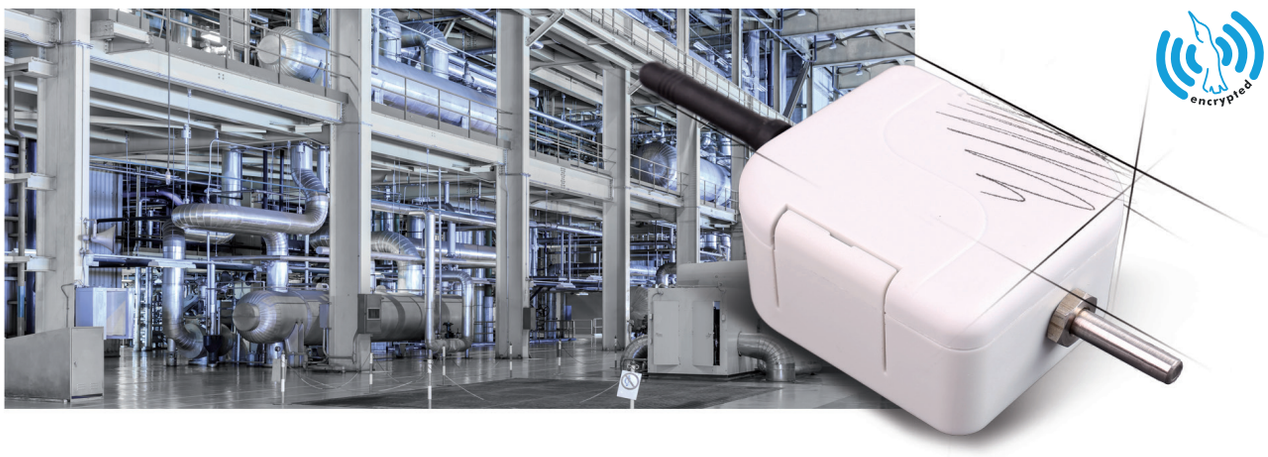
MIDAM
CONTROL SYSTEM

MIDAM W100x9

Wireless sensor



Summary

W100x9 is a wireless, battery powered sensor. Native modbus map grants seamless integration into the DDC/SCADA system. The communication is based on the encrypted Midam KFP protocol, which allows to update the device firmware on a wireless basis. IP65 protection level ensures reliable function of the sensor even in harsh environment.

General information

This document explains the Modbus protocol for W100x9 wireless sensor. Modbus is a communication protocol open to all users and supported in common by many manufacturers. The Modbus protocol allows data and setup information to be transferred between a Modbus Master and a Modbus Slave.

250 words can be read at the same time (i.e. 500 bytes).

Type:
R – register is read only
W – register is write only
RW – register is read/write,
RWE – register is read from EEPROM, write to EEPROM

The supported Modbus functions are:
03 Read Holding Registers – read words
16 Force Multiple Registers – write words

WIRELESS

Modbus map

name	address	type	description	default value
Modbus ID	1	R	modbus map identifier	0xF017 / 0xF018
FW number	2	R	Firmware compatibility version	1
Status	3	RW	Bit 8 set: write content of RAM into EEPROM	0
Device_id	6	R	Device identifier .. used by bootloader	1165
HW number	7	R	PCB version	1
Bootloader FW num.	8	R	Version of bootloader (0 if application runs)	
Name 0	9	RWE	user name, 16 chars	Thermometer 1
Name 1	10	RWE		
Name 2	11	RWE		

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Name 3	12	RWE		
Name 4	13	RWE		
Name 5	14	RWE		
Name 6	15	RWE		
Name 7	16	RWE		
RF address Lo	17	R		0x00A00000 - 0x00AFFFFF
RF address Hi	18	R		
RF key 0	19	RWE	16 byte AES key	MIKROKLIMA1234AB
RF key 1	20	RWE		
RF key 2	21	RWE		
RF key 3	22	RWE		
RF key 4	23	RWE		
RF key 5	24	RWE		
RF key 6	25	RWE		
RF key 7	26	RWE		
RF frequency	27 LSB	RWE	Communication frequency 0..868.95 MHz 1..868.3 MHz, 32.768 kBit 2..868.1 MHz 3..869.525 MHz 4..868.3 MHz, 38.400 kBit	0 (868.95 MHz)
RF power	27 MSB	RWE	Transmission power 0 .. 13 dBm 1 .. 13 dBm 2 .. 10 dBm 3 .. 5 dBm 4 .. 0 dbm 5 .. -5 dBm 6 .. -10 dBm 7 .. - 15 dBm	2 (+ 10 dBm)
EEPROM writes	28	R	number of writes into FLASH	
Uptime Lo	29	R	uptime in seconds	
Uptime Hi	30	R		
RF background RSSI	31 LSB	R	signed char background rssi -128 .. +20 dBm	
Vbat	32 LSB	R	x 0.1V Battery voltage	TRANSMITTED SPONTANEOUSLY Period ~ 24 hour
Bat state	32 MSB	R	Bit 0..3 battery state, x 10 % 0..10 = 0%..100% 15 not measured yet Bit 7 .. lowbat	TRANSMITTED SPONTANEOUSLY Period ~ 24 hour
...	...	...	...	
actual temperature	51	R	actual temperature measured by the internal sensor incl. correction (see correction temperature) temperature = register value * 0,01 °C	TRANSMITTED SPONTANEOUSLY Period ~ 5 min

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...	...	...	...	
actual rH	54	R	actual relative humidity = register *0,01 %	TRANSMITTED SPONTANEOUSLY Period ~ 5 min W-100-19 only
...	...	...	...	
measure period	69	RWE	measure period in seconds 4 .. 180 sec measure_period = register_value * 1s	8 (8 s)
transmit period	70	RWE	Max. RF transmit period 1 - 30 min Transmit_period = min register_value * 1 min	5 (5 min) Data are transmitted faster if change of value reached threshold value
change temperature threshold	71	RWE	data are sent immediately if the change is greater than the threshold value 0.10 - 10 °C temp_threshold = register_value * 0.01 °C	50 (0.50°C)
change rH threshold	72	RWE	data are sent immediately if the change is greater than the threshold value 0.50 - 20.00 % RH_threshold = register_value * 0.01 %	200 (2.00%) W-100-19 only
...	...	...	...	
correction temperature	74	RWE	correction: adds to the actual temperature measured by the internal sensor-20.00 to 20.00 correction_temp = register * 0,01 °C	0 (0°C)
correction rH	75	RWE	correction: adds to the actual humidity measured by the internal sensor Correction_rH = register * 0,01 %	0 (0 %) W-100-19 only

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