



## **FaceVACS® Sentry Operation Manual**

For more information and updated manual, please visit our web site at  
<http://www.iwtek.net>

## Version Control

| Version | Date       | Created By                      | Status        | Remark  |
|---------|------------|---------------------------------|---------------|---|
| 1.0.0   | 2004/08/04 | Fan Ying Lung                   | First Release |   |
| 1.1.0   | 2005/05/06 | Fan Ying Lung                   | Modification  |   |
| 1.2.0   | 2006/12/01 | Fan Ying Lung                   | Modification  |   |
| 1.3.0   | 2007/03/06 | Fan Ying Lung                   | Modification  |   |
| 3.0.0b  | 2007/10/10 | Yuen Wing Tai,<br>Fan Ying Lung | Modification  | <ul style="list-style-type: none"> <li>- Add Reset IP</li> <li>- Add mode 6</li> <li>- Add Cross Matching</li> <li>- Resetting the device &amp; Open Door</li> <li>- Add License page</li> <li>- Add Self Diagnostic</li> <li>- Worker to Person</li> </ul> |

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## Federal Communications Commission (FCC) Statement

### 15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

### 15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **Operation is subject to the following two conditions:**

- 1) This device may not cause interference and
- 2) This device must accept any interference, including interference that may cause undesired operation of the device.

### **FCC RF Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## Your New FaceVACS® Sentry system

Your new FaceVACS® Sentry Access Control / Time Attendance System combines ease of use and a wide range of features.

### Face Recognition:

- Incorporates the most advanced face recognition technology: Cognitec FaceVACS® – to provide whole new level of user experience, usability, acceptability and reliability. Much more secure than PIN and pure smart card system. Much easier to use than fingerprint and iris scan system.
- Eliminates the reliability problems associated with fingerprint sensors
- High false acceptance rate – less than 0.01%
- All records are irrefutable and cannot be forged or altered as full auditable log with reference photos are present

### Built-in Contactless Smart Card Reader:

- Two factor authentication provides added security
- Uses the industrial standard Philips Mifare technology
- Enable quick access operation by simply swipe of smart card for exit, where only low security is required.

### Built-in Internet Web Server:

- Enable the device to attach directly to the existing corporate network using standard RJ-45 cabling, with the need for any dedicated PC.
- Allow the device to be accessed and managed easily by standard Internet browser, such as Microsoft Internet Explore and Netscape.
- Allows simultaneous access to various reports by multiple simultaneous users.
- 100% standalone and self-contained – no need to connect to a main unit or occupy a dedicated computer.

### As an Access Control System:

- Access Time restriction – you can define the authorized time slot for each individual or for a group of individuals.
- Access Terminal restriction – you can specify who has the right to access a particular terminal. It is useful in a multi-device environment, where different doors are controlled by different devices.
- Photos of the users are kept as references.

### As a Time Attendance System:

- Default Clock-In & Clock-Out time – you can setup the default clock-in time and clock-out time, so the user does not need to specify every time when he/she clocks in & out.
- Totally eliminate the problems of third party punching-on-behalf kind of fraudulent practices and other abuses in case of card punching machines.

## How It Works?

Cognitec's patented FaceVACS® technology has been developed and refined since 1995. Numerous recent tests both governmental and institutional have established the leading status of FaceVACS® technology, humbling even the next trailing competitors by a significant margin. The FaceVACS® technology enables human faces to be recognized, non-intrusively and at ease. FaceVACS® technology handles pose, mimic, aging variance as well as variances coming from a new hair style, glasses or temporary lighting changes.

As a nature of biometrics the independency can never be 100% absolute. FaceVACS®, however through algorithmic leadership, optimizing and fine tuning over a very long period, created the best of class variance independency, i.e. it created excellent verification and identification results. Performance, i.e. accuracy and reliability of the recognition engine, is the key to the quality of face recognition systems. The Face Recognition Vendor Test 2002 ([www.frvt.org](http://www.frvt.org)) initiated by the US Government has tested systems of 10 vendors (including Cognitec) in one of the largest evaluations performed to date. Results published in March 2003 have confirmed the industry leading performance of FaceVACS® technology.

### Notes on face recognition:

1. You can present your smart card and take a look of the LCD to wait for the authentication confirmation message. Relax and it takes only a second to complete the verification. No need for poker face nor special predisposed pose or expression.
2. The distance between the camera and the user: the focal distance of the camera has been configured at an arm's length, i.e. it befits distance from where you present your smart card naturally on an extended arm and take a glance to the camera.
3. The environment: sufficient lighting is required to take legible photo. Spotlight is not recommended as it will create shades on faces that will cause verification difficulty. Diffuse lighting gives best illumination. Ordinary fluorescent lamp with diffuser is a good choice.
4. In master and slave mode operation, the lighting condition of master and slaves devices is best to be maintained at similar level of lighting intensity, colour temperature and angle of incidence to achieve best verification performance.

## Safety Precautions

- This product is designed for indoor installation. Do not install and operate the product outdoor.
- If the appliance is used as an access control device, it is advisable to select the type of door strike that will automatically release the door lock during blackout. This is for safety purpose when, for example, a fire occurs and the electric power is interrupted, the people can still get out of the premises. Consult with your security system consultant in case of doubt.

## Operation Modes

Your FaceVACS® Sentry can be configured to different operation modes:

- Access Control Mode / Time Attendance Mode
- Master mode / Slave mode
- Test mode / Normal mode

The default operation modes are **Access Control Mode & Master Mode**. This section explains the difference between these modes. Please note that you must use Internet Browser (discussed later) to change the first two operation modes. The “Test Mode” is for allowing new users to practice with the machine, and will be discussed in the section “Advanced Feature – Test Mode” later.

### Access Control Mode vs. Time Attendance Mode

The Access Control Mode is to control the employees from accessing the premises. The system controls the electronic door strike to lock / unlock the door. You can assign users to different departments, and you can control the authorized time for the members in each department.

In a multi-device environment, you can further assign the access rights of each department for different terminals.

The Time Attendance Mode is used to record the Clock In / Clock Out time of the employees. It is very useful to avoid the abuse usually associated in bunch card system through third party punching on behalf (buddy-punching). Audit trails of who did the clock in are recorded as the identity of the attendee is logged. The major difference is that in this mode, the device is not used to control the door strike, and there is no time & terminal restriction.

### Master Mode vs. Slave Mode

In a multi-device environment where more than one FaceVACS® Sentry device are connected to the same corporate network, one device is assigned as the Master device, and all others are assigned as the Slave devices.

To establish the identity, a person must submit his/her face image to the system. This process is called enrollment. It can be done in any device, including both Master and Slave devices.

The user data will then be automatically replicated to all other devices. In other words, once you are enrolled in the Master device, your facial data is also available in all other slave devices (and vice versa), and you can authenticate in any of these devices.

All the access records and the Clock-In Clock-Out records are also automatically replicated from the Slave devices to the Master device, and so the Master device contains all the necessary information. Therefore, you only need to access the Master device, using the Internet Browser, to obtain all the access and attendance records of the whole system. It is not necessary to access the Slave devices.

## Installing Your FaceVACS® Sentry

### **Power Requirements**

FaceVACS® Sentry requires a 220V AC switching power supply.

### **Deciding where to install**

FaceVACS® Sentry is a wall-mounted unit with a very small footprint, and can be conveniently installed anywhere. If used as an access control system, the product should be installed close to the door, so the user can open the door within the timeout period after authentication (5 seconds by default). Also note the following points:

- Allow adequate air circulation to prevent internal heat build-up
- Do not install the product next to heat sources such as furnaces, or in a place subject to direct sunlight and excessive dust.

### **Mounting the Metal Back Panel**

The FaceVACS® Sentry comes with a metal panel for mounting on wall. For better performance we highly suggest grounding of the panel to discharge the static charges that users may have built up inadvertently.

### **Connections – Corporate Network**

You can connect FaceVACS® Sentry directly to your corporate computer network via standard RJ-45 cabling and TCP/IP protocols. By connecting it to the network, you can manage and monitor the unit via any standard Internet browser (such as Microsoft Internet Explorer and Netscape Navigator).

The connection is optional if the product is used solely as an Access Control System. However, some of the features must be setup and maintained via the Internet browser, such as assigning the authorized time period for an individual to access. If you want to use the feature, you must connect the product to internet.

If it is used as a Time Attendance System, you must connect FaceVACS® Sentry to the network, since the Internet browser is required to retrieve the attendance records and reports.

For the detail about the installation, please refer to Sentry installation manual.

## Power-Up

After powering up FaceVACS® Sentry, it will perform a self-test, and it will load the module in the following sequence:

| Step Description                               | LCD Text                    |
|--|-----------------------------|
| 1. Waiting for input signal to reset IP        | Press 1 & 2 to reset IP...  |
| 2. Loading Module                              | Loading Module 9901         |
| 3. Loading Module                              | Loading Module 9909         |
| 4. Loading Module                              | Loading Module 9911         |
| 5. Loading Main Program's Database component   | Loading Database            |
| 6. Loading Main Program's Cam Driver component | Loading Cam Driver          |
| 7. Loading Main Program's Configuration        | Loading Configure           |
| 8. Standby Mode                                | 03/01/01 10:00<br>Show Card |

And the standby mode as show below:



## Resetting IP Address

You can reset the IP address of FaceVACS® Sentry during its power up.

To do so you must first power off FaceVACS® Sentry and attach a keypad / keyboard onto the motherboard of FaceVACS® Sentry. After that, power up FaceVACS® Sentry and wait until the LCD shows “Press 1 & 2 to reset IP...”. You can quickly press “1” and then press “2” on the attached keypad / keyboard. If the key sequence is input correctly, the LCD will show “IP reset”.

## Power-down / Reboot

When you reboot/shutdown in web page or show special card (please refer to **Special Cards and Global FaceVACS® Threshold**) in front of FaceVACS® Sentry, it will start unload module in the following sequence:

| Step Description                                  | LCD Text               |
|---|------------------------|
| 1. System Quit                                    | 03/01/01 10:00<br>Quit |
| 2. Unloading Module                               | Loading<br>Module 8811 |
| 3. Unloading Module                               | Loading<br>Module 8805 |
| 4. Unloading Module                               | Loading<br>Module 8808 |
| 5. Unloading Module                               | Loading<br>Module 8809 |
| 6. Finished unload module.<br>Reboot Now          | Device<br>Reboot       |
| 6. Finished unload module. You<br>can Power-down. | Device<br>Shutdown     |

And screen for unloading module is show below:



## Configuring Your FaceVACS® Sentry

FaceVACS® Sentry does not come with any keypad for configuration to prevent the device from being tampering.

Connect your FaceVACS® Sentry device to your corporate computer network by ordinary Category 5 Ethernet cable. You can either connect FaceVACS® Sentry to corporate Ethernet switch/hub or directly hook it up with a computer via cross-over cable. Choose a computer workstation for initial setup of FaceVACS® Sentry: make sure you know the password of the device, and how to change the IP address. Consult your I.T. colleagues in case of doubt.

Default IP address of FaceVACS® Sentry: 192.168.10.199

You can change your workstation as any available IP address, with correct subnet mask. Please contact your network administrator for the detail of network setting.

Launch your favourite Internet browser, and enter this URL:  
*http://<IP address of FaceVACS® Sentry>/*

You will be prompt to enter username and password:



Enter the administrator username and password to access the web pages. The default user name and password are:

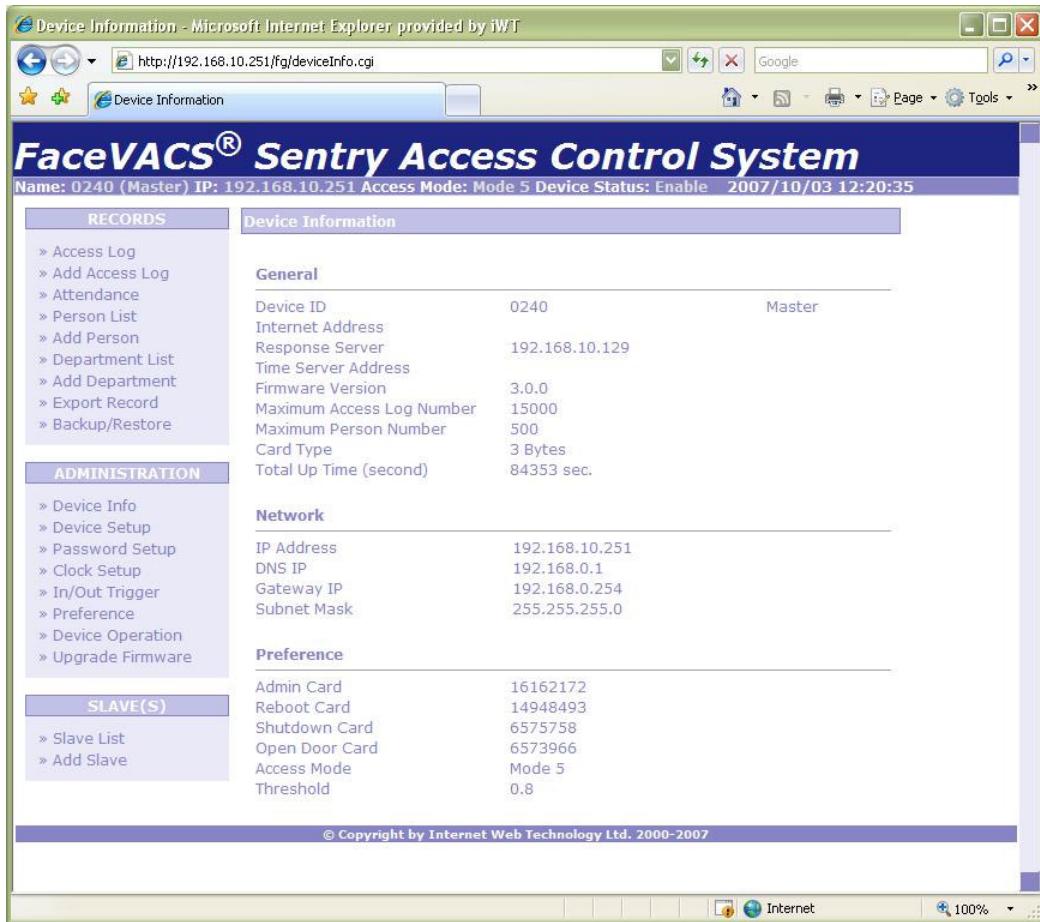
*Username: admin*

*Password: 123*

## Basic Operations

The built-in web server in each FaceVACS® Sentry device allows you to use the popular Internet browser software to manage and configure the device, and to access the records of these devices. You can use the popular Microsoft Internet Explorer or Netscape Navigator software running under different platform such as Window 98, Window 2000/ME/XP, Apple Macintosh, Linux and Unix machines.

Once connected to your corporate computer network, you can access the device by specifying the IP address in the Internet browser. The following will appear in the browser:-



The FaceVACS® Sentry's home page is divided into left and right panels. You can select different functions in the left panel, and the right panel will display the corresponding results. Note: The home page of your FaceVACS® Sentry may be slightly different from the one shown above depending on the model you have.

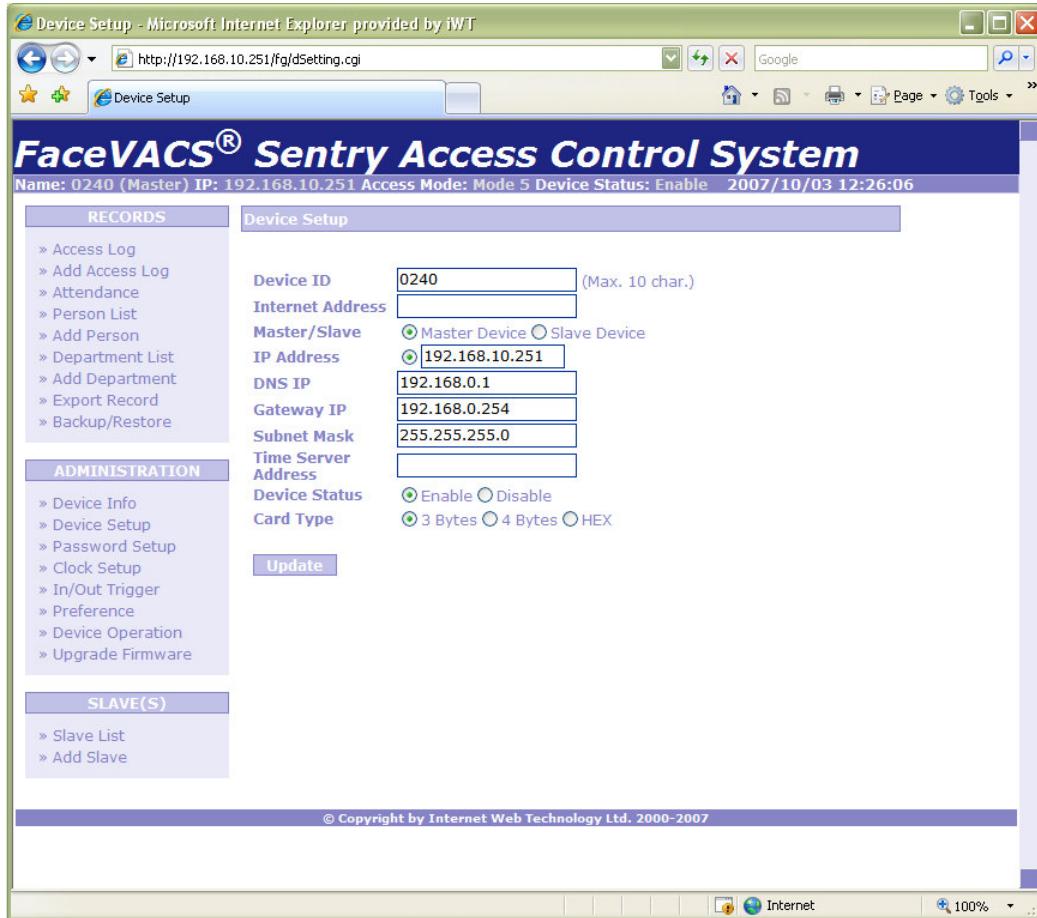
Each item in the left panel corresponds to different pages in the right panel, and will be discussed in the following sections.

You can perform basic operations on FaceVACS® Sentry device, including facial enrollment, activating and deactivating employees, and deleting employees, with using the Internet browsers. Following section discusses these basic operations in detail.

## Setting the Device Configuration and IP Address

To Enable the Master and Slave operation, you need to assign the device an ID and an IP address to the FaceVACS® Sentry. Currently, only static IP address is supported to be assigned to the FaceVACS® Sentry device.

To set the device configuration and IP address, click Administration -> Device Setup on the left side of the FaceVACS® Sentry web page. You will enter this page:



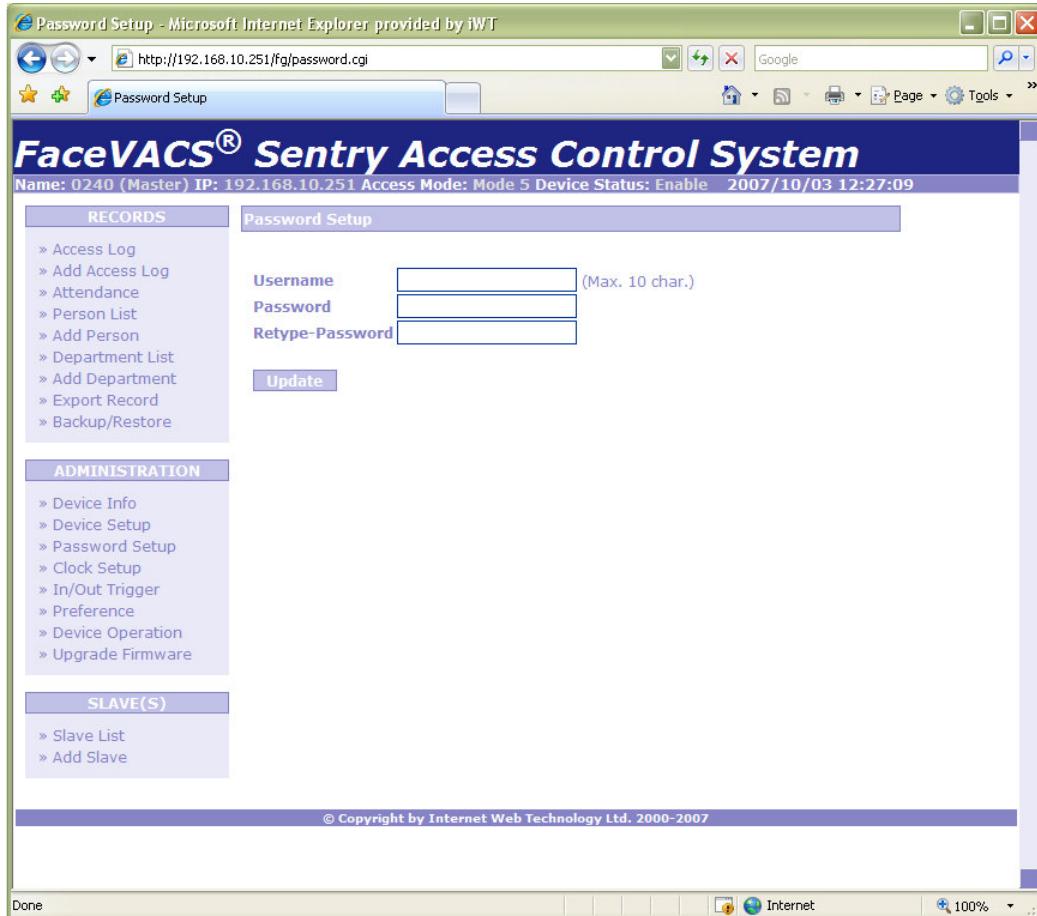
1. Enter the ID of the FaceVACS® Sentry in Device ID column
2. Enter the Internet address of the FaceVACS® Sentry
3. Select Master mode/ Slave mode
4. Enter the static IP address of FaceVACS® Sentry device
5. Enter FaceVACS® Sentry device Domain Name Server (DNS) IP address
6. Enter FaceVACS® Sentry device gateway IP address
7. Enter FaceVACS® Sentry device subnet mask
8. Enter time server address for time synchronization
9. Select FaceVACS® Sentry device status
10. Select FaceVACS® Sentry device return card type/format

Press Update Button to Update the Device Setting

### Setting Administrator Username and Password

FaceVACS® Sentry use Administrator Username and Password to protect the information in the device. Username and Password are also used to access it's own web page and configure the system.

Click Administration -> Password Setup on the left side of the FaceVACS® Sentry web page to access the Administration Username and Password. After clicked, you will enter this page:



1. Enter Administration Username in 1st columns.
2. Enter and Re-Enter the Administration Password in 2nd and 3rd columns.

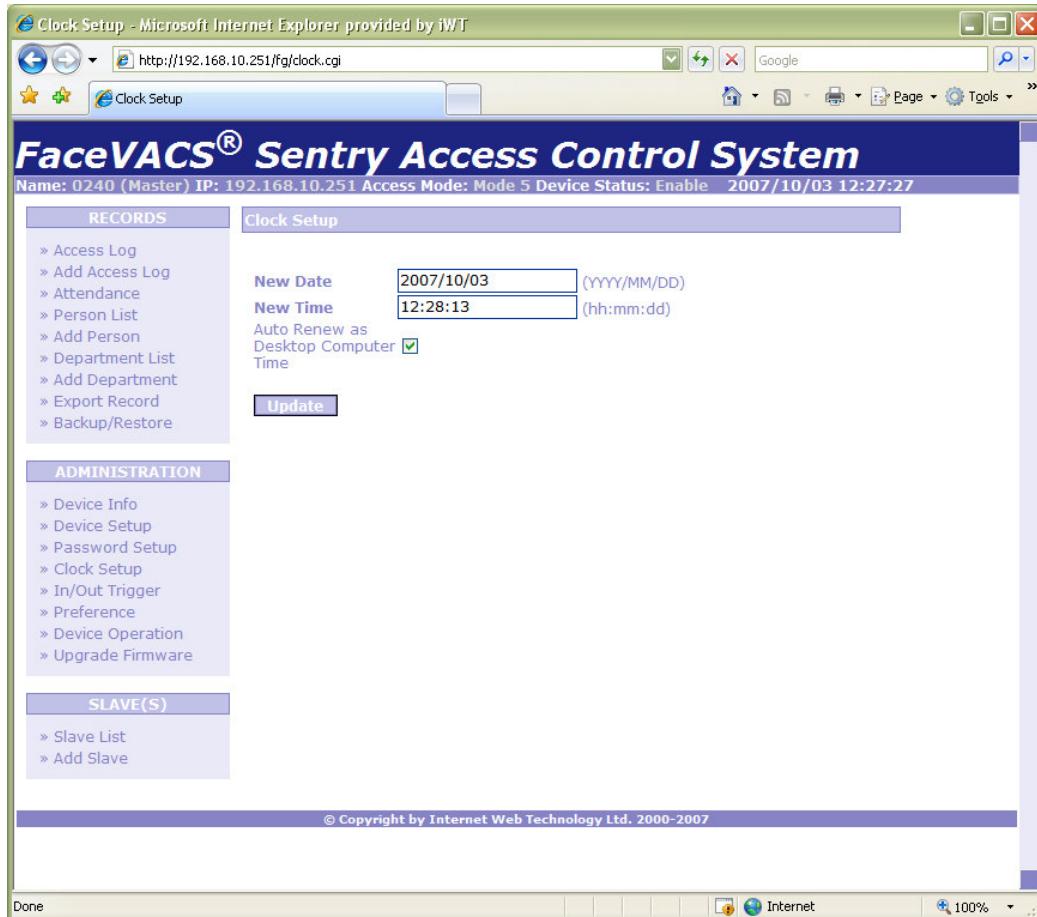
Press Update Button to change the username and Password.

Note: For security reason, original Administration Username and Password will not show in the web page

## Setting the date and time

You can change the date and time through Internet browser.

In the left side of the FaceVACS® Sentry web page, click *Administration* -> *Clock Setup*. You will enter this page:



You can set the FaceVACS® Sentry Date and Time manually  
(Enter Date in YYYY/MM/DD format and Time in hh:mm:dd format)

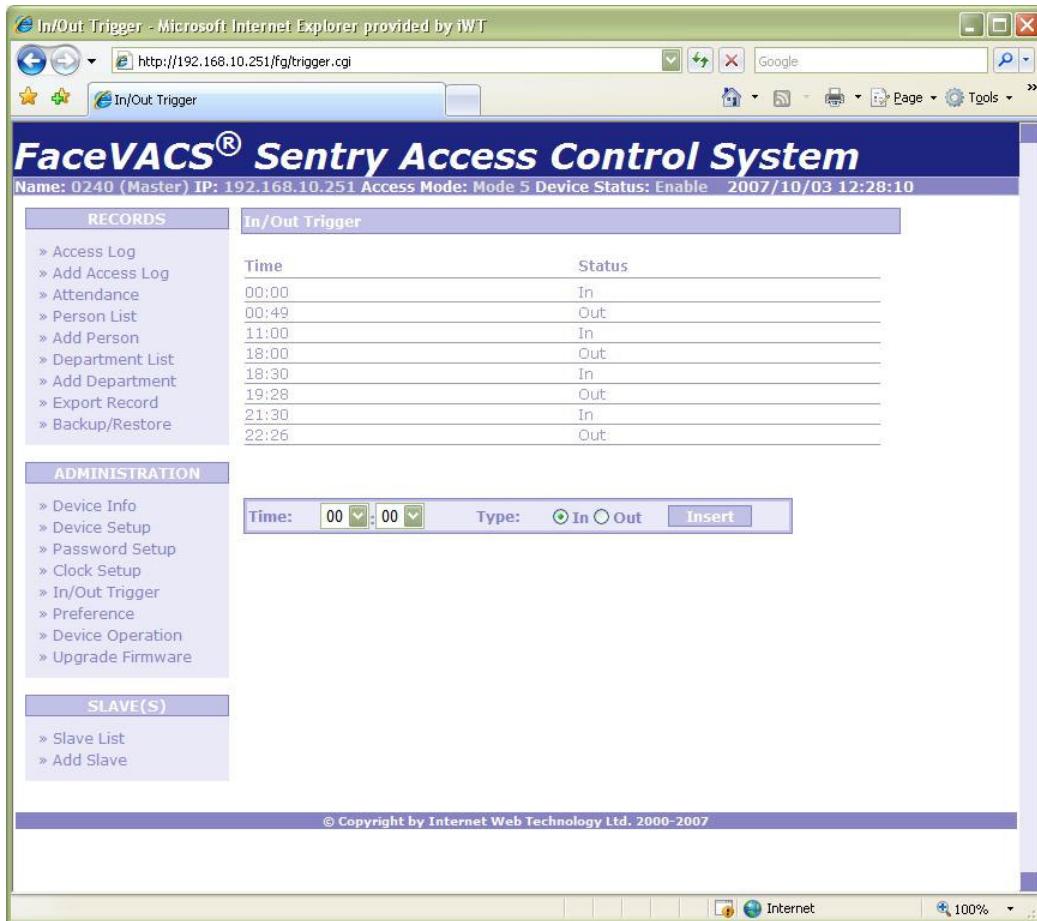
or

Check the Auto Renew as Desktop Computer Time CheckBox (by default) to synchronize FaceVACS® Sentry date time with your PC.

### In/Out Time

You can add or delete the in / out time through Internet browser.

In the left side of the FaceVACS® Sentry web page, click *Administration -> In/Out Trigger Setup*. You will enter this page:



The screenshot shows the FaceVACS® Sentry Access Control System web interface. The main title is "FaceVACS® Sentry Access Control System". The top status bar shows "Name: 0240 (Master) IP: 192.168.10.251 Access Mode: Mode 5 Device Status: Enable 2007/10/03 12:28:10".

The left sidebar has three main sections:

- RECORDS** (selected): Includes links for Access Log, Add Access Log, Attendance, Person List, Add Person, Department List, Add Department, Export Record, and Backup/Restore.
- ADMINISTRATION**: Includes links for Device Info, Device Setup, Password Setup, Clock Setup, In/Out Trigger (selected), Preference, Device Operation, and Upgrade Firmware.
- SLAVE(S)**: Includes links for Slave List and Add Slave.

The main content area is titled "In/Out Trigger". It displays a table of events:

| Time  | Status |
|-------|--------|
| 00:00 | In     |
| 00:49 | Out    |
| 11:00 | In     |
| 18:00 | Out    |
| 18:30 | In     |
| 19:28 | Out    |
| 21:30 | In     |
| 22:26 | Out    |

Below the table is a form to add a new event:

Time:   Type:  In  Out

At the bottom of the page, a copyright notice reads: "© Copyright by Internet Web Technology Ltd. 2000-2007".

To add in/out time, select the time HH:MM and type In/Out. After selection, click *Insert* button.

To delete, select the existent record in the list.

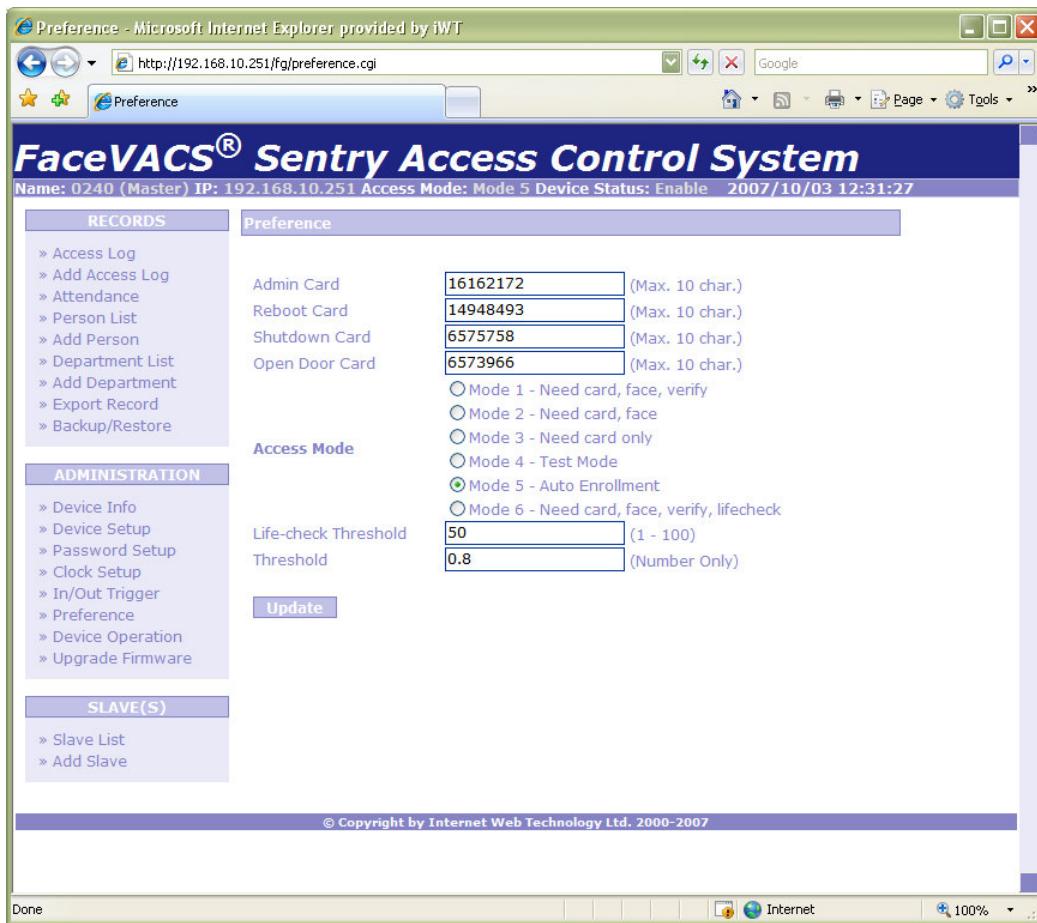
## Special Cards and Global FaceVACS® Threshold

Four types of special cards can be set in FaceVACS® Sentry. They are:

1. Admin Card: To trigger the enrollment process. Please refer to **Enrollment** section.
2. Reboot Card: With additional with face, it can reboot the device.
3. Shutdown Card: With additional with face, it can shutdown the device.
4. Open Door Card: With additional with face, it can open the door that controlled by the device.

Global FaceVACS® Threshold (**BE CAREFUL!** Do not confuse the term FaceVACS® Threshold with Life Check Threshold) is used to set the security level to access the device's door. This threshold is set according to Cognitec FaceVACS® technology.

To setup, click *Administration -> Preferences* on the left side of the FaceVACS® Sentry web page. You will enter this page to update the information:



**FaceVACS® Sentry Access Control System**

Name: 0240 (Master) IP: 192.168.10.251 Access Mode: Mode 5 Device Status: Enable 2007/10/03 12:31:27

| RECORDS           |  |
|-------------------|--|
| » Access Log      |  |
| » Add Access Log  |  |
| » Attendance      |  |
| » Person List     |  |
| » Add Person      |  |
| » Department List |  |
| » Add Department  |  |
| » Export Record   |  |
| » Backup/Restore  |  |

| ADMINISTRATION     |  |
|--------------------|--|
| » Device Info      |  |
| » Device Setup     |  |
| » Password Setup   |  |
| » Clock Setup      |  |
| » In/Out Trigger   |  |
| » Preference       |  |
| » Device Operation |  |
| » Upgrade Firmware |  |

| SLAVE(S)     |  |
|--------------|--|
| » Slave List |  |
| » Add Slave  |  |

**Preference**

Admin Card: 16162172 (Max. 10 char.)  
 Reboot Card: 14948493 (Max. 10 char.)  
 Shutdown Card: 6575758 (Max. 10 char.)  
 Open Door Card: 6573966 (Max. 10 char.)

Access Mode:

- Mode 1 - Need card, face, verify
- Mode 2 - Need card, face
- Mode 3 - Need card only
- Mode 4 - Test Mode
- Mode 5 - Auto Enrollment
- Mode 6 - Need card, face, verify, lifecheck

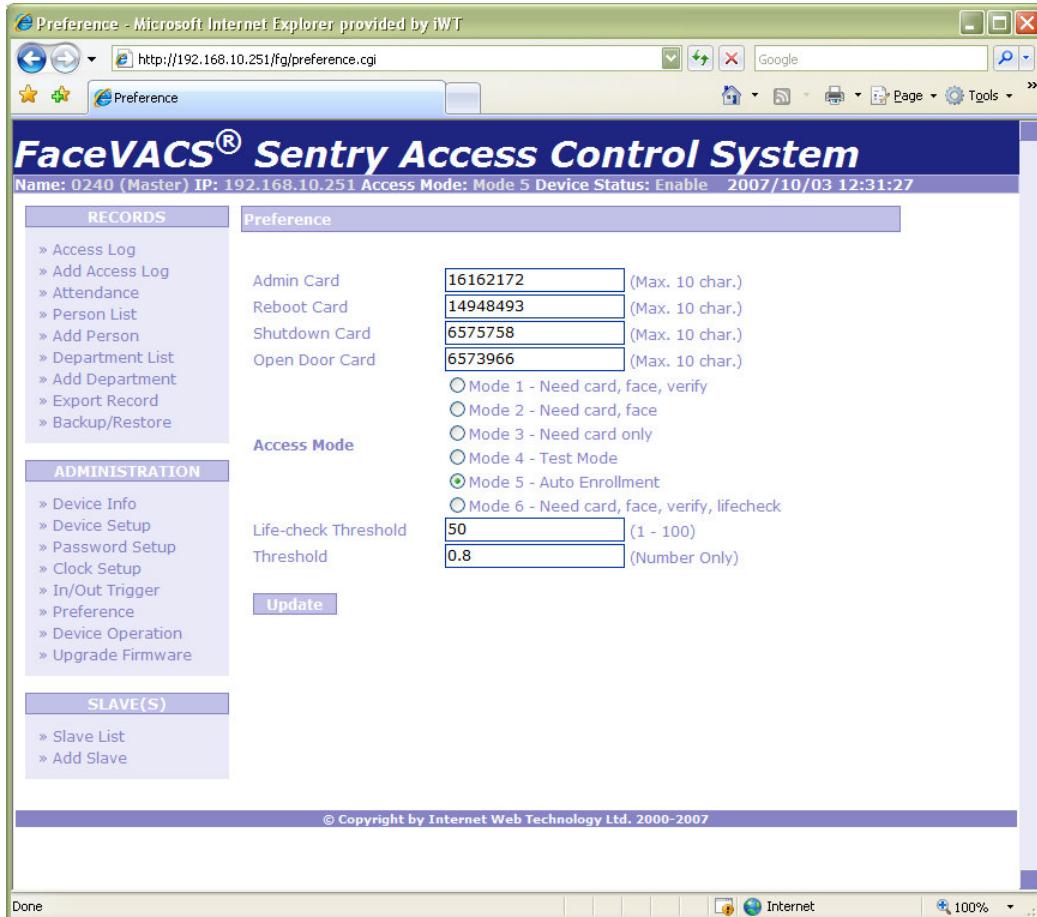
Life-check Threshold: 50 (1 - 100)  
 Threshold: 0.8 (Number Only)

**Update**

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### Access Mode and Life Check Threshold

Under different Access Modes, user can check in with various criteria. To set different Access Modes, click *Administration -> Preferences* on the left side of the FaceVACS® Sentry web page. You will enter this page:



FaceVACS® Sentry Access Control System

Name: 0240 (Master) IP: 192.168.10.251 Access Mode: Mode 5 Device Status: Enable 2007/10/03 12:31:27

|                |          |                 |
|----------------|----------|-----------------|
| Admin Card     | 16162172 | (Max. 10 char.) |
| Reboot Card    | 14948493 | (Max. 10 char.) |
| Shutdown Card  | 6575758  | (Max. 10 char.) |
| Open Door Card | 6573966  | (Max. 10 char.) |

Access Mode

Mode 1 - Need card, face, verify  
 Mode 2 - Need card, face  
 Mode 3 - Need card only  
 Mode 4 - Test Mode  
 Mode 5 - Auto Enrollment (selected)  
 Mode 6 - Need card, face, verify, lifecheck

|                      |     |               |
|----------------------|-----|---------------|
| Life-check Threshold | 50  | (1 - 100)     |
| Threshold            | 0.8 | (Number Only) |

Update

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This Page is used for setting up various FaceVACS® Sentry functions. Select one of the access modes and press Update to change the Access Mode (and also other functions) setting.

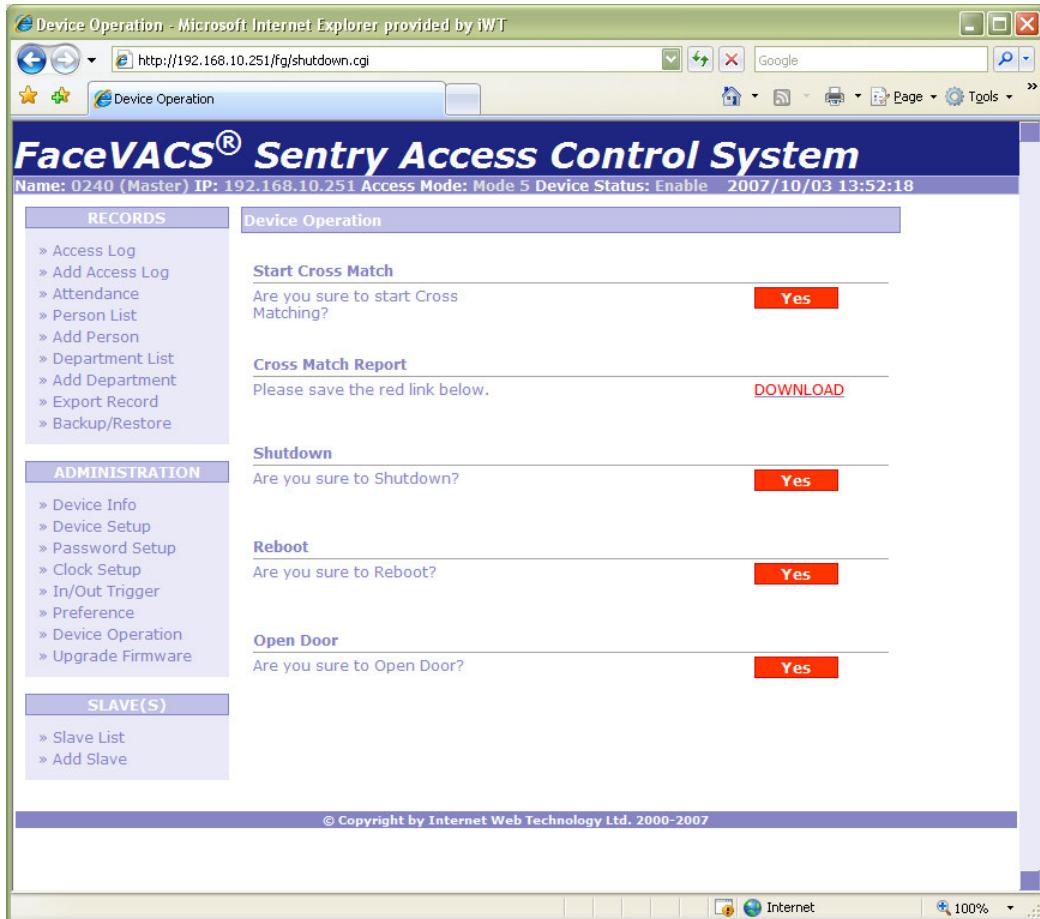
There are totally six Access Modes in FaceVACS® Sentry, which is:

1. Mode 1: Check in using card, user face and need verification.
2. Mode 2: Check in using card and user face. No verification is need.
3. Mode 3: Check in using card only. Also no verification is need.
4. Mode 4: Test Mode. Does not take any access record when enroll/check in or out.
5. Mode 5: Auto Enrollment Mode. Can enroll card without the present of administrator card. Please see section "Auto Enrollment" for more detail.
6. Mode 6: Check in using card, user face and need verification with life check. You need to set the Life-check Threshold value if you use this mode.

## Cross Matching Operation

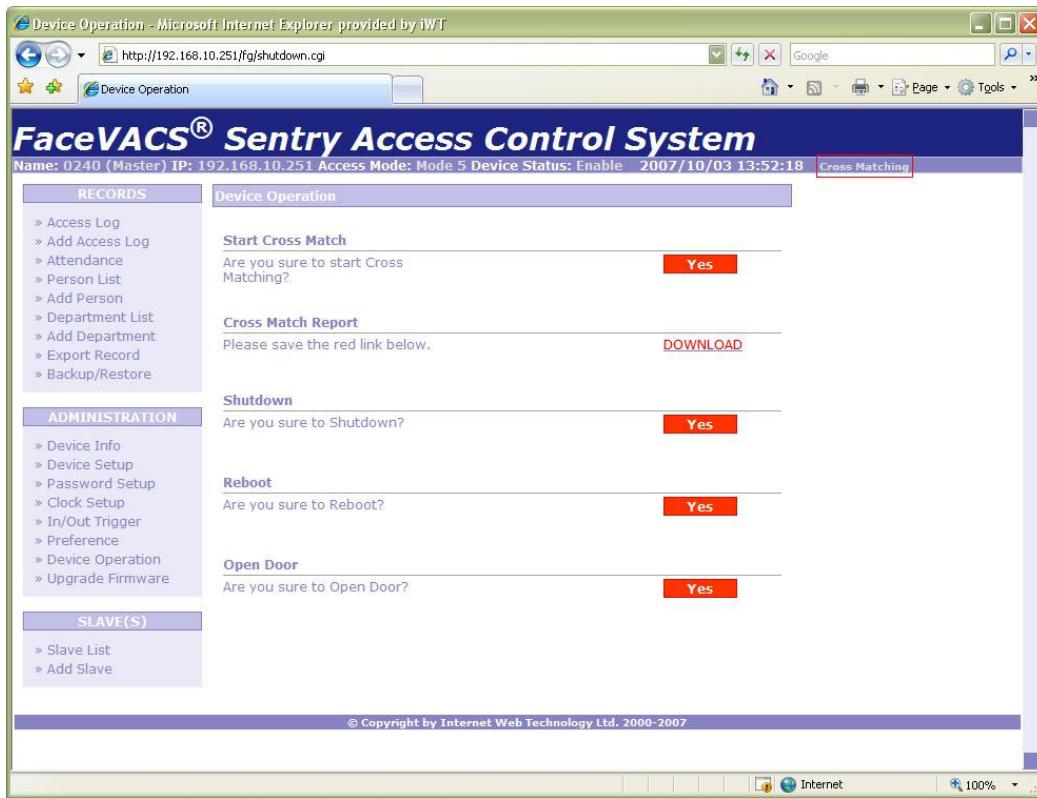
The FIR of the Person records can be compared mutually by using Cross Matching function. This function can check which pair of persons FIR is too high to cause possible false acceptance. If the resulted scores are too close or even higher than the device threshold, the personal threshold of the specific pair is suggested to set higher.

To start Cross matching, click *Administration -> Device Operation* on the left side of the web page. After clicked, you will enter this page:



Press *Yes* in *Start Cross Match -> Are you sure to start Cross Matching?*

It will start the cross match function. Then Cross Matching calculation begins in the device. While calculation, a sentence "Cross Matching" (the red squared statement the in the picture below) will be shown in the menu bar at the top right hand corner of the web page after you refresh it.



Keep refreshing the page after a certain time, e.g. 30 enrollees cross matching takes approximately 5 seconds, 500 enrollees cross matching takes approximately 3 minutes. If the sentence "Cross Matching" disappears, it means that the calculation is finished.

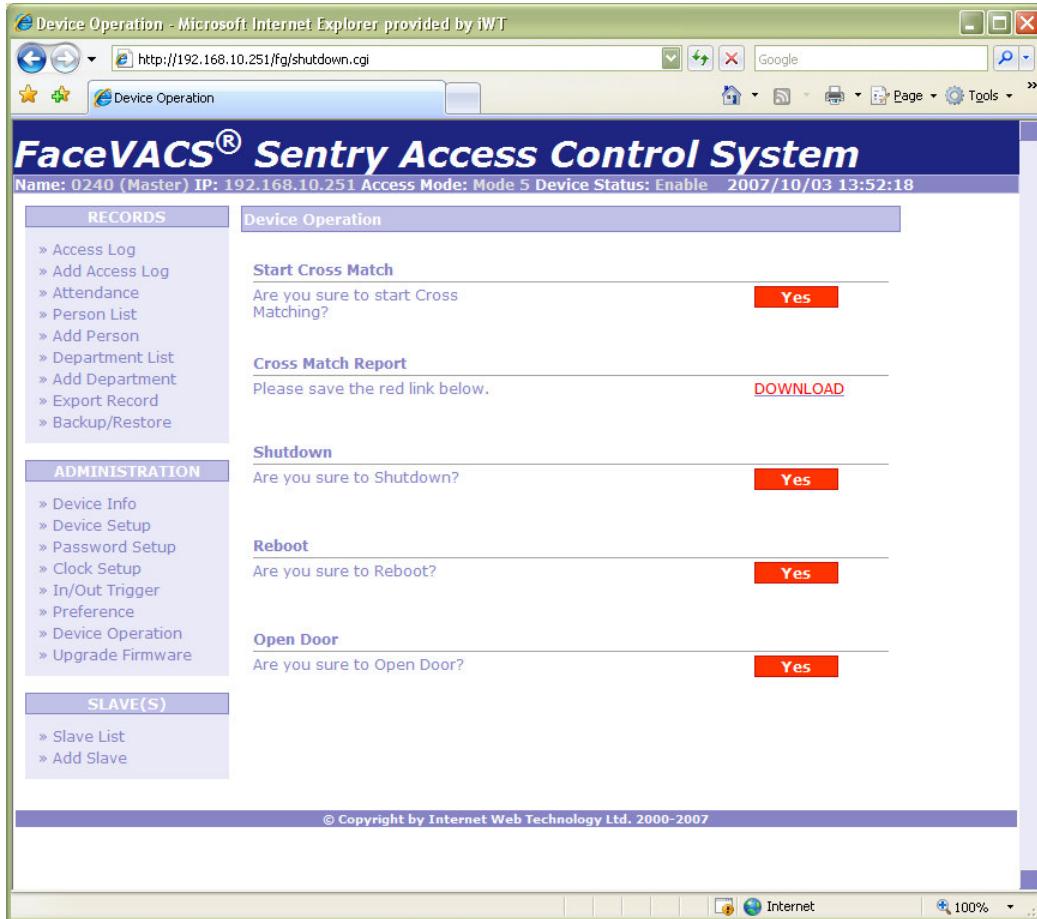
After the cross matching, a report is generated in the device, right click **DOWNLOAD** and save *CrossMatchReport.csv* to retrieve the Cross Match Report.

## Resetting the device & Open Door

The device can be turned off easily by just simply turning off the power. However, there is a very small chance that the unit is in the process of accessing and updating the internal flash memory at the moment when the power is discontinued. This may result in data loss.

The safe way to gracefully turn off is to do a proper shut down by accessing the shutdown function in web-based administration page.

Click *Administration -> Device Operation* on the left side of the FaceVACS® Sentry web page. After clicked, you will enter this page:



You can shutdown or reboot the FaceVACS® Sentry SAFELY (without internal data inconsistent) using these function. The action will be logged as access log record (but without any photo) for audit check.

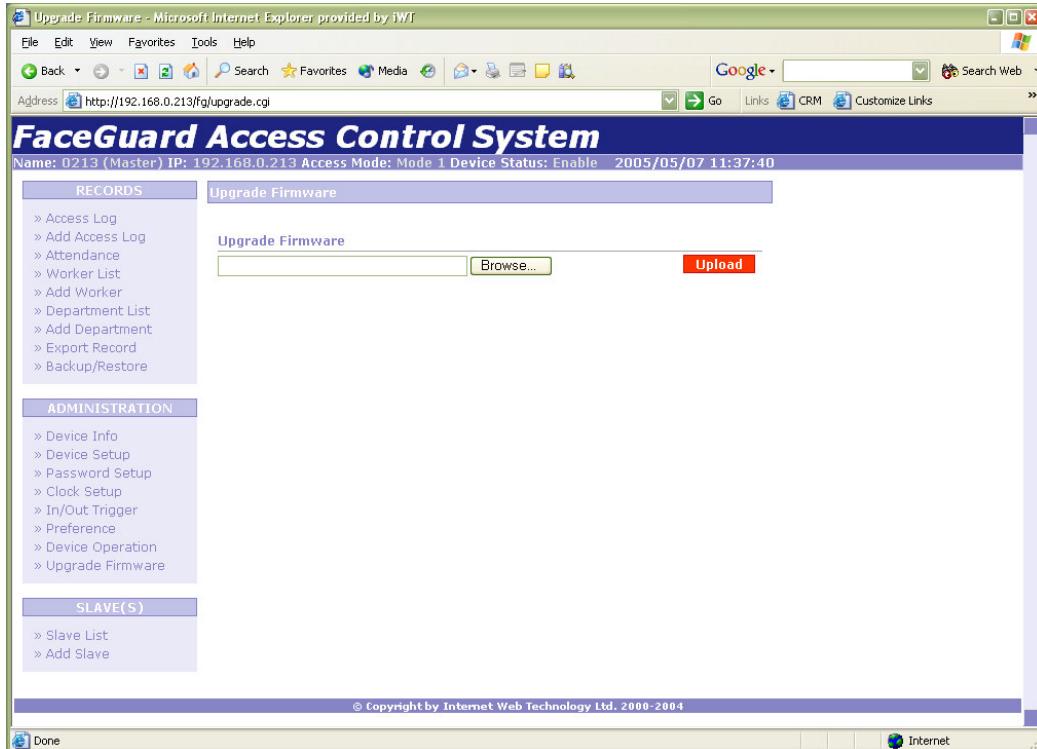
In unlikely event that software reset is required, you can use the System Reset smart card and present it to FaceVACS® Sentry device, it will gracefully shutdown the database, finish all the read-write operations, and restart the device in a safest way.

This page also provide the function to open the door that controlled by FaceVACS® Sentry by simply checking the button. This action will also be logged as access log record (but without any photo) for audit check.

## Upgrade Firmware

Most of the firmware releases that come with the device are stable release. However, some functions modification and improvement will be added to the device from time to time. We will provide the upgrade binary file to you when you need upgrade.

Click *Administration -> Upgrade Firmware* Operation on the left side of the FaceVACS® Sentry web page. After clicked, you will enter this page:



Click *Browse...* button to select the upgrade binary file and then click *Upload* button to upgrade the firmware.

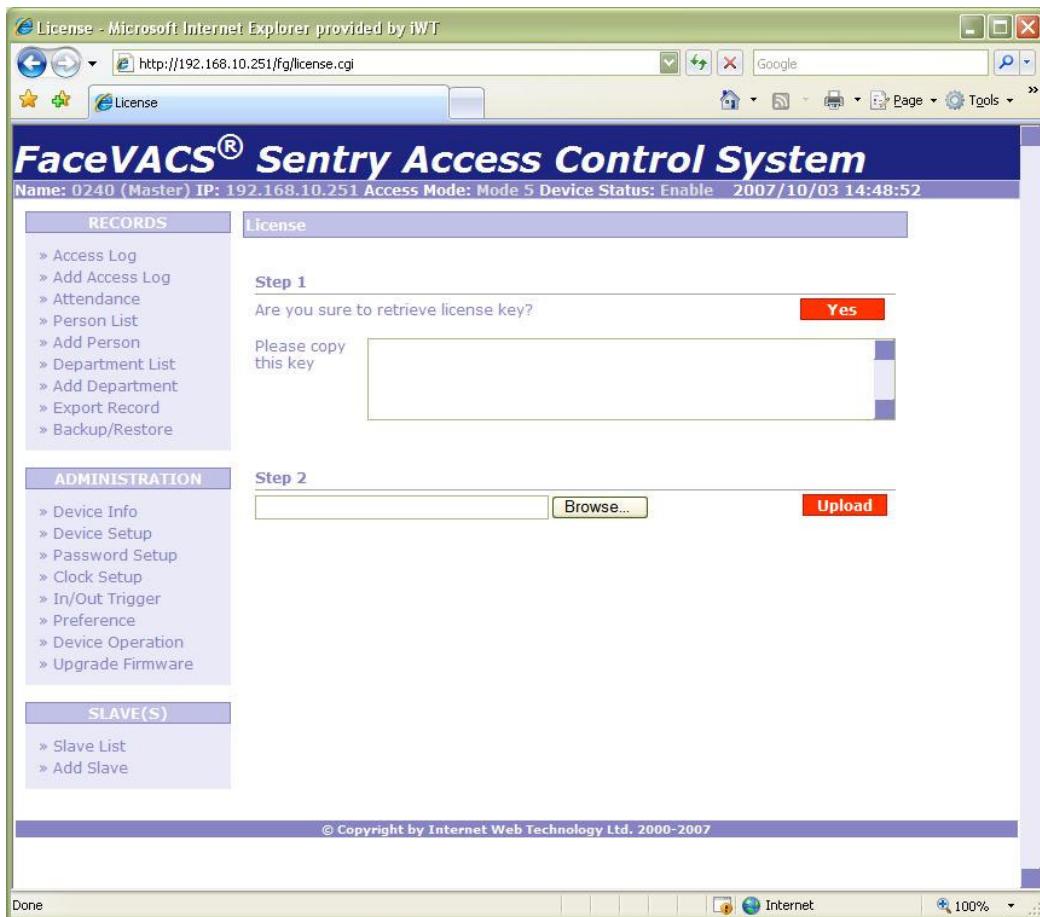
## License Page

Each device has unique license key to activate. While the entire devices will have valid license after manufacturing, but some time use may need to re-import the license for some reasons.

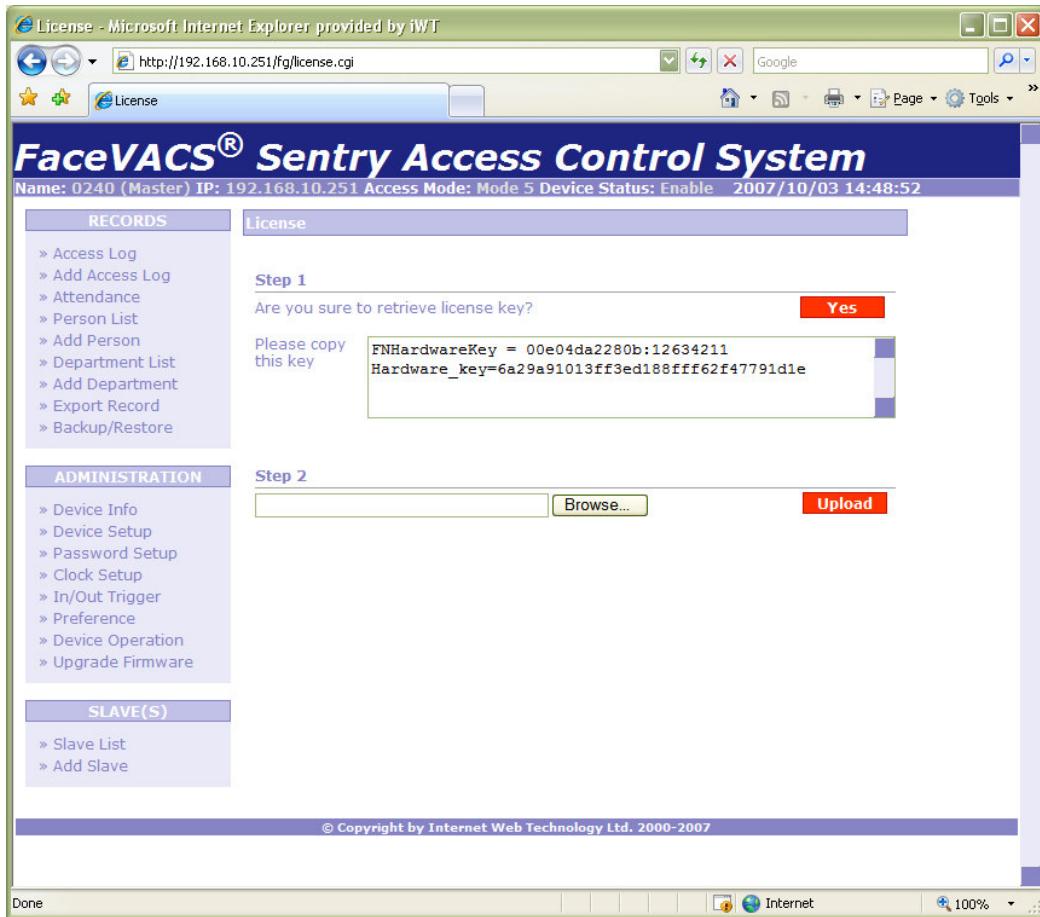
In internet browser's address bar, type:

*http://<IP address of FaceVACS® Sentry>/fg/license.cgi*

Then you will enter this page:



If you do not have the valid license file for this device, you can press *Yes* in *Step 1- Are you sure to retrieve license key?* And then copies the text (license information) in the text box with the word *Please copy this key* (see the picture below). After that you can send the license information to the support staff of FaceVACS® Sentry for valid license file.



If you have the valid license file for upload, you can click *Browse...* button to select the valid license file and then click *Upload* button to upload the license.