



BioSmart Integration Module Configuration and Operation
Manual

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1 List of terms used in BioSmart Integration Module Configuration and Operation Manual

Access – movement of people, means of transport and other objects into (out of) premises, buildings, zones and territories.

Access control system (ACS) – hardware-software system performing the access control functions.

Biometric scanner – an electronic device used to capture and transmit fingerprint images for further identification.

Executive devices – turnstiles, gates, barriers or doors equipped with electromagnetic or electromechanical locks.

Mifare card – Mifare standard contactless card containing fingerprint template.

2 Introduction into BioSmart Integration Module Configuration and Operation Manual

On the page:

- [Purpose of the Document](#)
- [General information about BioSmart module](#)

2.1 Purpose of the Document

Configuration and operation manual for BioSmart integration module is a reference and information guide meant for *BioSmart* configuration specialists. This module is a part of *ACFA Intellect* software package.

The guide provides:

1. general information about *BioSmart* ACS module;
2. information about how to configure *BioSmart* ACS module;
3. information about how to work with *BioSmart* ACS module.

2.2 General information about BioSmart module

BioSmart module is the *ACFA Intellect*-based ACS component. It performs the following functions:

1. Configuring *BioSmart* ACS (manufactured by ProSoft Biometrics);
2. Ensuring interaction between *BioSmart* ACS and *ACFA Intellect* (monitoring, control).

Note.

For more information about *BioSmart* ACS, please refer to official documentation for this system.

As this guide being prepared, the following equipment has been integrated with *ACFA Intellect*:

- BioSmart Prox v.2 controller.
- BioSmart Prox-E controller.
- BioSmart 4 controller (all models).
- BioSmart-mini reader.
- BioSmart readers (all models).

Before configuring *BioSmart* module do the following:

1. Install *BioSmart* ACS hardware on the site under security surveillance (see reference documentation about *BioSmart* ACS);
2. Connect *BioSmart* ACS to *ACFA Intellect* Server (see reference documentation about *BioSmart* ACS).

3 Supported hardware and licensing of the BIOSMART integration module

Manufacturer	Prosoft-Biometrics Ltd. https://www.biosmart-tech.com/
Integration type	Low-level protocol
Equipment connection	RS-232, USB, Ethernet

Supported equipment

Equipment	Function	Features
PROX-E	Independent access controller	Cards: 16000 Maximal number of users by fingerprints for one BioSmart Mini reader: 100 Max. number of events: 100 000 Identification time 1:3 000: not more 1 sec Number of reader devices: 4 Number of outputs (Wiegand or discrete output): 2 Number of discrete inputs: 6 Time zones: 64 (5 intervals for each day, 32 holidays) "Gate" mode – two-cycle mode with stopping for check incoming Antipassbach Pass with attendant Multi-users identification Door locking while arming Doors unlocking while fire alarm Ethernet interface
PROX v.2	Independent access controller	Cards: 3000 Maximal number of users by fingerprints for one BioSmart Mini reader: 100 Max. number of events: 40 000 Identification time 1:3 000: not more 1 sec Number of reader devices: 4 Number of outputs (Wiegand or discrete output): 2 Number of inputs (Wiegand or LED indication): 2 Number of discrete inputs: 6 Time zones: 64 (5 intervals for each day, 32 holidays) "Gate" mode – two-cycle mode with stopping for check incoming Antipassbach Pass with attendant Multi-users identification Door locking while arming Doors unlocking while fire alarm Ethernet interface
Biosmart 4 (all modifications)	Fingerprint scanner/Access controller	Max. number of fingerprints in local mode: 4500 Max. number of fingerprints in server mode: 3000 Maximal number of users in the card+finger mode: 3000 Max. number of cards in local mode: 3000 Max. number of events: 40000 Time zones: 64 time groups (5 intervals for each day, 32 holidays) Capacity (SteelCoat)/optical fingerprint scanner Embedded EM-Marine cards reader RS-485, Ethernet interfaces
Biosmart-mini	Card and fingerprint reader	Max. number of users for identification by fingerprints (up to 5 fingerprints for each user): 100 Max. number of cards: 100 RS-485 interface

Equipment	Function	Features
BioSmart FS80 <i>Note. Configuring and working with this reader module is described in the section Control Readers Settings Guide</i>	Control fingerprint reader	Fingerprint scanner Optical

Protection

1 COM port or 1 IP-address.

4 Configuring BioSmart integration module

4.1 Configuration procedure for BioSmart integration module

Here is the configuration procedure for BioSmart integration module:

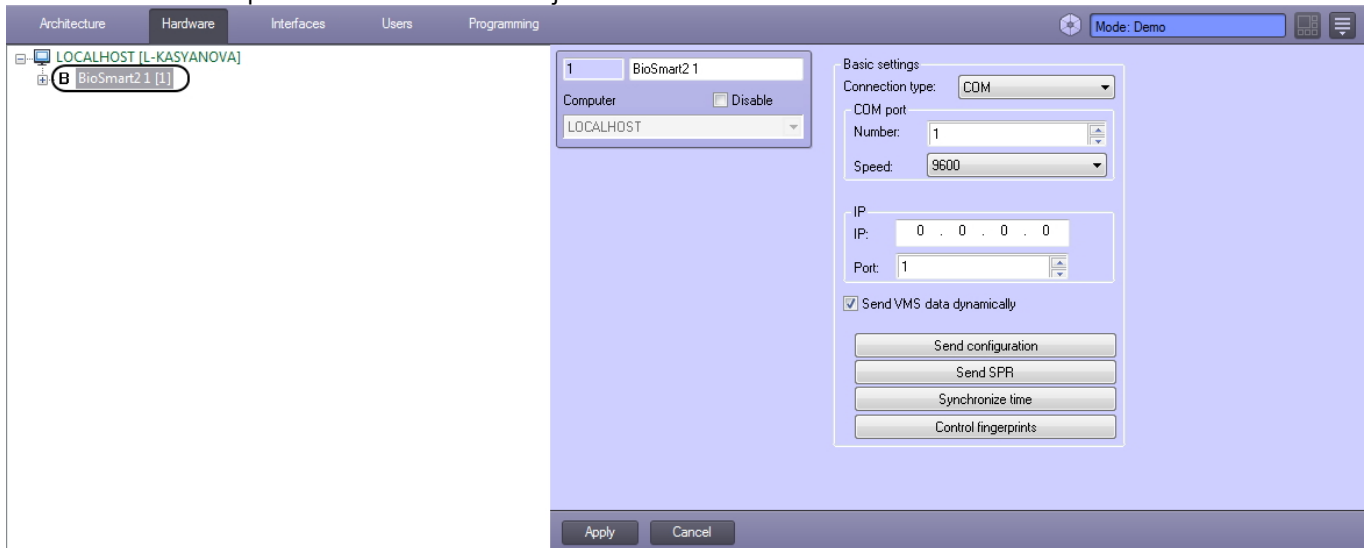
1. [Configure connection of BioSmart ACS controllers.](#)
2. [Configure BioSmart ACS controllers.](#)
3. [Configure BioSmart ACS readers.](#)

4.2 Configuring connection of BioSmart ACS controllers

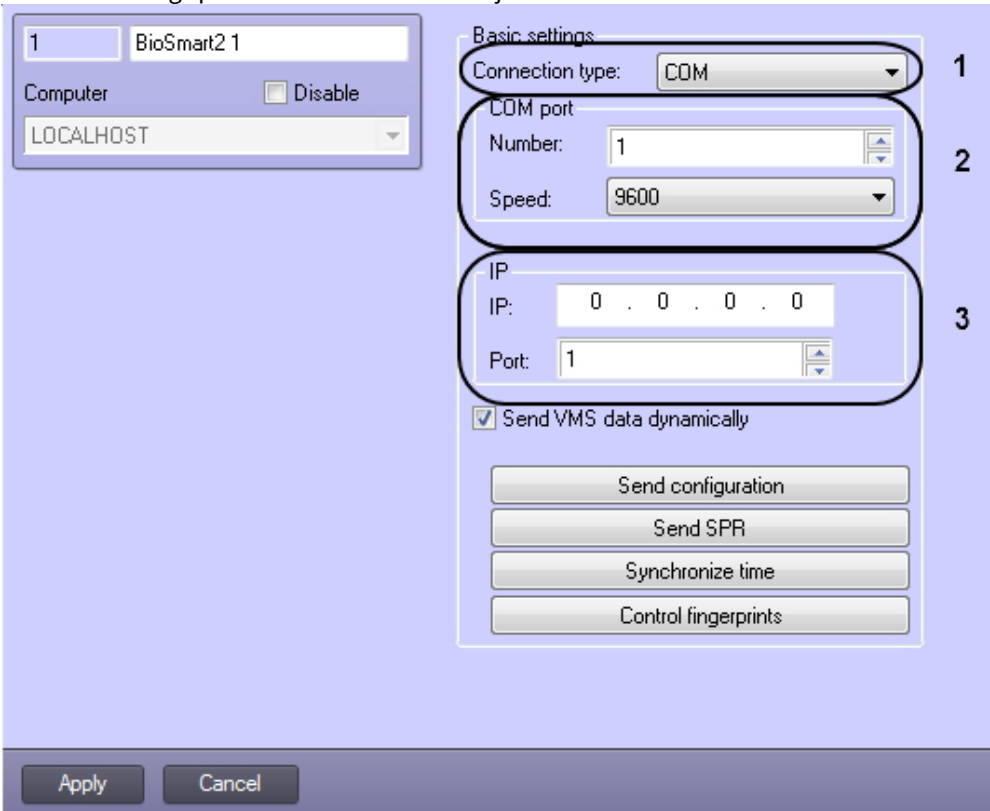
Connection of BioSmart ACS controllers of all types is configured the same way.

BioSmart ACS controller is connected to ACFA Intellect as follows:

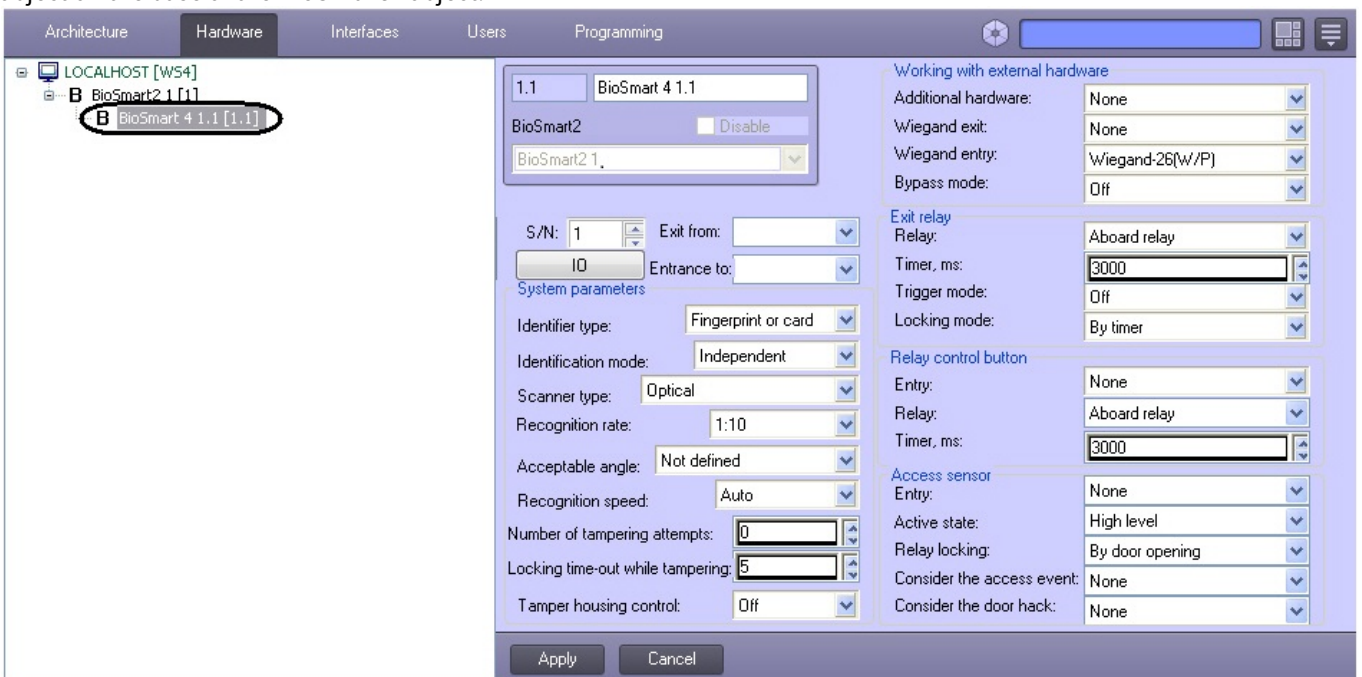
1. Create the **Computer (LOCALHOST)**-based **BioSmart2** object in the **Hardware** tab of the **System settings** dialog box. Each controller corresponds to the **BioSmart2** object.



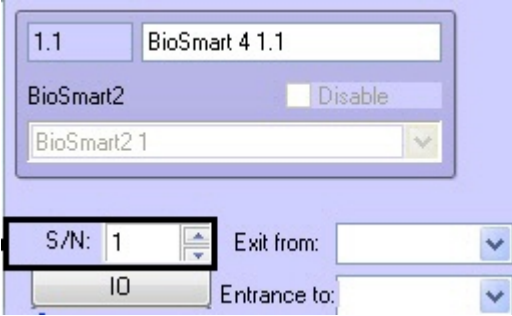
2. Go to the settings panel of the **BioSmart2** object.



3. Select the controller connection type in the corresponding list (1).
4. If connection is performed via RS-485 standard, then specify the COM port number and speed of its connection (2).
5. If connection is performed via Ethernet standard, then specify IP address and controller port (3).
6. Click the **Apply** button to save all changes.
7. Create the **Biosmart 4** or **BioSmart PROX** (BioSmart PROX v.2 controller corresponds to this object if connection is performed via RS-485 standard BioSmart PROX-E controller if connection is performed via Ethernet standard) controller object on the base of the **BioSmart2** object.



- On the settings panel of the created object specify the serial number of controller *BioSmart ACS*.



- Click the **Apply** button.

Note.

Only one server (*Intellect* or *Biosmart* software) can be connected to a controller at a time. If some software has connected to the controller, other servers are not able to establish connection.

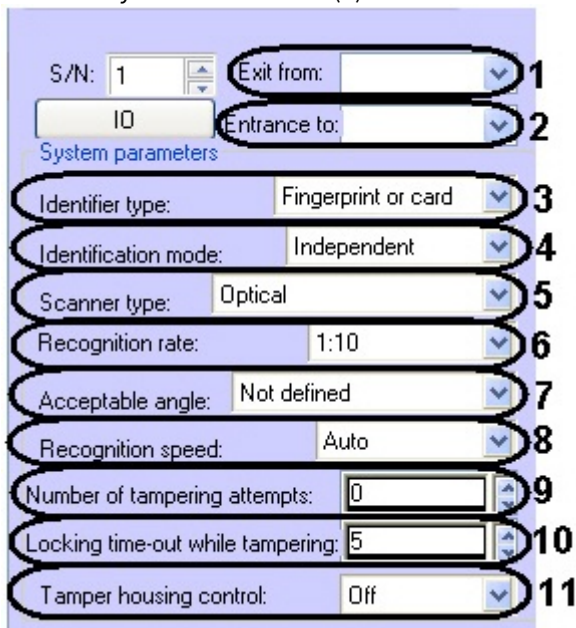
BioSmart ACS controller is now connected to *ACFA Intellect*.

4.3 Configuring BioSmart 4 controller

4.3.1 Configuring walk-through parameters of BioSmart 4 controller

Walk-through parameters of BioSmart 4 controller are configured on the settings panel of the **BioSmart 4** object:

- In the **Exit from** dropdown list select the **Region** object corresponding to the territory situated on the side of entrance to the territory via the controller (1).



- In the **Entrance to** dropdown list select the **Region** object corresponding to the territory situated on the side of exit from the territory via the controller (2).
- Select the walk-through mode in the **Identifier type** dropdown list (3).

Walk-through modes are presented in the following table.

Walk-through mode	Description
Fingerprint or card	Access is guaranteed when scanning a fingerprint or access card

Walk-through mode	Description
Fingerprint+card	Access is guaranteed when placing an access card and then scanning a fingerprint for 10 seconds
Code+fingerprint	Access is guaranteed when <i>entering</i> the access code onto the dial pad (if it is enabled) and then scanning a fingerprint for 10 seconds
Fingerprint on card	Access is guaranteed after matching fingerprint template on the Mifare card with user fingerprint scanned for 10 seconds after placing the Mifare card.

- Select the controller's operation mode in the **Identification mode** dropdown list (4). When the off-line mode is enabled, then controller is responsible for providing access, when the server mode is enabled – Server of *ACFA Intellect* is responsible for providing access.
- In the corresponding list select the type of scanner used in the reader (5).

Attention!

Only recommended values specified in steps 6-8 are to be set. Other values are to be approved by *BioSmart ACS* vendor. For the values to take effect the configuration is to be sent to controller (see [Sending configuration to controller](#) section).

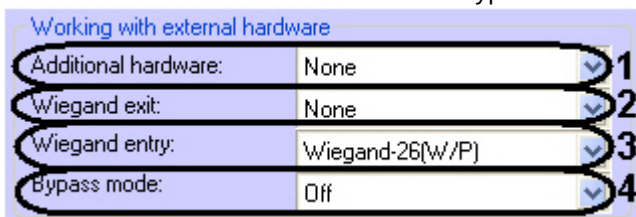
- In the **Recognition rate** list select the rate of false identification by a fingerprint (6). Recommended value – **1/100000**.
- Select the maximum acceptable angle of fingerprint rotation about boresight (in degrees) (7). Recommended value – **30**.
- Select the fingerprint recognition algorithm in the **Recognition speed** list (8). The faster recognition speed, the more likely the false access denial. The **Auto** value is to be in use – in this mode the speed is determined automatically depending on the number of fingerprint templates in the controller database.
- In the **Number of tampering attempts** field specify the number of failed access attempts by any identifier – if the specified number of failed access attempts is exceeded, then the controller will be locked out for **Locking time-out while tampering** (see step 10, 9).
- In the **Locking time-out while tampering** field specify the time (in seconds) of locking controller when the number of failed access attempts is exceeded (10).
- To enable tamper housing control set the **On** value for the corresponding parameter (11). In this case when the controller housing is tampered, the corresponding event and alarm occur.
- Click the **Apply** button to save all changes.

Walk-through parameters of BioSmart 4 controller are now configured.

4.3.2 Configuring BioSmart 4 controller working with external hardware

BioSmart 4 controller working with external hardware is configured on the settings panel of the **BioSmart 4** object:

- In the **Additional hardware** list select the type of device connected to the port of controller 2 (1).



List of additional hardware is presented in the following table.

Additional hardware	Description
None	Additional hardware is not connected
BioSmart relay control unit	BioSmart relay control unit is connected to the controller
SK-24	Key storage device is connected to the controller

Kronwerk	Controller works in the <i>Kronwerk</i> integration mode under control of <i>Kronwerk</i> software
BioSmart BOX	BioSmart BOX is connected to the controller
Perco	Controller works in the <i>Perco</i> integration mode under control of <i>Perco</i> software

- In the **Wiegand exit** list select the protocol type of Wiegand output of BioSmart 4 controller (2).

Protocol type of Wiegand output of BioSmart 4 controller is presented in the following table.

Additional hardware	Description
None	No third-party controller is connected to Wiegand output of BioSmart 4 controller
Wiegand 26	Third-party controller that uses Wiegand 26 protocol is connected to Wiegand output of BioSmart 4 controller
Wiegand 32	Third-party controller that uses Wiegand 32 protocol is connected to Wiegand output of BioSmart 4 controller

- In the **Wiegand entry** list select the protocol type of Wiegand input of BioSmart 4 controller (3).
- To enable the bypass mode set the **On** value for the corresponding parameter (4). In this case the card that is not registered in the database of *ACFA Intellect* can be transferred to the third-party controller via Wiegand output of BioSmart 4 controller.
- Click the **Apply** button to save all changes.

BioSmart 4 controller working with external hardware is now configured.

4.3.3 Configuring relay of BioSmart 4 controller

Relay of BioSmart 4 controller is configured on the settings panel of the **BioSmart 4** object:

- Configure the exit relay of BioSmart 4 controller in the corresponding parameter group:
 - In the **Relay** list select the type of relay that will be triggered when walking through (1).

The screenshot shows the configuration interface for the BioSmart 4 controller. It is divided into two main sections: 'Exit relay' and 'Relay control button'. Each section contains several parameters, some of which are highlighted with numbered callouts (1-7) corresponding to the instructions in the text.

- Exit relay section:**
 - Relay: Aboard relay (1)
 - Timer, ms: 3000 (2)
 - Trigger mode: Off (3)
 - Locking mode: By timer (4)
- Relay control button section:**
 - Entry: None (5)
 - Relay: Aboard relay (6)
 - Timer, ms: 3000 (7)

- In the **Timer** field specify time (in milliseconds) of active state of the relay after its triggering (2).
 - To enable the trigger mode set the **On** value for the corresponding parameter (3). In this case the relay will change its state after each success access. When the controller is switched on after its power failure, the relay returns to the state it had when power was switched off.
 - In the corresponding list select the relay locking mode (4).
 - Manual mode** – locking is activated when the **Open** button is pushed and inactivated when the **Close** button is pushed.
 - By timer** – locking is activated when the **Open** button is pushed and inactivated in time period specified in the **Timer** field (see step 1.2).
- Configure the relay control button in the corresponding group of parameters:
 - In the corresponding list select the entry to which the button is connected (5). If the button is disabled, then set the **None** value. In this case, skip the following steps.
 - Select the type of relay that triggers when pushing the control button (6).
 - In the **Timer** field specify time (in milliseconds) of active state of the relay after pushing the relay control button (7).
 - Click the **Apply** button to save all changes.

Relay of BioSmart 4 controller is now configured.

4.3.4 Configuring access sensor of BioSmart 4 controller

Access sensor of BioSmart 4 controller is configured on the settings panel of the **BioSmart 4** object:

1. Select the entry to which the access sensor is connected (**1**). If the access sensor is not connected, then set the **None** value. In this case, skip the following steps.

Setting	Value	Step
Entry:	None	1
Active state:	High level	2
Relay locking:	By door opening	3
Consider the access event:	None	4
Consider the door hack:	None	5

2. In the **Active state** list select the level of signal at discrete input at which the sensor triggering is detected (**2**).
3. In the corresponding list select the relay locking mode when the access sensor is triggered (**3**). **By door opening** – relay is disabled at rising edge of access sensor triggering. **By door closing** – relay is disabled at falling edge of access sensor triggering.
4. If the access event is to be taken into consideration, then select the **Yes** value in the corresponding list (**4**).
5. If the door hack is to be taken into consideration, then select the **Yes** value in the corresponding list (**5**).
6. Click the **Apply** button to save all changes.

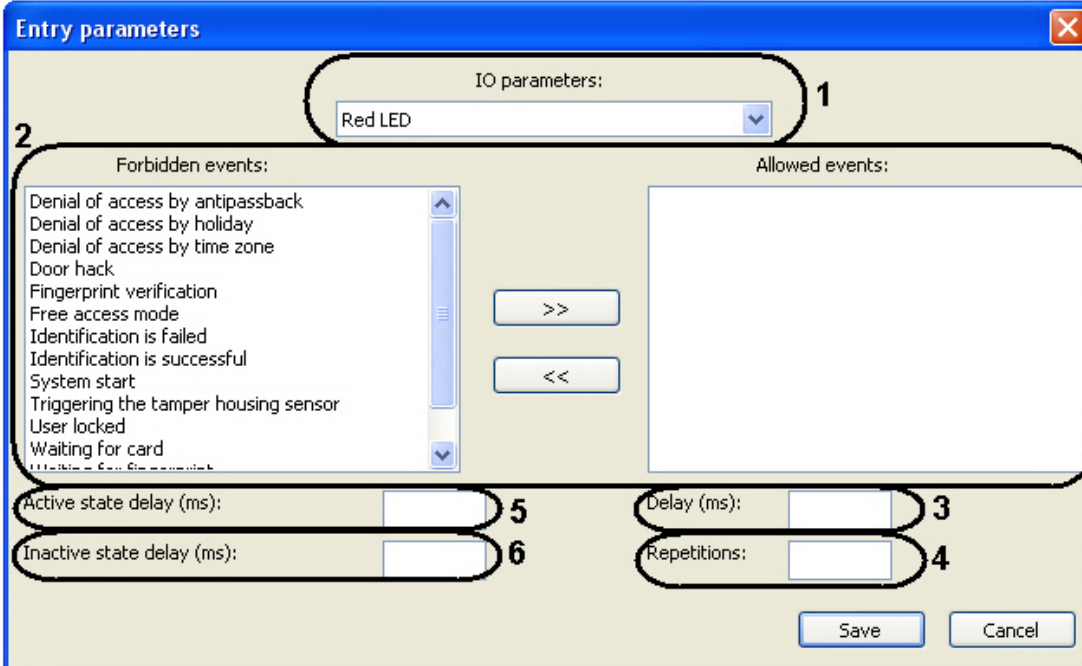
Access sensor of BioSmart 4 controller is now configured.

4.3.5 Configuring operating scenarios for executive devices of BioSmart 4 controller

It is possible to configure triggering of executive devices of BioSmart 4 controller when events appear in the system. For this do the following:

1. Click the **IO** button on the settings panel of the **BioSmart 4** object.

- In the **IO parameters** list select the executive device the reaction is to be set to (1).



- Use the >> button in order to forward events that trigger the executive device from the **Forbidden events** list to the **Allowed events** list (2).
- In the **Delay** field specify time (in milliseconds) that is to pass after receiving the selected event until the executive device becomes active (3).
- In the **Repetitions** field specify the number of the executive device triggerings after receiving the selected event (4).
- In the **Active state delay** field specify time (in milliseconds) for which the executive device is to become active (5).
- In the **Inactive state delay (ms)** field specify time (in milliseconds) between triggerings of executive device when there are repetitions (6).
- Repeat steps 2-7 for all required types of executive devices.
- Click the **Save** and then the **Apply** button.

Operating scenarios for executive devices of BioSmart 4 controller are now configured.

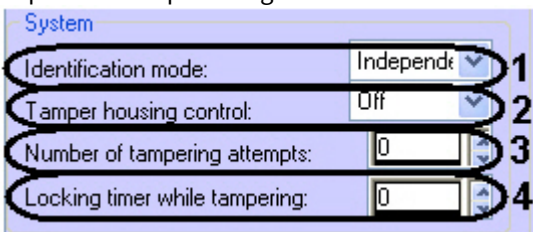
4.4 Configuring BioSmart PROX v.2 and BioSmart PROX-E controllers

BioSmart Prox v.2 and BioSmart Prox-E controllers are configured the same way on the settings panel of the **BioSmart PROX** object (see [Configuring connection of BioSmart ACS controllers](#) section).

4.4.1 Configuring access parameters

Access parameters are configured as follows:

- Select the controller operation mode in the **Identification mode** dropdown list (1). When the off-line mode is enabled, then controller is responsible for providing access, when the server mode is enabled – Server of *ACFA Intellect* is responsible for providing access.



- To enable tamper housing control set the **On** value for the corresponding parameter (2). In this case when the controller housing is tampered, the corresponding event and alarm occur.

3. In the **Number of tampering attempts** field specify the number of failed access attempts by any identifier – if the specified number of failed access attempts is exceeded, then the controller will be locked out for **Locking timer while tampering** (see step 4, 3).
4. In the **Locking timer while tampering** field specify the time (in seconds) of locking controller when the number of failed access attempts is exceeded (4).
5. Click the **Apply** button to save all changes.

Access parameters are now configured.

4.4.2 Configuring operation mode of controller

BioSmart Prox v.2 and BioSmart Prox-E controllers support 3 operation modes.

Note.

The **Escort** operation mode is currently not supported by *ACFA Intellect*.

Operation modes of BioSmart PROX v.2 and BioSmart PROX-E controllers are presented in the following table.

Operation mode	Description
Standard	Access is guaranteed when scanning a fingerprint or access card
Multi-access	Access is guaranteed when scanning fingerprints (placing access card) on different sides of the door
Gateway	Access is guaranteed to the walk-through premises, the second door can't be opened before the first door is closed

Operation mode is configured as follows:

1. Select the controller's operation mode in the **Access mode** dropdown list (1).

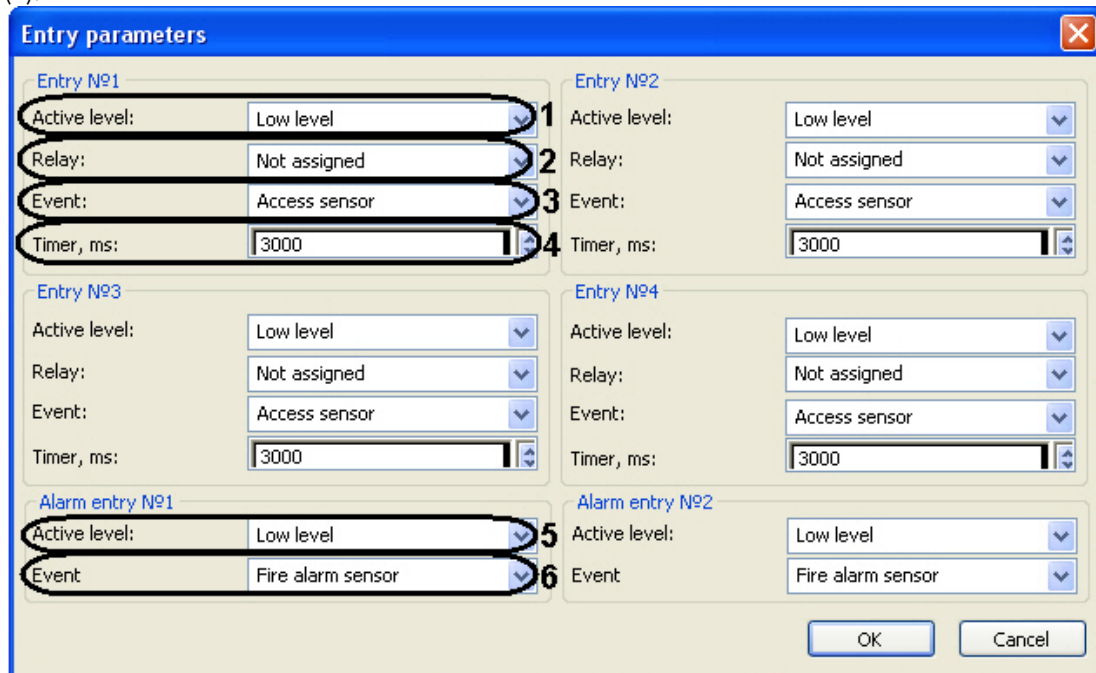
2. If the **Multi-access** mode is selected, then in the **Waiting time** field specify maximum possible time (in milliseconds) between scanning fingerprints (placing access cards) on different sides of the door (2). If this time-limit is exceeded, then access is denied.
3. If the **Gateway** mode is selected, then match sensors and access points with discrete inputs (3).
4. Click the **Apply** button to save all changes.

Operation mode is now configured.

4.4.3 Configuring discrete and alarm inputs of controller

To configure discrete and alarm inputs of controller, do the following:

1. Click the **Entry parameters** on the settings panel of the **BioSmart PROX** object.
2. Set the following parameters for each discrete input:
 - a. In the **Active level** list select the level of signal at discrete input at which the access sensor triggering is detected (1).



- b. In the corresponding list select the relay of controller that is event-triggered on the discrete input (2).
 - c. In the **Event** list select the type of event processed by controller when the signal of specified level arrives to discrete input (3).

Types of event processed by controller are presented in the following table.

Event type	Description
Not assigned	Signals from corresponding discrete input are not processed
Relay control button	Signal of specified level caused by pushing the button is processed
Access sensor	Signal of specified level caused by walking through the turnstile or the door is processed
Unlocking sensor	Signal of specified level caused by unlocking the relay is processed

- d. In the **Timer** field specify time (in milliseconds) of active state of the relay after its triggering (4).
3. Specify the following parameters for each alarm input:
 - a. In the **Active level** list select the level of signal occurring at alarm input – it triggers access sensor (5).
 - b. In the **Event** list select the type of sensor which triggering causes controller action (door locking, door unlocking, fire alarm activation, 6).
4. Click the **OK** and then the **Apply** button.

Discrete and alarm inputs of controller are now configured.

4.5 Configuring BioSmart-mini reader

BioSmart-mini reader is configured on the settings panel of the **BioSmart-mini reader** object. This object is created on the base of the **BioSmart PROX** object.

BioSmart-mini reader is configured as follows:

1. In the **Address** field specify the address of the reader in the *BioSmart ACS* internal network (1).

2. In the **Identifier type** dropdown list select the mode of access via the reader (2).
Fingerprint or card – access will be guaranteed after scanning a fingerprint or access card.
Fingerprint and card – access will be guaranteed after placing an access card and then scanning a fingerprint for 10 seconds.
3. In the corresponding list select the type of scanner used in the reader (3).

Attention!

Only recommended values specified in steps 4-6 are to be set. Other values are to be approved by *BioSmart ACS* vendor. For the values to take effect the configuration is to be sent to controller (see [Sending configuration to controller](#) section).

4. In the **Recognition rate** list select the rate of false identification by a fingerprint (4). Recommended value – **1/100000**.
5. Select the maximum acceptable angle of fingerprint rotation about boresight (in degrees) (5). Recommended value – **30**.
6. Select the fingerprint recognition algorithm in the **Recognition speed** list (6). The faster recognition speed, the more likely the false access denial. The **Auto** value is to be in use – in this mode the speed is determined automatically depending on the number of fingerprint templates in the controller database.
7. Select the type of access cards the reader uses (7).
8. Select the access direction in the corresponding list (8).
9. Disable relay while door opening/closing if necessary (9).
10. If the trigger mode is to be enabled for relay (relay changes its state after each success access), then set the **Yes** value in the corresponding list (10).
11. In the **Access sensor** list select the discrete input of controller with the events of which the reader will work (11).
12. If necessary let pass by RFID access card with any code (12).

Note.

This parameter is relevant only if the reader with RFID access cards is in use (see step 7).

13. In the **Exit from** dropdown list select the **Region** object corresponding to the territory situated on the side of entrance to the territory via the reader (13).
14. In the **Entrance to** dropdown list select the **Region** object corresponding to the territory situated on the side of exit from the territory via the reader (4).

Click the **Apply** button to save all changes.

4.6 Configuring BioSmart reader (all models)

BioSmart reader is configured on the settings panel of the **BioSmart reader** object. This object is created on the base of the **BioSmart PROX** object.

Settings parameters of BioSmart Prox controller are the same as corresponding settings of BioSmart-mini reader (see [Configuring BioSmart-mini reader](#) section).

4.7 Sending configuration to controller

Configuration is sent to a controller on the settings panel of the **BioSmart2** object.

To send configuration to the controller click the **Send configuration** button (1).



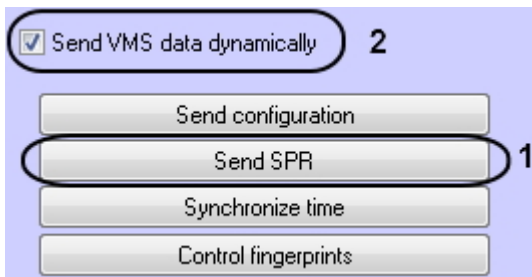
Note

When you click the **Send configuration** button, only the hardware settings are written to controller. To send the Server time to controller, click the **Synchronize time** button. For information on writing the VMS data to controller, please refer to the [Writing the VMS data to controller](#) section.

4.8 Writing the VMS data to controller

The *Visitor Management System* data, such as users, cards and fingerprints, is written to controller using the **BioSmart2** object settings panel.

To write the VMS data to the controller, click the **Send SPR** (1) button.



If the VMS data is to be sent to the controller dynamically, set the **Send VMS data dynamically** checkbox (2) and click the **Apply** button to save the changes.

Note

When you click **Send SPR**, the controller is initialized, and all the existing VMS data is deleted and then replaced with up-to-date records.

Note

When the VMS data is written to controller, the system sends out only the information about users with an access level in *Access Manager* that allows passing through the given access point. For more information about access levels, see [Access Manager Module Settings and Operation Guide](#).

Note

When the VMS data is written to controller, the **System Information** event in *Event Manager* is generated that indicates the number of users being recorded or blocked, and whether the users are recorded successfully. For more information about system events, see [Event Manager Module Settings and Operation Guide](#).

4.9 Managing the BioSmart fingerprints

To add fingerprints, do the following:

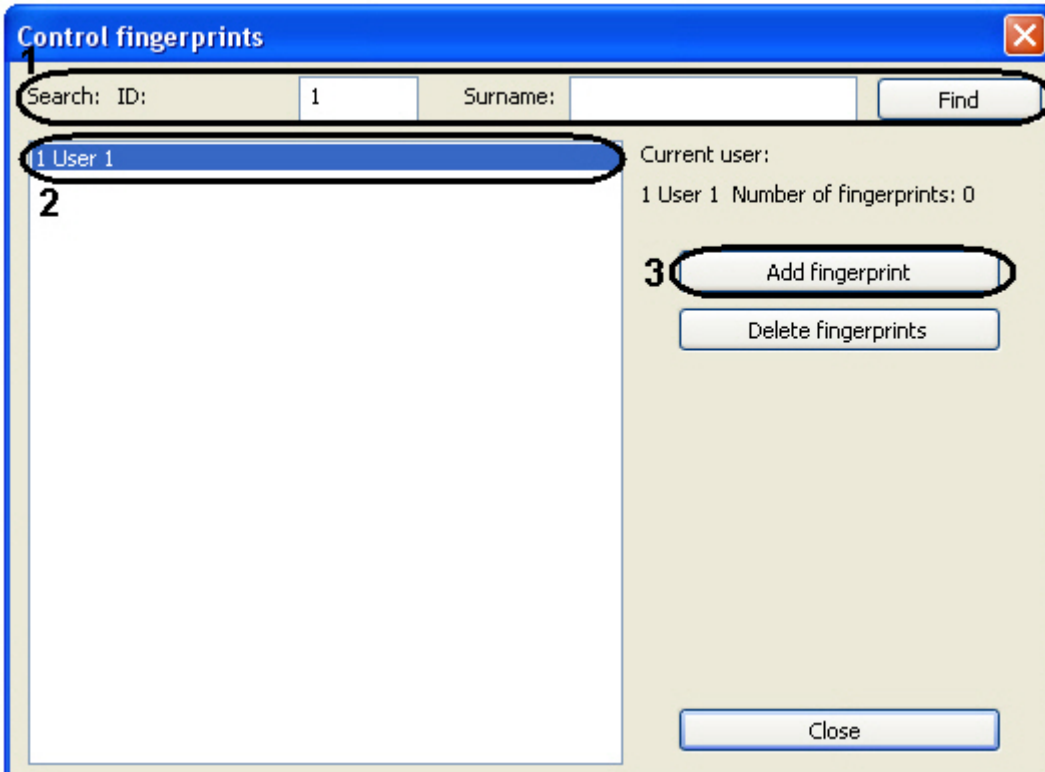
1. On the settings panel of the **BioSmart2** object, click the **Control fingerprints** button.

The screenshot displays the configuration interface for a BioSmart2 object. On the left, there is a header '1 BioSmart2 1' and a 'Computer' section with a 'Disable' checkbox and a dropdown menu set to 'LOCALHOST'. The main area is titled 'Basic settings' and includes the following fields:

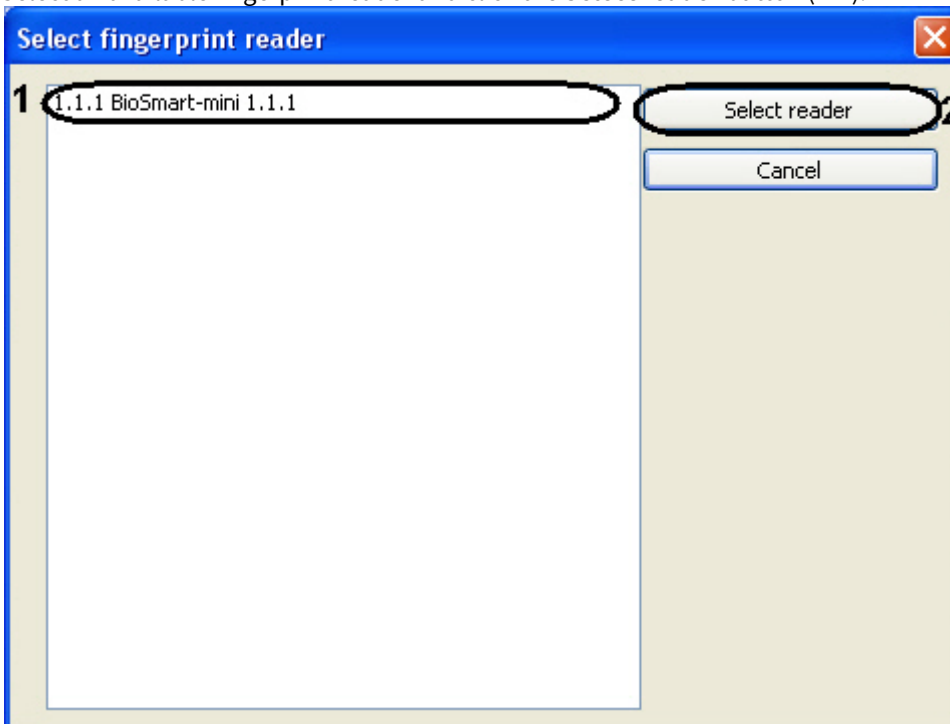
- Connection type:** A dropdown menu set to 'COM'.
- COM port:** A sub-section containing:
 - Number:** A numeric input field set to '1'.
 - Speed:** A dropdown menu set to '9600'.
- IP:** A sub-section containing:
 - IP:** A dotted input field set to '0 . 0 . 0 . 0'.
 - Port:** A numeric input field set to '1'.
- Send VMS data dynamically:** A checked checkbox.

Below these settings are four buttons: 'Send configuration', 'Send SPR', 'Synchronize time', and 'Control fingerprints'. The 'Control fingerprints' button is highlighted with a thick black border. At the bottom of the window are 'Apply' and 'Cancel' buttons.

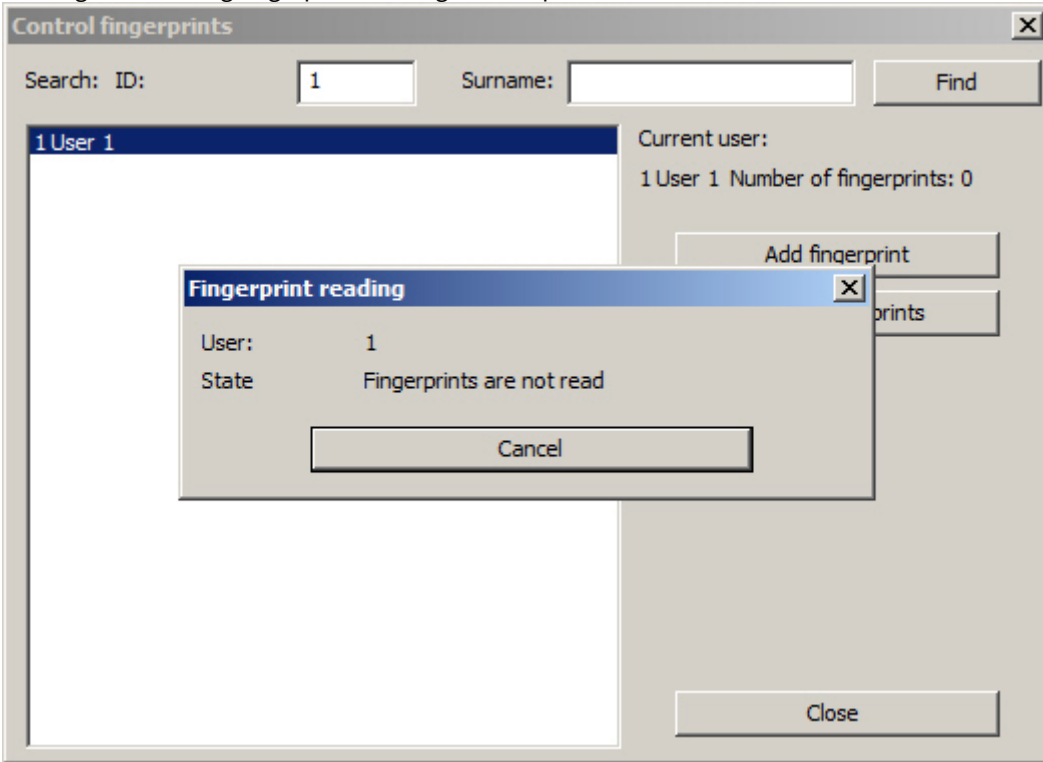
- Find a user by the ID or surname by clicking the **Find** button (1).



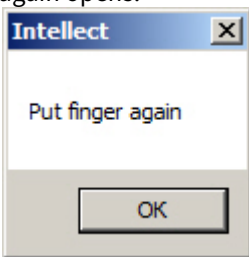
- Select the user (2) and click the **Add fingerprint** button (3).
- Select an available fingerprint reader and click the **Select reader** button (1-2).



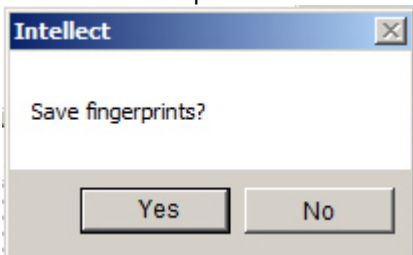
5. A dialog box showing fingerprint reading status opens.



6. Put a finger on the reader and hold it until you hear a beep. When reading of the fingerprint is finished, a number of fingerprints read is displayed in the **Fingerprint reading** dialog box. A dialog box instructing to put the finger to the reader again opens.



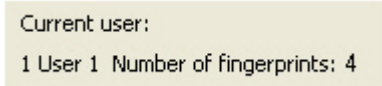
7. Put the same finger on the reader and hold it until you hear a beep. Click **Yes** in the opened dialog box to save fingerprints or **No** to cancel input.



Note.

Two copies of the same fingerprint, i.e. a comparison pair, are read per one cycle (steps 6-7). A Biosmart controller allows 5 comparison pairs per user.

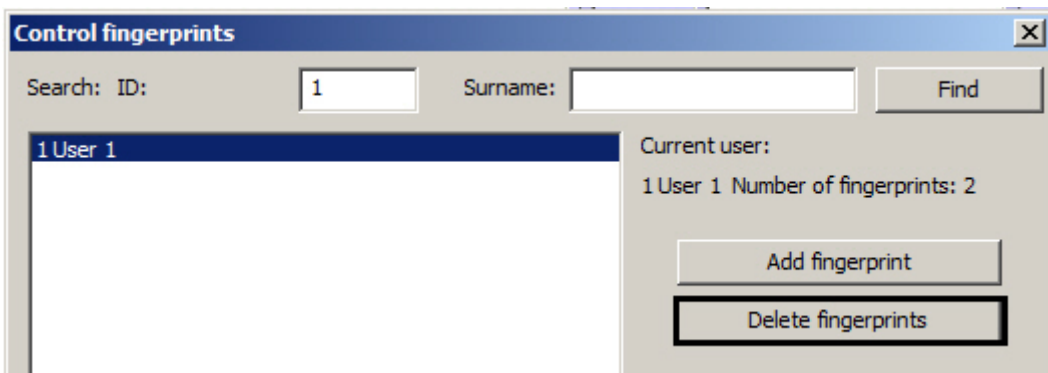
8. The number of fingerprints added for the selected user will be displayed in the **Control fingerprints** box.



9. Add fingerprints for all required users.

Note.

To delete fingerprints, select the user in the box and click the **Delete fingerprints** button.



- Write the VMS data to controller (see [Writing the VMS data to controller](#) section). If the **Send VMS data dynamically** checkbox is set checked, then there is no need to perform this action.

Attention!

For correct user identification it is required to fill the **Object code** and the **Card** fields in the *Visitor Management System* interface module (see the [Adding user access cards using a reader](#) section).

Fingerprints are now added to the system.

5 Working with BioSmart integration module

5.1 General information about how to work with BioSmart integration module

The following interface objects are in use when working with BioSmart module:

1. **Map.**
2. **Event Viewer.**

Information on how to configure these interface objects can be found in [Intellect Software package: Administrator's Guide](#).

Information on how to work with these interface objects can be found in [Intellect Software package: Operator's Guide](#).

5.2 Managing BioSmart controllers

Any *BioSmart* controller is managed in the **Card** interactive dialog box using the feature menu of the corresponding object (**BioSmart 4** or **BioSmart PROX**).



Description of feature menu of the **BioSmart** object is given in the table.

Menu command	Functionality
Close	Door is closed
Open	Door is opened