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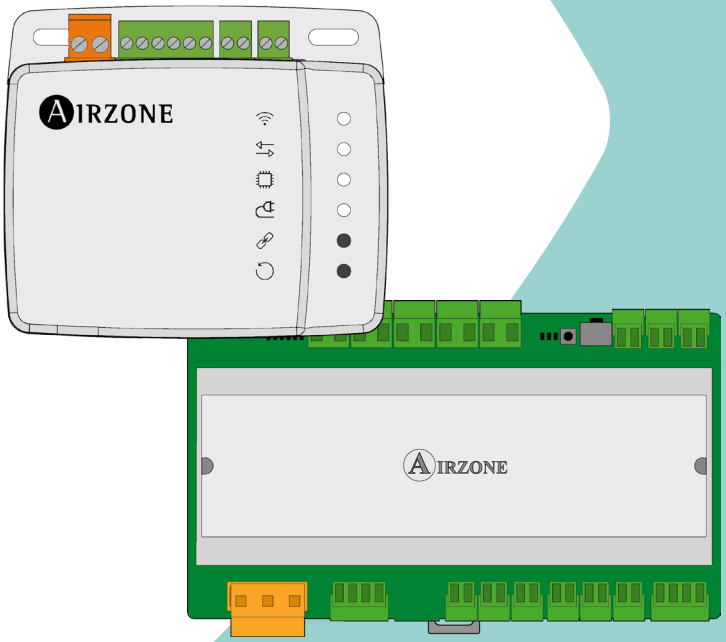
Integration Manual

Aidoo – Modbus



AIRZONE

Content

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Environmental policy

- Never dispose of this equipment with household waste. Electrical and electronic products contain substances that can be harmful to the environment if not properly handled. The crossed-out waste bin symbol indicates separate collection of electrical devices, which must be separated from other urban waste. For correct environmental management, at the end of its useful life the equipment should be taken to the collection centers provided for this purpose.
- The parts that make it up can be recycled. Therefore, please respect the regulations in force regarding environmental protection.
- If you replace the equipment, the original equipment must be returned to your dealer or deposited at a specialized collection center.
- Violations are subject to the penalties and measures stipulated in environmental protection law.

Modbus Protocol

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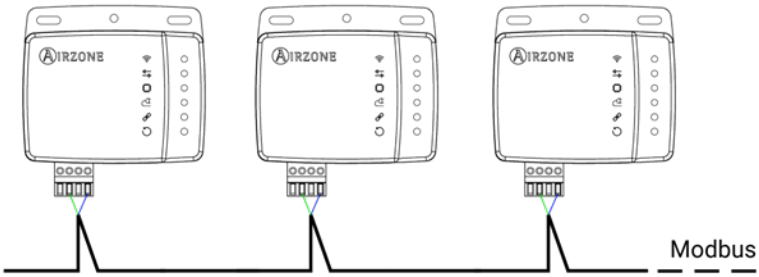
RS-485 COMMUNICATION PORT

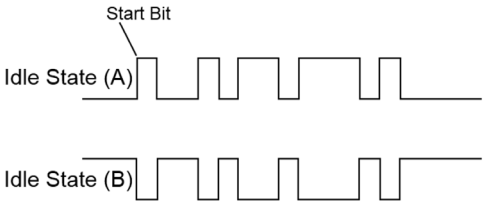
RS-485, also known as EIA-485, is a communication standard in bus.

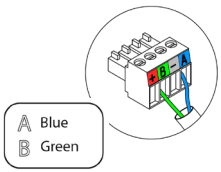
Integration bus	
Speed of the communication port	19200 bps
Communication	Half duplex
Frame length	8 bit
Stop bit	1 bit
Stream control	None
Parity	Even

Connection



For proper operation of the system, verify that only the communication cables (green-blue) are connected to their matching domotic buses. Attach the wires with the terminal screws following the color code.





PROTOCOL

Aidoo Pro allows a Building Management System (BMS) to control all variables of the Airzone systems.

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Aidoo Pro is a Plug&Play device for Airzone systems, and allows the following variables to be controlled and monitored:

- Switching on/off
- Room temperature
- Set point temperature
- Status of the operation mode
- Fan status and speed

MODBUS Protocol is a communication structure used to establish master-slave/client-server communication between intelligent devices connected on different types of buses or networks.

Each device intended to communicate using Modbus is given a unique address. Master devices send a command in a frame which contains the address of the device or the end-devices (slaves). All devices are sent the frame, but only the recipient interprets and executes the command. Modbus commands contain checksum information, to allow the recipient to detect transmission errors.

Note: *It possible to send information to multiple devices simultaneously using a frame called "Broadcast".*

Each message includes redundant information that ensures it is properly received. If, after a certain time, the master does not receive a confirmation it interprets that an error has occurred and terminates communication.

The mode of transmission used is MODBUS-RTU. Each byte of data is represented by two 4-bit characters in hexadecimal format. The format of the frame is the following:

Start	0	1	2	3	4	5	6	7	Parity	Stop

Configuration

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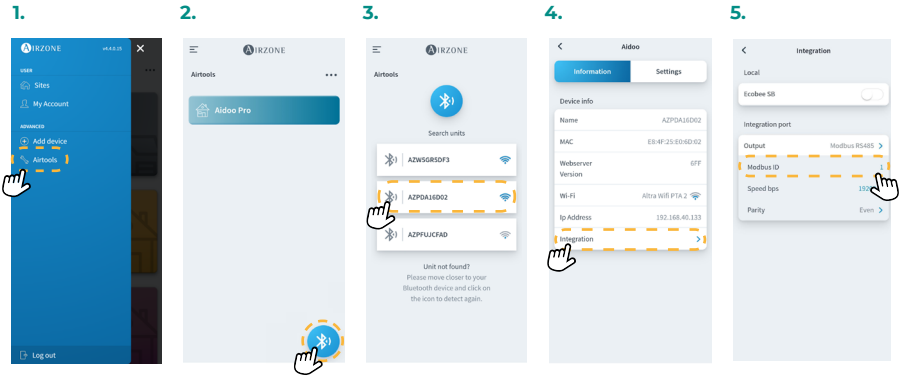
Aidoo is a Modbus slave device; it is therefore necessary to indicate its address. To do this, associate your Aidoo via the Airzone Cloud app (available for iOS and Android) by following these steps:

1. From the main screen, access the menu and select Airtools.
2. Start advanced configuration via Bluetooth.
3. Select your Aidoo from the list.

Note: *If your unit is not listed, confirm that the Bluetooth function on your iOS or Android device is enabled and that Aidoo is turned on and working properly.*

4. Select “Integration”.
5. Configure the output as Modbus and set the Modbus ID.



Download Airzone Cloud App

MODBUS FUNCTION CODES

Modbus basic commands allow the control of a device to change the value of its registers (memory slot) or to request the content of these registers, depending on the codes:

Code	Function
03	Read holding registers
04	Read input registers
06	Preset/write single holding register
16	Preset/write multiple holding registers

MODBUS COMMANDS

The format of the commands for the read/write operations is as follows (8 byte):

Slave address	Operation code	Register address	Data	CRC
1 byte	1 byte	2 bytes	1...2·N bytes	2 bytes

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- **Slave address.** Defines the system to access. A Modbus command contains the Modbus address of the device it is intended for 1 to 247. 0 address is reserved for a transmission to all devices (Broadcast).
- **Operation code.** Specifies the operation to be performed.
- **Register address.** Specifies the operation to be accessed. In commands to be performed in multiple registers, defines the boot log, from which you want to operate consecutively.
- **Data.** Formed by 2 bytes (simple operations) or a set of 2 bytes (multiple operations) that contain the information in the command.
- **CRC.** Two bytes are added to the end of the stream in order to detect transmission o reception errors. This action is done using the Cyclic Redundant Code.

  Generator polynomial: **CRC-16 = $x^{16} + x^{15} + x^2 + 1$**.

Write commands

Write multiple registers

Byte	Field
0	Address of the slave (1 - 247) (0: Broadcast)
1	Write multiple register (16)
2	Starting register address
3	Number of registers to be written (N)
4	
5	Total number of bytes of write data (2·N)
6	Data to be written in register 1
7	
...	
5 + 2·N	Data to be written in register N
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

The response, as long as it is error-free, will be:

Byte	Field
0	Address of the slave (1 - 247) (0: Broadcast)
1	Write multiple registers (16)
2	Starting register address
3	
4	Number of registers to be written (N)
5	
6	CRC
7	

Write a single holding register

Byte	Field
0	Address of the slave (1 - 247) (0: Broadcast)
1	Write single register (6)
2	Register address
3	
4	Data to be written
5	
6	CRC
7	

The response, as long as there is no error type, must be exactly the same format as the write command.

Read commands

Question

Byte	Field
0	Address of the slave (1 - 247) (0: Broadcast)
1	Reading records (3/4)
2	Starting register address
3	
4	Number of registers to be read (N)
5	
6	CRC
7	

Response

Byte	Field
0	Slave address (1 - 247) (0: Broadcast)
1	Read holding registers (3/4)
2	Number of response bytes (2·N)
3	Data to be read in register 0
4	
...	
3 + 2·N	Data to be read in register N
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

REGISTERS

Registers for Direct Expansion units

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point*	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature**	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
4	Speeds percentage	0 → Auto 25 → Silent 50 → Low 75 → Medium 100 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

** The minimum / maximum limits depends on your AC unit.*
*** Must be greater than 0.*

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Registers	Description	Values	Read (R) Write (W)	Operations
5	Louver vertical	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
6	Louver horizontal	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 1 → Super-Low Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High Bit 7 → Super-High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 3 → Swing U/D Bit 4 → Swing L/R Bit 5 → Swril Bit 8-11 → Vertical positions (0-7) Bit 12-15 → Horizontal positions (0-7)	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

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Registers	Description	Values	Read (R) Write (W)	Operations
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
59	Emergency heat status	0 → Deactivated 1 → Activated	R	0x03, 0x04
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Value: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

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Registers for Air-to-Water HP units

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature*	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
9	Unit status On / Off ACS	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
10	Status power ACS On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
11	Set point water C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
12	Set point ACS	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
13	General funct. water unit	Bit 0: ACS unit available 0 → ACS Not available 1 → ACS Available Bit 1: Unit Water config TAI/TH 0 → TAI mode 1 → TH mode Bit 2: Diverter valve 0 → Position C/H 1 → Posición ACS	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

** Must be greater than 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
27	Limit temp. max water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
28	Limit temp. min water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
29	Limit temp. max water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
30	Limit temp. min water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
31	Limit temp. max water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
32	Limit temp. min water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
33	Limit temp. max ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
34	Limit temp. min ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04

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Registers	Description	Values	Read (R) Write (W)	Operations
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Exampe: 7 A → 70	R	0x03, 0x04
46	Water out temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
47	Water in temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
48	Tank ACS temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
49	Water out temp. ICP	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
50	Refrigerant temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
51	Water flow	Water Flow x10 Exampe: 7.2 l/min → 72	R	0x03, 0x04
52	Water pressure	Water Pressure x10 Exampe: 1.3 bar → 13	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
61	Unit status On / Off C2	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
62	Set point water C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
63	Set point air C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
64	Set point air C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
65	Limit temp. max water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
66	Limit temp. min water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
67	Limit temp. max water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
68	Limit temp. min water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
69	Limit temp. max water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
70	Limit temp. min water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
71	Water out temp. C2	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
72	Local temperature C2	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04

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Registers	Description	Values	Read (R) Write (W)	Operations
79	Total energy generated in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
80	Total energy generated in ACS (2)		R	0x03, 0x04
81	Actual energy generated in ACS	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
91	Consumption electric resistor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
92	Consumption electric resistor in ACS (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
97	Consumption compressor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
98	Consumption compressor in ACS (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Índice

ES

Política medioambiental

- No tire nunca este equipo con los desechos domésticos. Los productos eléctricos y electrónicos contienen sustancias que pueden ser dañinas para el medioambiente si no se les da el tratamiento adecuado. El símbolo del contenedor de basura tachado indica la recogida selectiva de aparatos eléctricos, que se diferencia del resto de basuras urbanas. Para una correcta gestión ambiental, se deberá llevar el equipo a los centros de recogida previstos al final de su vida útil.
- Las piezas que forman parte del mismo se pueden reciclar. Respete, por tanto, la reglamentación en vigor sobre protección medioambiental.
- Debe entregarlo a su distribuidor si lo reemplaza por otro, o depositarlo en un centro de recogida especializado.
- Los infractores están sujetos a las sanciones y a las medidas que establece la ley sobre protección del medio ambiente.

Protocolo Modbus

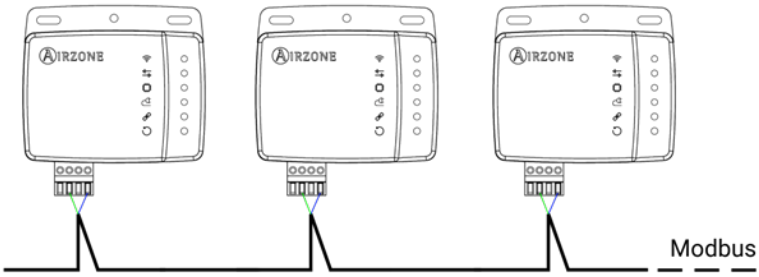
PUERTO DE COMUNICACIONES RS-485

ES

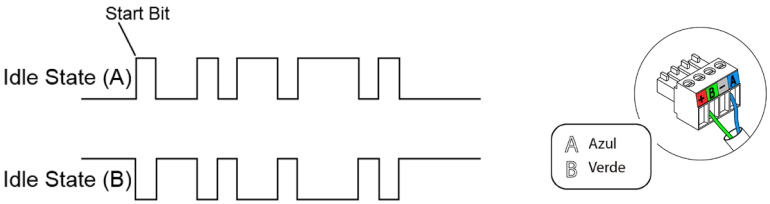
El RS-485, o también conocido como EIA-485, es un estándar de comunicaciones en bus.

Bus de integración	
Velocidad del puerto de comunicación	19200 bps
Comunicación	Half duplex
Longitud de la trama	8 bit
Bit de parada	1 bit
Control de flujo	Ninguno
Paridad	Par

Conexión



Para el correcto funcionamiento de los sistemas Airzone, verifique que sólo están conectados los cables de comunicación (verde-azul) en cada terminal en los respectivos buses. Fije los cables respetando el código de colores.



PROTOCOLO

El Aidoo permite a un Sistema de gestión de edificaciones (Building Management System - BMS) controlar todas las variables de los sistemas Airzone.

El Aidoo es un dispositivo Plug&Play para sistemas Airzone, y permite controlar y monitorizar las siguientes variables:

- Encendido/apagado
- Temperatura ambiente
- Temperatura de consigna
- Estado del modo de funcionamiento
- Estado y velocidad del ventilador

Modbus es un protocolo de comunicaciones basado en la arquitectura maestro/esclavo, el cual organiza la información a nivel físico en formatos o grupos lógicos de información.

Cada dispositivo de la red Modbus posee una dirección única. El dispositivo maestro envía un comando en una trama, en la cual está contenida la dirección del dispositivo o dispositivos destinatarios (esclavos). Todos los dispositivos reciben la trama, pero sólo el destinatario interpreta y ejecuta el comando, devolviendo un mensaje de confirmación o un mensaje de error.

Nota: *Existe la posibilidad de enviar información a multitud de dispositivos de manera simultánea a través de una trama denominada "Broadcast".*

Cada uno de los mensajes enviados incluye información redundante que asegura su integridad en la recepción. Si pasado cierto tiempo el maestro no recibe confirmación, entiende que se ha producido un error y termina la comunicación.

El modo de transmisión utilizado es MODBUS-RTU. Cada byte de datos se representa mediante dos caracteres de 4 bits en hexadecimal. El formato de la trama es la siguiente:

Start	0	1	2	3	4	5	6	7	Paridad	Stop

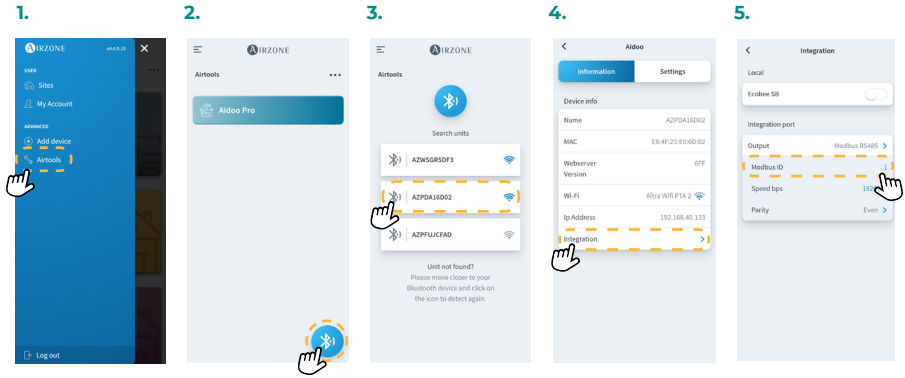
Configuración

El Aidoo es un dispositivo Modbus esclavo, por ello es necesario indicar la dirección de este. Para ello, asocie su Aidoo mediante la app Airzone Cloud (disponible para iOS y Android) siguiendo estos pasos:

1. Desde la pantalla principal acceda al menú y seleccione Airtools.
2. Comience la configuración avanzada vía Bluetooth.
3. Seleccione su Aidoo del listado.

__Nota:__ Si su unidad no aparece confirme que la función Bluetooth de su dispositivo iOS o Android está activado y que el Aidoo está encendido y funciona correctamente.

4. Seleccione “Integración”.
5. Configure la salida como Modbus y establezca el Modbus ID.



Descarga App Airzone Cloud

CÓDIGOS DE FUNCIÓN MODBUS

Los comandos básicos Modbus permiten controlar un dispositivo para modificar el valor de alguno de sus registros (espacio en memoria) o bien solicitar el contenido de dichos registros; según los diferentes códigos de función:

Código	Función
03	Lectura de registros de salida o internos
04	Lectura de registros de entrada
06	Escritura de un solo registro
16	Escritura de múltiples registros

COMANDOS MODBUS

El formato que siguen los comandos para las operaciones de lectura/escritura es el siguiente (8 byte):

Dirección de esclavo	Código de operación	Dirección de registro	Datos	CRC
1 byte	1 byte	2 bytes	1...2·N bytes	2 bytes

- **Dirección de esclavo.** Define el dispositivo esclavo al que se quiere acceder. Las direcciones son de 1 a 247, reservándose la dirección 0 para transmitir a todos los dispositivos (Broadcast).
- **Código de operación.** Indica la función a realizar por el comando.
- **Dirección de registro.** Indica la dirección del registro al que se desea acceder. En comandos sobre múltiples registros define el Registro de Inicio, a partir del cual se va a operar de forma consecutiva.
- **Datos.** Formado por 2 bytes (operaciones simples) o conjunto de 2 bytes (operaciones múltiples) que contienen la información del comando.
- **CRC.** Se añaden 2 bytes al final de la trama a fin de detectar errores en la transmisión o recepción. Para ello se utiliza el método de Comprobación de redundancia cíclica (Cyclic Redundant Code - CRC).

  El polinomio generador es: **CRC-16 = $x^{16} + x^{15} + x^2 + 1$**.

Comandos de escritura

Escritura de múltiples registros

Byte	Campo
0	Dirección de esclavo (1 - 247) (0: Broadcast)
1	Escritura de múltiples registros (16)
2	Dirección de registro de inicio
3	Número de registros a escribir (N)
4	
5	Número de bytes totales de escritura (2·N)
6	Datos a escribir en registro 1
7	
...	
5 + 2·N	Datos a escribir en registro N
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

La respuesta, siempre y cuando no se produzca ningún tipo de error, será:

Byte	Campo
0	Dirección de esclavo (1 - 247) (0: Broadcast)
1	Escritura de múltiples registros (16)
2	Dirección de registro de inicio
3	
4	Número de registros a escribir (N)
5	
6	CRC
7	

Escritura de un solo registro

Byte	Campo
0	Dirección de esclavo (1 - 247) (0: Broadcast)
1	Escritura de un solo registro (6)
2	Dirección de registro
3	
4	Datos a escribir
5	
6	CRC
7	

La respuesta, siempre y cuando no se produzca ningún tipo de error, debe tener exactamente el mismo formato que el comando de escritura.

Comandos de lectura

Pregunta

Byte	Campo
0	Dirección de esclavo (1 - 247) (0: Broadcast)
1	Lectura de registros (3/4)
2	Dirección de registro de inicio
3	
4	Número de registros a leer (N)
5	
6	CRC
7	

Respuesta

Byte	Campo
0	Dirección de esclavo (1 - 247) (0: Broadcast)
1	Letura de registros (3/4)
2	Número de bytes de respuesta (2·N)
3	Datos a leer en el registro 0
4	
...	
3 + 2·N	Datos a leer en registro N
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

REGISTROS

Registros para unidades de Expansión Directa

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point*	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature**	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
4	Speeds percentage	0 → Auto 25 → Silent 50 → Low 75 → Medium 100 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

** Los límites mínimo / máximo dependen de su unidad de AC.*
*** Debe ser mayor que 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
5	Louver vertical	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
6	Louver horizontal	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 1 → Super-Low Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High Bit 7 → Super-High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 3 → Swing U/D Bit 4 → Swing L/R Bit 5 → Swril Bit 8-11 → Vertical positions (0-7) Bit 12-15 → Horizontal positions (0-7)	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
59	Emergency heat status	0 → Deactivated 1 → Activated	R	0x03, 0x04
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Value: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Registros para unidades de Aerotermia

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature*	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
9	Unit status On / Off ACS	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
10	Status power ACS On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
11	Set point water C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
12	Set point ACS	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
13	General funct. water unit	Bit 0: ACS unit available 0 → ACS Not available 1 → ACS Available Bit 1: Unit Water config TAI/TH 0 → TAI mode 1 → TH mode Bit 2: Diverter valve 0 → Position C/H 1 → Posición ACS	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

** Debe ser mayor que 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
27	Limit temp. max water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
28	Limit temp. min water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
29	Limit temp. max water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
30	Limit temp. min water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
31	Limit temp. max water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
32	Limit temp. min water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
33	Limit temp. max ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
34	Limit temp. min ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Exampe: 7 A → 70	R	0x03, 0x04
46	Water out temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
47	Water in temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
48	Tank ACS temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
49	Water out temp. ICP	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
50	Refrigerant temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
51	Water flow	Water Flow x10 Exampe: 7.2 l/min → 72	R	0x03, 0x04
52	Water pressure	Water Pressure x10 Exampe: 1.3 bar → 13	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
61	Unit status On / Off C2	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
62	Set point water C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
63	Set point air C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
64	Set point air C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
65	Limit temp. max water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
66	Limit temp. min water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
67	Limit temp. max water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
68	Limit temp. min water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
69	Limit temp. max water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
70	Limit temp. min water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
71	Water out temp. C2	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
72	Local temperature C2	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
79	Total energy generated in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
80	Total energy generated in ACS (2)		R	0x03, 0x04
81	Actual energy generated in ACS	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
91	Consumption electric resistor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
92	Consumption electric resistor in ACS (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
97	Consumption compressor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
98	Consumption compressor in ACS (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

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Politique environnementale

- Ne jetez pas l'appareil dans la poubelle des déchets ménagers. Les appareils électriques et électroniques contiennent des substances qui peuvent être nocives pour l'environnement si ceux-ci ne sont pas traités correctement. Le symbole de la poubelle barrée d'une croix indique une collecte sélective des appareils électriques, différente du reste de déchets urbains. Dans l'intérêt d'une bonne gestion environnementale, l'appareil devra être déposé dans les centres de collecte prévus à cet effet, à la fin de sa durée de vie utile.
- Les pièces qui le composent peuvent être recyclées. Veillez, par conséquent, à respecter la réglementation en vigueur en matière de protection de l'environnement.
- Rendez-vous chez le distributeur, si vous souhaitez remplacer l'appareil par un autre, ou déposez-le dans un centre de collecte spécialisé.
- Les transgresseurs s'exposent aux sanctions et aux dispositions prévues par la loi en matière de protection sur l'environnement.

Protocole Modbus

PORT DE COMMUNICATION RS-485

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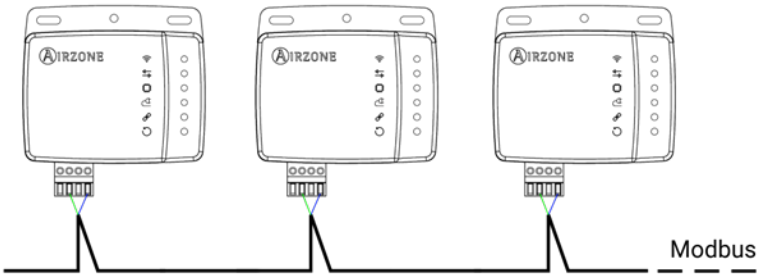
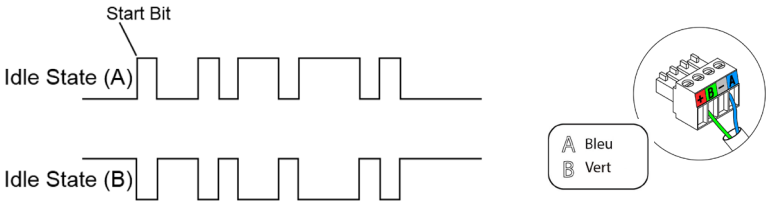
Le RS-485, également appelé EIA-485, est un standard de communication par bus.

Bus d'intégration	
Vitesse du port de communication	19 200 bps
Mode de communication	Half duplex
Longueur de trame	8 bits
Bits d'arrêt	1 bit
Contrôle de flux	Aucun
Parité	Paire

Connexion



Afin de veiller au bon fonctionnement des systèmes Airzone, vérifiez que seuls les câbles de communication (vert-bleu) soient connectés à chaque unité terminale des bus domotiques respectifs. À l'aide des vis, fixez les câbles aux différentes bornes, en respectant le code couleur.



PROTOCOLE

Aidoo Pro permet à un système de gestion de bâtiment (Building Management System - BMS) de contrôler toutes les variables des systèmes Airzone.

Aidoo Pro est un dispositif Plug&Play pour les systèmes Airzone, et permet de contrôler et de surveiller les variables suivantes :

- Allumage/extinction
- Température de la pièce
- Température de consigne
- Statut du mode de fonctionnement
- Statut et vitesse du ventilateur

Modbus est un protocole de communication basé sur une architecture maître/esclave, qui organise l'information à niveau physique en formats ou groupes logiques d'information.

Chaque dispositif du réseau Modbus possède une seule et unique adresse. Le dispositif maître émet une commande dans une trame, laquelle contient l'adresse du dispositif ou des dispositifs destinataire(s) (esclaves). Tous les dispositifs reçoivent la trame, mais seule le destinataire interprète et exécute la commande, en retournant un message de confirmation ou d'erreur.

Note : *Il est possible d'envoyer l'information à de multiples dispositifs de manière simultanée à travers une trame appelée « Broadcast ».*

Chaque message envoyé comprend des informations redondantes qui assurent son intégrité à la réception. Si, passé un certain délai, le maître ne reçoit pas de confirmation, il l'interprètera comme une erreur et mettra fin à la communication.

Le mode de transmission utilisé est MODBUS-RTU. Chaque octet de données est représenté par deux caractères de 4 bits en hexadécimal. Le format de la trame est le suivant :

Start	0	1	2	3	4	5	6	7	Parité	Stop

Configuration

L'Aidoo est un dispositif Modbus esclave. Il est donc nécessaire d'indiquer son adresse. Pour cela, associez votre Aidoo grâce à l'application Airzone Cloud (disponible sur iOS et Android) en suivant les étapes suivantes :

1. Sur l'écran principal, accédez au menu et sélectionnez Airtools.
2. Commencez la configuration avancée via Bluetooth.
3. Sélectionnez votre Aidoo Pro dans la liste.

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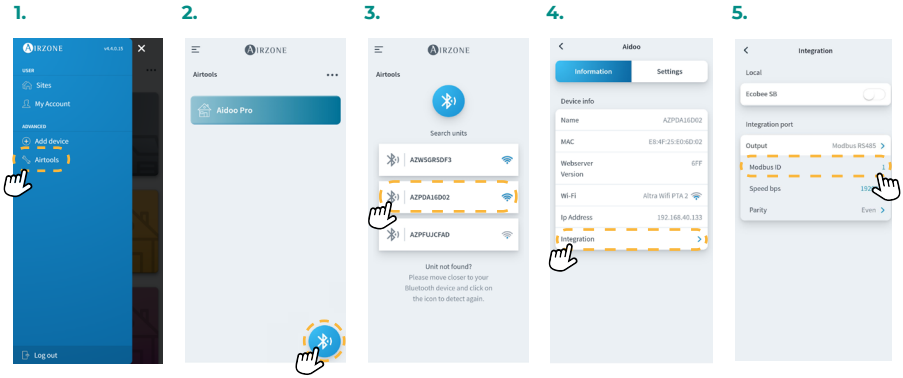
Note : *si votre unité n'apparaît pas, vérifiez que la fonction Bluetooth de votre dispositif iOS ou Android est activée et que l'Aidoo est allumé et fonctionne correctement.*

4. Sélectionnez « Intégration ».
5. Réglez la sortie sur Modbus et définissez l'ID Modbus.



Télécharger l'application Airzone Cloud

CODES DE FONCTION MODBUS

Les commandes basiques de Modbus permettent de contrôler un dispositif pour modifier la valeur de l'un de ses registres (espace dans la mémoire) ou demander le contenu desdits registres ; selon les différents codes de fonction :

Code	Fonction
03	Lecture des registres de sortie ou internes
04	Lecture des registres d'entrée
06	Écriture d'un seul registre
16	Écriture de plusieurs registres

COMMANDES MODBUS

Le format des commandes pour les opérations de lecture/écriture est le suivant (8 octets) :

Adresse du esclave	Code d'opération	Adresse de registre	Données	CRC
1 byte	1 byte	2 bytes	1...2·N bytes	2 bytes

- **Adresse du système.** Définit le système auquel on souhaite accéder. Les adresses vont de 1 à 247, le 0 étant l'adresse réservée pour transmettre à tous les dispositifs (Broadcast).
- **Code d'opération.** Indique la fonction que doit réaliser la commande.
- **Adresse de registre.** Indique l'adresse de registre à laquelle on souhaite accéder. Dans le cas des commandes sur plusieurs registres, elle définit le registre de départ à partir duquel les opérations vont s'exécuter de manière consécutive.
- **Données.** Formé par 2 octets (opérations simples) ou par un ensemble de 2 octets (opérations multiples) qui contiennent l'information de la commande.
- **CRC.** 2 octets sont ajoutés en fin de trame afin de détecter les erreurs dans la transmission ou la réception. Pour ce faire, on utilise la méthode de contrôle de redondance cyclique (Cyclic Redundant Code - CRC).

  Generator polynomial: **CRC-16 = $x^{16} + x^{15} + x^2 + 1$**.

Commandes d'ecriture

Écriture de plusieurs registres

Octet	Champ
0	Adresse du système (1 - 247) (0 : Broadcast)
1	Écriture de plusieurs registres (16)
2	Adresse de registre de départ
3	Nombre de registres à écrire (N)
4	
5	Nombre total d'octets d'écriture (2·N)
6	Données à écrire sur le registre 1
7	
...	
5 + 2·N	Données à écrire sur le registre N
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

À condition qu'il ne se produise aucun type d'erreur, la réponse sera :

Octet	Champ
0	Adresse du système (1 - 247) (0 : Broadcast)
1	Écriture de plusieurs registres (16)
2	Adresse de registre de départ
3	
4	Nombre de registres à écrire (N)
5	
6	CRC
7	

Écriture d'un seul registre

Octet	Champ
0	Adresse du système (1 - 247) (0 : Broadcast)
1	Écriture d'un seul registre (6)
2	Adresse de registre de départ
3	
4	Données à écrire
5	
6	CRC
7	

La réponse doit avoir toujours exactement le même format que la commande d'écriture, à condition qu'il ne se produise aucun type d'erreur

Commandes de lecture

Question

Octet	Champ
0	Adresse du système (1 - 247) (0 : Broadcast)
1	Lecture des registres (3/4)
2	Adresse de registre de départ
3	
4	Nombre de registres à lire (N)
5	
6	CRC
7	

Réponse

Octet	Champ
0	Adresse du système (1 - 247) (0 : Broadcast)
1	Lecture des registres (3/4)
2	Nombre d'octets de réponse (2·N)
3	Données à lire sur le registre 0
4	
...	
3 + 2·N	Données à lire sur le registre N
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

REGISTRES

Registres pour unités à Expansion Directe

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point*	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature**	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
4	Speeds percentage	0 → Auto 25 → Silent 50 → Low 75 → Medium 100 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

** Les limites minimal / maximal dépendent de votre unité de climatisation.*
*** Doit être supérieur à 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
5	Louver vertical	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
6	Louver horizontal	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 1 → Super-Low Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High Bit 7 → Super-High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 3 → Swing U/D Bit 4 → Swing L/R Bit 5 → Swril Bit 8-11 → Vertical positions (0-7) Bit 12-15 → Horizontal positions (0-7)	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
59	Emergency heat status	0 → Deactivated 1 → Activated	R	0x03, 0x04
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Value: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Registres pour unités PAC Air-Eau

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature*	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
9	Unit status On / Off ACS	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
10	Status power ACS On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
11	Set point water C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
12	Set point ACS	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
13	General funct. water unit	Bit 0: ACS unit available 0 → ACS Not available 1 → ACS Available Bit 1: Unit Water config TAI/TH 0 → TAI mode 1 → TH mode Bit 2: Diverter valve 0 → Position C/H 1 → Posición ACS	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

** Doit être supérieur à 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
27	Limit temp. max water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
28	Limit temp. min water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
29	Limit temp. max water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
30	Limit temp. min water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
31	Limit temp. max water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
32	Limit temp. min water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
33	Limit temp. max ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
34	Limit temp. min ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Exampe: 7 A → 70	R	0x03, 0x04
46	Water out temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
47	Water in temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
48	Tank ACS temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
49	Water out temp. ICP	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
50	Refrigerant temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
51	Water flow	Water Flow x10 Exampe: 7.2 l/min → 72	R	0x03, 0x04
52	Water pressure	Water Pressure x10 Exampe: 1.3 bar → 13	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
61	Unit status On / Off C2	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
62	Set point water C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
63	Set point air C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
64	Set point air C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
65	Limit temp. max water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
66	Limit temp. min water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
67	Limit temp. max water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
68	Limit temp. min water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
69	Limit temp. max water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
70	Limit temp. min water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
71	Water out temp. C2	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
72	Local temperature C2	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
79	Total energy generated in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
80	Total energy generated in ACS (2)		R	0x03, 0x04
81	Actual energy generated in ACS	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
91	Consumption electric resistor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
92	Consumption electric resistor in ACS (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
97	Consumption compressor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
98	Consumption compressor in ACS (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Indice

IT

Politica ambientale

- Non smaltire mai questa unità insieme agli altri rifiuti domestici. I prodotti elettrici ed elettronici contengono sostanze che possono essere dannose per l'ambiente in assenza di un adeguato trattamento. Il simbolo del cassonetto contrassegnato da una croce indica la raccolta separata delle apparecchiature elettriche, differente dal resto dei rifiuti urbani. Per una corretta gestione ambientale, l'unità dovrà essere smaltita presso gli appositi centri di raccolta alla fine del suo ciclo di vita.
- Le parti che fanno parte di questa unità possono essere riciclate. Si prega quindi di rispettare la regolamentazione in vigore sulla tutela dell'ambiente.
- È necessario consegnare l'articolo al relativo distributore in caso di sostituzione con un'altra unità nuova o depositarlo in un centro di raccolta specializzato.
- I trasgressori saranno soggetti alle sanzioni e alle misure stabilite dalle normative in materia di tutela dell'ambiente.

Modbus Protocol

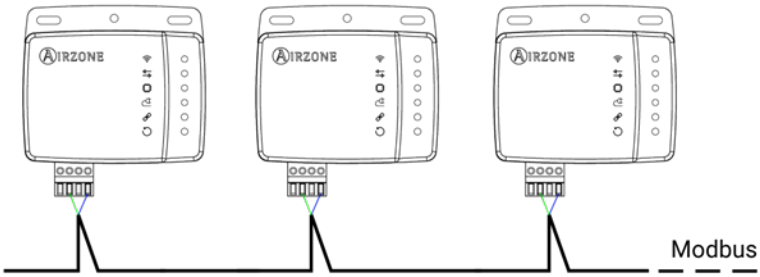
PORTA SERIALE RS-485

Lo standard RS-485, conosciuto anche come EIA-485, è uno standard di comunicazione bus.

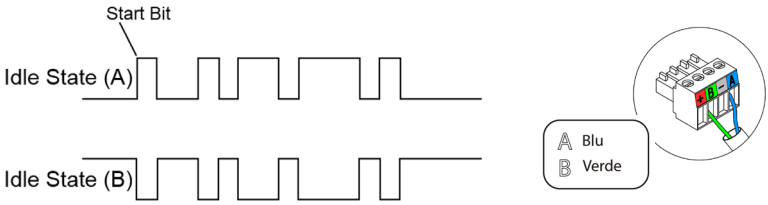
IT

Bus di integrazione	
Velocità della porta seriale	19200 bps
Modo di comunicazione	Half duplex
Lunghezza della trama	8 bit
Bit di fermata	1 bit
Controllo del flusso	Nessuno
Parità	Coppia di forze

Collegamento



Per un corretto funzionamento dei sistemi Airzone, verificare che siano collegati solamente i cavi di comunicazione (verde-blu) ai terminali dei rispettivi bus domotici. Fissare i cavi con le viti nei morsetti rispettando il codice dei colori.



PROTOCOLLO

Aidoo Pro consente a un sistema di gestione degli edifici (Building Management System - BMS) di controllare tutte le variabili dei sistemi Airzone.

Aidoo Pro è un dispositivo Plug&Play per i sistemi Airzone e consente di controllare e monitorare le seguenti variabili:

- Accensione/spegnimento
- Temperatura ambiente
- Temperatura di set-point
- Stato della modalità di funzionamento
- Stato e velocità del ventilatore

Modbus è un protocollo di comunicazione basato sulla architettura master/slave, che organizza le informazioni a livello fisico in formati o gruppi logici di informazione.

Ogni dispositivo della rete Modbus possiede un indirizzo unico. Il dispositivo master invia un comando in una trama, in cui si trova l'indirizzo del dispositivo o dei dispositivi destinatari (slave). Tutti i dispositivi ricevono la trama, ma solo il destinatario può interpretare ed eseguire il comando, restituendo un messaggio di conferma o un messaggio di errore.

Nota: *È possibile inviare informazioni a vari dispositivi simultaneamente mediante una trama denominata "Broadcast".*

Ogni messaggio inviato porta con sé delle informazioni ridondanti, che ne assicurano l'integrità nella ricezione. Se trascorso un determinato periodo di tempo il master non riceve nessuna conferma, intende che si è verificato un errore e termina la comunicazione.

Il modo di trasmissione utilizzato è MODBUS-RTU. Ogni byte di dati viene rappresentato con due caratteri da 4 bit in esadecimali. Il formato della trama è il seguente:

Start	0	1	2	3	4	5	6	7	Parità	Stop

Configuration

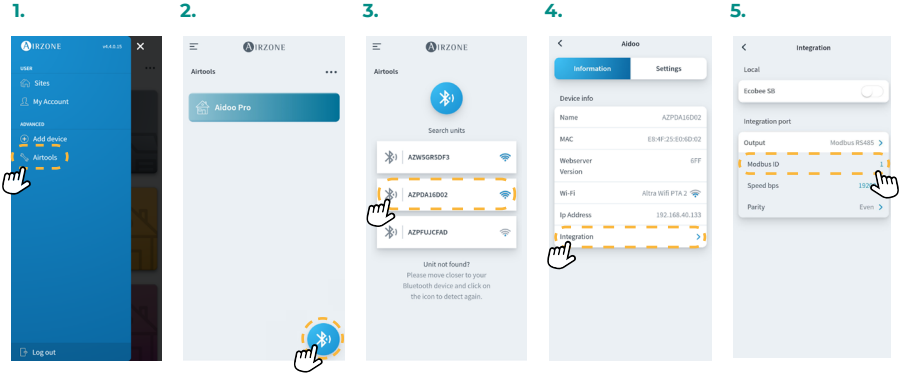
L'Aidoo è un dispositivo Modbus slave; perciò è necessario indicarne il relativo indirizzo. Per fare ciò, associare l'Aidoo mediante l'app Airzone Cloud (disponibile per iOS e Android) seguendo questi passaggi:

1. Dalla schermata principale, accedere al menu e selezionare Airtools.
2. Avviare la configurazione avanzata tramite Bluetooth.
3. Selezionare l'Aidoo dalla lista.

__Nota:__ Se l'unità da aggiungere non appare tra quelle disponibili, controllare che la funzione Bluetooth del dispositivo iOS o Android usato sia attiva e che l'Aidoo sia acceso e funzioni correttamente.

IT

4. Selezionare "Integrazione".
5. Configurare l'uscita come Modbus e impostare l'ID Modbus.



Scaricare l'app Airzone Cloud

CODICI DI FUNZIONE MODBUS

I comandi di base Modbus permettono di controllare un dispositivo per modificare il valore di uno dei suoi registri (spazio nella memoria) o per richiedere il contenuto di tali registri, a seconda dei diversi codici di funzione:

Codice	Funzione
03	Lettura dei registri di uscita o interni
04	Lettura dei registri di entrata
06	Scrittura di un solo registro
16	Scrittura di registri multipli

COMANDI MODBUS

Il formato seguito dai comandi per le operazioni di lettura/scrittura è il seguente (8 byte):

Indirizzo del slave	Codice di operazione	Indirizzo di registro	Dati	CRC
1 byte	1 byte	2 bytes	1...2·N bytes	2 bytes

- **Indirizzo del slave.** Definisce il sistema al quale si desidera accedere. Gli indirizzi vanno da 1 a 247, riservandosi l'indirizzo 0 per trasmettere a tutti i dispositivi (Broadcast).
- **Codice di operazione.** Indica la funzione che il comando deve realizzare.
- **Indirizzo di registro.** Indica l'indirizzo del registro al quale si desidera accedere. Nei comandi su registri multipli, definisce il registro di inizio, a partire dal quale si opererà in modo consecutivo.
- **Dati.** Formato da 2 byte (operazioni semplici) o da un insieme di 2 byte (operazioni multiple), che contengono le informazioni del comando.
- **CRC.** Si aggiungono 2 byte alla fine della trama, per rilevare gli errori nella trasmissione o nella ricezione. A tale scopo viene utilizzato il metodo di verifica di ridondanza ciclica (Cyclic Redundant Code - CRC).

  Il polinomio generatore è: **CRC-16 = $x^{16} + x^{15} + x^2 + 1$**.

Comandi di scrittura

Scrittura di registri multipli

Byte	Campo
0	Indirizzo del sistema (1 - 247) (0: Broadcast)
1	Scrittura di registri multipli (16)
2	Indirizzo di registro di inizio
3	Numero di registri da scrivere (N)
4	
5	Numero di byte di scrittura (2·N)
6	Dati da scrivere in registro 1
7	
...	
5 + 2·N	Dati da scrivere in registro N
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

La risposta, sempre che non si verifichi nessun tipo di errore, sarà:

Byte	Campo
0	Indirizzo del sistema (1 - 247) (0: Broadcast)
1	Lettura dei registri (3/4)
2	Indirizzo di registro di inizio
3	
4	Numero di registri da leggere (N)
5	
6	CRC
7	

Scrittura di un solo registro

Byte	Campo
0	Indirizzo del sistema (1 - 247) (0: Broadcast)
1	Scrittura di un solo registro (6)
2	Indirizzo di registro
3	
4	Dati da scrivere
5	
6	CRC
7	

La risposta deve contenere esattamente lo stesso formato del comando di scrittura, sempre che non si verifichi nessun tipo di errore.

Comandi di lettura

Domanda

Byte	Campo
0	Indirizzo del sistema (1 - 247) (0: Broadcast)
1	Lettura dei registri (3/4)
2	Indirizzo di registro di inizio
3	
4	Numero di registri da leggere (N)
5	
6	CRC
7	

Risposta

Byte	Campo
0	Indirizzo del sistema (1 - 247) (0: Broadcast)
1	Lettura dei registri (3/4)
2	Numero di byte di risposta (2·N)
3	Dati da leggere in registro 0
4	
...	
3 + 2·N	Dati da leggere in registro N
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

REGISTRI

Registri per unità ad Espansione Diretta

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point*	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature**	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
4	Speeds percentage	0 → Auto 25 → Silent 50 → Low 75 → Medium 100 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

** I limiti minimo / massimo dipendono dall'unità AC.*
*** Deve essere maggiore di 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
5	Louver vertical	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
6	Louver horizontal	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 1 → Super-Low Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High Bit 7 → Super-High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 3 → Swing U/D Bit 4 → Swing L/R Bit 5 → Swril Bit 8-11 → Vertical positions (0-7) Bit 12-15 → Horizontal positions (0-7)	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
59	Emergency heat status	0 → Deactivated 1 → Activated	R	0x03, 0x04
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Value: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Registri per unità Idronica

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature*	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
9	Unit status On / Off ACS	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
10	Status power ACS On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
11	Set point water C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
12	Set point ACS	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
13	General funct. water unit	Bit 0: ACS unit available 0 → ACS Not available 1 → ACS Available Bit 1: Unit Water config TAI/TH 0 → TAI mode 1 → TH mode Bit 2: Diverter valve 0 → Position C/H 1 → Posición ACS	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

** Deve essere maggiore di 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
27	Limit temp. max water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
28	Limit temp. min water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
29	Limit temp. max water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
30	Limit temp. min water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
31	Limit temp. max water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
32	Limit temp. min water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
33	Limit temp. max ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
34	Limit temp. min ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Exampe: 7 A → 70	R	0x03, 0x04
46	Water out temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
47	Water in temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
48	Tank ACS temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
49	Water out temp. ICP	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
50	Refrigerant temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
51	Water flow	Water Flow x10 Exampe: 7.2 l/min → 72	R	0x03, 0x04
52	Water pressure	Water Pressure x10 Exampe: 1.3 bar → 13	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
61	Unit status On / Off C2	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
62	Set point water C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
63	Set point air C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
64	Set point air C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
65	Limit temp. max water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
66	Limit temp. min water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
67	Limit temp. max water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
68	Limit temp. min water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
69	Limit temp. max water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
70	Limit temp. min water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
71	Water out temp. C2	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
72	Local temperature C2	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
79	Total energy generated in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
80	Total energy generated in ACS (2)		R	0x03, 0x04
81	Actual energy generated in ACS	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
91	Consumption electric resistor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
92	Consumption electric resistor in ACS (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
97	Consumption compressor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
98	Consumption compressor in ACS (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

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Política ambiental

- Nunca deite fora esta unidade com o lixo doméstico. Caso não sejam tratados adequadamente, os produtos elétricos e eletrónicos podem liberar substâncias que causam danos ao meio ambiente. A imagem de um recipiente riscado ao meio indica recolha seletiva de dispositivos elétricos, que são tratados de maneira diferente do lixo urbano. Para uma gestão ambiental correta, no final de sua vida útil, deverá levar a unidade a um centro de recolha adequado.
- As peças desta unidade poderão ser recicladas. Portanto, respeite a regulamentação em vigor sobre proteção ambiental.
- Entregue a unidade que não será mais utilizada ao seu distribuidor ou a um centro de coleta especializado.
- Os infratores estarão sujeitos às sanções e medidas estabelecidas pela lei de proteção do meio ambiente.

Protocolo Modbus

PORTA DE COMUNICAÇÕES RS-485

O RS-485, também conhecido como EIA-485, é um padrão de comunicação em barramento.

Barramento de integração	
Velocidade da porta de comunicação	19200 bps
Modo de comunicação	Half duplex
Comprimento da trama	8 bits
Bits de parada	1 bit
Controlo de fluxo	Nenhum
Paridade	Par

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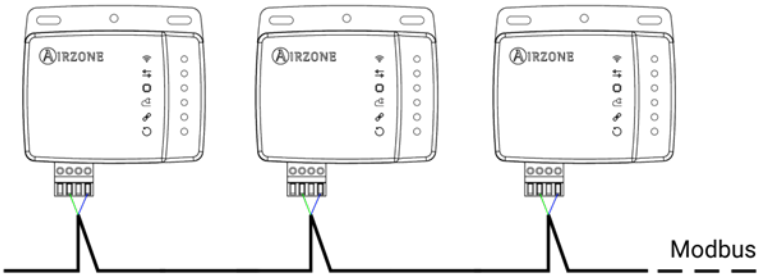
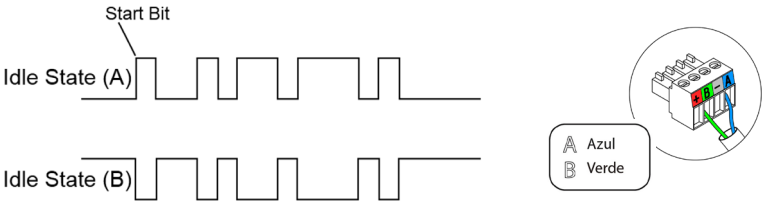
Conexão



Para o correto funcionamento dos sistemas Airzone, verifique se apenas os cabos de comunicação (verde-azul) estão conectados em cada terminal nos respetivos barramentos domóticos. Fixe os cabos nos diferentes terminais com os parafusos, respeitando o código de cores.



PROTOCOLO

O Aidoo permite um sistema de gestão de edifícios (Building Management System - BMS) para controlar todas as variáveis dos sistemas Airzone.

O Aidoo é um dispositivo Plug&Play para sistemas Airzone e permite o controlo e monitorização das seguintes variáveis:

- Ligar/desligar
- Temperatura ambiente
- Temperatura de set-point
- Estado do modo de funcionamento
- Estatuto e velocidade dos ventiladores

O Modbus é um protocolo de comunicação, baseado na arquitetura mestre/escravo, que organiza a informação fisicamente em formatos ou grupos lógicos de informação.

Cada dispositivo da rede Modbus possui um endereço único. O dispositivo mestre envia um comando em uma trama, na qual está contida o endereço do dispositivo ou dispositivos destinatários (escravos). Todos os dispositivos recebem a trama, mas apenas o destinatário o interpreta e o executa, e devolve uma mensagem de confirmação ou de erro.

Nota: *Existe a possibilidade de enviar informações a diversos dispositivos de maneira simultânea, através de uma trama denominada "Broadcast".*

Todas as mensagens enviadas incluem informações redundantes que asseguram a integridade da receção. Se o mestre não receber uma confirmação após certo tempo, ele entende que ocorreu um erro e termina a comunicação.

O modo de transmissão utilizado é MODBUS-RTU. Cada byte de dados é representado por caracteres de 4 bits em hexadecimal. O formato da trama é o seguinte:

Start	0	1	2	3	4	5	6	7	Paridade	Stop

Configuration

O Aidoo é um dispositivo Modbus escravo; por isso é necessário indicar o seu endereço. Para isso, associe o seu Aidoo através da aplicação Airzone Cloud (disponível para iOS e para Android) seguindo estes passos:

1. No ecrã principal aceda ao menu e selecione Airtools.
2. Inicie a configuração avançada via Bluetooth.
3. Selecione o seu Aidoo na lista.

__Nota:__ Se a sua unidade não aparecer, confirme se a função Bluetooth do seu dispositivo iOS ou Android está ativada e se o Aidoo está ligado e funciona corretamente.

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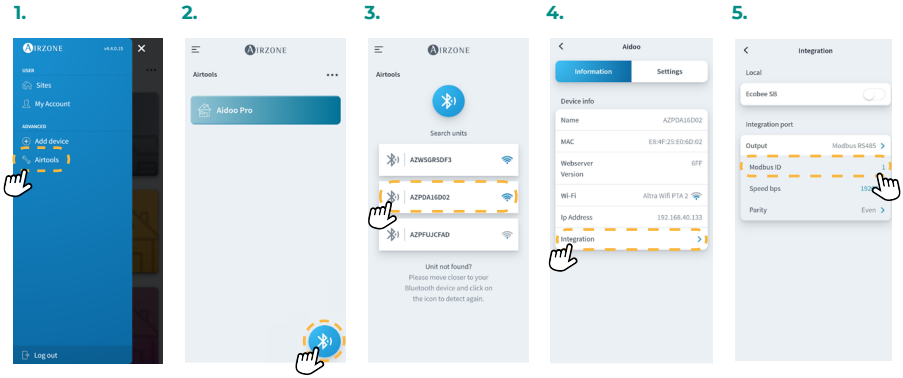
4. Selecione “Integração”.
5. Configure a saída como Modbus e definir o Modbus ID.



Descarregar a aplicação Airzone Cloud

CÓDIGOS DE FUNÇÃO MODBUS

Os comandos básicos Modbus permitem controlar um dispositivo para modificar o valor de alguns dos seus registos (espaço em memória) ou solicitar o conteúdo deles; de acordo com diferentes códigos de função:

Código	Função
03	Leitura de registos de saída ou internos
04	Leitura de registos de entrada
06	Gravação de apenas um registo
16	Gravação de vários registos

COMANDOS MODBUS

O formato dos comandos para as operações de leitura/gravação é o seguinte (8 byte):

Endereço do escravo	Código de operação	Endereço de registo	Dados	CRC
1 byte	1 byte	2 bytes	1...2·N bytes	2 bytes

- **Endereço do escravo.** Define o sistema ao qual deseja-se aceder. Os endereços variam de 1 a 247, e o endereço 0 é reservado para transmissão a todos os dispositivos (Broadcast).
- **Código de operação.** Indica a função a ser realizada pelo comando.
- **Endereço de registo.** Indica o endereço do registo ao qual deseja-se aceder. Em comandos sobre múltiplos registos, define o Registo de Início, a partir do qual a operação ocorrerá de forma consecutiva.
- **Dados.** Formado por 2 bytes (operações simples) ou conjunto de 2 bytes (operações múltiplas) que contém a informação do comando.
- **CRC.** São adicionados 2 bytes no final da trama para detetar erros na transmissão ou receção. Para isso, utiliza-se o método de Verificação de redundância cíclica (Cyclic Redundant Code - CRC).

  O polinômio gerador é: **CRC-16 = $x^{16} + x^{15} + x^2 + 1$**.

Comandos de gravação

Gravação de vários registos

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Gravação de vários registos (16)
2	Endereço de registo de início
3	Número de registos a serem gravados (N)
4	
5	Número de bytes totais de gravação (2·N)
6	Dados a serem gravados em registo 1
7	
...	
5 + 2·N	Dados a serem gravados em registo N
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

A resposta, quando não ocorrer nenhum tipo de erro, será:

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Gravação de vários registos (16)
2	Endereço de registo de início
3	
4	Número de registos a serem gravados (N)
5	
6	CRC
7	

Gravação de apenas um registo

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Gravação de apenas um registo (6)
2	Endereço de registo
3	
4	Dados a serem gravados
5	
6	CRC
7	

A resposta, quando não ocorrer nenhum tipo de erro, deve ter exatamente o mesmo formato do comando de gravação.

Comandos de leitura

Pergunta

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Leitura de registos (3/4)
2	Endereço de registo de início
3	
4	Número de registos a serem lidos (N)
5	
6	CRC
7	

Resposta

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Leitura de registos (3/4)
2	Número de bytes resposta (2·N)
3	Dados a serem lidos em registo 0
4	
...	
3 + 2·N	Dados a serem lidos em registo N
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

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REGISTOS

Registos para unidades de Expansão Directa

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point*	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature**	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
4	Speeds percentage	0 → Auto 25 → Silent 50 → Low 75 → Medium 100 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

** Os limites mínimo / máximo dependem da sua unidade AC.*
*** Deve ser superior a 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
5	Louver vertical	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
6	Louver horizontal	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 1 → Super-Low Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High Bit 7 → Super-High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 3 → Swing U/D Bit 4 → Swing L/R Bit 5 → Swril Bit 8-11 → Vertical positions (0-7) Bit 12-15 → Horizontal positions (0-7)	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
59	Emergency heat status	0 → Deactivated 1 → Activated	R	0x03, 0x04
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Value: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Registos para unidades de Aerotermia

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature*	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
9	Unit status On / Off ACS	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
10	Status power ACS On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
11	Set point water C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
12	Set point ACS	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
13	General funct. water unit	Bit 0: ACS unit available 0 → ACS Not available 1 → ACS Available Bit 1: Unit Water config TAI/TH 0 → TAI mode 1 → TH mode Bit 2: Diverter valve 0 → Position C/H 1 → Posición ACS	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

** Deve ser superior a 0.*

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
27	Limit temp. max water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
28	Limit temp. min water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
29	Limit temp. max water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
30	Limit temp. min water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
31	Limit temp. max water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
32	Limit temp. min water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
33	Limit temp. max ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
34	Limit temp. min ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Exampe: 7 A → 70	R	0x03, 0x04
46	Water out temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
47	Water in temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
48	Tank ACS temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
49	Water out temp. ICP	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
50	Refrigerant temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
51	Water flow	Water Flow x10 Exampe: 7.2 l/min → 72	R	0x03, 0x04
52	Water pressure	Water Pressure x10 Exampe: 1.3 bar → 13	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
61	Unit status On / Off C2	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
62	Set point water C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
63	Set point air C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
64	Set point air C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
65	Limit temp. max water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
66	Limit temp. min water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
67	Limit temp. max water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
68	Limit temp. min water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
69	Limit temp. max water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
70	Limit temp. min water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
71	Water out temp. C2	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
72	Local temperature C2	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
79	Total energy generated in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
80	Total energy generated in ACS (2)		R	0x03, 0x04
81	Actual energy generated in ACS	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
91	Consumption electric resistor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
92	Consumption electric resistor in ACS (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
97	Consumption compressor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
98	Consumption compressor in ACS (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Inhaltsverzeichnis

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Umweltschutz

- Das Gerät darf nicht über den Hausmüll entsorgt werden. Elektrische und elektronische Geräte enthalten Stoffe, die bei unsachgemäßer Behandlung Umweltschäden verursachen können. Das Symbol der durchgestrichenen Mülltonne weist auf die Notwendigkeit einer vom Hausmüll getrennten Entsorgung elektrischer Geräte hin. Für eine umweltgerechte Entsorgung muss das Gerät am Ende seiner Lebensdauer einer geeigneten Sammelstelle zugeführt werden.
- Die Gerätebauteile können wiederverwertet werden. Beachten Sie die geltenden Umweltschutzbestimmungen.
- Geben Sie das Altgerät beim Austausch an Ihren Händler zurück oder führen Sie es einer geeigneten Sammelstelle zu.
- Verstöße werden nach Maßgabe der einschlägigen Umweltschutzgesetze geahndet.

Modbus-Protokoll

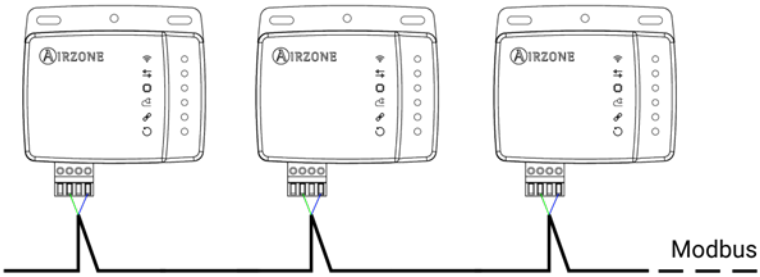
KOMMUNIKATIONS-PORT RS-485

Die RS-485, auch als EIA-485 bezeichnet, ist ein Bus-Kommunikationsstandard.

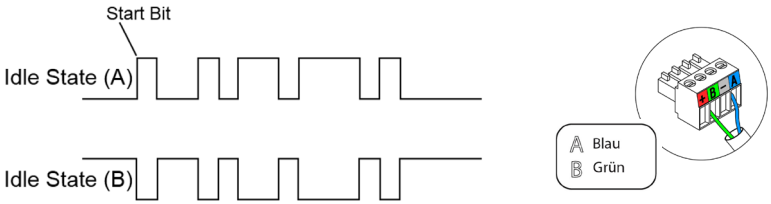
Integrationsbus	
Geschwindigkeit des Kommunikations-Ports	19200 bps
Kommunikationsmodus	Half Duplex
Länge des Datenrahmens	8 Bits
Stoppbit	1 Bit
Durchsatzsteuerung	Keine
Parität	Gerade

DE

Anschluss



Für den ordnungsgemäßen Betrieb der Airzone-Systeme muss überprüft werden, dass nur die Kommunikationskabel (grün-blau) an jeder Endeinrichtung der jeweiligen Haustechnikbusse angeschlossen sind. Befestigen Sie die Kabel mithilfe der Schrauben an den verschiedenen Klemmen und achten Sie auf den Farbcode.



PROTOKOLL

Aidoo ermöglicht es einem Gebäudemanagementsystem (Building Management System - BMS), alle Variablen der Airzone-Systeme zu steuern.

Aidoo ist ein Plug&Play-Gerät für Airzone-Systeme und ermöglicht die Steuerung und Überwachung der folgenden Variablen:

- Strom ein/aus
- Raumtemperatur
- Sollwerttemperatur
- Status der Betriebsart
- Lüfterstatus und -geschwindigkeit

Modbus ist ein Kommunikationsprotokoll, das auf der Master/Slave-Architektur basiert. Es organisiert die Information auf der physischen Ebene in Formaten oder logischen Informationsgruppen.

Jedes Gerät im Modbus-Netz besitzt eine eindeutige Adresse. Das Mastergerät sendet einen Befehl in einem Datenrahmen, in dem sich die Adresse des Zielgeräts bzw. der Zielgeräte (Slaves) befindet. Alle Geräte erhalten einen Datenrahmen, aber nur das Zielgerät interpretiert den Befehl und führt ihn aus und sendet eine Bestätigungsmeldung oder eine Fehlermeldung zurück.

Hinweis: *Es besteht die Möglichkeit, über einen Datenrahmen, der als „Broadcast" bezeichnet wird, Informationen an mehrere Geräte gleichzeitig zu senden.*

Jede gesendete Meldung enthält redundante Informationen, die ihre Vollständigkeit beim Empfang gewährleistet. Wenn der Master nach einer bestimmten Zeit keine Bestätigung erhält, geht er davon aus, dass ein Fehler aufgetreten ist, und beendet die Kommunikation.

Der verwendete Übertragungsmodus ist MODBUS-RTU. Jedes Datenbyte wird durch zwei Zeichen zu jeweils 4 Bits hexadezimal dargestellt. Der Datenrahmen hat das folgende Format:

Start	0	1	2	3	4	5	6	7	Parität	Stop

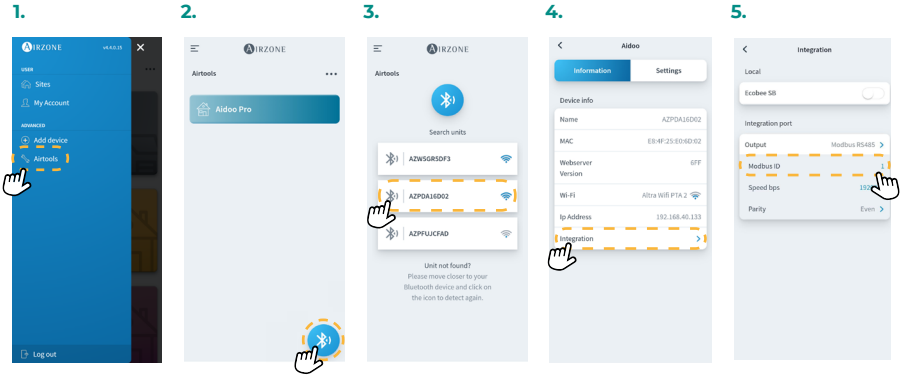
Konfiguration

Das Aidoo ist ein Modbus-Slave-Gerät, daher ist es notwendig, seine Adresse anzugeben. Verknüpfen Sie dazu Ihr Aidoo über die Airzone Cloud-App (verfügbar für iOS und Android) nach folgender Anweisung:

1. Rufen Sie auf dem Hauptbildschirm das Menü auf und wählen Sie Airtools.
2. Beginnen sie mit den erweiterten Einstellungen über Bluetooth.
3. Wählen Sie Ihr Aidoo aus der Liste aus.

Hinweis: *Wenn Ihr Gerät nicht angezeigt wird, vergewissern Sie sich, dass die Bluetooth-Funktion Ihres iOS- oder Android-Geräts aktiviert ist, dass das Aidoo eingeschaltet ist und ordnungsgemäß funktioniert.*

4. Wählen Sie „Integration“.
5. Konfigurieren Sie den Ausgang als Modbus und legen Sie die Modbus-ID fest.



Airzone Cloud-App herunterladen

MODBUS-FUNKTIONSCODE

Die grundlegenden Modbus-Befehle ermöglichen die Steuerung eines Geräts, um den Wert seiner Datensätze (Speicherplatz) zu ändern oder den Inhalt dieser Datensätze anzufordern, entsprechend den verschiedenen Funktionscodes:

Código	Funktion
03	Auslesen der internen oder Ausgangs-Datensätze
04	Auslesen von Eingangsdatensätze
06	Schreiben eines einzigen Datensatzes
16	Schreiben mehrerer Datensätze

MODBUS-BEFEHLE

Die Befehle für die Vorgänge Lesen/Schreiben folgen diesem Format (8 Byte):

Slaveadresse	Operationscode	Datensätzadresse	Daten	CRC
1 byte	1 byte	2 bytes	1...2·N bytes	2 bytes

- **Slaveadresse.** Legt fest, auf welches System zugegriffen werden soll. Die Adressen sind 1 bis 247. Die Adresse 0 ist für die Übertragung an alle Geräte reserviert (Broadcast).
- **Operationscode.** Zeigt an, welche Funktion durch den Befehl ausgeführt werden soll.
- **Datensätzadresse.** Legt die Datensätzadresse fest, auf die zugegriffen werden soll. Bei Befehlen über mehrere Datensätze legt sie den Start-Datensätz fest, ab dem nacheinander die Funktion ausgeführt wird.
- **Daten.** Besteht aus 2 Bytes (einfache Funktionen) oder Blöcken von 2 Bytes (Mehrfachfunktionen); sie enthalten die Informationen des Befehls.
- **CRC.** Am Ende des Datenrahmens werden 2 Byte angehängt, die Fehler bei der Übertragung oder beim Empfang erkennen sollen. Dazu wird die Methode der zyklischen Redundanzprüfung (Cyclic Redundant Code - CRC) verwendet.

  Das Generatorpolynom ist: **CRC-16 = $x^{16} + x^{15} + x^2 + 1$**.

Schreibbefehle

Schreiben eines einzigen Datensatzes

Byte	Feld
0	Systemadresse (1 - 247) (0: Broadcast)
1	Schreiben mehrerer Datensätze (16)
2	Start-Datensätz-Adresse
3	Anzahl der zu schreibenden Datensätze (N)
4	
5	Anzahl der Schreibbytes insgesamt (2·N)
6	Im Datensätz 1 zu schreibende Daten
7	
...	
5 + 2·N	Im Datensätz N zu schreibende Daten
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

Sofern keinerlei Fehler auftritt, muss die Antwort lauten:

Byte	Feld
0	Systemadresse (1 - 247) (0: Broadcast)
1	Schreiben mehrerer Datensätze (16)
2	Start-Datensätz-Adresse
3	
4	Anzahl der zu schreibenden Datensätze (N)
5	
6	CRC
7	

Schreiben eines einzigen Datensatzes

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Byte	Feld
0	Systemadresse (1 - 247) (0: Broadcast)
1	Schreiben eines einzigen Datensatzes (6)
2	Datensätzadresse
3	
4	Zu schreibende Daten
5	
6	CRC
7	

Sofern keinerlei Fehler auftritt, muss die Antwort genau dasselbe Format wie der Schreibbefehl haben.

Lesebefehle

Frage

Byte	Feld
0	Systemadresse (1 - 247) (0: Broadcast)
1	Auslesen von Datensätzen (3/4)
2	Start-Datensätz-Adresse
3	
4	Anzahl der auszulesenden Datensätze (N)
5	
6	CRC
7	

Antwort

Byte	Feld
0	Systemadresse (1 - 247) (0: Broadcast)
1	Auslesen von Datensätzen (3/4)
2	Anzahl der Antwortbytes insgesamt (2·N)
3	Im Datensätz 0 auszulesenden Daten
4	
...	
3 + 2·N	Im Datensätz N auszulesende Daten
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

DE

DATENSÄTZE

Datensätze für Direktverdampfungsgeräte

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point*	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature**	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
4	Speeds percentage	0 → Auto 25 → Silent 50 → Low 75 → Medium 100 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

** Die Minimal- und Maximalwerte hängen von Ihrem Klimaanlage ab.*
*** Muss größer als 0 sein.*

Registers	Description	Values	Read (R) Write (W)	Operations
5	Louver vertical	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
6	Louver horizontal	Bit 0-3 → Louver 1 (Default) Bit 4-7 → Louver 2 Bit 8-11 → Louver 3 Bit 12-15 → Louver 4 0-7 → Louver pos 8 → Auto pos 9 → Swing pos 10 → Swril pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 1 → Super-Low Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High Bit 7 → Super-High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 3 → Swing U/D Bit 4 → Swing L/R Bit 5 → Swril Bit 8-11 → Vertical positions (0-7) Bit 12-15 → Horizontal positions (0-7)	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
59	Emergency heat status	0 → Deactivated 1 → Activated	R	0x03, 0x04
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Value: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

Datensätze für Aerothermiegeräte

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature*	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
9	Unit status On / Off ACS	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
10	Status power ACS On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
11	Set point water C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
12	Set point ACS	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
13	General funct. water unit	Bit 0: ACS unit available 0 → ACS Not available 1 → ACS Available Bit 1: Unit Water config TAI/TH 0 → TAI mode 1 → TH mode Bit 2: Diverter valve 0 → Position C/H 1 → Posición ACS	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04

*** Muss größer als 0 sein.*

Registers	Description	Values	Read (R) Write (W)	Operations
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
23	Limit temp. max air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
24	Limit temp. min air ventilation	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
27	Limit temp. max water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
28	Limit temp. min water cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
29	Limit temp. max water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
30	Limit temp. min water heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
31	Limit temp. max water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
32	Limit temp. min water auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
33	Limit temp. max ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
34	Limit temp. min ACS	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	External temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
37	Exchange heat temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
38	Gas pipe temp. indoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
39	Exchange heat temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
40	Discharge compressor temp. outdoor unit	Temp x10 Example: 23 °C → 230	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
41	Position expansion valve outdoor unit	Pulse Units	R	0x03, 0x04
42	Position expansion valve indoor unit	Pulse Units	R	0x03, 0x04
43	Pressure evaporation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
44	Pressure condensation	Pressure x100 Example: 1.27 MPa → 127	R	0x03, 0x04
45	Consumption	Consumption x10 Exampe: 7 A → 70	R	0x03, 0x04
46	Water out temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
47	Water in temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
48	Tank ACS temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
49	Water out temp. ICP	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
50	Refrigerant temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
51	Water flow	Water Flow x10 Exampe: 7.2 l/min → 72	R	0x03, 0x04
52	Water pressure	Water Pressure x10 Exampe: 1.3 bar → 13	R	0x03, 0x04
53	Work temperature	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16

Registers	Description	Values	Read (R) Write (W)	Operations
60	Input T1T2 status	0 → Deactivated 1 → Activated	R	0x03, 0x04
61	Unit status On / Off C2	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
62	Set point water C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
63	Set point air C1	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
64	Set point air C2	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
65	Limit temp. max water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
66	Limit temp. min water cool C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
67	Limit temp. max water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
68	Limit temp. min water heat C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
69	Limit temp. max water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
70	Limit temp. min water auto C2	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
71	Water out temp. C2	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
72	Local temperature C2	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
73	Total energy generated in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
74	Total energy generated in heating (2)		R	0x03, 0x04
75	Actual energy generated in heating	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
76	Total energy generated in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
77	Total energy generated in cooling (2)		R	0x03, 0x04
78	Actual energy generated in cooling	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
79	Total energy generated in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
80	Total energy generated in ACS (2)		R	0x03, 0x04
81	Actual energy generated in ACS	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
82	Actual energy generated in photovoltaic	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
83	Total energy produced (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
84	Total energy produced (2)		R	0x03, 0x04
85	Total energy consumption heat pump (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
86	Total energy consumption heat pump (2)		R	0x03, 0x04
87	Actual energy consumption heat pump	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
88	Actual energy consumption total building	Value of Energy Example: (1) 0x1CAC Total: 0x1CAC = 7340 W	R	0x03, 0x04
89	Consumption electric resistor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
90	Consumption electric resistor in heating (2)		R	0x03, 0x04
91	Consumption electric resistor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
92	Consumption electric resistor in ACS (2)		R	0x03, 0x04
93	Consumption compressor in heating (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
94	Consumption compressor in heating (2)		R	0x03, 0x04
95	Consumption compressor in cooling (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
96	Consumption compressor in cooling (2)		R	0x03, 0x04

Registers	Description	Values	Read (R) Write (W)	Operations
97	Consumption compressor in ACS (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
98	Consumption compressor in ACS (2)		R	0x03, 0x04
99	Total consumption (1)	Value of Energy Example: (1) 0x1215; (2) 0x0001 Value: 0x00011215 = 70165 KWh	R	0x03, 0x04
100	Total consumption (2)		R	0x03, 0x04

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