



Access Control Panel

U-Prox IP100

Installation and programming manual

About this document

This manual covers installation, adjustment and utilization of U-Prox IP100 (hereinafter panel) access control panel. Read this manual carefully prior to installing the system.

Characteristics, Intended use and parameters of the panel are described in the section "**Summary**". Section "**Terms**" provides an explanation of terms found in this document.

The look of the panel, the pins and the mode of work are described in the "**Description section**". Order of installation, adjustment of external devices and panel configuration are described in "**Working with the device**" section.

Attention! Read this manual carefully prior to installing the system.

Installation, adjustment and utilization of panel is allowed only to persons or organizations with the appropriate authority from the manufacturer

Technical support

To get warranty and technical support you can apply to authorized service centers, situated on the territory of countries, enlisted in the warranty card.

Warranty and technical support are performed on the territory of the country, where the customer applied for warranty or free service.

Technical information is available on the system website

www.u-prox.com

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Brief description of the panel

U-Prox IP100 control panel - a device designed to control access to residential and business premises, for pass time and events logging and analysis, including personnel time attendance.

The default modification panel has built-in proximity card reader (ASK and FSK RF IDs) and keyboard.

The MF modification panel has built-in card reader ISO14443A (Mifare® Standard, Mifare® Hi-Memory, Mifare® Ultralight) and keyboard.

U-Prox IP100 processes the information received from the reader (readers), and controls actuator (e.g. a lock) with the built-in relay.

Panel has two End-of-line supervised inputs.

The panel can work offline or as part of the network. To add it to Access Control network, Ethernet (wired computer network) or Wi-Fi (wireless computer network) interfaces are used.

The network settings of the control panel are programmed via a standard USB port (mini USB B).

Panel U-Prox IP100 has advanced hardware capabilities and intellectual functions to control a single door with one built-in reader (single-sided door) or two readers (double-sided door). Having a large amount of non-volatile memory U-Prox IP100 is an access control system that provides for access control in variable establishments in small offices as well as on large enterprises with number of employees up to 31768 and up to 1,000 visitors.

Thoroughly elaborated technical and design solutions, the ability to connect external reader, communication over a computer Ethernet network or wireless Wi-Fi, non-volatile memory and the clock, protecting the communication ports and port reader for short circuit, over-voltage and reverse polarity - all allows to use the panel to build a variety of Access Control Systems (ACS) - from the system for a small office to the entrance of a large enterprise.

Intended use

Panel U-Prox IP100 is designed for operation in access control systems (ACS) of diverse scale in small offices as well as on large enterprises. Panels are connected in ACS via computer network Ethernet or wireless Wi-Fi.

The panel provides access to one room with the ability to control entry and exit as well as an alarm system of rooms connected with this access point. In the case of simultaneous control of entry and exit from the rooms function " Antipassback" is provided (prohibition of re-runs).

Characteristics

- Built-in card reader:
 - Default: with support for ASK and FSK identifiers.
 - MF Modification: ISO14443A - Mifare® Standard, Mifare® Hi-Memory, and Mifare® Ultralight identifiers
- Programming of readers indication
- Reading distance: up to 50 mm
- Current consumption from 12V power source (off load), max 160 mA
- Amplitude ripple of DC power supply, no more than 500 mV
- External reader may be connected to the U-Prox IP100 . It should be U-Prox series
- Two End-of-line supervised inputs
- Built-in Request to Exit button
- One relay (contact NO, NC, COM) 1 A @ 24 V
- One USB port to configure the network settings (for connection to the ACS server)
- Port Ethernet (4 wire) 10/100 Mbps.
- Wi-Fi device. Support WEP/WPA/WPA2.
- The complete configuration is done using ACS software via a computer network
- Antipassback
- Real-time clock (Door Time)
- Non-volatile memory:

RF IDs	31768
Events	47000
Time zones	255
Weekly schedules	255
Holidays	255
Temporary RF IDs	1000

- Overall Unit Dimensions - 119.4 x65, 4x20, 4 mm
- Weight Panel - 0.2 kg (with 0,5 m cable)
- Climatic version - UHL 4.2 GOST 15150-69 in the range of ambient temperatures from 0 to +55o C
- Relative humidity up to 80% without condensation

Terms

Identifiers

In access control systems each user has a unique RF ID. Identifiers can take the form of a plastic card, key FOB etc.

Reader

The information on the identifiers is read with READERS, connected to the ACS control panel. There are several types of RF IDs and readers for them. It is essential that reader and control panel use the same interface. Only U-Prox series readers may be connected to the U-Prox IP 100 control panel.

PIN (Personal Identification Number)

Some readers have built-in keypad. Keypads may be used for PIN entering. It can be both self-dependant or used as an additional code to user RF ID. When PIN is programmed as additional code, reader waits for PIN entering after RF ID is read-out.

Access point

Access point is a logical concept of the access control system implying control of passing through a door in one direction. It consists of reader, access control panel (or its part), door supervision devices (like door contact, RTE button etc.) and door locking device. For instance, the turnstile with two-way passes has two Access points – one for entrance and the other one for exit, door of this type is called double-sided door. A door with a reader on one side has only one Access point – Entry point, and it is called single-sided door\

Direction of passage

Passageway - is a logical unit of ACS, controlling passage through the access point in one direction. It includes reader, access control panel (or part of access control panel), actuator. So, tourniquet with double-sided control has two passageways, and the door, having single-sided reader - only one passageway. Access point, which consists of two passageways, is called double-sided, and the point of access, which consists of one direction of passage - single- sided.

RTE (request to exit)

To exit from the premises with a single-sided door, a button wired to control panel is used. This button is called RTE (request to exit) button. If someone opens a door otherwise than pressing RTE button – by re-energizing locking device, opening lock with a key etc., "Door Forced Open" event arises. RTE button may be used for remote door opening as well.

Door Contact

A properly designed ACS has to supervise door status (opened or closed): magnetic door sensor, sensor of the turnstile rotor position, inductive sensor of the road barrier, etc. This ensured that the system prevents situations when several users access the door with one RF ID or door left open after user's access and so on.

For these purposes the magnetic door sensor, the turnstile rotor position sensor and the position sensor of boom barrier are connected to the input of panel. The input used to connect the sensors, is called the input of the door contact.

Antipassback

Antipassback function is implemented in access control panels to prevent the situation when user gives his RF ID to another person after passing into the premises. If this function is on, control panel tracks an RF ID position – inside or outside the premises. On any attempt to pass in the same direction twice the panel denies access and stores “Access Denied, Antipassback” event into the Log.

Antipassback function can be set on only in case of the double-sided door control.

Global antipassback

Prevents user door pass from the areas where he must not appear. The facility spitted into the closed areas connected with double-sided access points, in which system supervises the personnel appearance for this purpose. System detects the global antipassback violation when somebody tries to re-enter such area without exit or tries to enter somewhere from the area he have not enter. System generates message “GLOBAL ANTIPASSBACK: Access Denied” in case of global antipassback violation.

Door time

If door sensor is open, corresponding access point goes into alarm. Alarm is not invoked, if contact is opened during Door Time interval. This interval starts when access is granted and lasts for the programmed time or terminates on opening and subsequent closing of door contact.

Code matching attempt

Control panels can activate alarm on attempt of a code (or RF ID) matching. Code matching is considered when invalid code (or RF ID) is entered several times successively. Valid code entering clears the counter. This function switching On and number of code entrances are subjects of programming.

Schedules

Date and time of valid access are indicated when setting user access rights. Control panel stores up to 250 time zones.

250 week schedules can be combined from these time zones.

Moreover, control panel can store up to 250 holidays, which happen once a year.

Time zones

Time zones are a part of schedule. This is a way to organize a range of days and times and associate it with access levels.

Time zones are utilized by the application to validate, authorize, or perform various functions based on schedules.

Downloading

Control panel is to be downloaded after all parameters are set – modes of inputs, outputs, access rights and others. During downloading parameters are rewritten into access control panel.

Description and operation

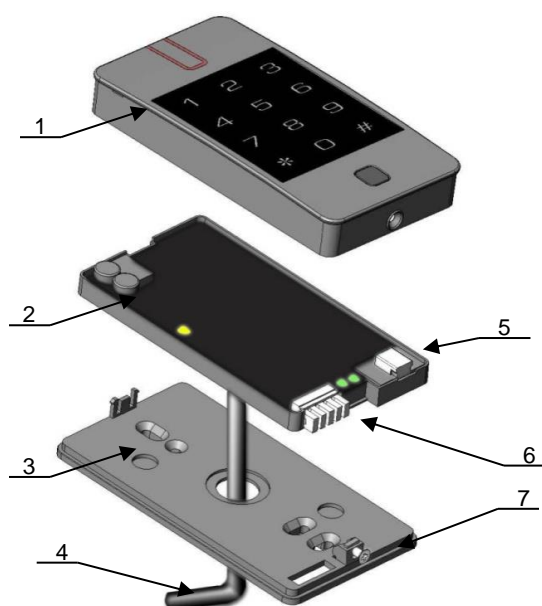
Panel

The look of the access control panel is shown in Fig. 1 and 2.



1. Panel enclosure
2. RTE
3. LED
4. Keypad

Fig. 1. U-Prox IP100 panel



1. The top cover of the panel
2. Control panel electronics, injected with polyurethane resin
3. The back plate of the corps
4. 9 wire connection cable
5. USB port (mini USB B)
6. Ethernet Cable connector
7. Fixing screw

Fig. 2. U-Prox IP100 components

Terminals


Colour / №	Name	Function
9-wire cable		
Red	+12 V	Connection to the power supply, connection of an external reader
Black	GND	Connection to the power supply, connection of an external reader, common for input loops
Yellow	Z1	Terminals for Loop
Orange	Z2	
Brown	NC (normally closed)	Relay contacts
Blue	NO (normally open)	
Grey	C1 (общий)	
White	D1 (Data 1)	Connection of an external reader
Green	D0 (Data 0)	
USB connector		
USB Mini B	USB connector	Used for the initial configuration of the network settings
Ethernet connector		
1	TX+	Connecting Ethernet cable. Terminals are measured from LED indicators: 
2	TX-	
3	RX+	
4	RX-	

Fig. 3. Marking terminals

Fig. 3. Marking terminals

Sound and light panel

Yellow LED:

- **Standby mode** (periodic blinking):
 - **1 short pulse once per second** - communication - Working in notification mode, connection normal;
 - **2 short pulse once per second** - communication - Working in the notification mode, **no connection**
- **frequent blinking** - downloading data from the server
- **uploading mode:**
 - **LED is on for 5 seconds** - the detection of removed top cover, uploading mode start
 - **frequent blinking** - waiting in uploading mode (with removed top cover), this indication means that the attempt to upgrade the firmware failed
 - 6 short beeps - successful upgrade of firmware
 - 2 short beeps - uploading mode exit
- **6 short beeps** (with shorted pins D0 and D1) – Factory reset .

Green LED 1 - **Link** (next to the jack Ethernet):

- On - Ethernet cable is OK

Green LED 2 - **Eth. Activity** (next to connector USB)

- Frequent blinking - Data Exchange

Panel operation

The panels supplied unloaded with factory settings below in document. In this state, the indicators of readers and the yellow LED on the panel flashes once per second. To make the panel work in access control system (ACS) you have to upload a network setting using the "Configurator" software and USB port.

Attention! All inputs should be terminated with resistors (supplied).

If no inputs are triggered panel goes to mode "Normal" after uploading the configuration.

The panel can supervise one door with one or two access points. There are four modes of access point: "Normal", "Alarm", "Blocking" and "Free Pass." "Free Pass" has the highest priority. If no inputs are broken Panel goes to mode "Normal" after uploading the configuration.

Panel can supervise one door with one or two access points. There are four modes of access point: "Normal", "Alarm", "Blocking" and "Free Pass." Mode "Free Pass" has the highest priority, as this mode is activated in the event of a fire, followed by modes of "Blocking", "Alarm" and "Normal" in decreasing order of priority.

"Normal" mode

This is the main mode of the panel. In this mode, the panel grants or denies access to RF ID owners.

In "Normal" mode the readers blink red.

Passing after entering RF ID

To pass through user enters contactless RF ID to the reader. If RF ID is registered and the passage is granted, access point opens (the panel activates the actuator). The reader LED becomes green.

Passing after entering RF ID and PIN code

On entering enrolled RF ID, panel tests whether PIN code is required, and, if required, waits for entering PIN code. After entering the correct PIN code, AP opens (the actuator is activated).

The reader LED becomes green.

Passing upon Request to Exit (remote opening of doors)

Exit from premises with single-sided door or passing of users is granted upon pressing Request to Exit (RTE). Pressing and releasing of RTE AP opens the door (actuator is activated). The reader LED becomes green.

Access denial upon entering RF ID

Access may be denied to RF ID owner due to the following reasons (the reader LED is red):

- cards (RF IDs) and schedules are not loaded in the panel (light off)
- card is not enrolled in the panel (for 1 second buzzer is on and LED is red)
- card term expired (for 1 second buzzer is on and LED is red)
- RF ID passed out of schedule (for 1 second buzzer is on and LED is red)

- attempt to re-pass when "Antipassback" is on (for 1 second buzzer is on and LED is red)
- entered RF ID is marked as lost or Blocking (for 1 second buzzer is on and LED is red)
- the panel is in "Alarm" mode (LED is constantly on and red)
- the panel is in "Blocking" mode (LED flashes red and yellow in turn)
- Pass count is exhausted for the temporary card (visitor).

"Alarm" Mode

In "Alarm" mode the reader indicator is constantly red. Depending on the programmed functions Access point goes into mode **"Alarm"** in case of unauthorized passage (Door Forced Open), opening of panel cover, entering RF ID recorded as lost, if AP is open too long (open time AP is exceeded), and in case of RF ID matching attempt.

In "Alarm" mode panel activates outputs, programmed as ALARM and SIREN.

"Alarm" output remains activated till "Alarm" mode is turned off. For output "SIREN", siren time is programmable.

If Access point is in "Alarm mode", passage is prohibited. Access point may be opened by pressing RTE.

To exit from the "Alarm" mode pass the ID with "Disalarm" attribute or by command from the computer.

"Free Pass" Mode

There are circumstances when you need to open access points for free passage of people, such as in the case of fire, earthquake or in other emergency. For this case, the panel has "Free Pass" mode.

In "Free Pass" Mode LED of reader flashes green and yellow.

The access point goes into "Free Pass" Mode after the command of operator from the computer or after the loop violation (break or shortage) programmed as FREE PASS. The access point is in "Free Pass" Mode for as long as the loop FREE PASS is broken or until the command from the computer comes (while the loop is broken, command from the computer will not work).

The panel allows to configure the function of loop "Free Pass" for access points A, B, or for both access points (A + B).

As long as access point is in "Free Pass" mode, the lock is held in open position, the panel stores a log event "Access granted" on presentation of RF ID code regardless of the antipassback state of, schedules, etc. It is used to control the presence of personnel on the premises in case of an emergency.

To ensure "Free Pass" mode when using locking devices with mechanical re-platoon you must control access point state. Locking devices with mechanical re-platoon can be unlocked with current pulse and remain unlocked until access point is not opened. While closing door, locking device goes into a closed state. Panel in "Free Pass" mode tests the door contact. Each closing of door again gives unlocking signal to the door.

"Blocking" Mode

If it is necessary to deny access to AP to all users of the system, the panel switches into "Blocking" mode. If AP is in "Blocking" mode, the passage is granted only to owners of RF IDs with the sign "Security Service". AP cannot be opened by pressing RTE.

In "Blocking" mode LED is alternately flash red and yellow

Access point goes into "Blocking" mode after the operator command from the computer or after loop violation designated as BLOCKING. Access point is in "Blocking" mode for as long as the loop is violated or until the command from the computer (while the loop is broken, command from the computer will not work).

Panel allows to configure loop function "Blocking" for access point A, B, or for both access points (A + B).

RF ID properties (cards)**Code (RF ID card code)**

Each card has a unique code which is set at the time of its manufacture. It consists of 10 hexadecimal digits.

PIN-code

Additional code is assigned to the card. It consists of no more than six decimal digits. It can be used together with readers that have a built-in keyboard.

Enter PIN code with the reader's keypad and press '#' key. Always enter PIN code AFTER the card pass. If PIN-code is correct, panel unlocks access point and grants access. Otherwise, panel generates a warning signal, and records "Invalid PIN-code" event into the log. Door remains closed.

Validity (of Card)

Card Validity expiration date.

Alarm Cancel

Passing the card to door reader, when the door is in "Alarm" state, panel registers event "Alarm cancelled" and puts the door to Normal mode. If the card that has no right to cancel the "Alarm" is passed, the door will remain in the same state. "Access denied. Alarm Status" event recorded into the log.

Security Service

Security Service mark gives the right of access to a Blocking door.

When the ordinary card is passed if door is in "Blocking" Mode, "Access denied. Blocking state" event recoded. Card with attribute "Security Service" pass. If the card is valid and has access right at the moment, the panel gives access and event "Access granted. Blocking state» is registered.

VIP

Access right to pass always everywhere, except through Blocking door.

VIP card may be assigned any schedule, Antipassback and validity period is NOT applied to it. The card may have PIN code

If the door is in "Blocking state", access is denied for RF ID with this attribute checked.

Antipassback is off

Access right without considering Antipassback Mode.

Access is granted regardless of the direction of the previous access, but according to the schedule and other attributes designated to the Card

Variants of Use and modes of output

All panel outputs can be programmed in any order for several functions: Blocking, Siren, Alarm, Programmable output. In addition, there is programmable operation mode for each output: start-stop (output remains active until the corresponding command is present, for example, during the time until the panel is in "Alarm" Mode), impulse (the output is activated for the programmed time), trigger mode (on the first event the output is activated, on the following is off, etc.), continuous.

The communicator

U-Prox IP100 panels operates automatically - after downloading data from the server, it processes the card passed according to its access rights, grants or denies access and sends event rehire to the ACS server.

Panel communicator operates in the **notification** mode. If there is event (passage, violation of input) event report message is send ACS server.

U-Prox IP100 panel can be connected to a computer network via wired connection (Ethernet) or via wireless network. This ensures work within **local network** (see Figure 3) or via the **Internet** (see Fig. 4), that allows to build distributed access systems of any size.

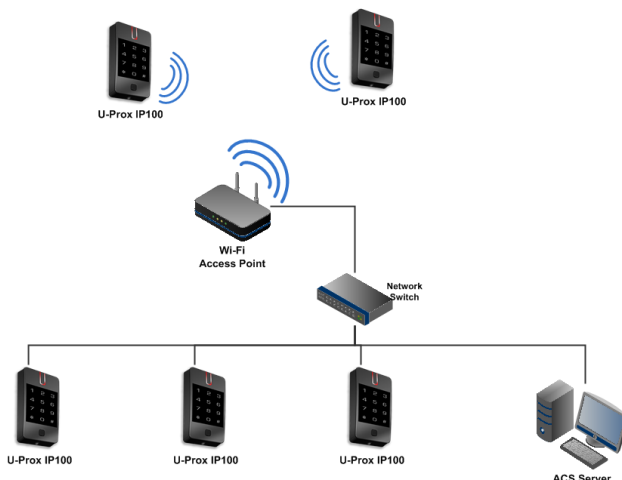


Fig. 4. An example of a local network of mixed type (Ethernet and Wi- Fi)

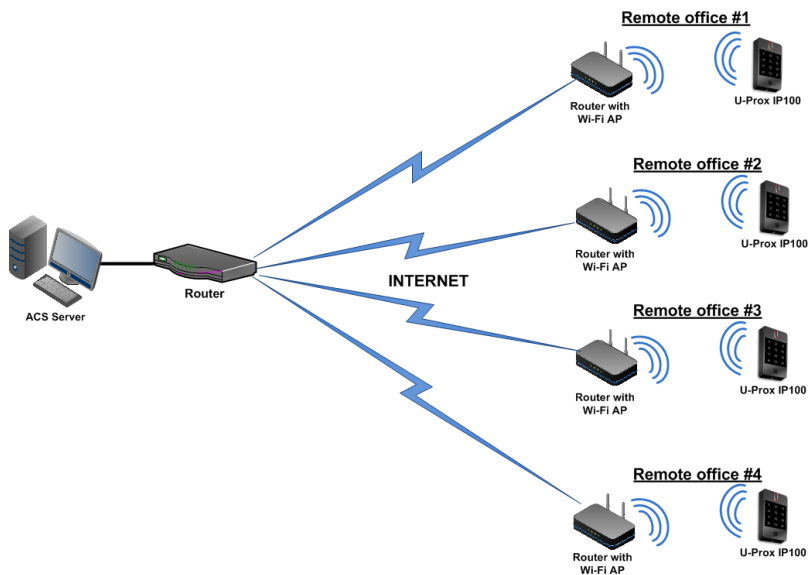


Fig. 5. An example of a distributed network

For setting common network of central office and branches for extra protection using VPN technology is recommend. To provide backup communication channels use routers with two dissimilar channels of access to the Internet.

Working with multiple Wi-Fi access points support reserving a wireless communication channel (main and backup) - see **Figure 6**.

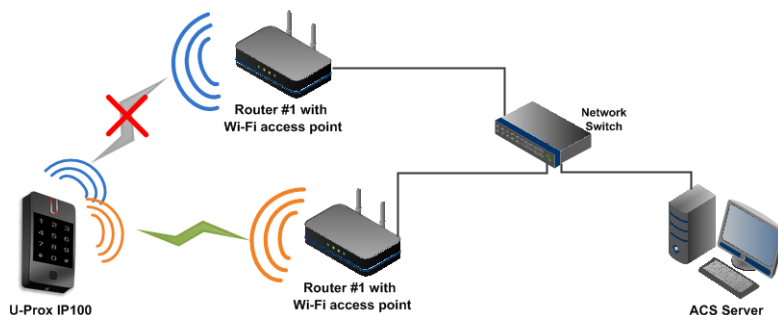


Fig. 6. Working with multiple Wi-Fi access points

Algorithm of working in LAN

1. If DHCP on (IP is 0.0.0.0) - obtaining IP address with the start of the access control panel
2. Update of IP status of address (announcement and extension of reserved IP, if DHCP)
3. Determine accessibility of ACS server and U-Prox IC A control panel (IP or DNS name)
4. Periodic sending of test signals
5. If there is, sending of events. Waiting for server commands.

Algorithm of working on Wi-Fi (with multiple access points)

1. Determine access to Wi-Fi network
2. Connect to a specific SSID № 1
3. If DHCP on (IP is 0.0.0.0) - obtain IP address
4. Update status of IP address (announcement and extension of reserved IP, if DHCP)
5. Determine accessibility of ACS server and U-Prox IC A control panel (IP or DNS name)
6. Periodic sending test signals
7. If there is, send the events. Waiting for server commands.
8. When failure - go to the next specified SSID

Algorithm of working on the Internet (local wire net)

1. If DHCP on (IP is 0.0.0.0) - obtaining of IP address within local network affiliate at panel launch
2. Update of status of IP addresses (announcement and extension of reserved IP, if DHCP)
3. Determine possibility of access to the Internet (accessibility of given IP address of router)
4. Determine accessibility of ACS server and U-Prox IC A control panel (IP or DNS name)
5. Periodic sending of test signals
6. If there is, send the events. Waiting for server commands.
7. Failure - transition to the second specified IP address of router.

Algorithm of working on the Internet (WLAN Wi-Fi)

1. Determine accessibility to Wi-Fi network
2. Connecting to specified SSID № 1 If DHCP - obtain IP address within local network affiliate at panel launch
3. If DHCP on (IP is 0.0.0.0) - obtain IP address
4. Update of status of IP addresses (announcement and extension of reserved IP, if DHCP)
5. Determine possibility of accessing the Internet (access to given IP addresses of routers)
6. Determine accessibility of ACS server and U-Prox IC A control panel (IP or DNS name)
7. Periodic sending of test signals
8. If there is, send the events. Waiting for server commands.
9. Failure - transition to the second IP address of specified router
10. Repeated failure - go to the next specified SSID

Server addresses automatic configuration for control panel

The use of the existing computer network infrastructure, standard network protocols (DHCP for instance) allowed to provide the “plug-and-play” principle. The mode of the automatic server address configuration in the panels eases the wireless lock system deployment significantly.

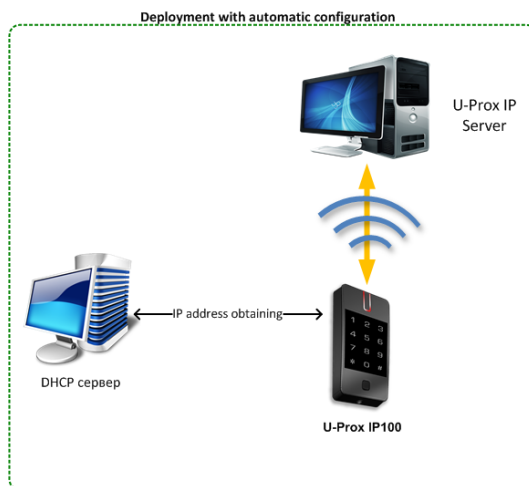


Fig. 7. System deployment

The algorithms for operation on each step described below

1. Panel checks for DHCP mode ON (panel address 0.0.0.0) or static IP
2. If DHCP mode is ON, the dynamic IP address obtain routine will start
3. The panel automatic configuration mode starts if the access control system IP address (IP or DNS name) is not set:
 - a. Panel sends data packages announcing access control system server about itself as a new device in the local network

Despite it is broadcast announcement, it is limited with single range local network and active network equipment. That's why the IP addresses of the access control system server are to be set manually for networks with sophisticated topology.

- b. The system will warn operator after the receiving of the data package from the new panel. Operator must add panel to the system database (DB).
 - c. After the panel added to the DB it receives the answer from the access control system server. The address of the access control system server recorded into the control panel and it stops to broadcast.
 - d. Operator has to upload panel after its adjustment recorded into the DB. Panel becomes associated to the certain access control system server, eliminating panel control capture with another system.

Return panel to the factory settings to eliminate the panel association to the system

- e. In the case of access control system server IP address change panel will initiate the automatic configuration routine, but the data exchange will be possible with previously connected system only.

Global antipassback

U-Prox IP100 control panel can operate in a system of global antipassback. The main controller U-Prox IC A tracks the location of a person on the fact of its passage through the access point. U-Prox IC A receives data about the passages from control panels U-Prox IP400, NDC F18 IP, U-Prox IP100, U-Prox IP300.

The basis of the global antipassback is the zoned antipassback. The facility is divided into rooms - zones of access or areas. With this division the entrance to another area is exit from the previous one, and the passage in the area is possible through various access points.

Antipassback control panel receives data from the access control panels and tracks the movement of personnel from area to area . Also can be tracked the location of the person who has multiple IDs (See Figure 8).

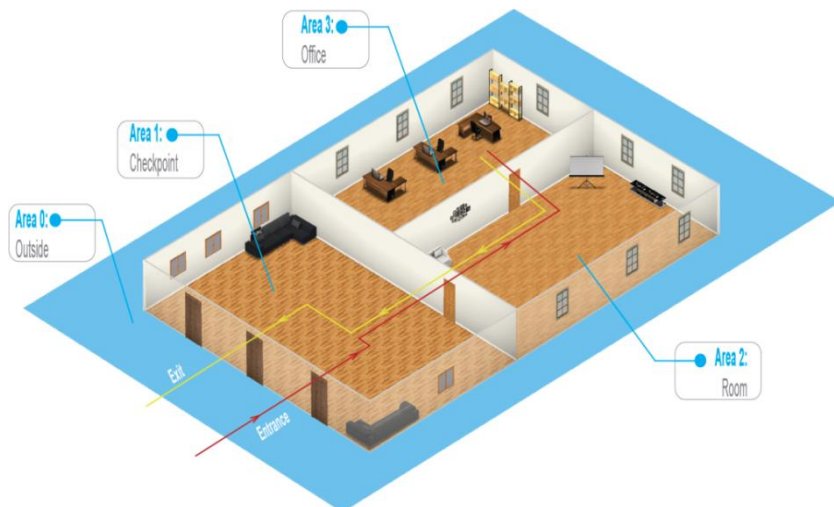


Fig. 8. Allocation of access areas

Initially an employee has the location "unspecified". After the first presentation ID to a reader's location

The location "unspecified" is assigned when registering a new employee, or after the system operator command "location reset" of person is fixed by U-Prox IC A.

With the use of global antipassback it is possible to suppress passback, using duplicate card for infiltration (sudden appearance inside), transferring the ID to another person, etc (See Figure 9).

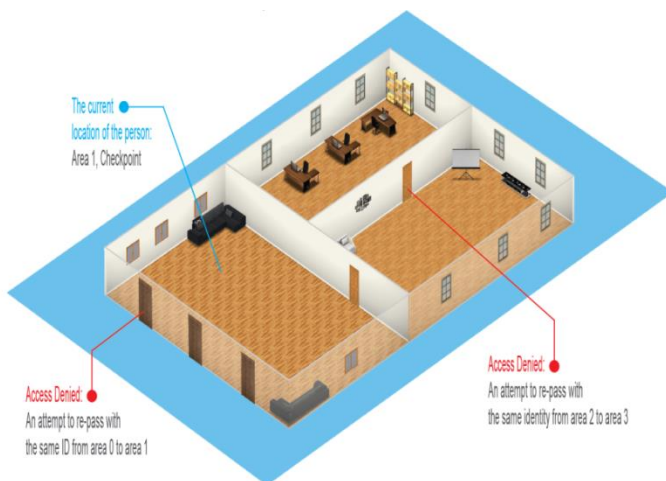


Fig. 9. Tracking the violations

In case of lost communication with the access control panels, forced entry, free pass, etc. U-Prox IC A merges access areas together, considering that the personnel may be both there and there.

After restoring the normal state of access point or communication with the control panels, areas will be unmerged (See Figure 10).

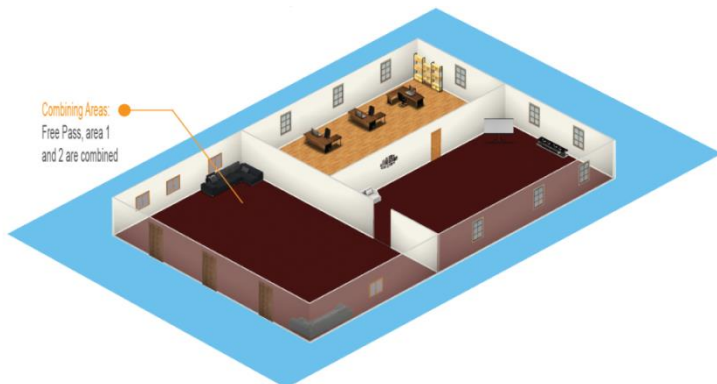


Fig 10. Merging access zones

U-Prox IP400, U-Prox IP100, U-Prox IP300, NDC F18 IP access control panels can be configured to two variants of behavior in case communication lost with U-Prox IC A:

- Not to pass anyone;
- Pass all according to the rules of the local antipassback

The requirements for U-Prox IC A adjusting:

- Control panel must have static address (IP or DNS)

The requirements for U-Prox IP100, U-Prox IP300, U-Prox IP400, NDC F18 IP adjusting:

- Only control panels with double-sided doors (entrance and exit on presentation of ID) can be involved in global antipassback.
- In configuration server address # 1 has to be the ACS server address.
- In configuration server address #2 has to be the address of U-Prox IC A
- In the U-Prox IP software must be enabled antipassback mode "General" for door
- For each access control panel must be specified master antipassback control panel and reaction to the loss of communication with him.

U-Prox IP400, U-Prox IP100, U-Prox IP300, NDC F18 IP control panels deliver events to two addresses at the same time. First one is ACS server's address, to display and store events in a database program. The second one is address of U-Prox IC A. Antipassback control panel sends answer with command to deny or grant access.

After ID presentation the delay in granting or denial of access may be up to 1 seconds, depending on the topology and bandwidth of the computer network

How to work with the device

The panel is delivered in a small plastic case with subsequent sealing. Overall dimensions are shown in Fig. 11.

Connection procedure

1. Before installation do initial setup of panel (that specifies settings of network parameters) with utility "Configurator" via USB Port
2. In the place of installation of the panel do preparing - mark and drill the holes (see Installing panel)
3. Run the cable lead from the power supply
4. Run the cable lead from the actuator (lock)
5. Install external reader and run their cables (if necessary)
6. Run loops from sensors / buttons
7. Run the cable lead-Ethernet (if necessary)
8. Run the wire commutation of power supply, lock, reader, inputs of the panel with the loops in accordance with the sections below (recommended using the back box)
9. Perform installation of the Ethernet cable into the connector terminal blocks
10. Place the installation cables into the wall
11. Fit the back plate of the panel, plug panel into the back plate, put the top cover and secure with the screw.
12. Connect the panel to ACS (in accordance with the instructions ACS)
13. By means of ACS, perform full panel adjustment (set of inputs, outputs, schedules, RF IDs, etc.).
14. Ready for operating

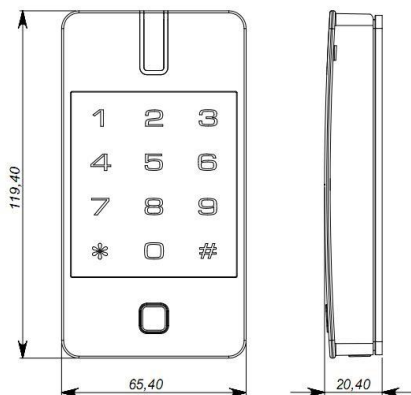


Figure 11. Overall dimensions

When the panel is in stand-alone mode, paragraphs 11 and 12 should be performed before paragraph 2.

Installation recommendations

Panel should be installed on the wall next to the door for users may easily pass card to it. To connect the cable under the body of panel it is necessary to have a small deepening or a hole with diameter of 14 mm.

Do not install panel on a metal surface, as it reduces the range of reading of built-in reader.

Power cables and other cables should not be located less than 0.1 m from the panel enclosure.

Do not place installation cables to the right of the panel.

If the second reader is used, it must be at least 20 cm from panel to eliminate the effect of double reading.

Installing Panel

Loosen the screw at the bottom of panel. Remove the upper lid, remove the back plate. Using the back plate of the panel as a template, mark and drill two holes at the place of a 5 mm and 30 mm (see Fig. 12). Run the cable in the central hole, attach the back plate to the wall using the supplied plastic anchors and screws. Connect panel to a previously placed cable connecting it to the power supply and the external reader. Insert panel into the back plate, put the top cover and fix with the screw. (See Figure 13).

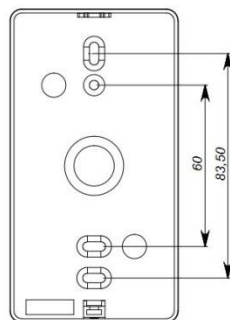


Figure 12. The back plate

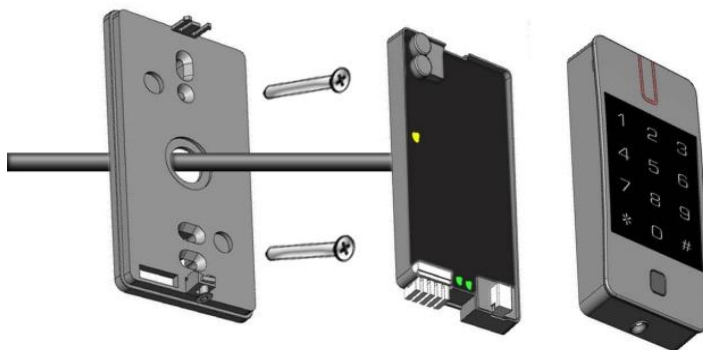


Fig 13. Installing the Panel

Connecting an external reader

The panel has a port for external readers. Only U-Prox series reader may be used with panel as external. The connection of U-Prox Mini RF ID reader is depicted on Fig.14.

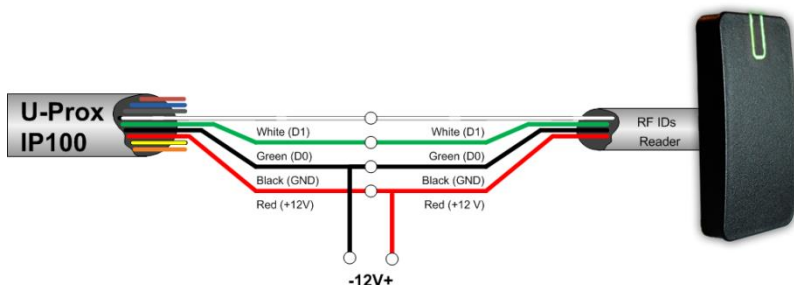


Fig 14. Connecting an external reader

Color matching circuits:

- White - data 1
- Green - data 0
- Black – GND
- Red - +12

Current consumption of each external reader connected to terminals "12 V" should not exceed 100 mA. When connecting to panel a reader of long range with current consumption more than 100 mA, supply the voltage to it from the separate source.

Connecting Loop Control

Panel has two inputs for connecting the loops supervised with end of line resistors. Each input functionality programmable. Inputs' functions are:

- Door Contact
- RTE
- Door Contact + RTE
- Free pass (A, B, A+ B)
- Blocking (A, B, A +B)
- Sensors monitoring
- 220V control and battery

The following describes how to connect various types of inputs. After factory reset all loops have no purpose and are not supervised. All loops work both for closing and opening.

The use of load resistors is mandatory.

Normal state of the loop - from 1.4 kOm to 3kOm, Line shortage - less than 1.4 kOm, the broken line - more than 3 kOm.

It is recommended to use supplied resistors.

Request to Exit button (RTE)

RTE is used for exit through single-sided door. In this case, access point opens when you press and release RTE. Use this input type for remote door opening button connection also. For example, to open the door manually, by the secretary or security guard.

Panel U-Prox IP100 has built-in RTE button, which can be activated or deactivated during programming. The number of the loop of this button - № 3.
By default all inputs and build-in RTE button are off

The example of normally open contact RTE button connection to Z1 terminal is on the Fig. 15.

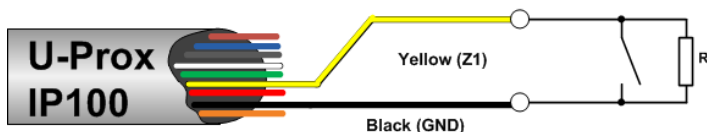


Fig 15. Connection of RTE button

Z1 input function assigned as follows:

- Z1 - RTE of access point A

The use of button of the electric lock to open access point or "allow access" button on the turnstile evokes the "DOOR FORCED OPEN" event

For proper operation, it is necessary to assign the connected loops as RTE when programming.

Door Contact

Control panel supervises the door state or position of the turnstile rotor with the door contact. Panel cannot detect unauthorized access or door is open too long (multiple entrance with one ID for instance) without the Door Contact.

The example of normally closed door contact connection to Z1 terminal is on the Fig. 16.

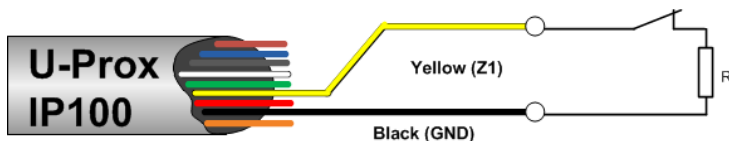


Fig 16. Connecting door contact

Z1 input function assigned as follows:

- Z1 - door contact of access point A

Access point, controlled by ACS, must have the door closer.

Program input as 'Door Contact' for proper operation of the door contact.

The control panel can operate without the door contact. In this case, after the passing RF ID for identify and granting access, an event "Access granted" is generated, the control panel send unlocking impulse, and returns to normal mode after door time expire.

Combined Loop- RTE and Door Contact

Panel inputs can be configured for simultaneous use of RTE button and Door Contact on single loop. In this case the loop breaking means breaking of Door Contact and (short-circuit) shorted - pressing of RTE button

The example of combined loop connection to Z1 terminals is on the Fig. 17.

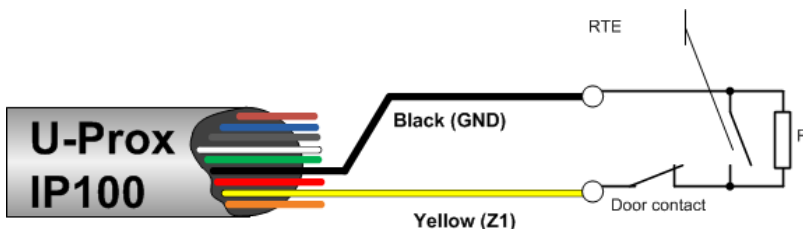


Fig 17. Connecting combined loop

Z1 input function assigned as follows:

- Z1 - Combined door contact and RTE of access point A

Any of two inputs can be assigned as a combined for service door contact and RTE button.

Loop "Control 220 and Battery"

Panel input may be installed to supervise status of power supply. Circuits connected to panel input, indicate status of external power supply (220V and battery). In Fig. 18 connection of power supply and panel U-Prox IP100 is shown. PWG and ACG can be open collector outputs or relay outputs (dry contacts) sink to the ground at normal mains power and battery state respectively.

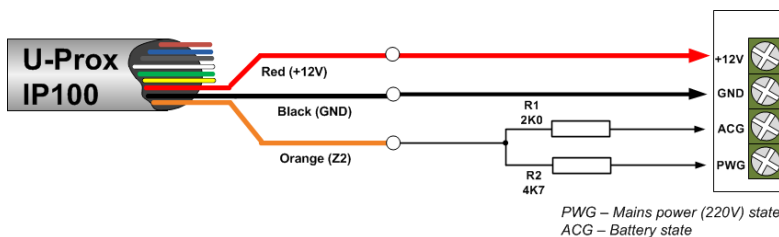


Fig 18. Connecting of Control Loop 220 and the battery to power supply

Z2 input function assigned as follows:

- Z2 - Control 220 and battery

Actuators

Panel has one relay to supervise actuators. Using this output, panel controls electric lock or latch, operation of the barrier, turnstile, or turns on any optional hardware.

Relay 1 has normally closed and normally open contacts. The relay contacts rating is 1A @ 24 V.

Voltage ripple at actuator operation must not cause the panel malfunction. In case of such malfunction power up actuators from alternate power supply.

Electric locks

Normally closed and normally open relay contacts, are programmable for a wide range (0 ... 255 sec) of lock operation time. Panel controls electric lock or latch, barrier operation, turnstile, or turns on and off any optional hardware with this output.

When the lock time is equal to 0 pulse duration of 200 ms will sent to relay.

The example of actuator connection is on the Fig. 19. The first is powering the lock and second by depowering.

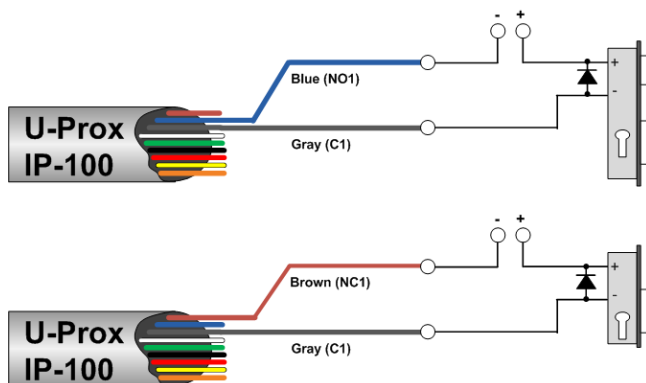


Fig 19. Connecting locks

When using relay to turn on / off current via inductive load, for example, to run electromagnetic lock, there are electric pulses of high amplitude. To prevent damage of relay contacts shunt inductive load by diode, set in opposite direction to voltage of coil supply

Remember, that low-cost solenoid latch do not allow long power supply. For these latches program the lock time as short as possible to prevent coil overheating.

Do not use diodes for connecting actuators to AC power supply.

Assign relay outputs as outputs of locks at panel programming for proper operation.

Connection

Wired or wireless computer network used for U-Prox IP100 communication to the ACS server. Device setup is possible with using autoconfiguration or manually with a PC using the software "Configurator":

Appropriate configuration provides:

- Assigning of static or dynamic (DHCP) IP address to a device;
- Working with two (primary and backup) IP or DNS (Domain Name Service) of ACS server addresses;
- Working on the Internet (service of remote branches) with the ability of reserving paths to the Internet via the second router;
- Use two Wi-Fi access points (primary and backup)

Panel works automatically after data upload from the ACS server. It processes access rights for IDs passed grants or denies access and sent event reports to the server.

Panel communicator operates in notification mode. If there is event (passage, input violation) data transmission to ACS server is initiated.

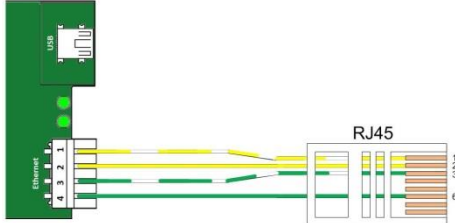
Panel provides protection against arbitrary interference due to the encryption of data with 256-bit key and against panel substitution supervising the unique serial number of the device at its work in the network. It also provides supervision of the communication channel by means of periodic test signals from the device.

Wired computer network (Ethernet)

Ethernet interface is used to connect components of the system (PC and panels) in the network. Ethernet cable length without additional equipment can be up to 100 meters.

Use standard Ethernet cable, which involves four wires: TX , TX-, RX , RX- for connection. Transfer rate is up to 100Mb / s.

Ethernet clamps of panel's connector	Cable color	Clamps of RJ-45 connector
Direct connection (to the switch or router)		
1	White-Yellow	1
2	Yellow	2
3	White-Green	3
4	Green	6



Crossover (directly to the network card in your computer).		
1	White-Yellow	3
2	Yellow	6
3	White-Green	1
4	Green	2

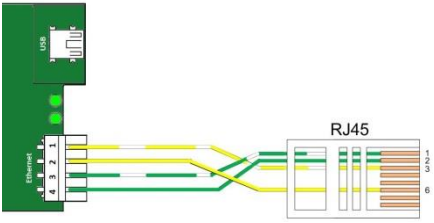


Figure 20. Connection cable Ethernet

Connect the Ethernet cable into the connector terminal blocks of panel with a special tool - **LSA punch down tool** (for example, KRONE LSA-PLUS)

To configure the Ethernet device of panel:

- Enable Ethernet communication
- Set network parameters of panel (do not set if you use DHCP):
 - IP address
 - Subnet Mask
 - IP address of the gateway (router) Internet 1 (not necessarily in the local area network)
 - IP address of the gateway (router) to the Internet 2 (optional)
 - IP address of the DNS Server 1 (if data transfer of the domain name is used)
 - IP address of the DNS Server 2 (optional, if data transfer of the domain name is used)
- Setting communication with server:
 - IP or DNS address server 1
 - IP or DNS address server 2 (address of U-Prox IC A panel, optional)
 - Access Ports (port to read and port to write)
 - Period of the link channel checking (test signal)

Wireless computer network (Wi-Fi)

Panel can operate in wireless computer networks of standards IEEE 802.11b/g/n (2.4GHz frequency, encryption WEP (Open), WPA, WPA2).

Panel supports two Wi-Fi access points (primary and backup) for this communication channel redundancy.

To configure the Wi-Fi device panel:

- Enable Wi-Fi communication
- Set up Wi-Fi (for each of used access points):
 - Network name - SSID

- Access key (password)
 - Encryption mode
- Set the panel network parameters (do not set if you use DHCP):
 - IP address
 - Subnet Mask
 - IP address of the gateway (router) Internet 1 (not necessarily in the local area network)
 - IP address of the gateway (router) to the Internet 2 (optional)
 - IP address of the DNS server 1 (if a data transfer of the domain name)
 - IP address of the DNS Server 2 (optional, if you are using a data on the domain name)
- Set up communication with the server:
 - IP or DNS server address 1
 - IP or DNS address server 2 (address of U-Prox IC A panel, optional)
 - Access Ports (port read and write port)
 - Period of the link channel checking (test signal)

Panel programming

Software	Operation
	1. Determination of panel operation mode: standalone or as part of ACS
Software "Configurator" connection through the USB port	2. Setting initial parameters: network settings of panel: <ol style="list-style-type: none"> Type of device - Wi-Fi or Ethernet Wi-Fi key of access to the network and encryption type (repeat when multiple networks) Server settings: IP address or DNS name of the server, access ports (port to read, port to write) <div data-bbox="322 491 1024 550" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Don't proceed paragraph d. if DHCP used in the network. </div> <ol style="list-style-type: none"> Device Settings: IP address of the device in computer network, subnet mask, IP DNS server, gateway to the Internet
ACS software	3. Panel enrollment and activation in the access control system software (refer to the software manual) 4. Set up device with ACS software <ol style="list-style-type: none"> Door settings: Single-sided or Double-sided door, operation of Antipassback, Time of PIN entering (or off) Access points settings: no. of readers, Door Times, "Alarm Prohibited. Door forced open", "Alarm Prohibited. Door opened too long" attributes Readers settings: reader type of 26 or 42 bit Panel inputs settings: type of reaction and access point (e.g., door sensor, access point of A and B, or a free pass, access point B). Panel outputs settings: type of use (lock, siren, etc.), operating mode, the pulse duration (if available in this mode), access point that operates this output. 5. ACS software creates the list of RF IDS with their attributes, schedules and access rights based on personnel access politics programmed in the system (Refer to the ACS software manual). 6. After forming and loading the configuration from ACS software the panel is ready for use.

Maintenance

Factory reset (before installation)

To return panel to the factory settings, perform the following steps:

1. De-power the panel
2. Remove top cover of panel
3. Short D1 (white) and D0 (green) wires
4. Power up
5. Wait for six beeps, signaling the successful panel reset
6. Disconnect panel
7. Remove short from D1 (white) and D0 (green) wires

Factory reset (after installation)

To return panel to the factory settings, perform the following steps:

1. Do not turn off the power. Remove top cover of panel
2. Connect the notebook running 'Configurator' program with USB cable to the panel
3. Connect to panel using software "Configurator"
4. Set the parameter "test period" equal to 0 (zero)
5. Upload (write) the new configuration to the panel

The controller will restart with factory settings

Switching to programming mode

To put panel in programming mode do the following:

1. Do not turn off the power. Remove top cover of panel
2. Connect to USB cable and set up the device using software "Configurator"

Replacing the device firmware

1. De-power the panel
2. Remove the top cover of panel
3. Connect the notebook with USB cable to the panel
4. Using special software, do the replacement of panel firmware
5. After downloading the firmware to the panel WAIT for SIX SHORT SIGNALS. It is the signal of correct firmware loading.

Factory settings

Communicator

Ethernet mode enabled, DHCP enabled (no device IP set), no ACS server set

Inputs

Z1, Z2, Z3(RTE) – disabled

Outputs

Relay 1 is disabled

Readers

Internal – RS mode, full RF ID (42Bit), External - RS mode, full RF ID (42Bit)