



LumiRing

AIR CR

Network Access Controller

RFID Reader

MANUAL

Lumiring.com



Оглавление

Purpose and general information	3
Description of connection methods	4
Hard reset	4
Specifications AIR CR.....	5
Typical wiring diagrams	6
One door. Control of the passage of one direction.....	6
One door. Control of the passage of two directions.	6
One door. Control of passage of one direction with galvanic isolation.	7
Using Bluetooth keys AIRKEY.....	7
MACS Lite app and AIR CR	7
Using Bluetooth keys AIRKEY to control passage in two directions.	7
System installation recommendations	8



Purpose and general information

AIR CR network access controller for controlling access to residential, industrial or office premises, equipped with electromagnetic or electromechanical locks. The device allows you to automate the passage of vehicles by controlling the barrier, gates and other actuators. The software allows you not only to control access, but also solves applied tasks for controlling delays and accounting for working hours. Connection to a computer network is carried out via Wi-Fi 2.4Ghz. The built-in reader supports 125Khz and 13.56Mhz RFID tags. Added support for Bluetooth (AIR KEYS) and Virtual Keys (VI KEY).

The Wiegand device is capable of working in two modes:

- Input - for connecting any external reader (Wiegand 4,8,26,34 data format)
- Output - for connecting a third-party ACS to the access controller

When connecting via Wiegand interface, the distance between the devices should be up to 100 m.

AIR CR RS485 interface with OSDP protocol support. In this case, the distance between devices can reach 1000 meters.

In one system, it is recommended to connect to the same interface, which will help to avoid differences in reading the card code and reading confusion in the system. AIR CR programming can be carried out from the Mobile Access Control System "MACS Lite" or the cloud service "UNIMACS". Initial settings are made through the built-in AIR CR site. Always install the latest firmware with every new installation. The controller outputs are implemented according to the open collector scheme (when the output is turned on, the transistor closes the output to ground).

AIR CR provides work in several modes that can cover a wide range of tasks of the installer.

Operating modes:

1. Standalone - work without connecting to any networks. The user interacts with the controller using the "MACS Lite" software being in close proximity to the controller. Connection of the User's phone to the AIR CR access point is required.
2. Network - work in a local network. To work with the controllers, the phone with the "MACS lite" application must be registered in the same network.
3. Cloudy - work in a local network with network connection support. This mode allows you to use all the features of AIR CR with minimal effort. The main advantages of this mode:
 - Automatic connection
 - Remote administration and monitoring
 - Ability to work with virtual keys
 - Ability to work with Bluetooth keys

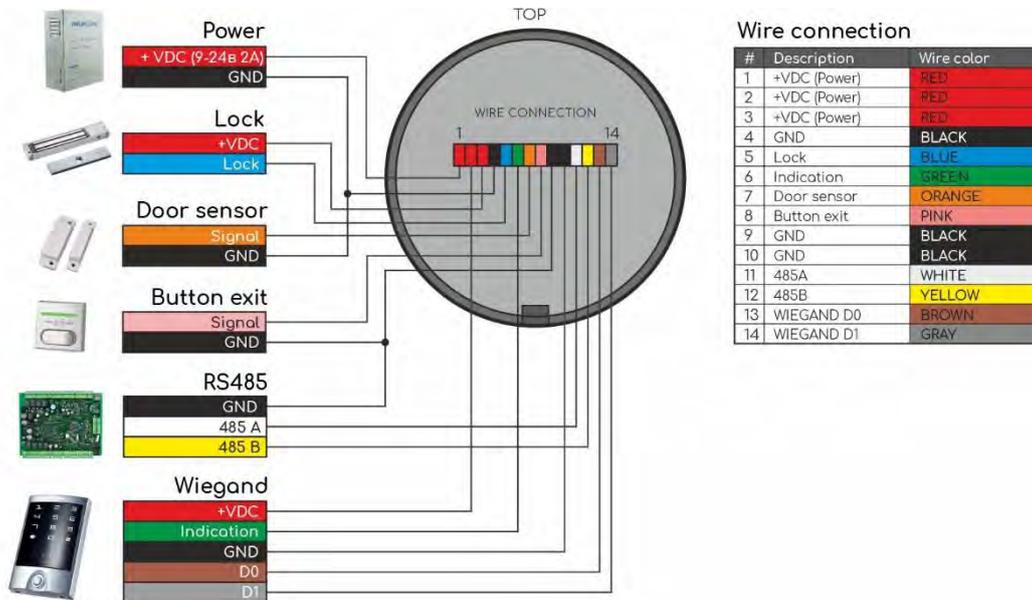
If an AIR CR galvanic circuit is required from a device (lock, barrier), control of high-voltage devices or devices with a significant current consumption (exceeding the rated current for the output), it is recommended to connect these devices via a relay (see 4). It also improves the reliability of the system. When using electromagnetic or electromechanical locks, it is recommended to use a protective diode (see Figure 6).



Description of connection methods

A wired interface is used to connect the AIR CR to any peripheral or executive equipment.

Figure 1 - Color designation of interface wires



Hard reset

To reset the device to factory settings, you must:

1. Remove power from the device.
2. Connect the three signal wires together D1 (Gray) + D0 (Brown) + GND (Black).
3. Apply power.
4. The transition to the reset mode is carried out with the change of indication to a full yellow ring
5. The process of resetting the settings and subsequent initialization of the file system can take up to 4 minutes. After the reset is completed, the device will automatically switch to standby mode, which it will inform about by changing the display mode and beeping.
6. Remove power.
7. Return the D1 (Gray), D0 (Brown) and GND (Black) wires to their original condition.



Specifications AIR CR

#	Parameter	Value
Electrical		
1	Supply voltage	9-24 V
2	Average rated current consumption (at voltage 12V): - No load output, not more	0,11A
3	Maximum current consumption (at voltage 12V): - No load output, not more	0,5A
4	Maximum switching current: - Output 1 (Lock)	3A
5	Maximum switching load voltage of outputs:	15 V
6	Protection types: - Overload - Overheating - Short circuit - Polarity change	YES YES YES YES
Functional		
7	Wireless interfaces	Wi-Fi 2,4Ghz Bluetooth 4.1
8	Wired interfaces	Wiegand RS485
9	Events memory during autonomous operation	Up to 250 000
10	Recommended number of users	Up to 10 000*
11	Number of connected readers	1
12	Built-in reader	1
13	Support for 125Khz identifiers • EM Marine	YES
	Support for 13.56Mhz identifiers • MIFARE DESFire; • MIFARE Plus; • MIFARE Ultralight; • MIFARE Classic 1K, 4K; • MIFARE Classic EV1 1K, 4K; • NFC;	YES
14	Supports copy protection for standard maps. MIFARE Classic 1K, 4K.	YES
15	Number of open collector outputs	1
16	Number of inputs	2
17	Maximum distance of wired interface: -RS485 -Wiegand	1000 m 100 m



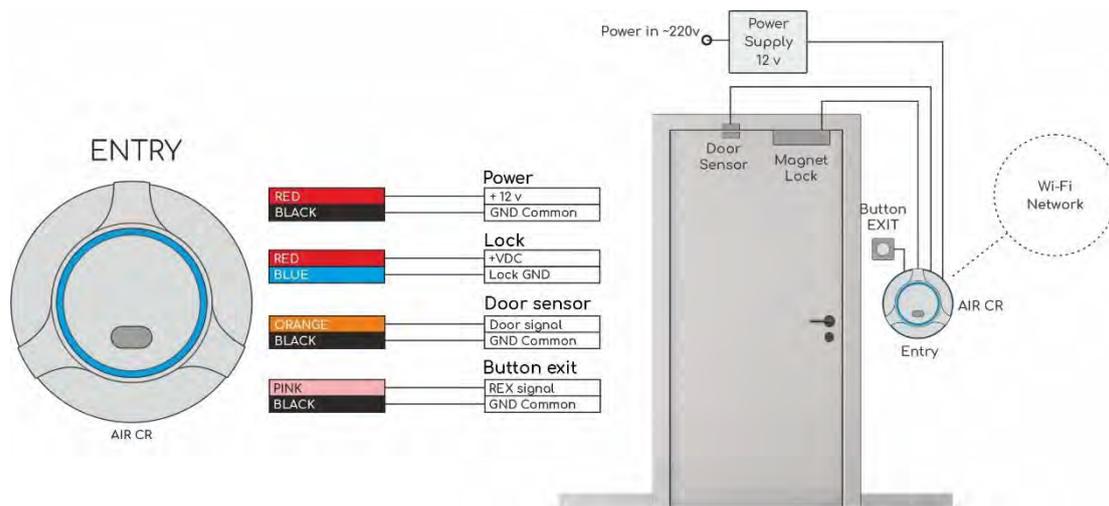
Operational		
18	Overall dimensions	(Д)60x(В)15 mm
19	Working temperature range	от -30 до 70 C
20	IP Protection level	IP65
21	Enclosure material	ABS Fire Retardant

* Maximum identification time, with the number of keys 10,000 - no more than 1.5 s. The controller can work with a large number of user keys, which will lead to an increase in the identification time.

Typical wiring diagrams

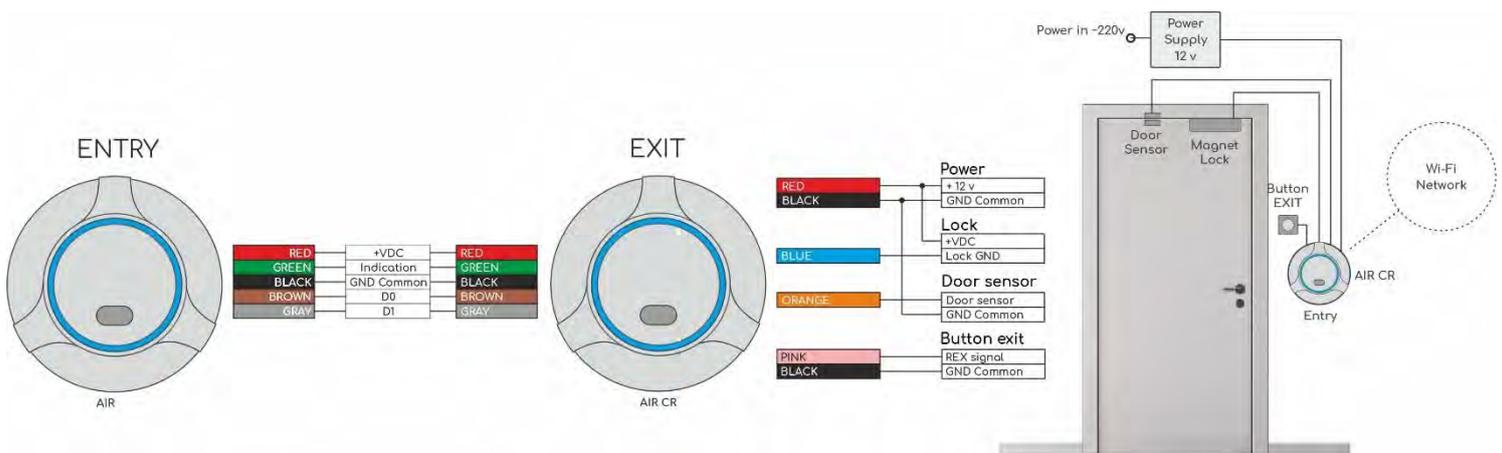
One door. Control of the passage of one direction.

Figure 2



One door. Control of the passage of two directions.

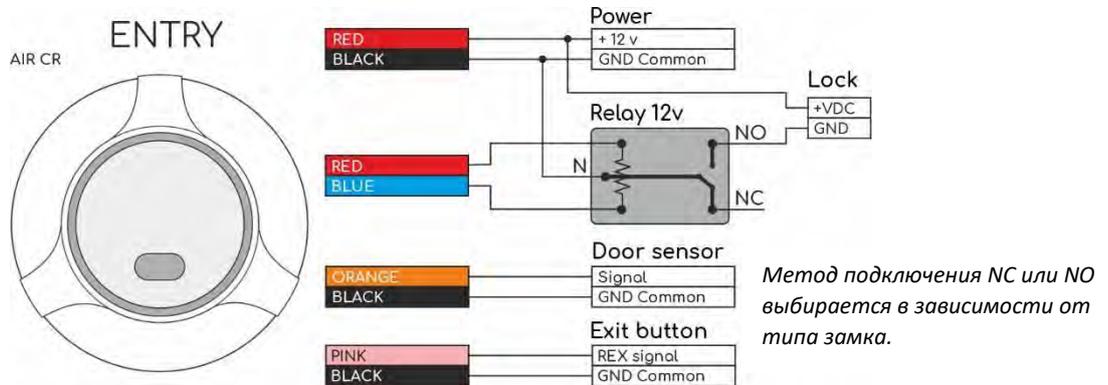
Figure 3





One door. Control of passage of one direction with galvanic isolation.

Figure 4



Using Bluetooth keys AIRKEY.

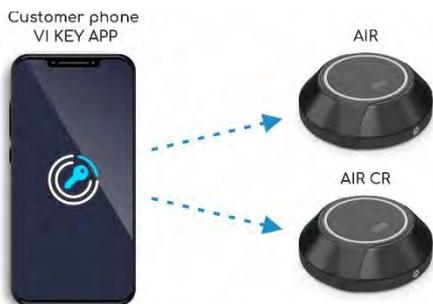
MACS Lite app and AIR CR

Figure 5



Using Bluetooth keys AIRKEY to control passage in two directions.

Figure 6



To organize passage in two directions, the Bluetooth dongle must be associated with each device in turn

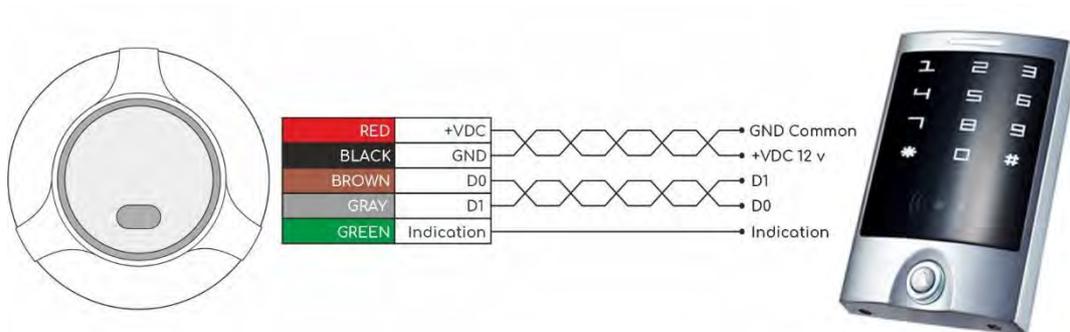


System installation recommendations

When drawing up the wiring diagram of the facility, the controllers should be placed as close as possible to the points of the Wi-Fi signal in order to minimize delays in working with a mobile application or cloud service. Try to avoid mounting the device on metal surfaces. If it is impossible to avoid, then use the reinforced mounting plastic from the device kit. After installation, check the Wi-Fi signal strength. The signal strength can be seen on the info page of the embedded site (see the section “Embedded AIR CR website”). The minimum allowable signal level is -75dB. If your signal strength is lower (the value is higher), then this can have a strong impact on the interactivity of the device with a mobile application or cloud service. We recommend moving the access point closer to the device or using a stronger antenna on the access point.

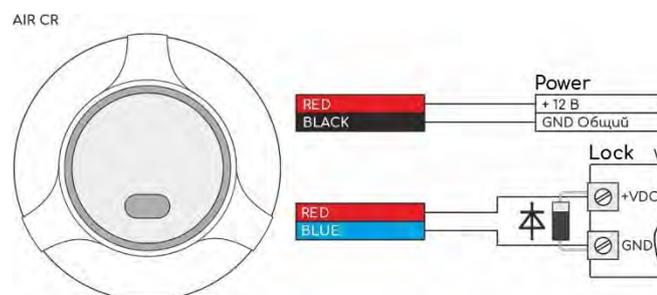
The length of the communication line via the Wiegand interface should be no more than 100 m. This interface has very weak protection against interference - we do not recommend laying it parallel to power cables and next to other sources of interference (daylight lamps, etc.). The minimum distance to power cables is at least 0.5m. If your communication line exceeds 5 m, we recommend using a UTP 5E cable.

Figure 7. Recommended Wiegand connection diagram



The length of the RS-485 communication line is not critical to the distance - this standard was specially developed for communication with remote objects and has good noise immunity. It is necessary to lay the RS-485 communication line at the maximum distance from power cables and daylight lamps. As a RS-485 communication line, it is necessary to use a twisted pair cable - UTP 5E or FTP 5 (If possible, ground the shield at one end). For reliable operation of the system, it is recommended to separate the power supply for controllers and actuators. The controller supply line wires should be kept as short as possible in order to avoid significant voltage drops across them. After laying the wires, make sure that the supply voltage of the controller with the locks turned on is not lower than 12 V.

Figure 8. Using a protective diode



A protective diode is used to protect the controller from reverse currents when an electromagnetic or electromechanical lock is triggered. The protective diode is connected in parallel with the contacts of the lock (the diode is



connected in reverse polarity). The diode must be installed directly on the contacts of the lock. Suitable diodes 1N5400, 1N5408, 1N5821, HER301 and similar. Varistors can be used instead of diodes, for which polarity is not required. Varistors VCR-07D101K S07K60, TVR07101, GNR-07D101K or similar are suitable.

Mounting template for marking

Figure 19

