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Certificate GOST R No POCC RU.ME83.B00374

## Operation instructions

iron  Logic



**MATRIX- II Net**  
**Network reader/controller**

### 5. DELIVERY SET

Reader "MATRIX- II Net" 1 pc.  
Connection element - 2 pcs.  
Protective caps - 2 pcs.  
Screw 3x30 - 2шpc.  
Dowel pin – 2pcs.

### 6. WARRANTY

Warranty period is 18 months from the date of sale but not exceeding 24 months from date of manufacture.

Reasons for warranty termination:

- violation of these Instructions and maintenance requirements;
- mechanical damages;
- use of aggressive agents;
- unauthorized intervention into the controller scheme.

During the warranty period the Manufacturer repairs reader failures free of charge which appeared due to the fault of Manufacturer or replaces faulty components and blocks. Repair is performed in the Manufacturer workshop.

### TECHNICAL CHARACTERISTICS:

Connection element of lock type (electromagnetic/electromechanical)  
Light and sound indication of operating and programming modes  
Setup of lock release duration: from 0 to 220 sec (factory default - 3 sec)  
Output: MIS-transistor  
Operating voltage: 12V DC  
Useful current (standby mode) 30mA  
Communication current up to 5A  
Ambient temperature: from -30C to +50C  
Relative air humidity: not exceeding 90%

#### Characteristics for off-line operation (without network connection).

Maximum number of keys: - up to 2024 pcs.

- simple cards for passage
- master cards to enter into programming modes and turn off "Lock" mode
- Locking cards passage and turn on of "Lock" mode.

Additional operating modes:

- "Lock" mode – passage is open for locking keys and closed for simple cards;
- "Accept" mode – passage is open, automatic record of all new cards into memory (turns on with master card).

## INSTALLATION AND CONNECTION

Install the reader at flat surface in a place providing free swipe of PROXIMITY cards.

To install reader MATRIX-II proceed as follows:

- Mark and drill holes corresponding to the reader holes (Fig. 2)
- Connect the wires of required devices to reader connectors according to diagram.

If the lock is electromechanical install connection element into position 1.

- Depending on the side of reader cable laying remove thin connecting strip in the reader body frame and lay the cable into the body.

When the power is supplied to the reader red diode turns on and the reader enters into programming mode (first switching – record of master cards).

- Install the reader and fix it with screws.

Close the holes on the reader with supplied protective caps.

\*if you install two reader at a distance not closer than 10 cm, actuation range may reduce. Distance between reader should not be less than 3 cm.

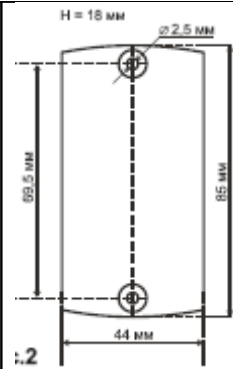
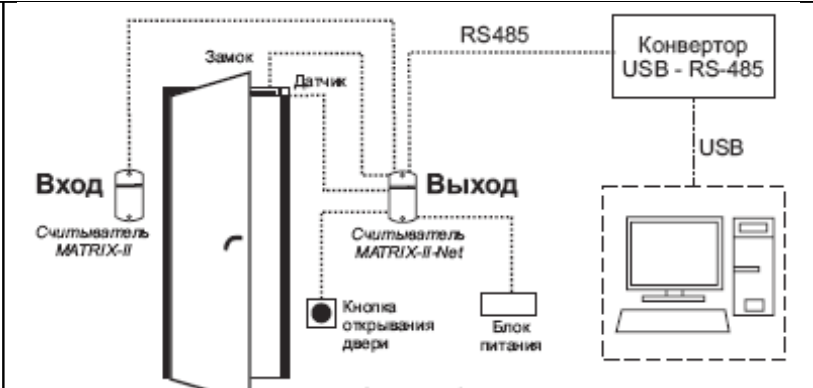


Fig. 2  
мм = mm



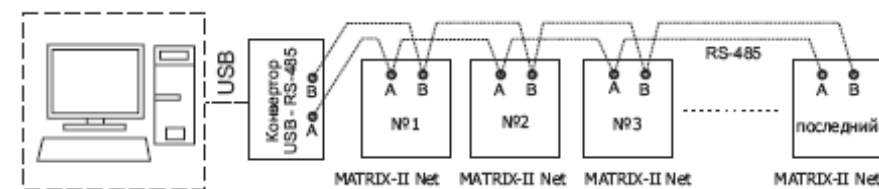
Вход = input, замок = lock, датчик = sensing device, выход = output, считыватель = reader, конвертор = converter, кнопка открывания двери = door release button, блок питания = power supply unit

Fig.1 Scheme of MATRIX-II-Net connection.

## 2.2 Operation in network (RS485).

Readers MATRIX-II Net may join into network using RS-485 interface and operate under the control of a computer. Special software allows program and manage their operation, download events. Decision on providing of card access is taken by MATRIX-II Net, irrespective of whether it is connected to PC or not.

Readers MATRIX-II Net are joined together by RS-485 consequently one after another.



конвертор = converter, последний = the last

The Figure demonstrates the example of how controllers connect to PC. Term "the last" means that the reader MATRIX-II Net is the last in the line.

Table 1. Programming modes

Modes	Entry into Programming mode	Designation
Programming using master cards		1...5 – Number of swipes
1. Adding of simple cards.	1 дМ	д – long swipe (card is hold for 6 seconds, yellow diode) к – short swipe (swipe the card and hold no longer that for 1 second)
2. Adding of locking cards.	1 дМ	
3. Adding of master cards.	1 кМ, 1 дМ	
4. Deleting of certain cards.	2кМ, 1 дМ	
5. Deleting of all cards (from reader memory)	3кМ, 1 дМ	
6. Setup of door release time.	4кМ	
7. Entry into Locking mode.	1дБ	
8. Entry into Accept mode	5кМ	
Programming using connection elements		M – master card П – simple card Б – locking card
1. Operation of electromechanical lock	Position 1	
2. memory erasing.	Position 2	
3. Adding of simple keys without master cards.	Position 3	
4. Standard – no effect on operation.	Position 4	

This mode blocks all simple cards. Use of simple cards does not open the door and induces a series of short signals. Exit from locking mode to general mode is performed using locking card (up to the series of short signals) by short swipe of a master card (series of short signals).

\*In case of supply voltage failure set before Locking mode is saved after switching-on of voltage.

#### **8. Entry into Accept mode ( 5 κM).**

Accept mode is used for the record of all swiped cards EM-Marine.

In this mode the card swiped to the reader induces door release and simultaneous record into the reader memory. The mode is used to recover users base without collection of clients cards.

To enter into the mode use the card.

Swipe the master card to the reader five times for a short period of time. In the moment of each swipe reader gives signals confirming identification of all master cards and their number will correspond to the number of swipes. In the moment of fifth swipe the reader will give five signals and one long signal confirming entry to Accept mode. To exit from the mode swipe the master card. The signal confirming such exit is a series of short signals.

\* In case of supply voltage failure set before Accept mode is saved after switching-on of voltage.

#### **3. Adding of master cards ( 1 κ M, 1 дM)**

Swipe the master card to the reader for a short period of time (short swipe). In the moment of such swipe the controller will give short signal confirming identification of the master card, hold the card not longer than for 6 seconds at the reader (long swipe). In the moment of swipe the reader will give two short signals indicating the second swipe of the master card in programming mode and in 6 seconds one signal indicating entry to the mode of master cards adding. After that remove the master card. To add new master cards swipe them in turn to the reader with an interval not longer than 16 seconds. After each swipe of a new card the reader gives short confirming signal. If the card is already recorded in the memory as a master card signals will not be given. Exit from the mode of master cards adding is performed automatically in 16 seconds after the last swipe. Controller confirms exit from the mode by a series of 5 short signals.

#### **4. Deleting of simple cards using master card ( 2 κ M, 1 дM)**

Swipe the master card to the reader for a short period of time (short swipe). In the moment of the first swipe reader will give a short signal confirming identification of a master card. In the moment of the second swipe the reader gives two short signals indicating the second swipe of the master card in programming mode, hold the master card not longer than for 6 seconds at the reader (long swipe). In the moment of the third swipe, the reader will give three short signals and in 6 seconds one signal indicating entry into the mode of simple cards deleting. To delete cards swipe them in turn to the reader with an interval between swipes not longer than 16 seconds.

After each swipe of the card to be deleted the reader gives short confirming signal. If the card is not recorded in the memory, the reader gives two short signals. Exit from the mode occurs automatically in 16 seconds after the last swipe or with the swipe of the master card. Reader informs about the exit from the mode with a series of short signals.

#### **5. Deleting of the reader memory ( 3 κ M, 1 дM).**

Swipe the card to the reader for three time for a short period of time (short swipes). At the moment of the first swipe the reader will give a short signal confirming master card identification. At the moment of the second swipe the reader will give two short signals confirming the second swipe of the master card in programming mode. At the moment of the third swipe reader will give three short signals confirming the third swipe of the master card, and not more than for 6 seconds swipe and hold the master card to the reader (long swipe). At the moment of the forth swipe the reader gives four short signals and in 6 seconds a series of short signals confirming deleting of the reader memory and exit from programming mode. After that master card should be removed. Entry to programming mode occurs automatically when power is on.

\* At the moment of deleting of the base using master card the programmed release time is not deleted.

#### **6. Release time programming (4 κM)**

Swipe master card to the reader four times for a short period of time. B At the moment of each swipe controller gives signals confirming identification of the master card and their number will correspond to the number of swipes. At the moment of the forth swipe controller gives four signals and enters in the mode of door release programming. Within 6 seconds from the last swipe lock the door button for a period required for release. After the button release controller will give a signal and record the time in the base.

\*If release button cannot be set, contacts No 4 and No3 (earth) close on each other.

#### **7. Locking mode (1 д Б)**

In the locking mode the passage is open using locking cards and closed for simple cards.

Locking mode is set using locking card (using locking cards - p.2).

Locking card is used:

As a simple access card in general operating mode (i.e. access is opened for all simple and locking cards recorded in the base)

To enter into locking mode (in this mode only locking cards can open the door).

To enter into common mode

Locking card opens by release.

To enter into locking mode hold locking card at reader for 3 seconds till the long continuous signal, confirming entry into locking mode.

**GENERAL CHARACTERISTICS OF PROGRAMMING MODE**

To enter into required programming mode use short (less than 1 sec) and long (about 6 sec) swipes with master card. Operation in programming mode is restricted with period after the last swipe (about 16 seconds), after which reader comes to initial condition informing about it with a series of five short signals.

**1. Adding of simple cards ( 1 д М).**

Swipe and hold master card (long swipe). At the moment of swipe reader gives short signal confirming identification of master card and in 6 seconds another signal confirming reader entry into the mode of simple cards adding. After that master card should be removed. To add new cards swipe them in turn to the reader with the interval between swipes not less than 16 seconds. After each swipe of a new card reader gives confirming short signal. If the card is already recorded in the memory, it gives two short signals. Exit from the mode occurs automatically in 16 seconds after the last swipe or after the swipe of a master card. After exit from the mode reader gives a series of 5 short signals.

**2. Adding of locking cards ( 1 д М).**

In the mode of simple cards adding it is required to swipe the selected card to the reader and hold it for 9 seconds till the long signal (i.e. first it gives a short signal and after that long signal confirming adding of a locking card). If you do not add other cards the reader gives a series of short signals confirming exit from the programming mode.

**Use of socket straps No 1.**

Controller is complete with one socket used for programming and setting into the mode of electromechanical lock (total four positions).

**Position No 1** – sets logics of power cascade without connection element of the electromagnetic lock, in closed position voltage applied;

With connection element of electromagnetic lock, in closed position voltage released

**Position No 2 CLR** – to delete controller memory. For this purpose turn off power, install connection element and turn on power. After deleting controller gives a series of short signals.

\*-Deleting of all cards and programmed release time.

(sets default settings - 3 sec.)

**Position No 3 ADD** to add simple cards without master cards.

For this purpose turn off power, install connection element and turn on power.

After a signal controller is in the mode of simple cards adding (you may add simple, locking cards without master card)

**Position No 4**

- standard position, does not influence on controller operation



**2. PROGRAMMING OF READER MATRIX-II NET**

**2.1 Programming in operation in offline mode (without network connection)**

First switch on (no cards in the base).

Short signals within 16 seconds. They indicate that the memory is deleted and the mode of master cards adding is set.

At the moment of signals swipe the card to the reader to record it into its memory as a master card. Termination of short signals confirms successful recording of the first master card.

To add new master cards swipe them in turn to the reader with an interval between swipes not exceeding 16 seconds. After each swipe of a new card reader gives a short confirming signal.

Exit from the mode of master cards adding occurs automatically in 16 second after the last swipe.

After the exit from the mode the reader gives five short signals.

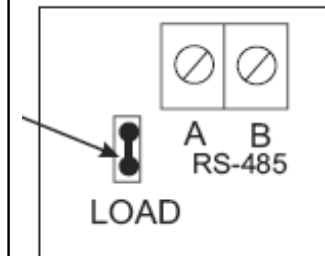
Further master cards are used for programming.

If no cards were recorded turn on the reader again.

Entry into the mode of master card recording when power is supplied occurs only if the base is empty (neither simple, nor master, nor locking cards).

Connection element encloses at the controller Socket No 2(LOAD)

Number of controller in the network is defined by special software. Initial all controllers have network address "1".



**Characteristics of network operation.**

- Maximum number of cards/keys: 2024 pcs
- events memory capacity 2048
- maximum number of controllers in network 255
- rate of exchange by network RS-485: 19200/57600 bit/sec (set automatically)

When the door sensor is installed "Door breaking" and "Unclosed door" events are available. Built-in reader MATRIX-II Net is perceived by software as connected for output.

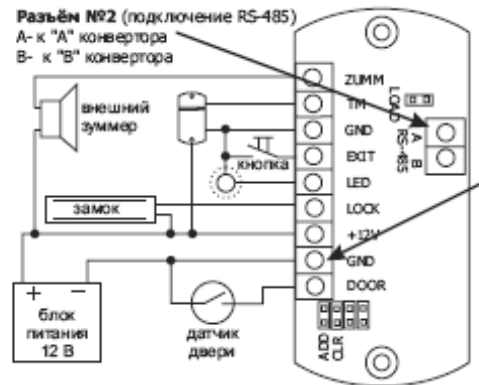
External reader MATRIX-II is installed for input.

Initially managing software perceives MATRIX-II Net as a controller with reader connected by the standard TM (Dallas)

Using connection element terminal No 1 (closure of LED-GND contacts) set the mode "Cards". In this mode software perceives MATRIX-II Net as a controller with installed reader by Wiegand 26.

Install connection element only if power is off.

If any cards were recorded without connection element installation, after its installation they will be not known, because the format of card code saving (Wiegand26 and TM) in the memory are different.

**Connector No 2 (connection RS-485)**

A- to A at converter  
B- to B at controller

Внешний зуммер = external buzzer; кнопка ТТ = ТТ button; замок = lock; блок питания = power supply unit; датчик двери = door sensor.

**Connector No 1**

1. ZUMM – external buzzer.
2. TM - input TM central
3. GND – general earth (-)
4. EXIT – door release button
5. LED – external light-emitting diode (+)
6. LOCK - lock
7. +12V power +12V
8. GND – general earth (-)
9. DOOR – door release sensor (hermetic contact).

**Note:**

- 1) When non-contact reader MATRIX-II is connected with MATRIX-II Net light-emitting diodes and sound are managed by wire TM.
- 2) Connection not required for: External buzzer; light-emitting diode; door sensor.

**GENERAL**

Reader MATRIX-II Net is designed to manage access in accommodation and production facilities, track of passage time and events.

Reader can operate both in standalone mode and using the network.

Connection and operation in standalone mode of reader MATRIX-II Net are the same as for reader MATRIX-II K.

Connection to network by RS 485 (double-wire connection).

Reader MATRIX-II Net allows connection of the following equipment:

- non-contact reader for proximity-cards, emulating TM key protocol (recommended reader MATRIX-II);
- electromagnetic lock, electromechanical lock/latch;
- door release button (normally open);
- external buzzer, external light-emitting diode (analogue set at the controller plate);
- open door sensor (normally open type).

Date of sale: " \_\_\_\_ " \_\_\_\_\_ 200\_\_

Distributor \_\_\_\_\_