MBC-24.Wi-Fi Modbus RTU-ASCII-TCP Gateway (RS485 / Wi-Fi)

Short guide

Safety

WARNING
Dangerous voltage!
Electric shock could kill or seriously injure.
All electrical connections must be performed by a fully qualified electrician.
Ensure that the mains voltage matches the voltage marked on the device.
Ensure that the device is provided with its own power supply line and electric fuse.

NOTICE
Switch on the power supply only after wiring of the device has been completed.

1. Overview

The MBC-24. Wi-Fi Modbus RTU-ASCII-TCP gateway is designed for bidirectional conversion and routing communication between ModbusRTU / ASCII via RS485 and Modbus TCP via the Wi-Fi interface. Master and Slave modes are supported.

For detailed information please refer to the MBC– 24. Wi-Fi user guide available at *www.akytec.de*.

2. Specifications

Table 1 Specifications

Parameter	Value
Power supply	
Power supply	24 (10…48) V DC
Power consumption, max.	6 W
Galvanic isolation	1770V
RS485	
Protocols	Modbus RTU (Master/Slave) Modbus ASCII (Master/Slave)
Baud rate	1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200 bps
Cable length, max.	1200 m
Default address	1
Number of Slaves, max.	32
Wi-Fi	
Standard	802.1 b/g/n
Protocol	Modbus TCP (Master/Slave)
Default address	192.168.1.99
Slave ID (fixed)	1
Number of Slaves, max.	31
USB	
Standard	USB 2.0
Connector type	Micro-USB
Device power supply	yes
Mechanical	
Mounting	DIN rail
Dimensions	55 × 96 × 58 mm
IP code	IP20
Weight	approx. 150 g
Average service life	10 years
Mean time between failures (MTBF)	80000 hours

3. Environmental conditions

The device is designed for natural convection cooling which should be taken into account when choosing the installation site.

The following environmental conditions must be observed:

- clean, dry and controlled environment, low dust level
- closed non-hazardous areas, free of corrosive or flammable gases

Table 2 Environmental conditions

Condition	Permissible range
Ambient temperature	−40...+55 °C
Relative humidity	10...95 % (non-condensing)
Altitude	up to 2000 m above sea level
EMC emission / immunity	conforms to IEC 61131-2
Vibration / shock resistance	

4. Dimensions

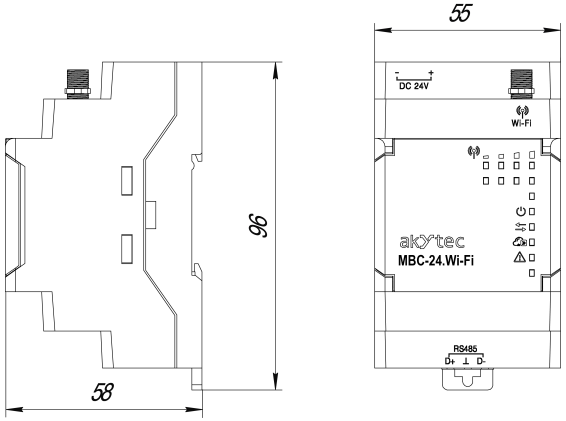

Fig. 1 Dimensions

5. Connection

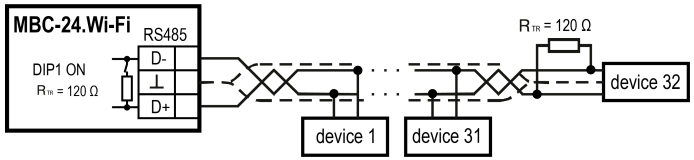

Fig. 2 Connection

6. Indication and control

There are 8 LEDs on the front panel of the gateway:

Table 3 Indicators

LED	State	Description
	ON (Wi-Fi 1...4)	Wi-Fi signal level
	ON one after the other ("ticker") (Wi-Fi 1...4)	Connection to Wi-Fi access point not configured
		The device has created its own access point for configuration
	ON	Power is on
RS	Flashing	Data transfer over RS485 interface
	Flashing	Data transfer over Wi-Fi interface
	OFF	No errors
	ON	Error (see *table 5*)

Table 4 Firmware update indication

LED	State	Description
	ON (⚠, **RS**, , ⏻), Wi-Fi LEDs flash and turn on one by one	Firmware update is in progress

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Table 5 Error indication and remedy

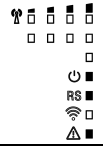
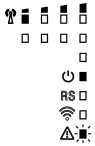
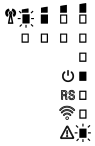
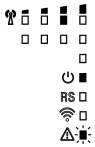
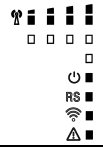
LED	State	Description	Remedy
	ON (⏻, **RS**, ⚠)	Invalid RS485 configuration: 7-N-1	Select a valid combination of parameters (see *table 6*)
	⚠ Flashing (short ON, long OFF) and ON (Wi-Fi 1 and ⏻)	Wi-Fi module does not respond	Contact akYtec service staff
		Wi-Fi module is not powered	
	⚠, Wi- Fi 1 Flashing (short ON, long OFF) and ON (Wi-Fi 2 and ⏻)	Incorrect configuration for connection to the access point	Ensure the correctness of configuration for connection to the access point. Check if there is a Wi-Fi signal in the place where the device is installed. Check antenna connection
		Access point rejects connection requests	
	⚠ Flashing and ON (Wi-Fi 3 and ⏻)	Static IP address setup error	Reassign IP address, if it was configured with akYtec Tool Pro. Ensure the correctness of Wi-Fi network settings
	ON (⏻, **RS**, ⚠, ᯤ, Wi-Fi 1..4)	Firmware startup error	Restart the device. Repeat the firmware update if necessary

Table 6 Supported Modbus data parameters' combinations

Modbus RTU	Modbus ASCII
8-N-1	8-N-1
8-N-2	8-N-2
8-O-1	8-O-1
8-O-2	8-O-2
8-E-1	8-E-1
8-E-2	8-E-2
—	7-O-1
—	7-O-2
—	7-E-1
—	7-E-2

NOTE
Modbus RTU doesn't support value 7 of the **Data bits** parameter.
Modbus ASCII doesn't support combinations 7-N-1 and 7-N-2.

Under the cover:

- Service button
- 4 DIP switches
- Micro-USB connector

The service button can be used for the following functions:

- Factory settings restoration (long press up to 12 s)
- Device reset (up to 2 s)

NOTE
DIP switch positions are read in ascending order starting from 1.

Table 7 DIP switches

DIP switch	Description
 DIP1 = ON	120 Ω terminating resistor is connected
 DIP2 = ON	Firmware update mode is enabled
 DIP3 = ON  DIP4 = ON	Only for akYtec service staff. DIP switches 3 and 4 must be turned off during normal operation

7. Using the device

The gateway configuration parameters must be set before using the device. Connect the gateway to *akYtec Tool Pro* software and set the following configuration parameters: the operation mode, the connected device address in the RS485 network, Wi-Fi settings, and the data conversion protocol required. After the gateway is disconnected from PC and powered, it starts bidirectional Modbus RTU/ASCII and Modbus TCP conversion.

For more information please see the *akYtec Tool Pro* software HELP and the MBC-24.Wi-Fi User Guide available at *www.akytec.de*

Before use, it is necessary to determine which interface will be assigned to the master, and then configure the data communication scenario accordingly.

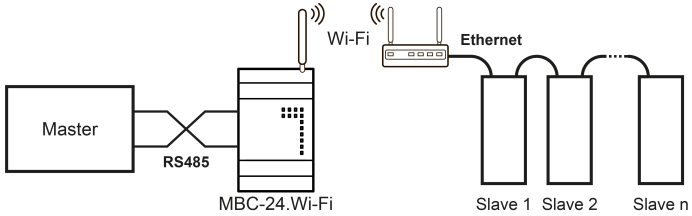


Fig. 3 Using the gateway with Master via RS485 interface

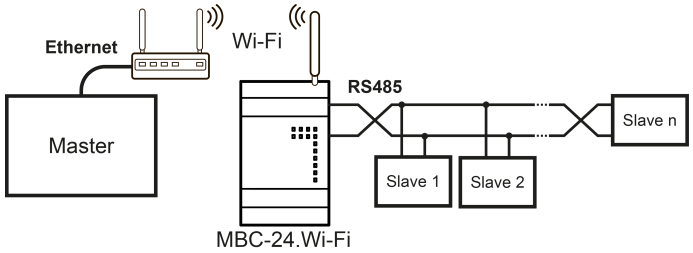


Fig. 4 Using the gateway with Slaves via RS485 interface

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