EK-BU1-485-TCP gateway allows bidirectional conversion of the Modbus protocol between an RS-485 serial line and an Ethernet/IP network.

Designed as a universal device, it can operate in conjunction with any equipment playing the role of Modbus master, providing maximum flexibility for integration into automation and supervision systems.

Within Delègo, the gateway allows the expansion of the number of RS-485 serial lines managed by the system.

The Delègo Server has a native RS-485 port for direct connection of Modbus devices; if it is necessary to communicate with devices on more than one serial line, one or more EK-BU1-485-TCP gateways can be used, thus expanding the capabilities of the system in a simple and scalable way.

Main features

- Plastic housing
- Design for mounting on 35 mm profile rail (according to EN 60715)
- IP20 degree of protection (according to EN 60529)
- Safety Class II
- Weight 50 g
- 2 UM modular luminaire (1 UM = 18 mm)
- Dimensions 36 x 87 x 59 mm (W x H x D)

Technical Data

Power supply

- 6-36Vdc or PoE port
- Isolation between power supply and signal

Environmental conditions

- Operating temperature: - 40 ... + 85 °C
- Storage temperature: - 40 ... + 85 °C
- Relative humidity: < 95% non-condensing

Communication interfaces

- 1 x RS-485 isolated
- 1 x RJ45 PoE port, supports IEEE 802.3af standard

RS-485 parameters

- Baud Rate: 1200 ~ 115200 bps
- Parity Bit: None, odd parity, even parity, mark, space
- Data Bits: 5 ~ 9 bits
- Flow Control: No flow control

Software

- Configuration: Web browser
- Protocols: Ethernet, IP, TCP, UDP, HTTP, ARP, ICMP, DHCP, DNS

Control, signalling and connection elements

The interface is equipped with status LEDs, a 6-36 Vdc power supply port, an RS-485 serial port for connecting Modbus devices, and an RJ45 connector for interfacing with the IP data network.

Signalling elements:

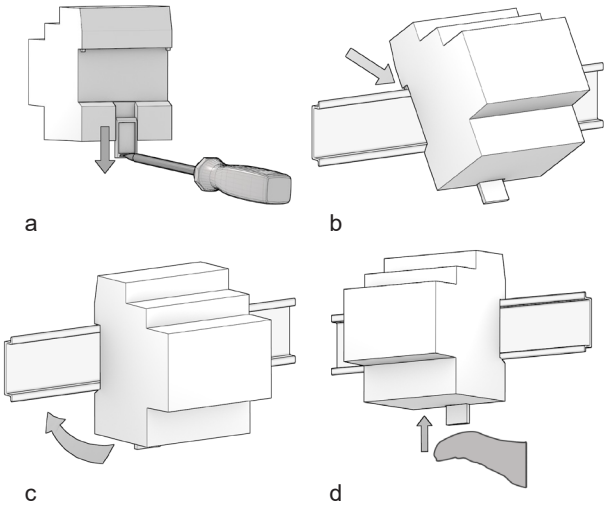
- PWR: indicates that the device is correctly powered
- LINK: (1) The LED is green when the network cable is connected. (2) When the TCP connection is established (or in UDP mode), the LED is blue (actually with a faint green light). It can be used to assess whether the serial port server has established a communication connection with the device connected to the network.
- ACT: (1) When the network port sends data to the serial port, the indicator light is green. The flashing time is 1 second longer than the actual communication time, which makes it easier to detect short data communications. (2) When the serial port sends data to the network port, the indicator light is blue and green simultaneously. Since blue is brighter, if blue is seen, it means that a serial port is returning data to the network port. This can determine whether the device is responding to commands from the network. If there is no response, it means that the serial port's baud rate is incorrect or that the serial port is not connected properly.

Control elements

- RESET button: must be pressed to activate IP address reset sequences or factory configurations.

Assembly

The luminaire has an IP20 degree of protection and is therefore suitable for use in dry indoor environments. The housing is designed for rail mounting in accordance with EN 60715 inside switchboards or electrical distribution cabinets. Correct positioning is achieved when the RJ45 network connector is at the bottom.



Proceed as follows to install the unit:

- With the help of a tool, bring the locking device into the fully lowered position (a);
- place the unit on the upper edge of the profile rail (b)
- Turn the unit towards the guide (c);
- Push the locking device upwards until it stops (d).

Warning! The electrical connection of the device may only be carried out by qualified personnel.

When disassembling the device, ensure that the power supply and Ethernet connections are disconnected and that the Modbus terminal is unplugged from its housing. Using a screwdriver, slide the locking device downwards and remove the device from the profile rail.

Note. *It is recommended that the installation of the device always ensure the full accessibility of the front side to allow the operation of the pushbuttons.*

Power supply

The EK-BU1-485-TCP gateway is powered via PoE, alternatively it can be powered with a 6-36 Vdc power supply via the screw terminals marked V+ and V+ on the 2-pin pull-out connector.

Characteristics of clamps

- Screw tightening of conductors
- Max. conductor cross-section 2.5 mm² (rigid) or 1.5 mm² (flexible)
- Recommended conductor stripping approx. 6 mm
- Max. torque 0.8 Nm

Connection to the Modbus network

The connection to the Modbus network is made via the screw terminal a located on the front of the device at the top. The screw terminals labelled “RS485A” (positive) and “RS485B” (negative) on the 3-pin pull-out connector are used for connection.

Characteristics of clamps

- Screw tightening of conductors
- Max. conductor cross-section 2.5 mm² (rigid) or 1.5 mm² (flexible)
- Recommended conductor stripping approx. 6 mm
- Max. torque 0.8 Nm

LAN connection

Use a standard RJ45 connector.

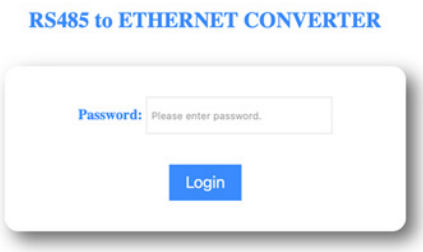
Configuration and Commissioning

Configuration and commissioning of the EK-BU1-485-TCP gateway must be carried out by accessing the web server integrated in the device.

Warning! Configuration and commissioning activities must be performed in accordance with the system design and carried out by a professional.

Access the IP address via a web browser:

http://192.168.1.200



When logging in for the first time, leave the password field empty and click on Login. On subsequent logins, if you have set a password, enter it in the Password field.

This takes you to the configuration screen, which is divided into the following sections:

- Device information
- Network settings
- Serial settings
- Advanced settings
- Multi-Host settings
- Modify Web Login key

Device Information

Set a device name or leave the default one.

Network Settings

Change the IP address of the device according to your network configuration.

Serial Settings

Change the RS-485 serial communication parameters according to the parameters of the devices connected to the Modbus RTU serial line.

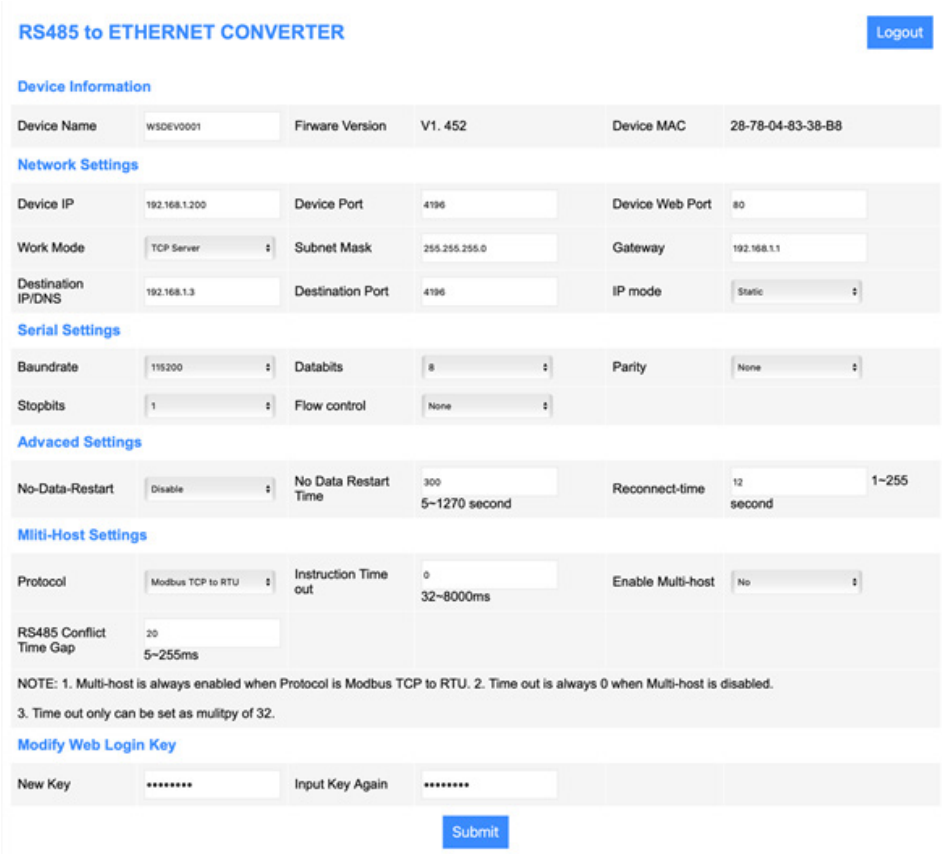
Multi Host Settings

Set Modbus TCP to RTU as protocol. Do not change the other parameters and leave them as default.

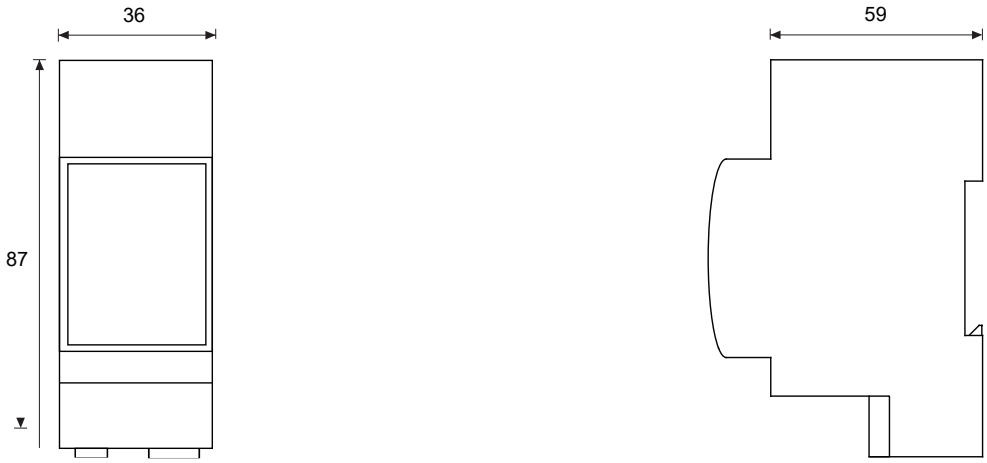
Modify Web Login Key

A password can be set here by filling in the New Key and Input Key Again fields with the desired password.

Once the changes are complete, always click on the **Submit** button.



Dimensions [mm]



Marks

- CE, UKCA: the device complies with the Electromagnetic Compatibility Directive (2014/30/EU), the Low Voltage Directive (2014/35/EU) and the RoHS 2 Directive (2011/65/EU).
- Reference Standards: EN 63044-5-1:2019, EN 63044-5-2:2019, EN 63044-3:2017, EN 62368-1:2020.

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/EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.

Important! Improper disposal of the product may cause serious damage to the environment and human health. For proper disposal, please inform yourself about the collection and treatment methods prescribed by your local authorities.

Document

This technical datasheet refers to the A1.0 release of the ekinex® device code. EK-BU1-485-TCP and is available for download on the website www.ekinex.com in PDF format (Portable Data Format).

File name	Device release	Updated
STEKBU1485TCP_EN.pdf	A1.0	11 / 2025

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
- ekinex® KNX defective devices must be returned to the manufacturer at the following address: EKINEX S.p.A. Via Novara 37, I-28010 Vaprio d'Agogna (NO) Italy

Other information

- This datasheet is aimed at installers, system integrators and planners
- 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
- Each ekinex® device has a unique serial number on the label. The serial number can be used by installers or system integrators for documentation purposes and has to be added in each communication addressed to the EKINEX technical support in case of malfunctioning of the device
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