MIDAM
CONTROL SYSTEM

MIDAM WRU900 89

Wireless CO_2 sensor with LED indication

Wireless, battery powered room sensor. The device features temperature, humidity and CO_2 sensors. Native modbus map that grants seamless integration into the DDC/ SCADA system. CO_2 values are indicated through 3 colour LED in "traffic light" pattern. The communication is based on the AES128 encrypted Midam KFP protocol, which allows to update the device firmware on a wireless basis.

Application

- HVAC control
- Measurement of temperature, humidity and CO_2.
- Wireless integration into SCADA control systems
- CO_2 indication (LEDs)

Function

The wireless sensor WRU900 89 measures temperature, relative humidity and CO_2 values. These are transmitted through the 868 MHz unlicensed band to the WCOM51, or WCOM01 gateways. Embedded AES 128-bit, provides the most secure encryption standard for wireless connections. Three LEDs indicate the CO_2 values in so called traffic light pattern in fully adjustable threshold fo each color/level. There is also an option with rotating knob and display available (refer to WRU900 01 HMI room unit) to provide a variety of possibilities for building up a project. 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

The controller can be integrated into DDC or SCADA systems directly via the WCOM51, or WCOM01 wireless gateways.

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

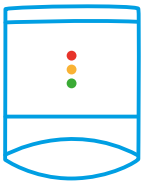
Prior to the first use, the encryption password (default "MIKROKLIMA1234AB") must be changed using the WUSB01 configuration dongle and the relevant software tool.

WIRELESS SOLUTIONS

MIDAM
CONTROL SYSTEM

MIDAM WRU900**89**

Wireless CO_2 sensor with LED indication



Technical data

Power supply	4,5V, 3x main alkaline battery 1,5V, type AA, not included
Consumption	idle <10 uA, avg. typical 90 uA, max. 25 mA
Battery life	> 3 years (default LED indication settings)
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
Protocol	WMBUS (EN 13757-4), KFP (dual stack)
Encryption	AES 128 PCBC, EN 13757-4
RF power	+10 to - 20 dBm, step 5 dB
Antenna	Integrated
Communication range	100 m in free space, 30 m in buildings
Indication	3 LEDs for convenient CO_2 values visual indication.
Mechanical and dimensions	90x115x30 mm enclosure ABS, IP20 2 x DIP switch (INIT mode, USR mode), 3x LED (CO_2 indication)
Temperature measurement range	-20 to +55 °C, ± 0,5 °C
Humidity measuring range	10 to 90 % rH, ±3% rH
Temperature setpoint	configurable, ± 10 to ± 1 K
CO_2 measuring range	400 ... 5000 ppm (secondary output 0-100%)
CO_2 measuring method	NDIR (Non-dispersive Infra Red)
CO_2 measuring accuracy	± 30ppm, ± 3% of measured value (defined conditions for at least 3 calibration ACDL completed over the past 3 weeks). ACDL (automatic calibration in dimming light mode).
Ambient conditions	-5 to +45 °C, 5 % to 95 % rH (EN 60721-3-3 class 3K5)
RoHS notice	The device contains a non-rechargeable battery. After the device is not operable, please return it to the manufacturer or dispose of it in compliance with local regulations.

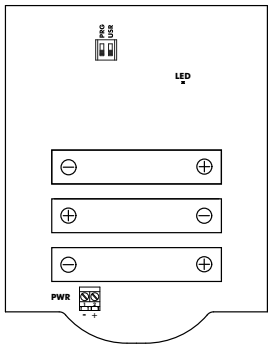
WIRELESS SOLUTIONS

MIDAM WRU900 89

Wireless CO_2 sensor with LED indication

Terminals, DIP switches and LED indication

PRG	In ON position, default frequency, power and password
USR	Not used.
LED	Red/Green LED - sending/receiving data, Red still ON - error indication
LED (top cover)	Green, Yellow, Red - CO_2 indication based on user settings
PWR1	Power supply terminal 1 (+)
PWR2	Power supply terminal 2 (-)



Battery/adapter power supply

The AA type type battery should keep your device running smoothly for more than 60 months but the time will come when you need to replace it. The KFP Tool app can also indicate and report the remaining battery power so that you are aware when it's proper time for change. Open the controller by gently pressing it on the sides. Remove old batteries from the bracket and place new batteries or connect appropriate wired power supply. Observe the battery type and polarity. Always replace both bateries with fresh ones. Then put both parts together and close the controller again. If powered simultaneously from 5 VDC, the batteries may serve as a power supply backup in case of mains supply problems.

Changes in versions

01/2021	New datasheet version (v21/01).
07/2023	Power supply options added (v23/07).
07/2025	The wording of the section "Midam KFP Password change" has been modified (v25/07).