BioScan® Express User's Guide

Introduction

Congratulations on your purchase of the BioScan Express® Fingerprint Terminal. This manual explains how to use the functionality of the terminal through the built in keyboard and how to connect to your PC computer. A separate SDK manual explains how to write computer programs so that you can control your terminal from a computer.

Powering up the BioScan Terminal

In your box you should find both the BioScan Express Terminal and the Communications Module. The Communications Module supplies both power distribution and communications to computers for the BioScan Express Terminal.

Communications Module

BiosScan Express Terminal

To get started with the BioScan Express Terminal, you must first connect it to the Communications Module and connect the Communications Module to the specified power source, as follows:

1. Connect the power cable to the communications module.

2. Connect the double-ended 8-pin modular plug cable, from the Communications Module to the back of the BioScan Express terminal.

3. Connect the power cable to the specified power source.

2. 8-Pin MP **1. Power**

2. 8-Pin MP

Using the BioScan Express Terminal Keyboard

Making Changes within the BioScan Menus

To enroll users and perform other functions, you can use the BioScan Express Terminal's keyboard.

BioScan Keypad

Keypad Definition

Confirms the current request.

Access to manage.

Escape or cancel.

Scroll up.

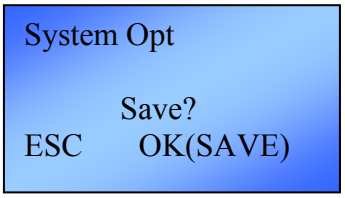
Scroll down.

Power button.

Numeric keys.

At the Welcome screen, when the MENU key is pressed the BioScan Express terminal configuration options become available to change. Key sequence to change and save is as follows; Arrow keys identify the item to be changed and the OK key selects and highlights the field. The Arrow keys can then be used to change the option, and OK will accept the change.

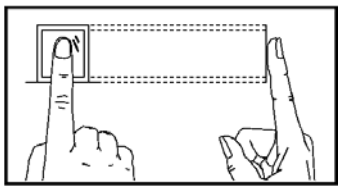
To complete the save for a change, press the ESC key to get to the following display where the OK key is then pressed to Save.



Correct Finger Placement

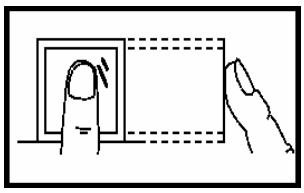
Finger placement and position is the first step in creating a good template image. The following pictures demonstrate correct and incorrect finger placement on the optic sensor.

1. The correct way is to place a finger flat-wise and to the center of the sensor surface.

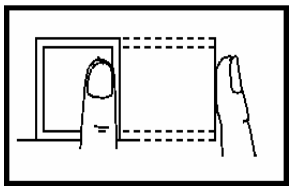


2. Incorrect finger placement examples are shown below with descriptions.

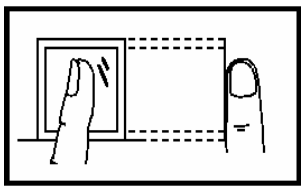
Upright



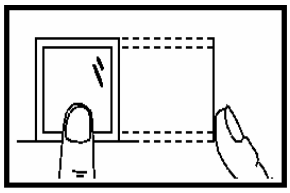
Not Centered



Skew or Side



Finger Top on edge of sensor



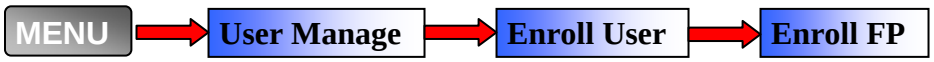
Note: *Please adopt correct finger placement, this company assumes no responsibility for errors from the use of the BioScan Express. This company reserves the right to revise documentation and to make changes from time to time in the content here of without obligation to notify any person of such revision or changes.*

Enroll Users

If this is the first enrollment on a new system, everyone is essentially an enrollee. If there is a manager in the system, the manager will have Manager status to enroll new users. There are three ways to enroll; fingerprint enrollment, password enrollment, fingerprint and password enrollment. Fingerprint enrollment should be used for most people who have good quality fingerprints; fingerprint and password should be used for people who enroll successfully, but for whom verification is difficult; Password enrollment should be used for the 1% of people whose fingerprint cannot be verified.

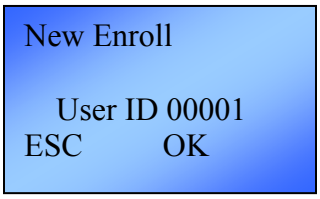
Enroll with Fingerprints

Navigate Menu on the Clock to "Enroll FP"



When you press "OK" following display will appear:

Press OK to continue:



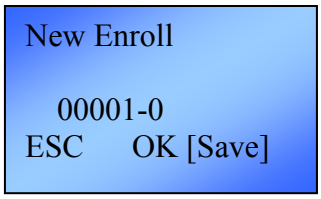
User ID

By default the next available user ID number appears, you can change it with the up and down keys or the number keys (the range is 1 to 65534).

Press OK to continue:

Place your finger on the sensor 3 times as prompted and press OK to save.

After pressing "OK" to save the following display appears:

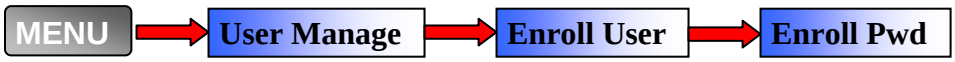


The last digit, 0, indicates the first fingerprint for this ID number (00001).

Press OK, the previous message continues to be displayed while the template is created. If there is a problem with the fingerprint capture you will be prompted to try again and should restart the enrollment process.

Enroll with Password

Navigate Menu on the Clock to "Enroll Pwd"



When you press "OK" following display will appear:

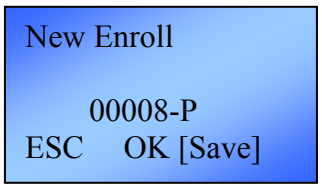
If known, input the user Id number and press OK.

Note: By default the next sequential user ID number will appear, change it with the up and down keys or the numeric keys (the range is 1 to 65534).

The password is numeric and can be one to five digits in length.
Input the password, press OK :

Input the password again, to verify and press OK :

The following is displayed with the ID followed by the letter P. This last letter P indicates the user ID is stored with a password.



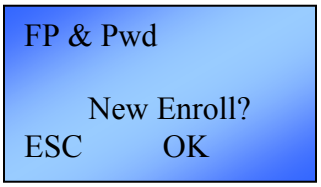
Press OK , the previous message continues to be displayed while the data is stored.

Enroll with Password and Fingerprint

Navigate Menu on the Clock to "Enroll FP & Pwd"

MENU → **User Manage** → **Enroll User** → **Enroll FP & Pwd**

When you press "OK" following display will appear:



Access the Fingerprint and Password, press OK, at the FP & Pwd prompt:

This will begin a new enrollment process and request a user ID.

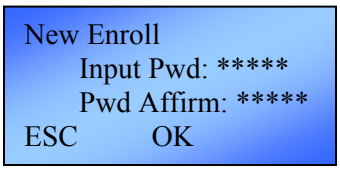
If known, input the user Id number and press OK.

Note: By default the next sequential user ID number will appear, change it with the up and down keys or the numeric keys (the range is 1 to 65534).

When the following prompt appears, place the finger to be enrolled on the reader 3 times as prompted:

When the following prompt appears, input users password: The Password is one to five digits in length.

Input the password again for verification, press OK : (Password can be one to five digits).



If successful the following will appear:

The following is displayed with the ID followed by a number and the letter P. The number indicates the current finger template associated with this ID. The number sequence for fingerprints captured is 0-9. This last letter P indicates the user ID is stored with a password.

Note: In the display example for new enroll, 00008—1P is broken down as ID – 00008, Second fingerprint – 1 (where fingerprints captured is 0-9), and the last letter P means password.

Press OK the previous message continues to be displayed while the template is created.

Suggestions for Successful Enrollment

When a fingerprint has good quality, the verification speed will be fast. If the fingerprint is of poor quality, slow reads and false rejections are possible.

In order to improve the fingerprint verification quality, try the following suggestions:

Table 2—1 Failure to Validate Enrollee or Fingerprint of Poor Quality

Dry fingerprints	Moisten the dry finger by holding it to the palm in a fist position.
Not enough pressure on the sensor	The user should place a finger firmly and squarely on the sensor surface.
How to select the finger?	The left or right index or middle finger is normally recommended. Otherwise the middle or ring fingers can be used to capture good fingerprint templates. Use fingerprints of good quality, not worn or injured.
How to place the finger?	Place finger firmly on the sensor surface, finger placement must cover 2/3 of the sensor surface. The fingerprint should not touch perpendicular to the sensor surface. Do not touch the finger too fast; or move the finger on the sensor surface.

Fingerprint change Influence	Worn or injured fingers can influence verification. If the finger quality is too poor, use password verification.
Others	No matter how advanced the reader, there is a percentage of people whose fingerprint scans may not validate. For this small group, the alternatives are to use Id and fingerprint validation (1:1), lower the match threshold, or use password validation.

User Verification (1:N)

Users can verify themselves at the clock

Fingerprint Verification

At the Welcome screen simply place the finger on the sensor surface, and the following will appear:

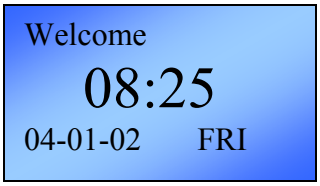
The message will display for about 0.5 seconds. If the test is successful, it will say "Thank you", and the following will appear:

If the user identity cannot be verified, the user is prompted to try again, the following will appear:

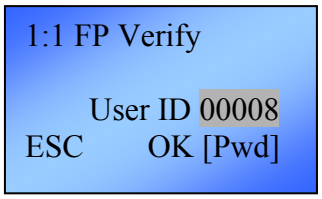
The message will display for about 0.5 seconds, and then return to the start-up window.

ID Number and FingerPrint

At the Welcome screen Enter your ID number. The display will change to show the User ID entered.



The option to enter a password is present, but not needed for ID Number and FingerPrint combination.

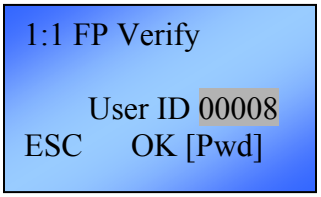


To verify, place a finger that has been enrolled on the reader, the following will appear:

Password Verification

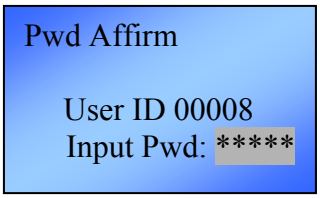
To start the verification process, enter user ID number, at the Welcome screen.

Once the user ID is entered the clock displays the appropriate prompts for a user ID stored with a password.

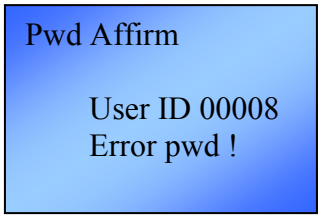


Press OK , to accept the password acknowledgement and the display will change to the Input Password prompt.

Input correct user password, passwords are masked by the asterisks. Press OK , and if verified the following will appear:



If the password cannot be verified an error message will appear.



Authority Levels

Authority Levels

BioScan Express Fingerprint Time &Attendance has four authority or status levels, as defined below:

Users	People whose identity must be verified, to gain access to the facility or to have their attendance recorded.
Enrollers	Are Users who are authorized to enroll new users or delete users on the system.
Managers	Users who are allowed to do other operations, except set advanced options and enroll manager's authority.
Supervisors	Are Users who have access to change all functions including the system setup.

Note: Without Manager and Supervisor status in the system, the Enroller can enroll and delete users. If no Supervisor exists in the system, the Manager can enroll a supervisor.

Managing Match Threshold Levels

Match Thresholds

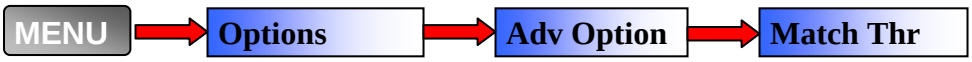
The Match Threshold is a number that represents the degree to which verification is examined to ensure that the person is actually the person being identified. The Match Threshold Levels establish a balance between False Acceptance Rate (FAR) and False Rejection Rate (FRR). FAR measures how often a non-authorized user is falsely recognized and granted access to the system. FRR measures how often an enrolled and authorized user, who should be granted access to the system, is denied on the basis that the system did not recognize him. You can set match threshold levels on a per-use basis. If the fingerprint verification is difficult, you can adopt ID & Fingerprint verification (match one to one). Raising the threshold increases security, while lowering it decreases security. The correct balance is essential. For users with worn or injured fingers, match threshold levels can (and should) be reduced. The Threshold Level should match the site security requirements.

Table 1—1 Suggested Match Threshold Settings

FRR	FAR	One to Many	One to One
High	Low	45	25
Middle	Middle	35	15
Low	High	25	10

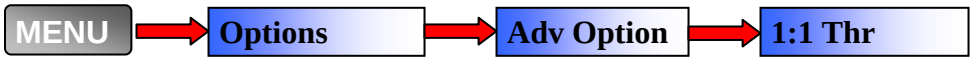
Setting Match Threshold Settings

To change match threshold settings for **one to many (1:N)**, navigate the menu to Match Threshold, and Press OK .



Use the arrow keys, or the number keys to set the threshold number desired and Press OK .

To change the **one to one (1:1)**, match threshold setting, navigate the menu to 1:1 Threshold, and Press OK .

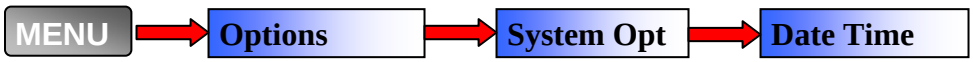


Use the arrow keys, or the number keys to set the threshold number desired and Press OK .

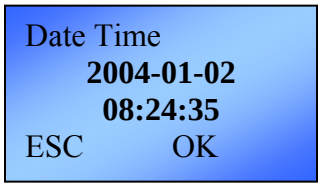
Setting System Options

Date/Time

Navigate to the Date/Time screen as follows and Press OK .



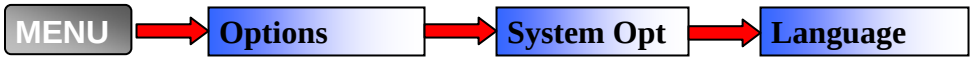
Access Date Time, the following will appear:



Scroll between the year, month, date, hour, minutes, and seconds using the arrow keys. To modify the selected field, press OK and change the field using the number keys.

Change the Display Language

Navigate to the Language screen as follows and Press OK .



When the Language setting is accessed, it defaults to ENG. Use the arrow keys to select another language. The BioScan Express comes with three built-in languages, simplified Chinese, traditional Chinese, and English for all displays.

Select the language that you will use, and press OK then Press ESC to return the Options. The system will request confirmation for the displayed language. Press OK to accept the language displayed.

Resetting System Settings and Values to Default

The Advanced Option selections provide functions to reset settings and data deletion. Navigate to the Advanced Options screen as follows, and Press OK .

MENU → Options → System Opt → Adv Option

The Advanced Option setting will display.
The arrow keys allow you to navigate to the desired function. Press OK to access the function, and follow the prompts.

Press OK to save.

The Advanced Option functions include:

Restore Deflt	Restores the various options to their default values.
Clear all Data	Deletes all enrolled users, fingerprints, and logs.
Delete Logs	Deletes all logs of flash disk.
Clear Admin Pri	Clears all administrative privileges.

Require Only One to One Verification

The BioScan Express Terminal can be set to require one to one verification (User Id and fingerprint). To do so navigate to the Advanced Options menu and press OK .

MENU → Options → System Opt → Adv Option

The Advanced Option setting will display.
Use the arrow keys allow you to navigate to the Only 1:1 Function. Press OK . Use the arrow keys to toggle Between Yes and No.

Press OK to save.

Turn Off Voice

The voice that confirms verification or denies verification “Thank You” or “Please Try Again” can be turned on or off. To do so, navigate to the Advanced Options menu and press OK .

MENU → Options → System Opt → Adv Option

The Advanced Option setting will display.
Use the arrow keys allow you to navigate to the Voice Function. Press OK . Use the arrow keys to toggle Between Yes and No.

Press OK to save.

Communication with Your Computer

The BioScan Express can be connected to a computer using RS232/485 or Ethernet. Once connected to your computer, you may control certain functions on the BioScan Express Terminal using programs written using the BioScan Express SDK.

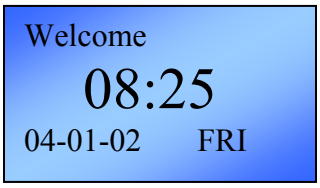
RS232 or RS485 Connection (Serial Connection)

1. Ensure the Mode Switch on the communications module is set to 232/485.

2. Connect your computer to the RS 232/485 connection on the Communications Module using the supplied RS232/485 serial cable.

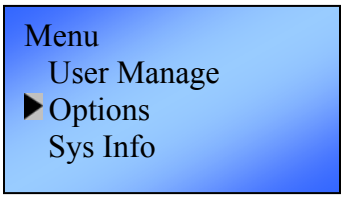
3. Plug the power cable to the power outlet to power on the Bioscan Terminal.

4. Wait for the power on screens to cycle through to the startup display.



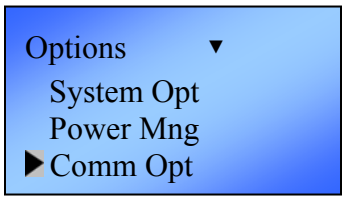
5. Press the Menu key.

6. Use the down arrow key and select Options, Press the OK key.

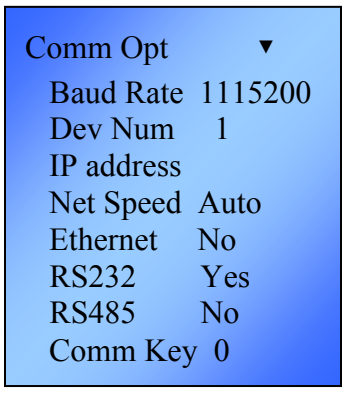


7. Use the down arrow key and select Comm Opt, Press the OK key.

   The following options will be available by using the down arrow to scroll selections.



8. To configure RS232/485, set this to Yes. Ethernet set to No for this to work correctly.



   Baud Rate: Leave at the Default

   Device Number: machine ID, the range is 1 to 255. Default should be at 1. The Device Number is recognized by the software.

   IP address: Defaults to IP address 192.168.0.0. and will not need to be changed with RS232 or RS485.

RS232 or RS485 Connection (Serial Connection) Continued

Net Speed: Must be set to AUTO.

Ethernet: No

One of the following must be set to Yes, one to No depending on your choice
RS232: Yes or No

RS485: Yes or No

Ethernet Connection

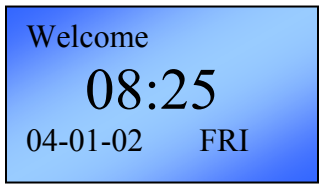
The following steps will assist with the Ethernet setup.

1. Ensure the Mode Switch on the communications module is set to TCP/IP.

2. Connect your computer to the TCP/IP Communications Module using a standard Ethernet cable.

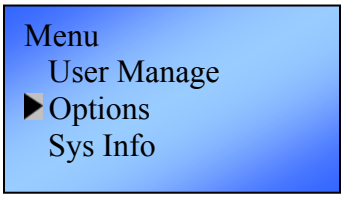
3. Plug the power cable to the power outlet to power on the Bioscan Terminal.

4. Wait for the power on screens to cycle through to the startup display.



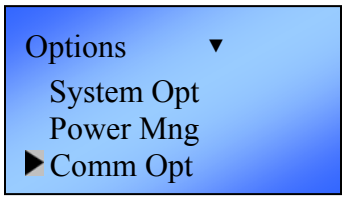
5. Press the Menu key.

6. Use the down arrow key and select Options, Press the OK key.

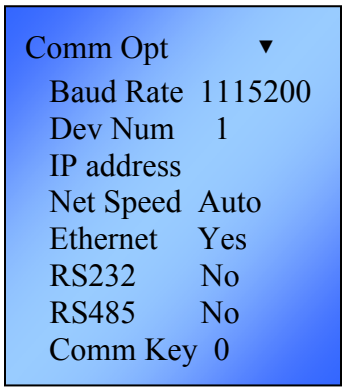


6. Menu

7. Use the down arrow key and select Comm Opt, Press the OK key.



The following options will be available by using the down arrow to scroll selections.



8. To configure Ethernet, set this to Yes. RS232 and RS485 must be set to No for this to work correctly.

   Baud Rate: Leave at the Default

   Device Number: machine ID, the range is 1 to 255. Default should be at 1. The Device Number is recognized by the software.

Ethernet Connection Continued

IP address: Defaults to IP address 192.168.0.0. and will need to be changed for the current network IP.

Net Speed: Must be set to AUTO.

Ethernet: Yes to use TCP/IP protocol.

RS232: No

RS485: No

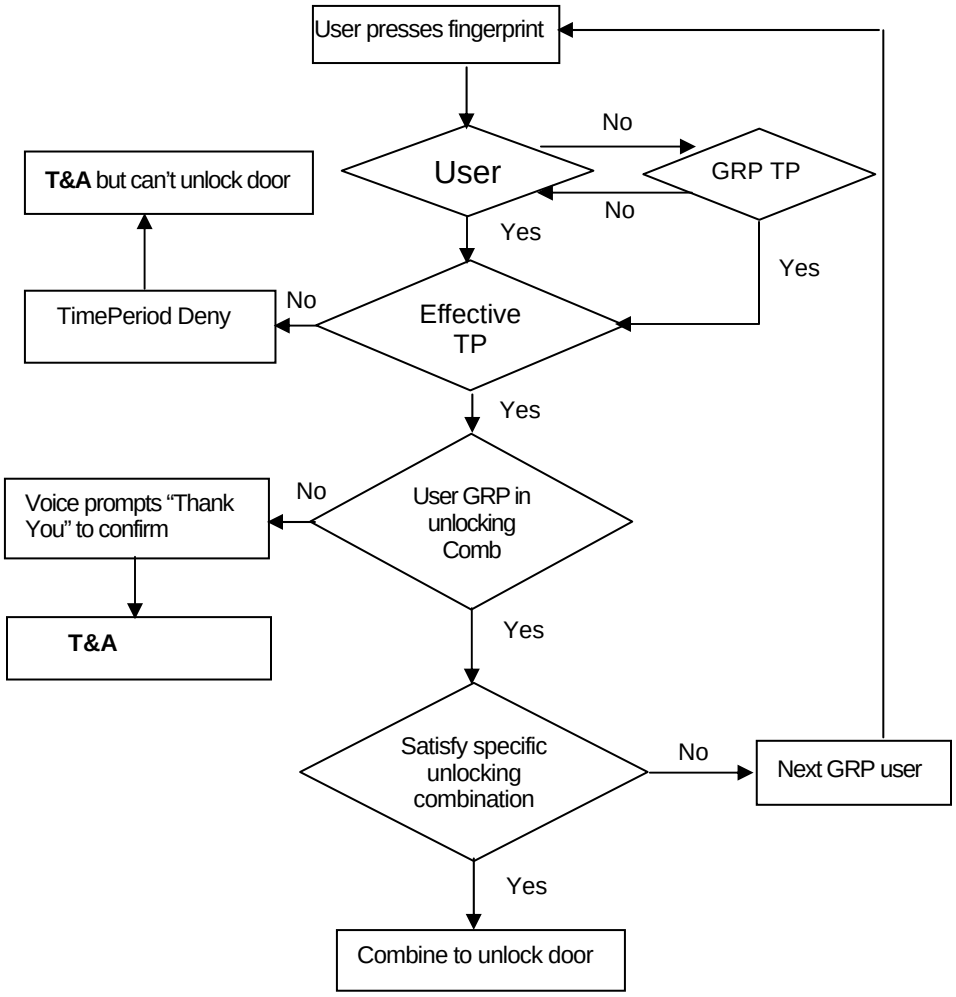
Access Control

The BioScan Express Terminal can be used to control door access. Users can be assigned to groups and groups assigned certain time periods when their members can gain door access. In addition users can be directly assigned time periods during which they can gain access. Combinations can be defined that require members of two or more groups to validate before a door can be accessed.

Under the BioScan Express access control functionality, each user is assigned to a group. Each group can be assigned time periods (maximum of three). Members of this group can unlock the door during any of these time periods. Users can also be directly assigned time periods (maximum of three) during which the user will be allowed unlocking access.

Combinations can be set up to require members one or more to validate before the door can be unlocked.

Under the system default settings, all new users are assigned to group 1. Group 1 is assigned time period 1 which is for 24 hours a day, seven days a week. One combination is set up for group 1 alone, meaning members of the group can unlock the door without combining with anyone else.



Basic Terms

Basic terms used in the access control functions:

- Access Options: Includes all the settings that allow a registered user to unlock a door during certain time periods and in combination with other users.
- Define TP: The definition of the Time Period for each day of the week that a user or group can unlock the door.
- Grouping (GRP): Divides registered users into several groups, makes users easy and convenient to manage.
- Effective Time Period: The definition of time period in which user or group can unlock the door.
- Group Time Period: A time period in which a group can unlock the door.
- User Time Period: A time period in which a user can unlock the door.

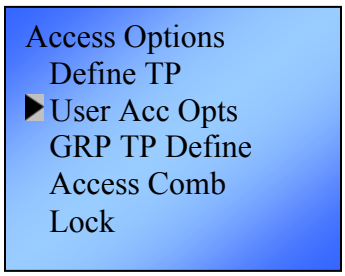
- Access Comb (Unlocking combination): defines different unlocking combinations, and each combination is composed of different groups.
- Lock (Time duration of lock drive): The fingerprint scanner controls the time to open electronic lock.

Access Options

All of the Access functionality is set up under the Access Options on the BioScan Express Terminal. Access Options are reached as follows:

Navigate Menu on the Clock to "Access Options":

All of the access control functions are located here.



There are five functions available under Access Options:

Define TP (Time Period) is used to define time periods during which a user or a user group can unlock the door.

User Acc Opts is to process correlative setting according to user's requirement.

GRP TP Define is group Time Zone, and configure group time zone.

Access Comb defines different unlocking combinations, and each combination is composed of different groups.

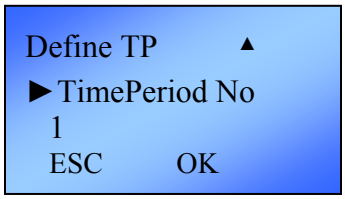
Lock fingerprint scanner controls the time to open electronic lock. In this menu, user can define and set each function.

You can navigate to any of these functions using the up and down arrows, and enter any of them by pressing OK .

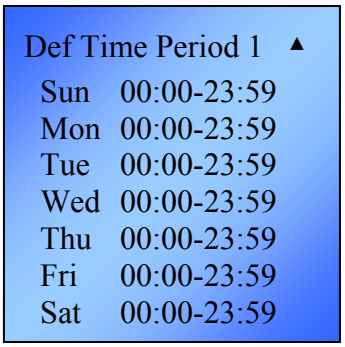
Defining Time Periods

A time period is period of time during which door unlocking access will be allowed. The BioScan Express Terminal can define maximum 50 Time Periods. A time period is defined as the time during each of the seven days of the week. For each day time is set in the format of HH:MM-HH:MM. 23:57-23:56 would represent access forbidden all day, 00:00- 23:59 would represent all day access. Under the system default, Time period 1 is set up to allow access all day everyday.

On entering the Define TP function the following display appears:

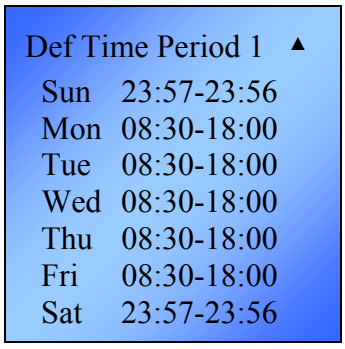


Enter the number of the time period you wish to define and press OK. The following would be the default settings (24 hours a day seven days a week).



To change the settings for any day scroll up and down with the arrow keys and press OK at the day you wish to modify. Change the hours and press OK.

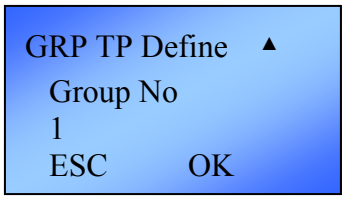
The following demonstrates settings for no access on Saturday and Sunday, and access from 8:30 am – 6:00 pm Monday to Friday.



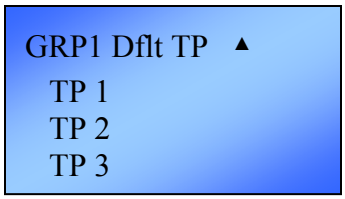
Defining Groups

The GRP TP Define function can be used to define groups based on the time periods assigned to them. The BioScan Express defines five groups. By default Group 1 is assigned time period 1 and the others are undefined. A group can be assigned up to three time periods.

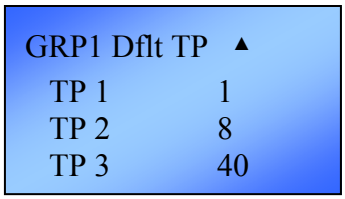
To define a group, navigate to the GRP TP Define function and press OK.



Enter the number of the group you wish to define and press OK. The default setting (assignment to time period 1 only) will be as follows:

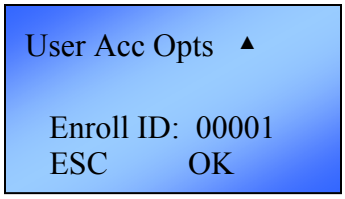


You can alter the any of the time periods assigned to the group by navigating between TP1, TP2, and TP3 with the up and down arrow keys and pressing OK on the one to be altered. The following would represent assignment of time periods 1, 8, and 40 to group 1. Thus members of group 1 could now gain access provided the time of access were contained in one of these three time periods.

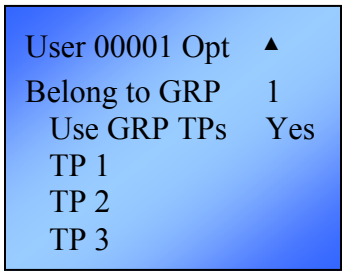


Setting User Access Options

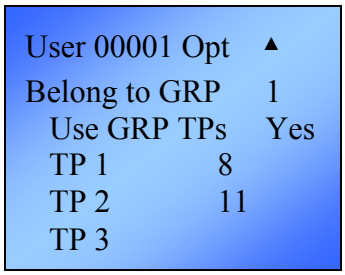
To implement the access functionality, users must be assigned to groups or directly to time periods. To make these assignments navigate to the User Acc Opts function and press OK.



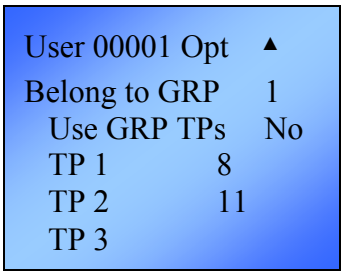
Enter the user Id of the user being assigned and press OK.



This user is assigned to group 1 and assigned to use the group time periods, thus he will have access during the time periods assigned to that group. The user can be directly assigned time zones, in which case, Use GRP TPs will automatically switch to No indicating that the user no longer has access during the group's time periods, but only during the time periods directly assigned to him. Thus when this user is assigned to time periods 8 and 11:



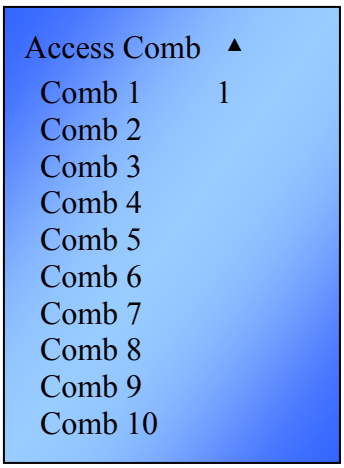
Once saved, and this screen is returned to, it will appear as:



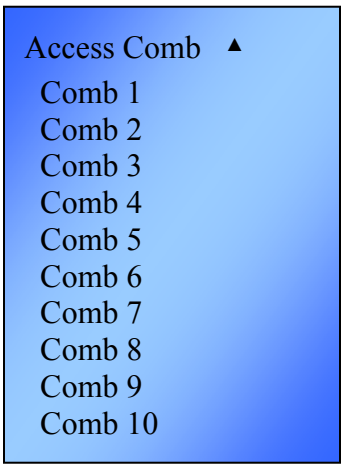
Setting Combinations

The Access Comb function allows combinations of users to be required to unlock the door. Up to ten combinations can be defined. By default one combination is set up allowing members of group 1 to unlock the door alone. Combinations are defined by entering the group numbers to combine together without spaces. For Example 134, would combine groups 1, 3, and 4. With this combination the door can be opened if one member of each of these groups successfully validates on the BioScan Express Terminal.

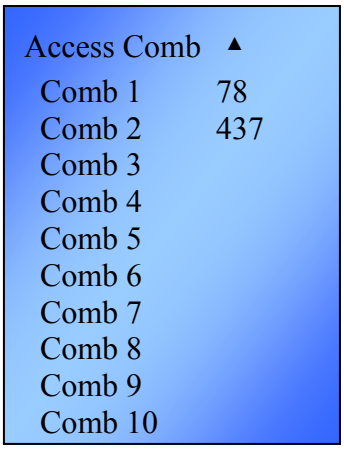
To define combinations navigate to the Access Comb function and press OK. The default setting will be as follows:



To change combinations, navigate to the Comb number , press OK and enter the numbers for the desired combination. Assigning no combinations as follows would allow no access:



To allow the door only to be opened by a combination of groups seven and eight or a combination of groups four, three, and seven, the following settings would be made:



Setting Lock Control Timing

A delay on the door opening can be set. One quantity unit is 20ms with the maximum value being 254, which would represent 5.08 seconds. The default is 0.

To set the delay, navigate to the Lock function and press OK. Enter the desired number of units and save.

Cleaning Your BioScan Express Terminal

Cleaning the optical sensor may be required if performance begins to degrade or is visibly obstructed. A fine, lint free optical quality cloth may be used to wipe off the optical platen and the terminal.