

MODBUS RTU in CAMRegis Basic dataloggers

1- INTRODUCTION

This document is aimed at describing to the user the operation of the MODBUS RTU communications series protocol implemented by AKO in the CAMRegis Basic dataloggers. We should take into account that we assume that the user who wants to interact with any of our equipment with communication capacity has some knowledge of the protocol.

2- TECHNICAL SPECIFICATIONS

RS-485 COMMUNICATIONS: Physically speaking, the CAMRegis Basic devices with integrated communications can be connected to a RS-485 communications bus with other devices. This is a multipoint connection where the maximum distance is 1200 m. The configuration of this bus should be identical to the one presented in the following table:

RS-485 SERIES CONFIGURATION	
Baud Rate	9600 bauds
Data length	8 bits
Parity bit	No
Stop Bits	1 bit
Resists termination	No
Number of devices	30

3- MODBUS FUNCTION SUPPORTED

Functions	
WRITE SINGLE REGISTER	06h
WRITE MULTIPLE REGISTER	10h
READ HOLDING REGISTER	03h
READ INPUT REGISTER	04h
READ DEVICE IDENTIFICATION	2Bh

4- PARAMETER MAP

Depending on the parameter, the temperature values are expressed in degrees x10

Maximum value: 0X8001 (Open circuit)

Minimum value: 0X7FFF (Closed circuit)

INPUT CONFIGURATION:

	Description	Units	Address
i1	Type of input 1: 0: Disabled 1: NTC 2: 4-20 mA 3: Digital input (NO) 4: Digital input (NC)	-	201
i2	Value 4 mA input 1	-	202
i3	Value 20 mA input 1	-	203
i4	Calibration input 1	According i1	204
i11	Type of input 2: 0: Disabled 1: NTC 2: 4-20 mA 3: Digital input (NO) 4: Digital input (NC)	-	211
i2	Value 4 mA input 2	-	212
i3	Value 20 mA input 2	-	213
i4	Calibration input 1	According i11	214

ALARM CONFIGURATION:

	Description	Units	Address
A0	Alarm input 1: 0: Disabled; 1: Enabled	-	500
A1	MAX alarm value input 1	According i1	501
A2	MIN alarm value input 1	According i1	502
A3	Delay alarm input 1	Min.	503
A4	Alarm output input 1: 0: No output 1: Only acoustic 2: Only relay 3: Acoustic + relay	-	504
A10	Alarm input 2: 0: Disabled; 1: Enabled	-	510
A11	MAX alarm value input 2	According i11	511
A12	MIN alarm value input 2	According i11	512
A13	Delay alarm input 2	Min.	513
A14	Alarm output input 2: 0: No output 1: Only acoustic 2: Only relay 3: Acoustic + relay	-	514

GENERAL CONFIGURATION:

	Description	Units	Address
P2	Access code function: 0 :Inactive; 1 :Parameter access block	-	602
P3	Default parameters: 0 :No; 1 :Yes	-	603
P5	MODBUS address for units with communication	-	605
P7	Temperature display mode: 0 : Integers in °C 1 :One decimal point in °C 2 :Integers in °F 3 :One decimal point in °F	-	607
P8	Input to be displayed: 0 : Carrusel Input 1 - Input 2; 1 : Input 1; 2 : Input 2	-	608
P50	Mute alarm with SET key: 0 : Disabled 1 : Only sound 2 : Only relay 3 : Sound and relay	-	650

LOGGER CONFIGURATION:

	Description	Units	Address
L1	Log interval: 0 : 1 minute 1 :5 minutes 2 : 15 minutes 3 :30 minutes 4 :60 minutes	-	911
L2	Delete record and event log: 0 :No; 1 :Yes	-	912
L3	Day of the start of the log: 0 : Monday 1 :Tuesday 2 :Wednesday 3 :Thursday 4 :Friday 5 :Saturday 6 :Sunday	-	913
L4	Decimal separator in .csv files: 0 : "," 1 : "."	-	914

DATE AND TIME:

	Description	Units	Address
r1	Hour	-	701
r2	Minute	-	702
r3	Day	-	703
r4	Month	-	704
r5	Year	-	705
r6	Automatic hour change: 0 :No; 1 :Yes	-	706

ACCESS CONTROL AND CONFIGURATION:

	Description	Units	Address
L5	Password	-	800
PU	Programme version	-	801
Pr	Programme version	-	802

5- CONTROLLER STATUS

Description	Units	Min	Max.	Address
Buzzer		-256d	0d	1000
Probe 1	(°C/°F)	7FFFh	8001h	1001
Probe 2	(°C/°F)	7FFFh	8001h	1002
Digital input 1		0d	1d	1003
Digital input 2		0d	1d	1004
Keypad		0d	15d	1005
Relay 1 output		-256d	0d	1006
Alarms				1020

TEMPERATURE (PROBES): Value expressed in degrees x10

Maximum value: 8001h (Open circuit)

Minimum value: 7FFFh (Closed circuit)

DIGITAL INPUTS: The meaning of each value will depend on the configuration of the P12 and P13 parameters

Maximum value: 1 (active)

Minimum value: 0 (inactive)

OUTPUTS (RELAYS and BUZZER):

Relay OFF = 0d

Relay ON = -256d (0XFF00)

KEYPAD: The value simulates pressing one of the available keys, depending on the controller model.

Value	Keystroke
0	
1	
2	
3	
4	
5	
6	
7	
15	No key pressed

ALARMS:

After converting to binary, each bit defines the status of each of the active (1) or inactive (0) alarms.

	Description
bit 0	MIN alarm input 1
bit 1	MAX alarm input 1
bit 2	MIN alarm input 2
bit 3	MAX alarm input 2