Release Notes

MVXX and VeriSeries™
Version 9.60

COPYRIGHT INFORMATION

TRADEMARKS

TABLE OF CONTENTS

LIST OF ACRONYMS

These acronyms and abbreviations are used in this document:

API	Application Programming Interface
AUX	Auxiliary
DLL	Dynamic Link Library
DST	Daylight Saving Time
ESI	External Storage Interface
FPF	Finger Placement Feedback
FPGA	Field Programmable Gate Array
GPI	General Purpose Input
GPO	General Purpose Output
GUI	Graphical User Interface
I/O	Input/Output
ID	Identification
IP	Internet Protocol
LCD	Liquid Crystal Display
LED	Light Emitting Diode
mA	milliampere
mm	millimeter
OEM	Original Equipment Manufacturer
PACS	Physical Access Control System
PC	Personal Computer
TCP/IP	Transmission Control Protocol/Internet Protocol
TEM	Template
UART	Universal Asynchronous Receiver/Transmitter
UR	Use Record
USB	Universal Serial Bus
UT	Universal Time
UR	User Record
VDC	Volts Direct Current

1. INTRODUCTION

This document provides a history of the various changes that have occurred to the Bioscrypt firmware throughout its development.

For each revision, the document provides information such as what has changed, user enhancements, bug fixes, known issues and their workarounds (if available), etc.

In this document, the terms "unit" and "reader" are often used interchangeably as a generic term to refer to a Bioscrypt fingerprint reader.

2. FIRMWARE VERSION 9.60

Firmware version 9.60 is certified for use with MV1610 V-Pass FX, V-Prox, and V-Smart MIFARE units, as well as V-Station Base, Prox, and MIFARE units. Firmware version 9.60 cannot be used as a firmware upgrade for any other Bioscrypt product.

- Only VeriAdmin version 7.51 should be used to perform firmware and FPGA updates.
- This firmware version should only be used with FPGA version 3.7 for MV1610 V-Pass FX, V-Prox, and V-Smart products.
- This firmware version should only be used with FPGA version 2.7 for MV1610 V-Station products.
- Version 9.60 of the DLL (BII_V1100.DLL) is the compatible version for use with this release.

Bioscrypt recommends using version 7.51 of the VeriAdmin application to administer products that are using firmware version 9.60.

2.1. CHANGES/REMOVALS FROM VERSION 9.50

2.1.1. NEW FEATURES

- 4K MIFARE card support on V-Smart MIFARE (firmware 9.60) and V-Station MIFARE (firmware 9.60 and 11.00). Users may choose to write templates to any one kilobyte of the four kilobytes of memory. The reader is capable of reading only the enrolled template from the selected 1K location. Please see the *Operator's Manual* for further details.
- 1:1 User Record (VUR) mode for V-Station Base/Prox/MIFARE (firmware version 9.60 and 11.00): User records can be enrolled and verified using products compatible with firmware version 9.60 and 11.00. The template mode of the product can be selected via the Unit Parameters dialog box, under the Biometrics Tab in the Unit Mode area. User record mode can be specified by selecting "1:1 User Record" in the "Enrollment Type" drop-down list. Be aware that changing the template mode deletes all previously existing templates on the device. Bioscrypt recommends using the same template mode throughout an installation.

- Optional custom LCD logos: Custom LCD logos are supported for V-Stations that support firmware versions 9.60 and 11.00. A custom logo file (*.byt) can be uploaded to the V-Station by means of the V-Station Manager and the Menus tab. The logo resolution is limited to 122 x 16 pixels. Please see the *Operator's Manual* for complete details.

- Ethernet subnet mask and gateway support: Ethernet Subnet mask and gateway can be defined by means of the V-Station Manager and the Ethernet tab. Alternatively, the Subnet mask and Gateway can be set via the keypad (with administrative rights). Subnet mask and gateway support is only available for V-Station products that support firmware versions 9.60 and 11.00. Setting only the IP address sets the subnet mask to 255.255.255.0 automatically. Please see the *Operator's Manual* for more details.

2.1.2. RESOLVED ISSUES

- Extended ID Wiegand formats can now be used in combination with User Records and Password Verification.
- Ademco 34-bit RCM code is now supported.

2.1.2.1. V-PROX & V-PASS FX

- The V-Pass FX now re-establishes communication through RS-485 after a power reset.

2.1.2.2. V-SMART

- V-Smart MIFARE units no longer produce a -754 error when HID 1431 MIFARE smart cards are presented.
- The "Max Templates per Card" setting is now obeyed.
- You can now switch between the Aux (RS-232) USB port and the RS-485 port on V-Smart MIFARE units without having to modify the Port Mode setting.

2.1.2.3. V-STATION

- Custom Verification Entry code is now logged correctly in the Transaction log for V-Stations.
- V-Station keypad inputs are no longer ignored when the unit is waiting for a user to "Place a Finger".
- The V-Station Transaction log no longer becomes corrupted after approximately 4096 entries.
- The V-Station no longer prompts for a password with TEM templates that have no password and the template security setting set to "Password Only".
- The Host port baud rate can now be set to 115200 for V-Station units.
- The Code column of the Transaction log now shows "254" instead of "255" after pressing the CLEAR key when prompted to enter the CVE after successfully verifying with a Prox card at a V-Station Prox.
- The V-Station MIFARE transaction log now shows an appropriate index of template verification when a verification is initiated via a smart card.
- The V-Station 1:200/1:500 can now use Access Schedules.
- Pressing the CLEAR key repeatedly on the V-Station keypad while it is waiting for a smart card to be presented no longer hangs the unit.
- Pressing the CLEAR key on the V-Station keypad during an enrollment no longer clears the LCD while the unit is waiting for a finger to be placed.
- The V-Station now asks for a password regardless of the method of authentication.

- The top LED of a V-Station in Searching mode now stays illuminated following a keypad enrollment timeout.
- V-Station Base and Prox models now receive Wiegand input correctly from the Wiegand input terminals.
- The V-Station keypad now accepts six characters when keying in the baud rate.
- The Transaction Log now retrieves the most recent entries when using the "All entries, limit to:" mode.
- Pressing keypad buttons too quickly no longer causes V-Station units to lock up intermittently.
- GPI functionality now operates correctly for "falling edge" signals on MV1610 V-Station units.
- When using the V-Station Base MV1610 in Searching mode (1:200 or 1:500), access schedules are no longer ignored when the ID number is entered first.

2.2. NEW/CHANGED API DLL FUNCTIONS

For details about these commands, please refer to the Bioscrypt *API DLL Manual*, which contains a summary of function support for the different releases.

2.3. KNOWN ISSUES/LIMITATIONS

- Bioscrypt recommends disabling the "Send Verification Result" option for the Host port of all units in a network when using Polling mode in an RS-485 network.
- V-Station Searching does not overwrite 1:N templates via the keypad. VeriAdmin can be used to overwrite existing templates.
- An invalid baud rate can be set for the host port when setting the baud rate via the keypad. Ensure that one of these baud rates is used: 115200, 57600, 38400, 19200, or 9600.
- An incorrect transaction log entry is logged when a template deletion is initiated via a Prox Delete ID card.
- GPI Action Enroll for V-Station creates a new ID instead of incrementing the Index value for every enrollee triggered by a GPI action.
- Only the Wiegand string of the first template stored on a smart card is transmitted, regardless of whether verification was successful with the first or second template.

3. FIRMWARE VERSION 9.50

Firmware version 9.50 is certified for use only with the MV1610 V-Station MIFARE. Firmware version 9.50 can not be used as a firmware upgrade to any other previously released firmware version. Version 9.50 of the DLL (BII_V1100.DLL) is the compatible version for use with this release.

3.1. V-STATION MIFARE PRODUCT DESCRIPTION

The V-Station MIFARE allows a template to be written to a MIFARE smart card, as opposed to being saved to the reader's internal memory. This allows an unlimited number of users to be enrolled. The V-Station MIFARE is used only in the 1:1 Verification mode. Verifications are initiated by presenting a smart card carrying a template.

3.2. CHANGES/REMOVALS FROM VERSION 9.40

The site key is now masked as asterisks when entered through the keypad.

3.3. KNOWN ISSUES/LIMITATIONS

- V-Station MIFARE with firmware 9.50 does not support User Record mode.
- DST can only be set to occur on a specific day of the week. Administrators will have to manually set the day of the week annually for those who reside in countries where DST is applied on a specific calendar date.
- If the reader to not powered when the time change occurs the unit will not apply DST settings. The administrator will have to resynchronize Date/Time settings to the unit manually through VeriAdmin.
- The DST feature does not support geographic locations which require more than one hour of difference. DST only supports a difference of one hour.
- An error (-14) may be generated when editing templates with nearly the maximum number of templates already stored on the reader. Bioscrypt recommends that the administrator:

    1. Transfer the templates to the PC to be edited.
    2. Delete the original templates from the V-Station.
    3. Edit the templates on the PC.
    4. Transfer the templates back to the V-Station.

3.4. RESOLVED ISSUES

- Ethernet Broadcasting of templates may produce an error. If the Verify Broadcast check box is selected, the VeriAdmin software checks and re-sends any failed templates to each individual unit.
- Broadcasting templates with Verify Broadcast disabled results in no templates being transferred.

3.5. NEW/CHANGED DLL FUNCTIONS AND SERIAL COMMANDS

No DLL functions and associated serial commands have been modified or added in this release.

4. FIRMWARE VERSION 9.40

Firmware version 9.40 is an update certified for use with the MV1610 combo board V-Station Base and V-Station Prox. Version 9.40 of the DLL (BII_V1100.DLL) is the compatible version for use with this release.

4.1. CHANGES/REMOVALS FROM VERSION 9.30

- As of firmware version v9.40, V-Station Base and V-Station Prox will no longer support User Record mode. Since this v9.40 release is only applicable for these units, older products that were released prior to v9.40 are not affected and continue to support UR mode.
- Added support for Daylight Saving Time (DST). The Daylight Saving Time feature is available via the V-Station Manager GUI to automatically update the time upon a specified day. The time is automatically updated for all units online at the time of the change.
  - The start date and an end date are set. At the Start Date, the time shifts one hour ahead and at the End Date the time shifts one hour back.
  - For countries using Universal Time, the UT check box should be selected.
- Passwords entered via the keypad are now displayed on the V-Station LCD as asterisks for user security.

4.2. KNOWN ISSUES/LIMITATIONS

- DST can only be set to occur on a specific day of the week. Administrators have to manually set the day of the week annually for those who reside in countries where DST is applied on a specific calendar date.
- If the reader to not powered when the time change occurs, the unit does not apply DST settings. The administrator must re-synchronize the Date/Time settings to the unit manually through VeriAdmin.
- The DST feature does not support geographic locations that require more than one hour of difference. DST only supports a difference of one hour.
- An error (-14) might be generated when editing templates with nearly the maximum number of templates already stored on the reader. Bioscrypt recommends that administrators:
  1. Transfer templates to the PC to be edited.
  2. Delete the original templates from the V-Station.
  3. Edit the templates on the PC
  4. Transfer the templates back to the V-Station
- Ethernet Broadcasting for 1:Many templates might produce an error. If the Verify Broadcast check box is selected, the VeriAdmin software checks and re-sends any failed templates to each individual unit.
- Broadcasting 1:Many templates with Verify Broadcast disabled results in no templates being transferred.

4.3. NEW/CHANGED DLL FUNCTIONS AND SERIAL COMMANDS

The following DLL functions and associated serial commands have been modified or added in this release:

API DLL Additions:

- BII_Set_Is_TCPIP_Refresh_Enabled: Sets the current status of the flag which determines whether the TCP/IP socket communication will be refreshed after an error occurs. After refreshing of socket communication the failed function call is repeated. The default value of flag is TRUE.
- BII_Get_Is_TCPIP_Refresh_Enabled: Returns the current status of the flag which determines whether the TCP/IP socket communication will be refreshed after an error occurs. After refreshing of socket communication the failed function call is repeated. The default value of flag is TRUE.

Serial Interface Command Changes:

- BII_DateTimeSettings_Struct (0x0807): Updated for new DST features
- BII_Reset_Finger_Data_Format (0x079C): Delay modified to 2500 ms
- BII_Set_Finger_Data_Format (0x079B): Delay modified to 2500 ms
- The following have been changed to support 16 Bytes from 12 Bytes to accommodate for V-Stations that support DST:
  - BII_VS_Reset_Date_Time_And_DST_Settings (0x0809)
  - BII_VS_Set_Date_Time_And_DST_SettingsEx (0x0808)
  - BII_VS_Set_Date_Time_And_DST_Settings (0x0808)
  - BII_VS_Get_Date_Time_And_DST_Settings (0x0807)

For more details about all new and deprecated commands, please refer to the Bioscrypt *Serial Command Manual*, which contains a summary of command support for the different releases.

5. FIRMWARE VERSION 9.30

Firmware version 9.30 is an update certified for use with the MV1610 combo board V-Smart MIFARE, MV1610, MV1210, and MV1510 OEM modules. This firmware is not compatible with MV1200 based products, and it is strongly advised not to attempt an upgrade with version 9.30.

Version 9.30 of the DLL (BII_V1100.DLL) is the compatible version for use with this release.

5.1. V-SMART MIFARE PRODUCT DESCRIPTION

The V-Smart MIFARE allows a template to be written to the smart card itself, as opposed to being saved to the reader's internal memory. This allows an unlimited number of users to be enrolled for a customer. The V-Smart is used only in 1:1 Verification mode. Verifications are initiated by presenting a smart card carrying a template.

5.2. CHANGES/REMOVALS FROM VERSION 9.20

- Support for new MV1610 combo board product. This release introduces support for the MV1610 combo board-based V-Smart MIFARE. The V-Smart MIFARE supports only 1:1 Verification mode. For serial commands and DLL functions pertaining to the ESI component and therefore Smart Card functionality, please refer to the Bioscrypt *Serial Command Manual* and the Bioscrypt *API DLL Manual*.
- Support for 348-byte templates by MV1510 OEM. Support for 348-byte MV1510 OEM templates has been added for this release.
- Inability to downgrade below version 9.20. Previously, MV1610 combo board VeriSeries products could be downgraded to Beta versions of firmware below 9.20. This can cause damage to the unit, and has been disallowed.
- Resolution of Wiegand input acknowledgement. The VeriSeries reader was ignoring the first Wiegand String sent to it after a unit parameter was changed. This has been corrected in the firmware.
- Delete Command Card indication. Previously, when a Delete Command Card was used to delete a user that does not exist on a VeriSeries reader utilizing Prox input, it would flash green with a beep indicating a successful deletion instead of flashing red. This has been resolved to flash red with no beep.

5.3. NEW/CHANGED DLL FUNCTIONS AND SERIAL COMMANDS

This release incorporates the MV1610 combo board V-Smart MIFARE and therefore a number of commands have been added since version 9.20 to facilitate its functionality. These commands are identical to the V-Smart commands from version 7.50, with the exception of a few commands that were deprecated as they did not apply to the new product.

For details about all new and deprecated commands, please refer to the Bioscrypt *Serial Command Manual*, which contains a summary of command support for the different releases.

5.4. NEW/CHANGED API DLL FUNCTIONS

Similar to the serial commands, functions that support V-Smart MIFARE functionality have also been added to the DLL.

For details about these commands, please refer to the Bioscrypt *API DLL Manual*, which contains a summary of function support for the different releases.

5.5. KNOWN ISSUES

- When a reader is in 348-byte template support mode and the reader's flash memory contains the maximum amount of templates (4000), selecting and deleting a large number of templates (greater than 3500) while leaving behind a very small number can cause the delete operation to fail, and the reader to become unresponsive for a few seconds. Eventually, when the reader responds, it displays the error: "The reader detected a checksum mismatch in the received data". The workaround is to select no greater than 2000 templates for deletion at once.
- When uploading 348-byte templates to the reader, if the number of templates is close to maximum (4000), templates that have the same ID_Index combination as those present on the reader should not be uploaded, otherwise an incorrect message stating lack of flash space may be displayed. If this occurs, and the application displays "Template X_Y already exists on the unit. Do you wish to overwrite?" then the option "No to All" should be selected. Another option is to delete all the templates on flash, and perform the transfer.
- The DLL function BII_Start_FPRVerify returns an incorrect error code when a finger is not presented. The error code returned is "-11: Invalid ID" instead of "-16: No finger detected". The correct error is returned by the serial command.

6. FIRMWARE VERSION 9.20

Firmware version 9.20 is currently certified for use only on the MV1610 combo board VeriSeries products, the V-Pass FX and V-Prox. This firmware is not compatible with MV1200 combo board VeriSeries products; therefore it is strongly advised not to attempt an upgrade of those readers with version 9.20.

Version 9.20 of the DLL (BII_V1100.DLL) is the compatible version for use with this release. Please note that some features described in the notes for version 9.20 have also been described in the notes for previous releases to highlight differences from versions 7.xx and 8.xx for MV1610 combo board VeriSeries customers.

6.1. VERISERIES PRODUCT DESCRIPTIONS

The V-Pass FX can be used in 1:N Searching as well as 1:1 Verification mode. When in searching mode, the reader is always waiting for a finger to be placed on the sensor for authentication. In 1:1 verification mode, the reader is installed in conjunction with a Wiegand-based reader, thereby adding dual-factor authentication to an existing access control system. An ID number, read from a card with the Wiegand-based reader, points to the user's template on the reader used in the 1:1 Verification attempt.

The V-Prox leverages 1:1 verification and card reader technology and allows users to initiate verification actions by presenting a proximity card.

6.2. FIRMWARE HIGHLIGHTS

This release adds support of two of Bioscrypt's new MV1610 combo board offerings: the V-Pass FX and the V-Prox.

Template Storage: Two modes are supported by the V-Pass FX, 1:1 verification mode and 1:N identification mode (also known as Searching mode). The V-Prox supports only 1:1 verification mode. In 1:1 verification mode, the reader can store approximately 4000 templates. The searching V-Pass FX supports 1:N identification for N=200 or 500. The algorithms used are optimized for a maximum of 200 or 500 templates, respectively. Please refer to the description of the Unit Parameters' Biometrics tab in the *VeriSeries Operators Manual* for information about how to change the template support mode.

Template format: In verification mode, the Bioscrypt preferred format is the 348-byte template, which when saved to PC, has the TEM (*.tem) extension.

In identification mode, the format of searching templates is either the Bioscrypt 1:500 search or 1:200 search. When saved to PC, the 1:500 templates have the TMS (*.tms) extension, whereas the 1:200 templates have the MTM (*.mtm) extension.

For customers migrating from one searching template format to another, it is important to note all previously enrolled templates will need to be re-enrolled as there is no conversion between these two template formats. Bioscrypt recommends using the 1:500 searching algorithm, unless backward compatibility with existing 1:200 templates is desired. Please contact Bioscrypt Technical Support if you have any questions about which format to use. The default template format for a V-Pass FX is 1:500 searching (TMS), and a V-Prox is 348-byte templates (TEM).

Reader Mode Conversion Feature: V-Prox and V-Pass FX readers can now be converted from one template mode to another. Depending on the allowable modes, the reader can be configured for:

- 1:1 verification mode operating with Templates (TEM)
- 1:500 identification mode operating with Searching Templates (TMS)
- 1:200 identification mode operating with Searching Templates (MTM)
- 1:1 verification mode operating with User Records (VUR) *

* The most popular mode for biometric data storage is the Bioscrypt "template mode", which uses .tem files of a length of 348 bytes. User Record mode should only be used upon advice from Bioscrypt Customer Support.

Support for this feature has been added to the VeriAdmin and BioscryptOEMDemo applications, under the Biometrics tab in the Unit Parameters window. Please note the V-Prox only supports 1:1 Verification templates.

Please ensure that all templates or User Records present on the reader are backed up prior to conversion, as they will be deleted as part of the process.

All readers deployed in an installation should be configured to the same mode.

USB for Aux port: The Aux port on the MV1610 combo board VeriSeries readers is now a USB interface. It utilizes a Serial-to-USB converter (CP210x USB to UART Bridge). In order to use this new interface, the proper drivers must be installed. These drivers are provided on the installation CD for your convenience in the folder "USB_Driver_CP210x_Bridge". Please install these drivers manually by double-clicking the file CP210x_VCP_Win2K_XP.exe, and following the prompts in the Wizard. Alternatively, the driver can be downloaded from the Silicon Laboratories website (http://www.silabs.com).

The RS-232 protocol can still be used via the Host port.

Default Wiegand Option: The Wiegand tab in Unit Parameters of VeriAdmin or the BioscryptOEMDemo applications allows customization to the Wiegand capabilities of the reader. The "Enable Output" box has two drop-down options out of which "Selective Output (when source is Wiegand)" was previously the default option. The default is now the second option, "Always Output (regardless of input source)".

Quality Enhancements: To ensure high quality images are used for enrolling searching templates, the mapping of Quality score to VeriAdmin stars has changed. Scanned images must now obtain quality scores in the range of 41-60 in order to obtain a 3 star quality rating in VeriAdmin. Previously 3 stars indicated a quality range of 21-60. A good enrollment is vital to easier and more accurate identifications. For enrolling 1:1 templates, the mapping of VeriAdmin stars to the Quality value remains the same as before.

Auto Finger Detect and LED behavior on 1:N Identification V-Pass FX: For 1:N Identification readers with MV1200 version 7.40/7.50, the LED table settings were ignored in favor of Auto Finger Detect settings. Now the LED pattern is strictly dictated by the LED table stored in the reader's flash memory.

Please see the *VeriAdmin Release Notes* for changes affecting this feature implemented in VeriAdmin.

6.3. NEW/CHANGED DLL FUNCTIONS AND SERIAL COMMANDS

The following DLL functions and associated serial commands have been added in this release:

BII_Get_Finger_Data_Format	(0x079A)
BII_Set_Finger_Data_Format	(0x079B)
BII_Reset_Finger_Data_Format	(0x079C)

For detailed descriptions, please see the Bioscrypt *API DLL Manual* and Bioscrypt *Serial Command Manual*.

6.4. DEPRECATED DLL FUNCTIONS AND SERIAL COMMANDS

The following DLL functions and associated serial commands have been deprecated:

BII_Get_Product_Type	(0x0071)
BII_Calibrate_Finger_Detection	(0x0444)
BII_Get_MV1200_Step_Upgrade_Result	(0x0704)
BII_Get_Port_Comm_ParamsEx	(0x0427)
BII_Get_Sensor_Parameters	(0x0441)
BII_Get_Sensor_ParametersEx	(0x0441)
BII_Program_Monitor	(0x0490)
BII_Reindex_Templates	(0x04B0)
BII_Reset_Sensor_Parameters	(0x0442)
BII_Reset_V1100_Comm_Parameters	(0x0422)
BII_Reset_Wiegand_Locks	(0x0477)
BII_Set_PC_Flow_Contol	PC only
BII_Set_Port_Comm_ParamsEx	(0x0426)
BII_Set_Sensor_Parameters	(0x0440)
BII_Set_Sensor_ParametersEx	(0x0440)
BII_Set_V1100_Comm_Parameters	(0x0420)
BII_Set_V1100_Comm_ParametersEx	(0x0420)
BII_Set_Wiegand_Lock	(0x0476)
BII_Start_FPREnroll_TransferDual	(0x0755)
BII_Start_Sensor_Calibrate	(0x0443)
BII_Update_Template_Storage_Space	(0x04B7)

6.5. KNOWN ISSUES

- When a reader is in 348-byte template support mode and the flash contains maximum templates (4000), selecting and deleting a large number of templates (greater than 3500) while leaving behind a very small number can cause the delete operation to fail, and the reader to become unresponsive for a few seconds. Eventually, when the reader responds, it displays the error: "The reader detected a checksum mismatch in the received data". The workaround is to select no greater than 2000 templates for deletion at once.
- When uploading 348-byte templates to the reader, if the number of templates is close to maximum (4000), templates that have the same ID_Index combination as those present on the reader should not be uploaded, otherwise an incorrect message stating lack of flash space may be displayed. If this occurs, and the application displays "Template X_Y already exists on the unit. Do you wish to overwrite?" then the option "No to All" should be selected. Another option is to delete all the templates in flash memory, and then perform the transfer.

- The DLL function BII_Start_FPRVerify returns an incorrect error code when a finger is not presented. The error code returned is "-11: Invalid ID" instead of "-16: No finger detected". The correct error is returned by the serial command.
- Templates enrolled on the MV1100™-based VeriSeries using a Veridicom sensor are not supported by Bioscrypt products as of this release.
- After presenting a Delete Command Card to a VeriSeries reader and verifying, the reader prompts for a card to be presented whose corresponding template is to be deleted. When the card is presented and the ID deleted, the top LED flashes green with a beep. If, after presenting a Delete Command Card and verifying, a card is presented whose ID does not exist on the reader, the top LED should simply flash red. Instead, the top LED in the latter case is also seen to flash green with a beep as if the ID existed on the reader.

7. FIRMWARE VERSION 9.13_B15

Firmware version 9.13_B15 is also only certified for use with only the MV1610 OEM module.

7.1. CHANGES/REMOVALS FROM VERSION 9.13_B14

Image capture improvement - An issue which could have resulted in an inferior captured image quality has been resolved.

7.2. KNOWN ISSUES

- When the MV1610 OEM module is in 1-to-1 verify mode, and working with User Records (URs,) transferring a maximum number of URs or a number close to maximum to the unit, may not transfer the entire set. The URs not transferred can then be selected individually and re-transferred. The error message that is displayed when the problem arises is "Error -17: Background flash erase is needed".
- Related to the previous issue: Deleting enrollments from User Records with multiple indices can also be unsuccessful when there are maximum or close to maximum URs in the flash memory. An example is having ID 1 with 3 indices 0, 1, and 2 (so they are referred to as 1_0, 1_1 and 1_2) and trying to delete only 1_0. One workaround is to create some space in the flash memory by deleting some single-enrollment URs first. Selecting all URs and deleting at once works without errors.
- Related to the above issues: The number of maximum allowable templates is dynamic when in User Record support, as they are variable in size. Depending on stored record size, the max value also changes. This number is not being updated properly when the number of URs is close to maximum, and may show a larger variation even after enrolling or deleting a single record.
- When the MV1610 unit is in 348-byte template support mode and the flash contains maximum templates, selecting and deleting a large number of templates while leaving behind a very small number can cause the delete operation to fail, and the unit to become unresponsive for a few seconds. Eventually, when the unit responds, it displays the error: "The device detected a checksum mismatch in the received data".
- In the Unit Parameters window of BioscryptOEMDemo, there is an option in the "Biometrics" tab to not require a finger placement for templates with security level of "None" (Level 0). If the option is selected and a verify operation is initiated for such a template, a finger placement is still required.
- When uploading 348-byte templates to the MV1610 unit, if the number of templates is close to maximum, templates that have the same ID_Index combination as those present on the unit should not be uploaded, otherwise, and incorrect message stating lack of flash space may be displayed. If this is performed, and the application displays "Template X_Y already exists on the unit. Do you wish to overwrite?" then the option "No to All" should be selected. Another option is to delete all the templates in the flash memory, and then perform the transfer.
- The command Get Stored Record Size (0x078B) returns an incorrect error code when an invalid index value is passed in. The error is that of an invalid ID (-11) instead of the expected -12.

- The DLL function BII_Start_FPRVerify is returning an incorrect error code when a finger is not presented. The error code returned is "-11: Invalid ID" instead of "-16: No finger detected". The correct error is returned by the serial command.
- Wiegand4002 Extended ID format does not have any bits designated for Site (Facility) code, therefore specifying an alternate site code should not have any effect. It is observed that if any values are specified for "Alt. Site Code" or "Fail Site Code" with this format selected, and a verify is performed, the Wiegand string generated by the MV1610 unit actually changes.
- The parity calculation for Generic64 Wiegand format is not correct. The parity bits calculated are actually the inverse of the expected values.

8. FIRMWARE VERSION 9.13_B14

This release introduces the MV1610 OEM Module, the successor to Bioscrypt's popular MV1200 module. Currently, it is certified for use only with the MV1610 module.

8.1. HARDWARE HIGHLIGHTS OF THE MV1610

Sensor: The MV1610 interfaces to Authentec's AF-S2 finger-scan sensor for robust finger-scan imaging.

I/O:

- Two ports for RS-232 communication (Host and Auxiliary)
- A Host RS-485 communication channel
- Two General Purpose Input and two General Purpose Output lines
- Wiegand communication channel
- LED output support

Storage Memory: Four megabytes of flash memory space, divided into two 2-megabyte parts. One part is used to store firmware and unit configuration settings, and the other part is used for finger-scan templates.

Physical Footprint: The OEM board is 63 mm x 43 mm and the sensor board is 34.5 mm x 34.5 mm.

Peak Power Requirements: 500 mA at 5 VDC regulated.

8.2. FIRMWARE CHANGES/REMOVALS FROM VERSION 9.05 TO 9.13_B14

- Support for FPGA. The FPGA (Field Programmable Gate Array) provides I/O features currently present on MV1200, UART for the sensor communication, Watchdog, and board abstraction information.
- Support for Wiegand communication. Wiegand communication is supported by the MV1610.
- Support for two GPI/GPO lines. Instead of one GPI and one GPO supported by version 9.05, this release supports functionality for two lines, based on either of the 0 and 1 lines or a combination of the two.
- Support for LED Table. This release also adds support for LED operation used to indicate different unit states and events.
- Support for RS-232 Host Port communications. In addition to the Aux port, the Host port is also supported.
- Support for RS-485 Host Port communications. RS-485 protocol allows a network of units to be constructed.
- Support for Duress Mode. Duress mode allows users to present an alternate finger designated as the Duress finger and send out a different Wiegand string to inform the Access Control Panel of a duress situation.
- Support for Polling Mode. Polling mode allows the unit to place an entered ID into a queue for retrieval by an external device, and allow that external device to independently initiate a verify operation.

8.3. SERIAL COMMANDS

As firmware version 9.05 did not support MV1610, a number of existing commands applicable only to the MV1610 were not supported. These commands now return valid parameters. Please see the Command – Product compatibility table at the end of either the Bioscrypt *API DLL Manual*, or the Bioscrypt *Serial Command Manual*.

8.4. DLL FUNCTIONS

One new DLL function has been added to this release.

BII_Edit_Record_field (0x0788) – Edit or reviews a specific data field in an existing User Record.

8.5. KNOWN ISSUES

- When the MV1610 unit is in 1-to-1 verify mode, and working with User Records (URs,) transferring a maximum number of URs or a number close to maximum to the unit, may not transfer the entire set. The URs not transferred can then be selected individually and re-transferred. The error message that is displayed when the problem arises is "Error -17: Background flash erase is needed".
- Related to the previous issue: Deleting enrollments from User Records with multiple indices can also be unsuccessful when there are maximum or close to maximum URs on the flash. An example is having ID 1 with 3 indices 0, 1, and 2 (so they are referred to as 1_0, 1_1 and 1_2) and trying to delete only 1_0. One workaround is to create some space on the flash by deleting some single-enrollment URs first. Selecting all URs and deleting at once works without errors.
- Related to the above issues: The number of maximum allowable templates is dynamic when in User Record support, as they are variable in size. Depending on stored record size, the max value also changes. This number is not being updated properly when the number of URs is close to maximum, and may show a larger variation even after enrolling or deleting a single record.
- When the MV1610 unit is in 348-byte template support mode and the flash contains maximum templates, selecting and deleting a large number of templates while leaving behind a very small number can cause the delete operation to fail, and the unit to become temporarily unresponsive. The unit does respond after a few seconds displaying the error: "The device detected a checksum mismatch in the received data".
- This is an issue with the OEM Demo application: There is an option in the Unit Parameters -> Biometrics tab to not require a finger placement for templates with security of "None" (level 0.) If the option is selected and a verify operation is initiated for such a template, a finger placement is still required.
- This is observed when the MV1610 unit is configured to work with 348-byte templates: When uploading templates to the unit, if the number of templates is close to maximum, templates that have the same ID_Index combination as those present on the unit should not be uploaded. If this is performed, and the application displays "Template X_Y already exists on the unit. Do you wish to overwrite?" then the option "No to All" should be selected. Another option is to delete all the templates on flash, and perform the transfer.
- The command Get Stored Record Size (0x078B) returns an incorrect error code when an invalid index value is passed in. The error is that of an invalid ID (-11) instead of the expected -12.

- The DLL function BII_Start_FPRVerify returns an incorrect error code when a finger is not presented. The error code returned is "-11: Invalid ID" instead of "-16: No finger detected". The correct error is returned by the serial command.
- Wiegand4002 Extended ID format does not have any bits designated for Site (Facility) code, therefore specifying an alternate site code should not have any effect. It is observed that if any values are specified for "Alt. Site Code" or "Fail Site Code" with this format selected, and a verify is performed, the Wiegand string generated by the MV1610 unit actually changes.
- The parity calculation for Generic64 Wiegand format is not correct. The parity bits calculated are actually the inverse of the expected values.

9. FIRMWARE VERSION 9.05

9.1. CHANGES/REMOVALS FROM VERSION 9.03 TO 9.05

- Algorithm Version - The firmware version includes an updated version 5.11 of the finger-scan-matching algorithm.
- Quality Enhancements - The quality score is now calculated differently to give more accurate feedback. The mapping of stars to the Quality value is the same as in version 9.03.
- Verification Response Time - The time for verifications has been improved.

9.2. KNOWN ISSUES

- This applies to both MV1210 and MV1510: When the unit is in 1-to-1 verify mode, and working with User Records (URs,) transferring a maximum number of URs or a number close to maximum to the unit, may not transfer the entire set. The URs not transferred can then be selected individually and re-transferred. The error message that is displayed when the problem arises, is "Error -17: Background flash erase is needed".
- Related to the previous issue: Deleting enrollments from User Records with multiple indices can also be unsuccessful when there are maximum or close to maximum URs on the flash. An example is having ID 1 with 3 indices 0, 1, and 2 (so they are referred to as 1_0, 1_1 and 1_2) and trying to delete only 1_0. One workaround is to create some space on the flash by deleting some single-enrollment URs first. Selecting all URs and deleting at once works without errors.
- Related to the above issues: The number of maximum allowable templates is dynamic when in User Record support, as they are variable in size. Depending on stored record size, the max value also changes. This number is not being updated properly when the number of URs is close to maximum, and may show a larger variation even after enrolling or deleting a single record.
- This is an issue with the OEM Demo application: There is an option in the Unit Parameters -> Biometrics tab to not require a finger placement for templates with security of "None" (level 0.) If the option is selected, and a verify operation is initiated for such a template, a finger placement is still required.
- This is observed when the MV1210 or MV1510 unit is configured to work with 348-byte templates: When uploading templates to the unit, if the number of templates is close to maximum, templates that have the same ID_Index combination as those present on the unit should not be uploaded. If this is performed, and the application displays "Template X_Y already exists on the unit. Do you wish to overwrite?" then the option "No to All" should be selected. Another option is to delete all the templates on flash, and perform the transfer.
- Sending the command 0x0452 (Reset Global Thresh), or calling the function BII_Reset_Global_Thresh sets the global security threshold to Very High (1), instead of Medium (3). To set the value to 3, use the command 0x0450, or BII_Set_Global_Thresh with the data parameter of 3.
- Certain Error codes have been used differently in Firmware than in the DLL. Ideally, an error code should refer to the same issue on both the platforms. Below is a listing of the error codes and their interpretation in Firmware and DLL respectively:

Certain error codes have been used differently in firmware than in the DLL. Ideally, an error code should refer to the same issue on both the platforms. Below is a listing of the error codes and their interpretation in Firmware and DLL respectively:

-100

Firmware: "Invalid sensor code" (BYT_ERR_INVALID_SENSOR_CODE)

DLL: "An empty error packet was received" (BII_ERR_REC_UNIDENTIFIED)

-101

Firmware: "Invalid Compression Type" (BYT_ERR_INVALID_COMPRESSION_TYPE)

DLL: Generic Error Code (BII_ERR_ERROR)

-102

Firmware: "Invalid Candidate Compression Type" (BYT_ERR_INVALID_CAND_COMPRESSION_TYPE)

DLL: "Error Accessing PC's Comm. port" (from Readfile, BII_ERR_PORTACCESS)

-103

Firmware: "Invalid Sensor DPI" (BYT_ERR_INVALID_SENSOR_DPI)

DLL: "Timeout occurred before all data was received" (BII_ERR_REC_TIMEOUT)

-130

Firmware: 1:Many mode is disabled (BYT_ERR_ONE_TO_MANY_DISABLED)

DLL: Returned for TCP/IP specific calls when in comm. port mode (BII_ERR_NOT_USING_SOCKET)

-201

Firmware: Internal Error (BYT_ERR_INTERNAL_ERROR)

DLL: "Command Echoed Back does not match command sent" (BII_ERR_COMMANDCHK)

-401

Firmware: Invalid System Time (BYT_ERR_INVALID_SYSTEM_TIME)

DLL: "An invalid CommPort was specified" (BII_ERR_INVALIDPORT)

10. FIRMWARE VERSION 9.03

10.1. HARDWARE HIGHLIGHTS

Sensor: The MV1210 interfaces to AuthenTec's AF-S2 finger-scan sensor for robust finger-scan imaging, whereas the MV1510 interfaces to the AFS8500 sensor.

I/O: An RS-232 communication channel, a general purpose input line and a general purpose output line are all present on each of the MV1210 and MV1510.

Storage Memory: Four megabytes of flash space, which is divided into two 2-megabyte parts. One part is used to store firmware and unit configuration settings, and the other part is used for finger-scan templates.

Physical Footprint: The OEM board is 63 mm x 43 mm, and the sensor board (used for both the AF-S2 and AFS8500 sensors) is 34.5 mm x 34.5 mm.

Peak Power Requirements: 0.350 amps at 5 VDC regulated.

10.2. FIRMWARE HIGHLIGHTS

Algorithm: The firmware version includes the version 5.10 of the finger-scan matching algorithm.

Template Storage: As mentioned, the MV1210 can be used in two modes, the 1:1 verify mode, and the 1:many identify mode, also known as the searching mode. In 1:1 verify mode, depending on the format (discussed below,) the unit can store either 4000 "old-format" templates, or a higher but variable number of User Records: The reason for the higher number is that the User Records are compressed by Huffman encoding. In 1:many identify mode, the MV1210 can only store up to 500 templates, because searching templates are larger in size. The MV1510 is used only in 1:1 verify mode, and only supports User Records. It does not support searching mode or searching templates. The future 9.1X releases will add MV1510 support for 348-byte templates in addition to User Records.

Template format: The formats for finger-scan data utilized in this version are those from the MV1200 versions 7.xx and 8.xx. We will discuss the data in terms of verify and identify modes. In verify mode, the two formats used are the 7.xx-compatible Templates and 8.xx-compatible User Records. When saved to PC, the templates have the TEM (*.tem) format, and the User Records have the VUR (*.vur) format. In identify mode, the format of searching templates is compatible with Bioscrypt's 1:500 search. When saved to PC, these templates have the TMS (*.tms) extension.

Unit Type Conversion Feature: The firmware has a conversion utility that allows a user to convert a 1:1 verify MV1210 unit to a searching (1:500) type and vice versa. This feature only applies to the MV1210, as the MV1510 only supports 1:1 verify mode with User Records as the template format. The MV1210 can be converted between any of these modes:

- 1:1 verify mode operating with Templates (TEM)
- 1:1 verify mode operating with User Records (VUR)
- 1:500 identify mode operating with searching templates (TMS)

Support for this feature has been added to the OEM Demo application, under the "Biometrics" tab in the Unit Parameters window.

Important Note: Please ensure that all templates or User Records present on the MV1210 or MV1510 unit are backed up prior to conversion, as they will be deleted as part of the process. New Verification Thresholds. In order for the new product lines to provide the same level of biometric security associated with our products, the algorithmic score thresholds for verifications were altered slightly.

Serial Command Protocol: The MV1210 and MV1510 use the same Serial Command protocol as the former MV1200 and MV-Lite products. Not all commands from the former products are implemented, and some supported commands may not be applicable from one unit type to another. If any unsupported or inapplicable command is sent to the device, an appropriate error will be returned.

SDK DLL: The DLL (BII_V1100.DLL) for this version has also been built on the MV1200 8.11/ MV-Lite 1.30 version, with the addition of some new functions, which are presented in the next section.

10.3. Low-Level Commands

These low-level serial commands were added in this release:

0x079A	Get Finger Data Format	Retrieves the current format of templates that the MV1210 or MV1510 is operating with
0x079B	Set Finger Data Format	Sets the format of templates that the MV1210 or MV1510 will operate with
0x079C	Reset Finger Data Format	Resets the format of templates that the MV1210 or MV1510 will operate with

For detailed command structures, please refer to the document *Excerpt - MV1210 Serial Interface*.

10.4. DLL Functions

BII_Get_Finger_Data_Format: Retrieves the format of templates that the MV1210 or MV1510 is operating with.

BII_Set_Finger_Data_Format: Sets the format of templates that the MV1210 or MV1510 will operate with.

BII_Reset_Finger_Data_Format: Resets the format of templates that the MV1210 or MV1510 will operate with.

10.5. KNOWN ISSUES

This applies to both MV1210 and MV1510: When the unit is in 1-to-1 verify mode, and working with User Records (URs) transferring a maximum number of URs or a number close to maximum to the unit, may not transfer the entire set. The URs not transferred can then be selected individually and re-transferred. The error message that is displayed when the problem arises, is "Error -17: Background flash erase is needed".

Related to the previous issue: Deleting enrollments from User Records with multiple indices can also be unsuccessful when there are maximum or close to maximum URs on the flash. An example is having ID 1 with three indices 0, 1, and 2 (so they are referred to as 1_0, 1_1 and 1_2) and trying to delete only 1_0. The error that commonly seen is "One workaround is to create some space on the flash by deleting some single-enrollment URs first. Selecting all URs and deleting at once works without errors.

This is an issue with the OEM Demo application: There is an option in the Unit Parameters -> Biometrics tab to not require a finger placement for templates with security of "None" (level 0.) If the option is selected, and a verify operation is initiated for such a template, a finger placement is still required.

Certain templates (in *.tem) format, cannot be converted to User Record (*.vur) format directly by uploading them to an MV1210 unit. If these same templates are converted using the template conversion utility in VeriAdmin, the operation is successful and they can be uploaded to the unit without errors. This issue is under investigation.

The Verification Queue which holds information for eight previous events on the device, is not reporting the Template/Index combination properly. For the MV1210, it reports the correct ID, but the index is always a value of 0, regardless of the number chosen during enrollment. The MV1510 shows 0 for both ID and Index.

Certain error codes have been used differently in firmware than in the DLL. Ideally, an error code should refer to the same issue on both the platforms. Below is a listing of the error codes and their interpretation in firmware and DLL respectively:

-100
Firmware: "Invalid sensor code" (BYT_ERR_INVALID_SENSOR_CODE)
DLL: "An empty error packet was received" (BII_ERR_REC_UNIDENTIFIED)

-101
Firmware: "Invalid Compression Type" (BYT_ERR_INVALID_COMPRESSION_TYPE)
DLL: Generic Error Code (BII_ERR_ERROR)

-102
Firmware: "Invalid Candidate Compression Type" (BYT_ERR_INVALID_CAND_COMPRESSION_TYPE)
DLL: "Error Accessing PC's Comm. port" (from Readfile, BII_ERR_PORTACCESS)

-103
Firmware: "Invalid Sensor DPI" (BYT_ERR_INVALID_SENSOR_DPI)
DLL: "Timeout occurred before all data was received" (BII_ERR_REC_TIMEOUT)

-130
Firmware: 1:Many mode is disabled (BYT_ERR_ONE_TO_MANY_DISABLED)
DLL: Returned for TCP/IP specific calls when in comm. port mode (BII_ERR_NOT_USING_SOCKET)

-201
Firmware: Internal Error (BYT_ERR_INTERNAL_ERROR)
DLL: "Command Echoed Back does not match command sent" (BII_ERR_COMMANDCHK)

-401
Firmware: Invalid System Time (BYT_ERR_INVALID_SYSTEM_TIME)
DLL: "An invalid CommPort was specified" (BII_ERR_INVALIDPORT)

11. BIOSCRYPT CONTACT INFORMATION

Bioscrypt, Inc. is available to provide information and assistance. Before contacting Technical Support, please copy down the following version information about your reader:

- Product name and model number
- Software
- DLL
- Algorithm
- Kernel
- ESI (if applicable)
- Communication Manager (CM) (if applicable)
- Kit (if applicable)
- FPGA.

11.1. TECHNICAL SUPPORT CONTACT INFORMATION

Phone:	905.940.7477
Toll Free:	888.940.7477
Fax:	905.940.7484
Business Hours:	Monday to Friday, 8:00 a.m. to 8:00 p.m. (-5 GMT)
E-mail:	support@bioscrypt.com
Web:	http://www.bioscrypt.com

11.2. BIOSCRYPT OFFICE LOCATIONS

Corporate Headquarters

505 Cochrane Drive, Markham, Ontario, Canada L3R 8E3	T +1 905.940.7750 F +1 905.940.7642

Switzerland

36 Rue Cardinal Mermillod 1227 Geneva, Switzerland	T +1 41.22.849.1050 F +1 41.22.849.1060

United States

840 West California Avenue Suite 200, Sunnyvale, California, USA 94086	T +1 408.446.1133 F +1 408.746.3700