MIDAM
CONTROL SYSTEM

MIDAM WCOM51

Wireless gateway/repeater

Router/repeater for integration of up to 75 wireless devices. The communication is based on the AES 128 encrypted Midam KFP protocol, which allows to update the device firmware on a wireless basis across the wireless network topology. Native modbus map grants seamless integration into the DDC/SCADA systems. Thanks to the "dual stack radio" technology, it can read values from wMbus based devices simultaneously.

Application

- Modbus RTU to wireless Midam KFP protocol
- Integration of up to 75 Midam KFP devices
- Integration of up to 75 WMbus devices
- Wireless coverage extension
- Wired or wireless integration into SCADA systems

Function

WCOM51 embeds AES 128-bit, the most secure encryption standard for wireless connections. It can work in two modes, direct communication or cached mode. Each device is mapped to Modbus RTU register area. Up to 75 devices can be mapped with configurable offset and length. Communication status is available through timestamp, comm error and status. Wireless coverage area can be extended using the mesh functionality, which is possible thanks to connection of more WCOM51 devices in a row on a RS485 bus. Configuration and data message are exchanged between repeaters on a real time basis. Wireless communication is based on an unlicensed 868 MHz band and uses higher radio frequency transmitter power up to + 20 dBm. Receiver contains +12 dB preamplifier. SMA antenna connector makes implementation of high gain external antenna possible. Direct mounting flex antenna, or external antenna on coaxial cable with SMA connector can be installed, for example for mounting outside switchboard in order to gain better radio signal reception. Gateway configuration is made by software tools over wireless network, or over wired RS485 terminals. The device has factory-set values to ensure the correct default function and allows direct reading and writing of values to the Modbus map, which is available in a separate document. All settings are also stored in the Modbus map directly in the device. Before using the device for the first time, it is necessary to pair it and it is recommended to perform individual configuration, especially to change the encryption password.

SCADA system integration

Direct integration into various SCADA systems through wired Modbus RTU (RS485) protocol is possible.

Pairing

Two devices are required for mutual communication. Both must be powered and located in close proximity to each other. Usually, wireless gateway or configuration dongle is used to set up remote wireless devices. Use look-up function in software tool to display a list of all available devices in range and assign or adjust parameters based on wireless ID code for each single device. There is a comprehensive help section integrated in the software tool to provide support during the wireless device set up procedure.

Midam KFP Password change

Prior to the first use, the encryption password (default "MIKROKLIMA1234AB") must be changed using the WUSB01 configuration dongle and the relevant software tool.

WIRELESS SOLUTIONS

MIDAM WCOM51

Wireless gateway/repeater

Technical data

Power supply	24 to 240 V AC/DC
Consumption	4 W max., 2 W typical average
Communication	868,950 MHz, 100 kbps, WMBUS T1, KFP (default factory setting) 868,300 MHz, 32 kbps, WMBUS S1, KFP 868,100 MHz, 100 kbps, KFP 869,525 MHz, 100 kbps, WMBUS C, KFP 868,300 MHz, 38 kbps, KFP RS485, 300 to 115200 bps, galvanic isolation 1 kV
Protocol	wMBUS (EN 13757-4), KFP (dual stack), Modbus RTU
Encryption	AES 128 PCBC, EN 13757-4
RF power	+20 to - 20 dBm
Antenna	SMA female connector for external antenna. Basic type included in delivery. External antenna requirements: Connector SMA male Frequency range 868 - 870 MHz VSWR < 2.0 Efficiency > 30% Max. input power 0.5 W Input impedance 50 Ohm Cable insertion loss < 1dB
Communication range	500 m in free space, 150 m in buildings
Output	230 V AC, max. 4 A, AC1 general use, non-inductive load (EN60947-4-1), contact lifespan > 10^5 cycles
Mechanical and dimensions	70.4 x 99 x 35 mm Polycarbonate enclosure, IP20 3x LED (PWR, DIAG, TX) 4x Jumper (PRG/USR mode, RS485 BUS END) 1x SMA jack
Terminals	7x M3 screw terminal (Power, DO, RS485) Recommended wire diameter 0.35 to 1.5 mm^2
Ambient conditions	-5 to +45 °C, 5 % to 95 % rH (EN 60721-3-3 class 3K5)

WIRELESS SOLUTIONS

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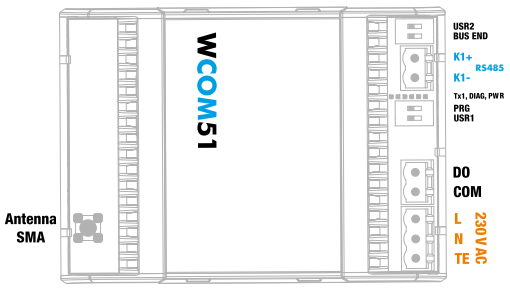
Terminals and connection

K1+	Serial line RS485 +
K1-	Serial line RS485 -
DO	Digital output, NO (normally open)
COM	Common terminal
L, N	Power supply, 24 ... 240 V AC/DC
TE	Technical ground
Antenna SMA	External antenna connector



LED indication and DIP switches

USR2	Not used.
BUS END	Bus end RS485, the first and last devices on the bus should have bus end in ON position.
TX1	RS485 transmitting data to the field bus.
DIAG	Diagnostic, wireless radio indication.
PWR	Power supply indicator.
PRG	In ON position - default frequency, power and password is used.
USR1	Not used.

Changes in versions

01/2020	New datasheet version (20/01).
04/2020	Power supply range extended from 24 to 240 V AC/DC (20/04).
11/2020	Terminal connection scheme updated (v11/2020).
06/2021	Number of connected wireless devices increased (v21/06).
06/2023	External antenna requirements added (v23/06).
07/2025	The wording of the section "Midam KFP Password change" has been modified (v25/07).

WIRELESS SOLUTIONS

Subject to technical changes and General Terms and Conditions.