



Manual

Revision A

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Introduction

This Manual is for users to read about and reference all the features provided in the MX5 Series 7.1Utility. Some options will be either obsolete or updated so there might be differences between your current version and the latest Utility available.

The MX5 Utility is designed to offer a versatile and expandable solution that will complement your MX5 product for years to come. The MX5 utility is the product of choice for versatility, expandability and productivity.

Warranty

All the MX5 products are backed by a two year parts and labour limited warranty. Should you have problems with your MX5

device, please contact the dealer from whom you purchased the product. Any alteration, erasure or modification of the MX5 Utility is against copyright laws and the person responsible may be prosecuted according to the rights of a software provider. Extended Warranty is available for all POSH products, Contact your sales team at POSH for more details. Posh also offers after warranty service for all its products.

Disclaimer

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The All New MX5 - 7.1 Utility Software

This program is designed to configure selectable functions for each MX5 Device and to demonstrate the functionality of the various parts of the MX5 devices.

System Requirements

1. Windows compatible PC with VGA display, standard mouse and keyboard.
2. Any of the following operating systems: Windows 2008/7/8/10/11.
3. 1 MB Minimum of available conventional memory.
4. An open USB port type 2 or 3.

Utility Installation

Use the following steps below in order to install the MX5 - 7.1 Utility program.

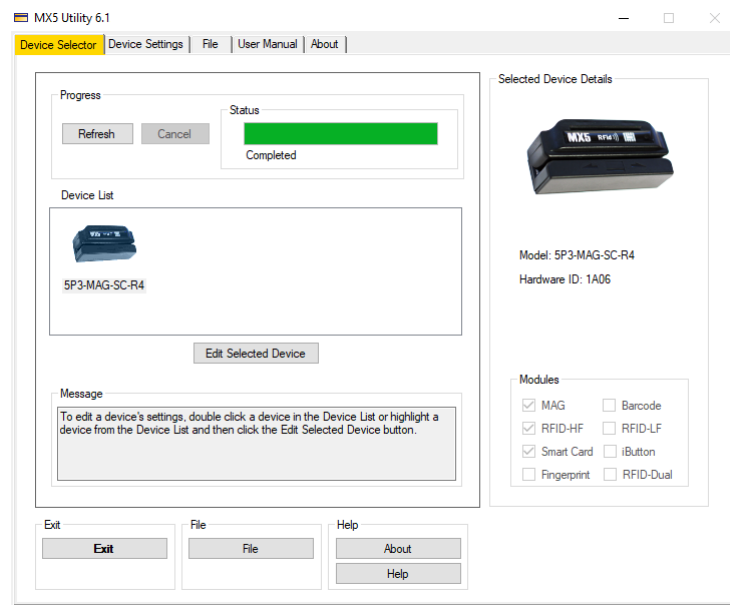
1. Execute the self installing application program by double clicking on the file.
MX5AppSetup.msi
2. Click on the Next buttons in the installation wizard , accepting the defaults for installation.
3. The MX5 Utility application will be installed in your “Program Files (x86)” Directory in a folder called “MX5 Device”.
4. Note that POSH products does not require any special drivers for all its MX5 Series products. An INF file is provided with the installation of the utility which is required when using the USB VRS (Virtual Serial Port) The INF files are included in the installation location of the MX5 Utility. “Program Files (x86)” Directory in a folder called “MX5P-6.3_Device” MX5_EN_3X.inf , mx5_en_x64.cat , mx5_en_x86.cat
5. The latest Firmware for each devices is also automatically copied to the “Program Files (x86)” Directory in a folder called “MX5P-6.3_Device” “Firmware” Use this directory when you are looking for the latest FMD files that you which to flash into your MX5 product as part of the “Upgrade BOS” Each device is assigned a unique HW ID # which corresponds to a specific FMD upgrade file. You can only install FMD Files that match Hardware ID number “HWID:” for the specific hardware. This option is designed to prevent the installation of the wrong flash file for the specific device. See “Upgrade BOS” for more details.

Legend

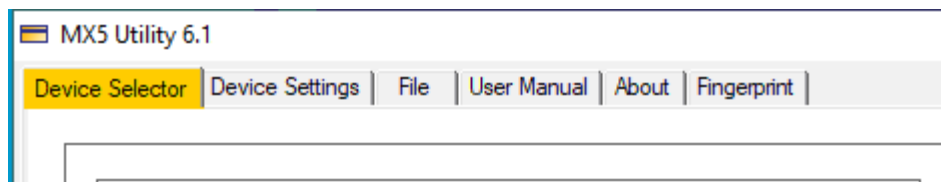
About the Color coding of the Tabs in the Utility and this Manual. The “Yellow” Tab indicates the current active tab located at the Top of the utility. The “Blue” Tab is the currently selected Sub-Tab for the selected “Yellow” TAB. The “Blue” Sub-Tabs bar is located beneath the “Yellow” Tab bar. All the buttons in this manual are illustrated by the button name highlighted in Gray as shown “Button”. **Helpful Tip** are in Red.

Device Selector TAB

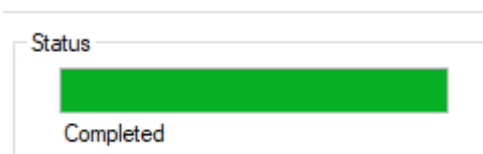
The MX5 – 7.1 Utility Device Selector Tab will display a list of all MX5 devices connected to your computer. The device's name is displayed under each device icon. The selected device's name and picture will be highlighted when it is selected. Use the mouse pointer to click on the image of the item you wish to edit or review. Double click the image or click on the **"Edit Selected Device"** button to go to device settings for the highlighted selected device of the **"Device List"**. Also, you can also click on the **"Device Settings"** tab on the top of the page to edit and review the selected device.



When a device is selected, the **LED** on the selected device will start to **flash** ON/OFF. When multiple devices of the same type are connected to your computer, the flashing will allow you to identify which device you are editing.



Use the Mouse to click on the tabs to quickly change your screen selection for the Selected Device.



The **"Status"** Bar on the Device Selector tab will show the current status of the **"Device List"** progress. To cancel the search, Simply click the **"Cancel"** button. To refresh the **"Device List"** click the **"Refresh"** button.

Helpful Tip:

The “**Selected Device Details**” dialog box located to the right of the “**Device Selector**” tab page, shows detailed information for the selected device. This is helpful in determining which “**Modules**” are installed in the selected device.



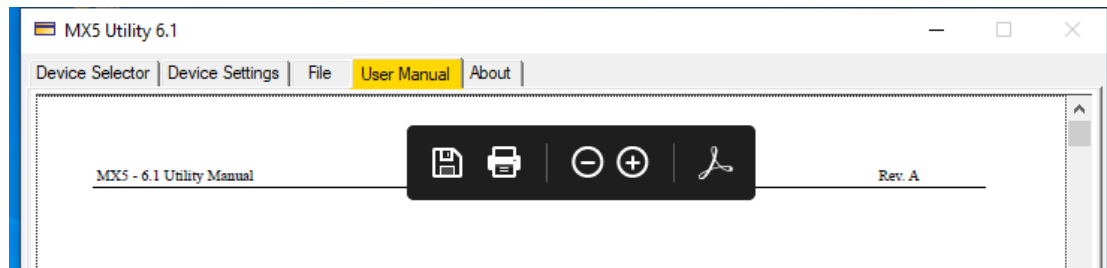
The Model Number of the selected device is also displayed in the dialog box. The short form of the device and their meanings are listed below:

- H1 – Single CPU device & Hub.
- H2 – Dual CPU device & Hub.
- BT – Bluetooth device
- 53 / MAG – The Magnetic Reader portion of the device. Three Tracks.
- 2D – The 1D/2D Barcode Reader that reads all forms of barcodes.
- 2DW – Wide Angle 1D/2D Barcode Reader that reads all forms of barcodes
- SC – The Smart Card Reader.
- M2 – High frequency only RFID-HF reader R/W.
- R4 – High frequency only RFID-HF reader.
- EM – Low frequency only RFID-LF reader.
- DF – High and Low frequency RFID reader.
- FP – Fingerprint Reader.
- IB – iButton Token disk Reader.
- CBP – CPU M3 core 128 Flash size

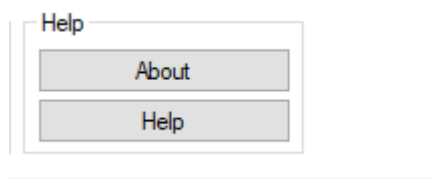
The “Hardware ID” or “HWID” is a unique number assigned to each and every MX5 product. This number corresponds to the flash upgradeable firmware which can be installed on the specific device. The HWID is also used to save or restore settings for a specific device ID. Using the “File” tab, saved settings can only be restored to devices with the same HWID devices. Battery operated devices will display the Capacity % for the Battery of the Selected Device.

User Manual TAB

Clicking this tab will automatically open the user manual to page one. The viewer screen uses the built-in Acrobat Reader. Moving the mouse to the top of the page of the viewer will automatically open the Acrobat Reader tool bar as shown above. “**Help**” buttons on the bottom left of the some tabs will automatically open the manual to the corresponding page for the tab of the utility you are currently working on.



Helpful Tip:



The “**Help**” button will also open the “**User Manual**” top tab, but it will automatically open the manual to the corresponding page of the screen you are currently working in. The “**Help**” button is located at the bottom of most tabs.

About Tab

The “**About**” tab will show the following information about the utility.



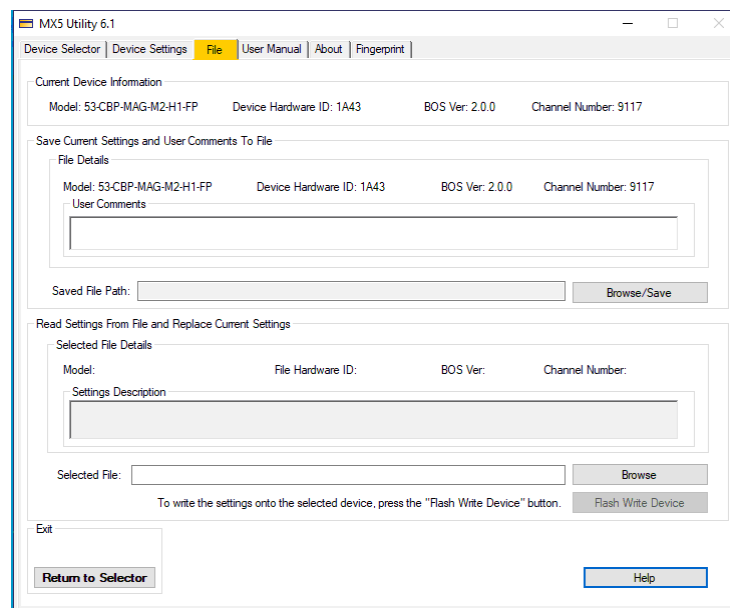
Exit Button

The “**Exit**” button will shut down the MX5 utility and return all the device LED back to its original default state. The “**X**” icon located on the top right of the utility is disabled. The button is located on the Device Selector tab.

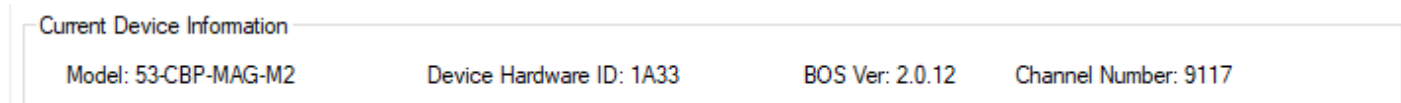


File Tab

The “**File**” tab is used to save and read the selected device’s settings to and from a file. If you have multiple devices with the same Hardware ID to configure, first configure a device in the Device Settings tab. Then from the File tab “Save Current Settings” to a file. Device settings can be restored from a file using the “Read Setting from File...”. No need to manually edit the device settings after a restore is done.



The “**Current Device Information**” group box at the top of the “**File**” tab contains detailed information about the “**Current Selected Device**”. The “**Device Hardware ID**” number is the main piece of information critical to the files being Saved or Read. It is recommended to include the HWID number as part of your file name. Use the User Comments box to include additional information about the specific saved file for future reference.



The “**File**” tab has two main functions, Save Current Settings and Read and Replace Current Settings to the selected device.

Save Current Settings and User Comments To File

File Details

Model: 53-CBP-MAG-M2 Device Hardware ID: 1A33 BOS Ver: 2.0.12 Channel Number: 9117

User Comments

Saved File Path: Browse/Save

Saving the current settings of the selected device is simple and fast. Your selected device details are automatically updated on the screen. A “**User Comment Box**” is available for your personal notes which will be included with the saved file for future reference. Use the “**Browse/Save**” button to select the file name and path. When the file is saved, a dialog box will open to notify you of a successful save.

Read Settings From File and Replace Current Settings

Selected File Details

Model: File Hardware ID: BOS Ver: Channel Number:

Settings Description

Selected File: Browse

To write the settings onto the selected device, press the "Flash Write Device" button. Flash Write Device

Use the “**Browse**” button to select the file location and file to Replace the Current Settings of the Select Device. Note that if the Hardware ID of the file does not match the “**Current Device Information**”, the “**Flash Write Device**” button will be grayed out and you will not be able to load the file. Should the file you have selected match the HWID of the selected device, pressing the “**Flash Write Device**” button will overwrite the settings of the currently selected device with the settings stored in the selected settings file. Once the settings have been updated, the selected device will beep, flash the **LED** and automatically restart. The “Settings Description” box will display the comments that were added to the saved file. Adding comments to files will help you organize your saved files. The BOS version and HWID of the device must match the HWID and the BOS version of the save file in order to restore saved settings. If you upgraded the BOS, you will not be able to install settings files made with the previous BOS version. You will need to create a new settings file for the new BOS Version.

Helpful Tip:

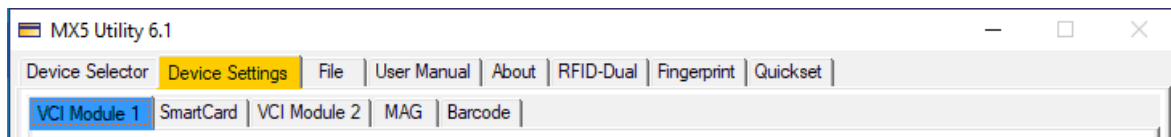
Use The “**File**” button to automatically select the “**File**” tab to save or restore the settings of the currently selected device. Refer to the [File Tab](#) section in this manual for more information on the File button / tab

File

File

Device Settings TAB

“**VCI Module 1**” tab is the Variable Channel Interface (VCI) for Module 1. Note that some MX5 devices may have two (VCI) module tabs labeled “**VCI Module 1**” and “**VCI Module 2**”. The tabs to the right of each VCI Module will contain the reader’s setting tabs associated with the VCI Module. Each module will have its own HWID number and you can save / restore the settings to and from a file specific to this hardware only. Saving / restoring setting files for a dual Module will only be for the actively selected VCI Module. Each VCI Module has its own file, saving / restoring file based on the HWID of the VCI Module and saving / restoring settings for the selected module will not affect the other VCI Module settings. In the example below you will find the **VCI Module 1** contains a Smartcard reader only and that **VCI Module 2** Contains a Mag reader and Barcode Reader.



The tabs to the right of the “**VCI Module 1**” are the various hardware interfaces available for VCI Module 1. In this next example three tabs are shown, “**MAG**”, “**RFID-HF**”, and “**SmartCard**”. Selecting these tabs will allow you to customize the settings for each interfaces. The save / restore settings file will only affect the selected Module and the readers settings for this HWID number.



See the various Device “Tabs” by the Tab name for settings and configuration options for each tab.

“General” Settings

“**Sound On**” Selecting this option will enable sound. A single beep is heard when a good read from any device is made. Two beeps are heard when an “error” in reading is detected. No data is sent out by the device when an “error” is detected on any of the devices.

“**LED Status**” Selecting this option will change the LED default setting. The LED can be turned OFF by default by unselecting/selecting the LED Status box. When the LED is turned OFF by default, all the LED indicators are reverse logic. LED OFF (also called Night Mode) will only flash or turn ON when a reading device has read valid data from a reader. The LED will be OFF by default after the device has indicated its status.

Note that the LED will flash during Initializing when the device is powered on and will also display all diagnostics responses on power up. Also all error and good read responses will be flashed when any device has performed a read of any ID except Smart Cards. (Smart Card LED cannot be turned off) Smart card LEDs will vary in behavior from various MX5 Devices which includes a SC device. The Smart Card LED will only be turned ON when the system is accessing data from the IC card. The LED Status box may behave differently on CBP devices (Reverse LED Logic on CBP devices only).

“Enable Add-On Cable” If an older type of connector is needed to interface a device to the computer, there are special cables for doing this. To have a device work with those cables, this feature has to be enabled and the Channel for the device has to be VRS. Add-on Cables KITS are available in DB9 RS232, Mini Din6 PS2 or Din5/KB. (Cable and option is Available upon Request at time of Purchase only) Only available on a selected number of MX5 Products. Special firmware will be provided with the cable kit. Contact POSH for more details. (Only available on custom applications.)

“Card Slot Sensor” The card slot sensor can be disabled if desired by un-checking this option. When disabled the External Trigger button must be used to start the reading of barcodes or images. (Only accessible with the K9 or K9J Product) See the special note below on the External Trigger button.

“External Trigger Button” The external trigger can be disabled from triggering a barcode read by un-checking this and just the card slot sensor will be used to read barcodes or images. (Only accessible with the K9 or K9J Product) See Special note below.

Special Note: Should you disable both options **“Card Slot Sensor”** and **“External Trigger Button”** options, then you will be **Enabling “Auto Sense Mode”** of the 2D/1D barcode reader. In Auto Sense Mode, the barcode is automatically read when a barcode is moved and presented in the field of the barcode camera. In Auto Sense mode, First Read Sequence options are only used. (See **Barcode** Tab) for more info on Auto Sense Mode settings.

“KB Character-case” Selecting one of these options will control how the data will be output. **Upper** will output the alphabetic characters in all **“CAPITAL”** letters. This option overrides the Caps lock status. By selecting the **Lower** option, all the character data output will be in **“lower case”** only and this mode is not affected by the Caps lock status. The default is the **“As Is”** option outputs data as it is stored in a card or tag. This feature is only available for keyboard type devices ONLY.

“Variable Channel Interface Options”

Variable Channel Interface Options

All Current USB Channels

MAG: KB RFID-HF: KB SC: SCCCID

USB Channel Selector: SCCCID-KB (9103)

Channel Selector Description:

Device Output Control

Device	Channel	Encryption	Device	Channel	Encryption
☒ MAG	KB		☐ Barcode		
☒ RFID-HF	KB		☐ RFID-LF		
☒ SmartCard	SCCID		☐ iButton		

“All Current USB Channels” Displays all the USB channels used by each internal device and any assigned computer port being used by the USB Channel and list the COM Port(s) number used.

“USB Channel Selector” List of all the USB Channel combinations that can be configured to connect the Devices to. Each Module number will have a different list of Possible USB Channels for each Device of the product for that Module number. (See Dual Module Devices for more info) There are currently over 88 possible USB selections available for the MX5 Series product. Each product will be automatically assigned a list of possible USB channels for each specific product module. Using the USB Channel Selector, you can select the combination you wish to use for your specific needs of your application for each device. When changing the USB Channel Selector, you will be prompt to confirm the change. Upon acceptance of the change, the new settings will automatically be saved and the device will automatically restart with the selected settings. **Important Note:** Every USB Channel Selection, once saved, will install a default setting for each and every setting in the selected module. It is important to select the desired “USB Channel Selector” **first before** changing any other settings or device TAB settings. Go to [Section Q](#) for a complete list of the available Channel numbers and description.

“Channel Selector Description” For each USB Channel combination there is a default device assignment. This box will display the default assignments for the selected USB Channel number.

“Device Output Control” Controls that provide enabling and disabling of devices within an MX5 device. USB Channel settings can be changed from the default for a device and an encryption method to be used on each Channel. You should select the appropriate USB Channel Selector Before proceeding to any other changes on the DOC (Device Output Control)

“Device” Each device can be enabled or disabled within the unit by checking or un-checking the device’s checkbox.

“Channel” Display of the current Channel in use by a device which can be modified by switching to a different available Channel. If the Channel is Grayed out, you cannot change the Channel for that device. You can select the same USB channel for all you devices should it be allowed by the utility. Unused channels will not receive any data. SCCCID is only available for SC Smart Card device. You cannot share the SCCCID Channel. Unselecting the device besides the Channel will disable the output of the device and the device will not output any data. If you require a specific port for a device then you will need to change the **“USB Channel Selector”** for the available USB Channel combination you require.

MAG = Magnetic Card Reader, RFID-HF = 13.56Mhz UID Reader, Smart Card = IC Chip CCID Device,
iButton = Contact Button, Barcode = 2D & 1D Barcode Reader, RFID-LF = 125Khz UID Reader.

“Encryption” Each device can be set to it’s own encryption method. Not all encryption methods will be available to all device/channel combinations. (This option is only available on OEM firmware or Special Request) “3Des” encryption keys can be injected into the POSH device. The **“Encryption”** injection tab is only visible when encryption is enabled by the custom firmware. All encryption keys are fully protected in the device and cannot be read by anyone once it is installed by the client using the Encryption TAB in this utility. Other encryption types are available upon request (AES). The output data of the reader will be encrypted with the injected key and sent out to the channel selected for each device with the encryption option enabled. This is the best method for securing your data from hacks and port sniffers. Your application will need to have the decryption key to decode the data received from the reader.

“Device Information”

Device Information			
Model: 53-CBP-MAG-M2	Hardware ID: 1A33	Channel Number: 9117	BOS Version: 2.0.12

“**Model**” Name of the Module currently being viewed which lists each device function.

“**Hardware ID**” A unique Hardware identifier for each POSH MX5 products. Used with upgrade firmware FMD files. The Hardware ID is used by the MX5 Utility to ensure the correct firmware is always installed on the specific hardware it is intended for.

“**Channel ID**” Identifier number of the USB Channel combination being used by the USB Channel Selector. There are currently 88+ possible USB combinations and each combination is identified by a unique Channel ID number. Depending on the specific hardware and readers, a unique list of available Channel ID numbers is provided for each Hardware ID devices using the USB Channel Selector.

“**BOS Ver**” The version number of the Firmware (Basic OS Application) currently installed in the selected device module.

File	
Save Settings File	Help
Read Settings File	

By pressing the “**Help**” button, You will be directed to the specific page in the manual relating to the current Tab setting you are in. Whereas the “**User Manual**” Tab will open the manual only.

The “**Save Settings File**” and “**Read Settings File**” buttons will open the “**File**” Tab automatically.

Device	
Reset to Defaults	Get Device Settings
Upgrade BOS	Save Device Settings

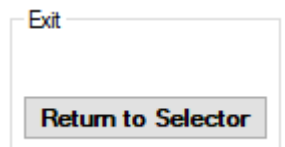
“**Reset to Defaults**” Selecting this option will reset all to the factory default settings for the selected device, including all the tab defaults for each devices. The KB channel will be selected automatically in the USB Channel Selector. Each device tab will be reset to factory default. All of your previous settings will be lost and restored to factory defaults. This is a quick and easy way of putting your device in a known working state for testing the various hardware devices. By opening a file in Notepad, you can output data from each device as a keyboard entry. The Smart Card SC device cannot be tested using Notepad in KB mode. Special software and SC are available for testing. Contact POSH for more details on how to test SC devices.

“**Get Current Settings**” Selecting this option will get the current setting of the current device module for the selected TAB. Every time you change TABS, the Current Settings are loaded to the screen. Should you change any settings intentionally or accidentally, you can reload the current settings to the screen automatically by selecting this option.

“Save Device Settings” Selecting this option will save any changes you have made to the active tab. Special care should be taken when saving changes of the USB Channel Selector, which will cause all the tabs to be reset to a factory default for the selected USB channel. Each tab will need to be configured and saved should you have had any special settings made for any device(s). The device will be restarted by the utility when you save new settings of the USB Channel Selector. Some tabs will Save the new settings for the selected tab and the changes may take effect immediately after saving. Sometimes unplugging the USB device maybe required for the new settings to take effect. Note, The **“Save Device Settings”** button will be active only when settings on the current tab have been changed, otherwise the button will be disabled.

“Upgrade BOS” When new firmware is released and it is desired to update the device with the latest firmware, this function will start the upgrade process. The upgrade screen will be shown automatically and you will have the option to select the firmware file. If you have selected this option by accident, simply use the **“Reactivate BOS”** button on the “Update” tab to exit the upgrade option and the device will restart with its last saved options. (See Update Tab for more details)

Note: If the Update failed for what ever reason or the firmware application gets corrupted, you will not be able to **“Reactivate BOS”** You will need to re-install the firmware file after which you can use the File Tab to restore your custom settings. The firmware version must match the HWID # and the Firmware Version # saved in order to restore your settings. If you upgraded your firmware, you will not be able to install old settings files if the firmware version does not match. You will need to create a new Save Settings file for the new firmware version.



To exit and return to Device Selector, press this button or use the **“Device Selector”** Tab

Magnetic Stripe Reader Settings “Mag”Tab

“**Device Status**” Display of the device’s current status. If ‘Enabled’ is showing, the device is working as expected. If “Disabled” is showing, the device has been manually disabled. You can disable the magnetic reader by unselecting the mag option in the DOC (Device Output Control) panel. No data is sent out from the Magnetic reader if it is Disabled.

“**Channel**” The Channel Identifier shows the Channel the device is connected to. You can change the output Channel of the Mag reader using the DOC panel.

“Card Control Options”

Typically a magnetic card stripe may contain up to 3 tracks of data. ISO cards (Credit Cards) typically have 2 tracks of data and AAMVA cards (Drivers License) have 3 tracks of data. See the illustrations for each card type shown in **Figure ISO** and **Figure AAMVA** below. Each of the three magnetic tracks have their own settings and configuration. You can select what card type you would like to read for each track. A unique “SS” Start Sentinel and “ES” End Sentinel character can be selected for each track. You can also have a “CR” Carriage Return after each track.

Helpful Tip:

Track Data parsing is available for each track. Now you can extract data from a specific tracks if needed. See [Section P](#) for more details and helpful hints on how to parse data from each tracks. This feature is only available on version 2.0.0 firmware or higher.

Note: Custom magnetic card data parsing is also available should your needs require it. Contact your sales agent for

custom firmware or POSH Technical Support for more details about custom firmware for your MX5 Device.

“ISO” Track Selectors Select which Credit Card/Data Card ISO tracks you would like the reader to read. Refer to your software application’s notes to determine which track(s) should be selected for proper data reading.

“AAMVA” Track Selectors Select which driver’s license data tracks you would like the reader to read. This option only applies to driver’s licenses and has no effect on reading ISO credit cards. Driver’s licenses are automatically recognized by the mag reader and can be enabled to be read by the mag reader by selecting this option.

Track “SS” Selectors Enable or disable the track start character (Start Sentinel). You can also select your own SS by using the pull down bar that is beside the enable checkbox. Use the default settings unless notified otherwise by your application vendor. Each track can have a unique SS. **(Character 200 – 255 are reserved for Data Parsing. See [Section P](#) for more details)**

Track “ES” Selectors Enable or disable the track end character (End Sentinel). You can also select your own ES by using the pull down bar that is beside the enable checkbox. Use the default settings unless otherwise notified by your application vendor. Each track can have a unique ES. **(Character 200 – 255 are reserved for Data Parsing. See [Section P](#) for more details)**

“Send CR” Track Selectors Select a Carriage Return “CR” will put a carriage return character at the end of the selected track of the magnetic strip data. This forces the data that follows reading of a track to the next line of the output.

“Track Output Order” This option allows you to change the output order of the selected tracks. The default track order is (1,2,3). Selecting (1,2,3) will output each track to the channel in the following order: track 1 data , then track 2 data and lastly track 3 data.

“Send Any Valid Selected Track(s)” Enabling this option will tell the device to send out any valid data from the tracks **“that have been selected”** only. When this option is selected, it informs the reader to send all the **selected valid tracks** regardless if there was a read error **on any of the selected tracks**. When unselected and there is a track read error on a selected track, the unit will flash the LED twice and sound two beeps. No data will be sent out when an error is found. This option is handy for trouble shooting and it is enable by default.

“Group Prefix” An optional character that can be placed before all the magnetic track data output from the Reader. This allows you to put a specific prefix character in front of all the Magnetic Track output order.

“Group Suffix” An optional character that can be placed at the end of all the magnetic track data output from the Reader.

“Group CR After Data” An optional Carriage Return Suffix can be sent at the end of the Group Data. This is the last characters sent after the Group Suffix. If no Group Suffix is enables, The Group CR will be sent on the last Character of Track data group in the Group Output Order.

The magnetic stripe can be **only** one of two encoding formats. Your MX53 Device will automatically decode the data from the magnetic stripe and provide you the data stored on each track. Data is verified to be valid before it is made available on the channel selected for the MAG device. You can also request a validated track sequence, should you require specific tracks to be deemed needed in order to validate a card read. In other words, if you require two tracks of data, and only one track of data is valid, then the data is rejected and two beeps with LED flash is generated and no data is sent out to the channel. Likewise you can also request any valid tracks to be read from your selected tracks. This will give you the data from any selected track if the data for that track is verified valid.

This document will not cover the ISO and AAMVA data format standards for magnetic stripe data. These standards are available online and will not be covered in this manual. The illustrations below if for your reference only, more details of each standard are available on the web.

Your ISO magnetic card stripe can have up to three magnetic data tracks as shown below on your credit card.

Note: Most credit cards typically have two tracks of data (Track 1 & 2) and the magnetic black stripe is usually thinner. Track 3 is usually optional and not used by most credit card companies.

0.223"		Recording Density (bits per inch)	Character Configuration (including parity bit)	Information Content (including control characters)
Track 1	IATA	210 BPI	7 Bits per Character	79 Alphanumeric Characters
Track 2	ABA	75 BPI	5 Bits per Character	40 Numeric Characters
Track 3	THRIFT	210 BPI	5 Bits per Character	107 Numeric Characters

Figure ISO

Your AAMVA magnetic card stripe has three magnetic data tracks as shown below on your driver's license.

The magnetic data for AAMVA has a standard which can be found online for each track.

0.223"		Recording Density (bits per inch)	Character Configuration (including parity bit)	Information Content (including control characters)
Track 1	IATA	210 BPI	7 Bits per Character	82 Alphanumeric Characters
Track 2	ABA	75 BPI	5 Bits per Character	40 Numeric Characters
Track 3	IATA	210 BPI	7 Bits per Character	82 Alphanumeric Characters

Figure AAMVA

RFID-HF UID Settings (13.56 Mhz RFID) Tab

Device Status: Enabled

Channel: VRS1 (COM4)

RFID UID Settings

Data Format: 4/7 Byte UID

Antenna Gain (%): 78

Auto Read Card Types:

- ☒ ISO 14443A
- ☒ ISO 14443B
- ☒ ISO 15693

Output Options:

SS: ☐ % (37) ☐ ? (63)

ES: ☐ ? (63)

Wiegand Data Size:

☒ SendCR

Decimal ☐ Hex ☒

Padding/Truncation: 16 Hex Zero Padding

Custom Padding/Truncation: Auto

Output Manipulation:

Available Commands:

Bit/Byte Adjustment:

Add to List -> Clear List

Instruction List:

“Device Status” Display of the device’s current status. If ‘Enabled’ is showing, the device is working as expected. If “Disabled” is showing, the device has been manually disabled. You can disable the RFID reader by unselecting the RFID-HF option in the DOC (Device Output Control) panel. No data is sent out from the RFID-HF reader if it is disabled.

“Channel” The channel identifier shows the channel the device is connected to. You can change the output channel of the RFID-HF reader using the DOC panel.

“RFID UID Settings”

“Data Format” This function is no longer supported and has no functionality.

“Antenna Gain (%)” This function is no longer supported and has no functionality.

“Auto Read Card Types” This feature will list each card standard that will be read automatically by the RFID device. Any standard can be taken out of the list of card types that will be read by un-checking it. This will provide for faster reading if fewer card types are required to be read. Read speed can be increased by unselecting unused card types. Card types supported are ISO 14443A, ISO 14443B, ISO 15693 and ISO 18092. If you have un-selected the card type, the UID of the card type will not be read when the card is presented to the RFID field of the reader.

“Output Options”

“RFID SS & ES” Enable or disable the RFID start sentinel & end sentinel character being added to the output. You can also select your own SS/ES character by using the pull down bars and choosing a different character than the default one. Use the default settings unless otherwise notified by your application vendor.

“**Send CR**” You may add a CR character to the output after the UID is read from the RFID card/tag.

“**Wiegand Data Size**” Not Used.

“**Decimal/Hex**” The UID of a RFID card/tag can optionally be output in either decimal or hexadecimal format. Padding and truncation will vary in output depending on this option.

“**Padding/Truncation**” The UID (Unique ID) number of the card can be altered by padding it with leading zeroes from a length of 10 /13 / 17 characters for decimal output option., or for hexadecimal output, the optional number of bytes are 8, 14 or 16 with zero padding put at the front of the UID. The padding values are related to the choice of data size and decimal/hexadecimal options. By Selecting the Auto option, the data of the UID is output based on the number of characters received by the RFID card type presented in the RFID field. In auto mode, the data length will vary depending on the number of bytes read from the card presented in the RFID field. Decimal and hexadecimal mode will also have different output results in auto mode and the data length will vary. Data truncation (loss of data) may occur on the leading data bytes, if the data field read exceeds the selected output data length. Select “Selectable/Custom Padding” for selectable Padding of 1 to 16 / 17 Character Data output.

“**Custom Padding/Truncation**” The UID number of the card can be set to “Auto” which will output the natural data length of the card read. A Zero Padding output of 1 to 16/17 can be selected by the pull down tab. Special “Custom options” are

available for both Hex and Decimal Padding.
descriptions.

17 Digit Zero Padding
Custom Dec option 1

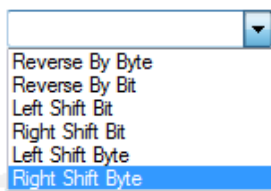
Refer to **appendices** for Custom

“Output Manipulation”

“**Available Commands**” For data manipulation of the Data Read from the RFID Media. Six commands are available: ‘Reverse By Byte’. This will send the byte data in the reverse order when read from the RFID media. The other 5 commands available are shown in the Figure below. An explanation of each command is shown in [Section A of the appendices](#).

A script can be developed by choosing multiple commands and adding them to the Instruction List which will be performed in the order they are added. See [Section A](#) for more details and examples.

Available Commands



“**Add to List**” Clicking on this button will take the command currently in the commands dropdown and add it along with the adjustment number, if applicable, to the Instruction List. See **Section A of the appendices** for more details

“**Clear List**” If the list of commands chosen is not what is desired, clicking this button will clear it so no data output manipulation occurs or a new list can be entered. You will need to click “Save Device Settings” after clearing the List changes take effect.

“**Save Device Settings**” Click this button to save settings.

RFID-LF UID Settings (125 Khz RFID) Tab

Device Selector | **Device Settings** | File | User Manual | About

VCI Module 1 | **RFID-LF** | Module 1 Test

Device Status: **Enabled** | Channel: **HIDA**

RFID UID Settings

Output Options

SS: ☐ % (37) | ☐ Decimal | Fixed Padding/Truncation: **Selectable/Custom Padding**

ES: ☐ ? (63) | ☒ Hex | Custom Padding/Truncation: **Auto**

☒ SendCR

Output Manipulation

Available Commands: [Dropdown] | Bit/Byte Adjustment: [Dropdown] | Add to List -> | Clear List | Instruction List: [Text Area]

“Device Status” Display of the device’s current status. If ‘Enabled’ is showing, the device is working as expected. If ‘Disabled’ is showing, the device has been manually disabled is there is a problem with its functions.

“Channel” The Channel Identifier the device is connected to.

“Output Options”

“RFID SS & ES” Enable or Disable the RFID Start & End Character (Sentinel) being added to the output. You can also select your own SS/ES character by using the pull down bars and choosing a different character than the default one. Use the default settings unless otherwise notified by your application vendor.

“Send CR” You may add a CR character to the output after the UID is read from the RFID card/tag.

“Decimal/Hex” The UID of a RFID card/tag can optionally be output in either decimal or hexadecimal format.

Fixed Padding/Truncation

Selectable/Custom Padding ▾

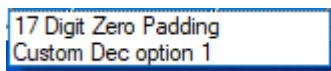
Custom Padding/Truncation

Auto ▾

“Fixed Padding/Truncation” The UID (Unique ID) number of the card can be altered by padding it with leading zeroes from a length of 10 /13 / 17 characters for decimal output option., or for hexadecimal output,

the optional number of bytes are 8, 14 or 16 with zero padding put at the front of the UID. The padding values are related to the choice of data size and decimal/hexadecimal options. By selecting the Auto Mode option, the data of the UID is an output based on the number of characters received by the RFID card type presented in the RFID Field. In Auto Mode, the data length will vary depending on the number of bytes read from the card presented in the RFID field. Decimal and hexadecimal mode will also have different output results in Auto Mode and the data length will vary. Data truncation (loss of data) may occur on the leading data bytes, if the data field read exceeds the selected output data length.

“Custom Padding/Truncation” The UID number of the card can be set to “Auto” which will output the natural data length of the card read. A Zero Padding output of 1 to 16/17 (Decimal/Hex) Digits can be selected by the pull down tab option. Also available are Special “Custom options” are and can be available for both Hex and Decimal Padding. Contact Sales for more options or custom firmware.

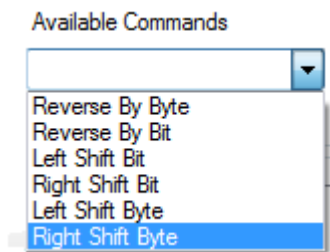


Refer to **Appendices** [Section A](#) for a description of the Custom options.

“Output Manipulation”

“Available Commands” For data manipulation of the data read from the RFID media. Six Commands are available: ‘Reverse By Byte’. This will send the byte data in the reverse order when read from the RFID media. The other 5 commands available are shown in the Figure below. An explanation of each command is shown in [Section A](#) of the appendices.

A script can be developed by choosing multiple commands and adding them to the Instruction List. Each command will be performed in the order it was added. See [Section A of the Appendices](#) for more details.



“Add to List” Clicking on this button will take the command currently in the commands dropdown and add it along with the adjustment number, if applicable, to the Instruction List. See [Section A](#) of the appendices for more details

“Clear List” If the list of commands chosen is not what is desired, clicking this button will clear it so no data output manipulation occurs or a new list can be entered. You will need to “Save the New Settings” after clearing the list to take effect.

“Save Device Settings” In order to take affect of the changes made.

Barcode Reader Settings Tab

“Device Status” Display of the device’s current status. If ‘Enabled’ is showing, the device is working as expected. If “Disabled” is showing, the device has been manually disabled. Upon USB power up of the device, the LED will flash 4 times when the 2D/1D camera is initializing. If initialization fails, 4 Beeps will be sounded. Upon a successful initialization, the LED will stop flashing.

“Channel” The channel identifier the USB device is connected to.

“Barcode Reader Options”

“First Read Sequence” Using read sequences, certain barcode symbols can be prioritized over other types which speeds up barcode reading. Select the barcode types you wish to read in the first read sequence. Unselecting unused barcode types will increase the read speed. Also if multiple barcodes are presented at the same time in the reading field, the 1D barcode will be decoded first and the other barcode will not be read. The defaults are setup for reading driver’s license barcodes. If the 2D barcode is not read on the first read sequence then the second read sequence may read the barcode. It is common to select secondary barcodes in the second read sequence that is not used often in conjunction with first sequence barcodes. This will allow the reader to capture the barcode should it have not read in the allotted read time.

Also note that the first sequence is only used when you have selected **Auto Sense mode**. (See Card Slot Sensor / External Trigger Button)

“Read Time” The barcode engine will try to read the selected list of barcodes for the duration selected in seconds. Once the a selected barcode is read, the data will be transmitted to the selected output channel. The reader will stop reading after a successful read within the read time selected. If no barcode is read within the read time selected, the second read sequence is initiated. NOTE: If you are using the 2D/1D readers in **Auto Sense MODE** (See [Card Slot Sensor / External Trigger Button](#))

Then the first read sequence is only used. The read time slide bar has a different function. **In Auto Sense mode** the time in seconds is the duration to wait before a subsequent barcode is read when a new barcode is presented in the reading field. The timer is a count down in seconds after a successful barcode read before the next read attempt is initiated by the reader. (This is true only in Auto Sense Mode)

“Second Read Sequence” Having a second read sequence, additional barcode symbols can be added for the control of priority order of barcode formats which speeds up barcode reading. The read time of this sequence can also be adjusted.

“Barcode Selection” Most popular barcodes are available in each read sequence which allows for priority of first pass to read high demand barcodes. Second pass can have additional barcodes for alternate data barcodes. There are currently 15 barcode types to choose from. The basic functions and options of each barcode has been enabled by default. Should you have any special requirements of the barcode, contact your POSH service department for further details. The default barcode selections have been made for first and second read sequence to support driver’s licenses. You can change these settings by selecting or unselecting the barcode types you wish to support. Keep in mind that the more barcode types that are selected, it may affect the read speed of the barcode presented in the read field.

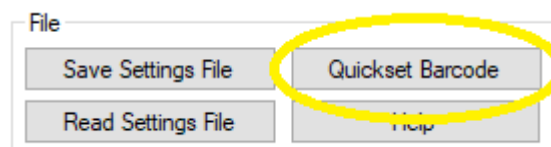
Note: if the device undergoes a “Reset to Factory Defaults”, barcode settings will return to the defaults and the customized lists of barcode types will have to be changed to get the desired barcodes to read again.

“Barcode Prefix/Suffix” Optionally, a Prefix and/or Suffix can be added to the barcode data output. Checking on either one or both is available and the character chosen can be any character of the ASCII character set; even unprintable characters. A Carriage Return (CR) can also be added to the end of the barcode data if desired. If you require additional characters (More than one) for prefix or suffix, contact your support team at POSH for suggestions on how to accomplish this.

Helpful Tip:

2D barcode AAMVA Data parsing is available for driver’s licenses with an AAMVA conforming 2D barcode. Now you can convert your 2D AAMVA barcode to a AAMVA Magnetic Card Data format if needed. See [Section P](#) for more details and helpful hints on how to. This feature is only available on version 2.0.0 firmware or higher.

Note: Custom data parsing is also available should your needs require it. Contact your sales agent for custom firmware or POSH Technical Support for more details about custom firmware for your MX5 Device.



“QuickSet Barcode” Button will automatically open up the **“QuickSet”** Tab located at the top of the page. This feature is used for creating a Special Barcode which will automatically configure the current module with the current settings. This is Ideal for deployment of new units, support and saving your custom settings. The barcode can be emailed and read from your Monitor, tablet and / or phone screen. No need to print the Barcode. See QuickSet Settings for more details.

QuickSet Tab Settings Function (Deployment TOOL)

This function will create a QR barcode that contains all the current settings of the selected VCI Module which is captured at the time the tab is selected. The barcode can be printed and read by the K9 & K9J barcode device which will force all settings to the saved user defined values. This makes the rolling out of multiple units quick and easy. This can also help restore the desired user settings after a firmware upgrade or the “Reset to Defaults” button is clicked. This function is only available on MX5 devices with a 2D Barcode (K9 & K9J) and is available on the MX5 Utility only.

The unique barcode that is generated by quick settings is ideally for the selected device Hardware ID only. If you are using a device Hardware ID # 1800 The Quick Settings barcode generated can only be read by devices # 1800. The Quick Setting barcode will be ignored by the MX5 product if it does not match the Hardware ID # it was created for. Firmware version 1.0.0 or higher will support cross match Hardware ID# 18XX and ID # 1CXX are both acceptable as long as the XX of both ID numbers are the same. The Quick Set barcode of the matching XX are interchangeable between 18XX and 1CXX devices. This means you can have a device with HW ID# 180E and a HW ID# 1C0E and both will be able to read each other’s Quick Set Barcode.

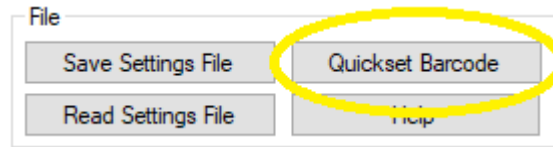
Helpful Tip:

A new feature “User Comments” Dialog Box was added to QuickSet Barcode which allows the user to include USER data to be included with the Barcode image. This is a helpful way to identify or making comments on the specific hardware settings and such. The Dialog box should be filled out before saving the Barcode image.

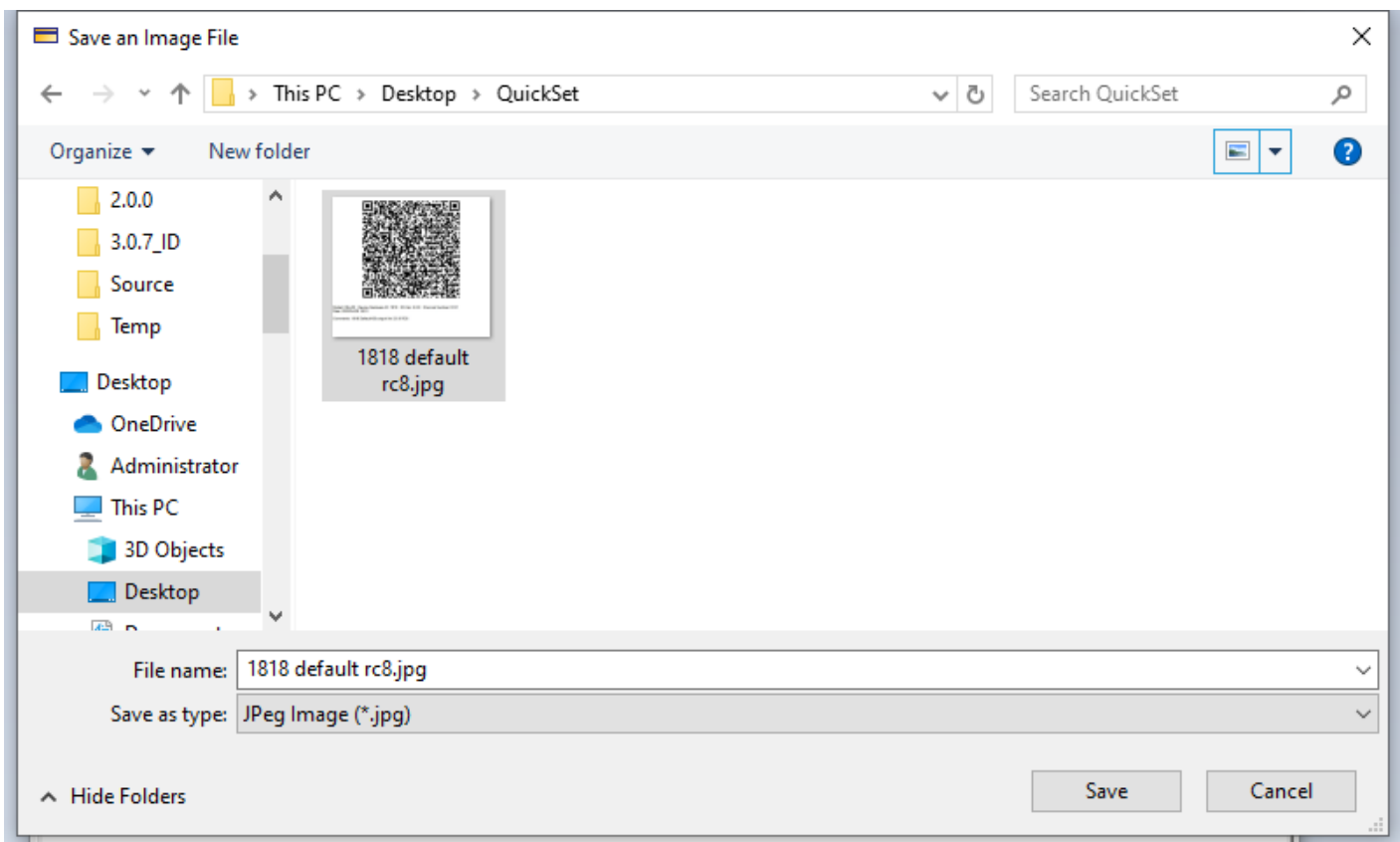
Creating a QuickSet Barcode

1. YOU will need to first select the desired USB Channel Selector and save the settings.
2. Set up the desired General settings of your VCI module (LED, Sound, Card Slot Sensor, External Trigger, KB)
3. Setup the desired DOC (Device Output Control) for each Device and then save your new DOC settings.
4. By Selecting the “Device Settings” Tab located at the top of the Page, Make desired changes to the settings for all the devices Available for the selected “VCI Module” containing the “Barcode” TAB.

5. Save all the TAB changes Using the Save “Device Settings” for each Device Tab(s)
6. Select the “QuickSet” tab or from the “Barcode” tab select the “QuickSet Barcode” button on the bottom of the page. See picture below:



7. In the “QuickSet” tab you are now ready to save your settings to a JPEG file, which will contain your special setup barcode for your device with all your settings that you have saved. We suggest to include the hardware ID # as part of the naming of the file with an appropriate name and fill out the “User Comments” dialog box for future reference **before** saving the file.



This file can be easily printed, emailed or sent to a portable device or laptop. The K9 and K9J can read this barcode from the screen of your device and automatically setup your K9 or K9Jr device, by simply reading the saved barcode with your device. If printing this barcode, we recommend using the following suggestions for the size of barcode for your device.

If the barcode image is too large, the 2D camera may not be able to fully capture and read your saved settings.

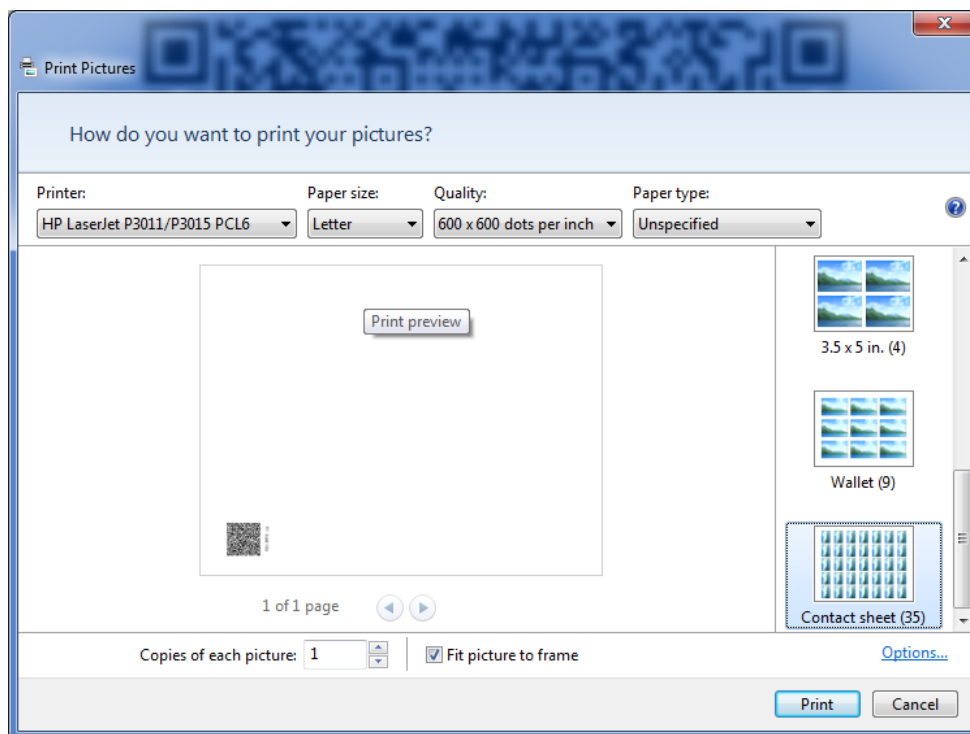
Note: If the K9 / K9Jr HWID device does not match the HWID of the generated Barcode, The K9 / K9Jr will ignore the Barcode and sound an error message by beeping & flashing the LED 2 times.

Printing the QuickSet Barcode

Open the Jpeg file using a Photo Viewer. (Windows Default Photo Viewer is used in this illustration)



8. Select to Print the Photo and the following page will open.



9. Select Contact Sheet which will set the size scaling factor to no less than 25% automatically. If you are using a different application, we suggest to scale your barcode to 25% its original size. Print to your printer.

Using the QuickSet barcode

10. When the Quick Settings barcode is printed, place the paper about an 1 inch (25 mm) away from the barcode card slot and press the trigger button as shown below:



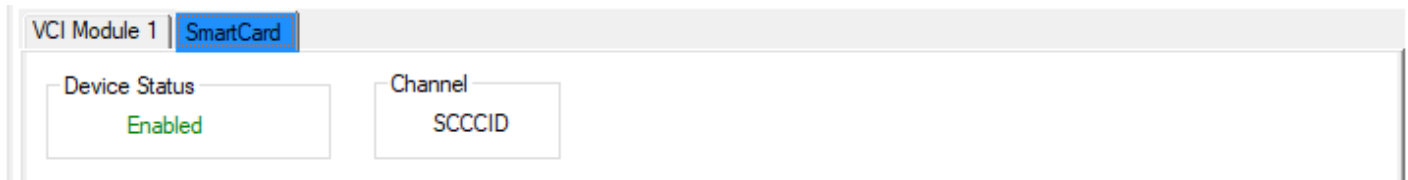
The barcode camera will start reading and if the read is successful, the device's LED will start flashing. When the update to the settings is completed, the device will reboot and sound one long beep. You do not need to use the utility for this process. All the settings that were saved in the device have been now saved into the current reader. This is a fast and easy way of setting up new readers and for updating settings to older units in the field without the use of any software. Note that all the settings are stored in the flash memory of the reader only. No Data is sent from the device when a QuickSet barcode is read.

If you are using a device Hardware ID # 1800 The Quick Settings barcode generated can only be read by devices # 1800 or # 1C00. The Quick Setting Barcode will be ignored by the MX5 product if it does not match the Hardware ID # it was created for. This will be due to the fact that each Hardware ID # has a unique configuration of Hardware and devices attached. Firmware version 1.0.0 or higher will support cross match Hardware ID# 18XX and ID # 1CXX are both acceptable as long as the XX of both ID numbers are the same. The QuickSet barcode of the matching XX are interchangeable between 18XX and 1CXX devices. This means you can have a device with HW ID# 180E and a HW ID# 1C0E and both will be able to read each other's QuickSet Barcode. If the Device HW ID# does not match the HW ID# of the barcode being read, the settings of the barcode is ignored by the device and 2 beeps will be sounded to indicate an error. No data will be received or sent from the device.

Reading Quick Set Barcode from the Screen

It is possible to read the quick setting barcode from the LCD screen of your Portable device, Laptop Screen or LCD display without having to print the barcode. The size and resolution of the barcode displayed, the light intensity of the screen may need to be adjusted. The distance the reader in front of the screen may need to be adjusted to fit the barcode in the read field of the barcode camera. Press the trigger button to start the barcode reader. Upon a successful read, the LED will rapidly flash and the device will reboot with the new settings saved in the flash memory of the device. You will hear one long beep once the unit has completed. Note that the barcode camera will also reset and will take about 20 to 30 seconds to reboot before you can read any barcodes. If the LED is flashing 4 times per second, the camera is still initializing and has not completed yet. When the LED is solid and not flashing, the barcode camera is ready. If two beeps is heard, the barcode has not read, try again or verify that the HWID # match the barcode being read.

SmartCard Settings Tab



“Device Status” Display of the device’s current status. If ‘Enabled’ is showing, the device is working as expected.

If “Disabled” is showing, the device has been manually disabled is there is a problem with it’s functions.

“Channel” The channel identifier the device is connected to. There is no configuration available for the Smart card device. Only the status and channel is displayed. The smart card device is a CCID IC Smart card device which uses the default drivers provided by the Windows & Linux OS. If you are using Linux you may have to edit the setup file to include the MX5 SC smart card reader info: VID 0980, PID 91FF MI 07 See [Section M](#) for more details on how to configure the Smart Card reader to Linux OS.

No drivers are required to be installed for Windows or Linux. The OS already includes the drivers and the system will automatically install the appropriate drivers upon initialization of the USB port with the OS. If you wish to disable the CCID device, then you will need to got to the Device Output Control (DOC) of the VCI (Variable Channel Interface) page and unselect the Smart Card device. Save the new settings for the changes to take affect.

Module 1 Test Tab

Device Selector | **Device Settings** | File | User Manual | About | QuickSet |

VCI Module 1 | MAG | Barcode | RFID-HF | SmartCard | **Module 1 Test**

Test Channel 1

Devices: BARCODE, MAG

Channel: VRS1(COM4)

Auto-Read: **ON**

Clear

0000	20	20	20	20	20	20	20	20	20	0A	44	41	49	4D	4F	4E	.DAIMON
0010	54	50	45	4C	49	45	52	20	20	20	20	20	20	20	20	20	TPELIER
0020	20	0A	44	41	4A	56	54	0A	44	41	48	30	35	36	30	33	.DAJVT.DAK05603
0030	20	30	30	30	30	20	0A	44	41	52	31	20	20	20	0A	44	-0000 .DAR1 .D
0040	41	53	35	20	20	20	20	20	20	20	20	0A	44	41	54		ASS
0050	42	20	20	20	0A	44	41	55	35	30	33	0A	44	41	57		B .DAU503.DAW
0060	31	33	30	0A	44	41	59	42	52	4F	0A	44	42	41	32	30	130.DAYBRO.DBA20
0070	30	37	30	38	31	36	0A	44	42	42	31	39	37	37	30	38	070816.DBB197708
0080	31	36	0A	44	42	43	32	0A	44	42	44	32	30	30	33	30	16.DBC2.DBD20030

Test Channel 2

Devices: RFID-HF

Channel: HID1

Auto-Read: **ON**

Clear

0000	30	30	30	30	30	30	30	30	42	37	33	35	37	33	39	41	00000000B735739A
0010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	

It is now possible to test the features of your MX5 Device using the “**Module Test Tab**”. No special software is needed to test the Channel selected for each Device. Up to two Channels can be displayed and each Device is listed in the “Devices” box of each Test Channels. All the devices are in Auto Read mode and the data collected will be displayed in the capture box. The data is displayed in HEX and ASCII as shown above. This is a great way to see the output data of your custom settings for each device. The “Clear” button will clear the data of the appropriate capture box. Each Module will have its own test tab and the associated hardware for that module will be listed in the test tab Device box for each channel(s).

Fingerprint Tab

The MX5 Device Fingerprint Tab will allow you to scan a fingerprint for testing purpose only. If you have more then one Fingerprint module connected to the same computer, A dialog box will give you a warning and you will need to use the “**Fingerprint Module Selection**” to select the desired fingerprint scanner to test. Press the “**Scan**” button and place a finger on fingerprint reader. An image of your fingerprint will be displayed. If no finger is placed on the reader, the scan will time out.

Device Selector | Device Settings | File | User Manual | About | **Fingerprint** | RFID-Dual | Quickset |

Fingerprint Module Selection

{95DD3E0E-9C09-412F-6716-3B8416A446A6}

Fingerprint Control

Scan Cancel

Scan Timeout Counter

Fingerprint Image

Status

Success



All the MX5 products as shown above can be adapted to have a Fingerprint module from Digital Persona. The Bio metric reader used in all the MX5 products is module # TCRF1C USB reader which works with all Windows Login, and many 2FA applications on the market today. SDK and Drivers for various platforms and sample software is available free. Contact Sales for more info.

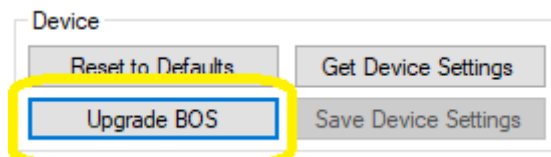
Setting up **Windows 10** for Bio metric Fingerprint Logon:

- Select the Start. button.
- Select **Settings** > Accounts.
- Sign-in** options on the left. ...
- Click Get started.
- Enter your PIN.
- Scan** your finger on the **fingerprint reader**. ...
- Click Add Another to repeat the process with another finger, or close the program.

The drivers for the finger print module are already included with the Windows 11 / 10 OS depending on the version release. If it is not installed, it is free to download.

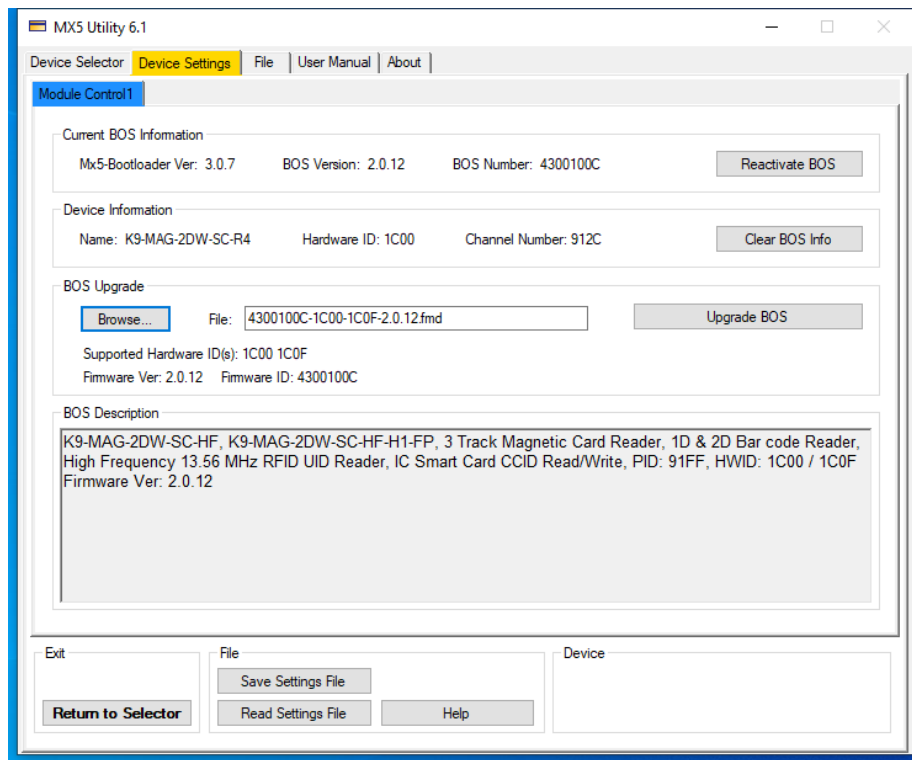
Using **Upgrade BOS** option

In order to Upgrade the BOS (Basic Operating System) Application, you must first go to “**Device Settings**” tab of the desired unit you wish to Upgrade. At the bottom right side of the menu, Select “**Upgrade BOS**” button.



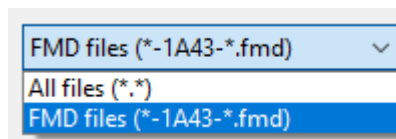
A dialog box will appear asking if you wish to continue. Select “Yes” and the MX5 unit will sound a long beep, Flashing the LED and it will start the Boot Load internal application in the MX5 device. A steady beep and LED flash will be noticed once the MX5 unit is in Boot Load mode. The MX5 Utility will return to the “**Device Selector**” screen. Simply select the device you placed in Boot Load mode and now select the “**Device Settings**” Tab.

The Screen will now display the “**Module Control**” Window for BOS Upgrade page as shown below.

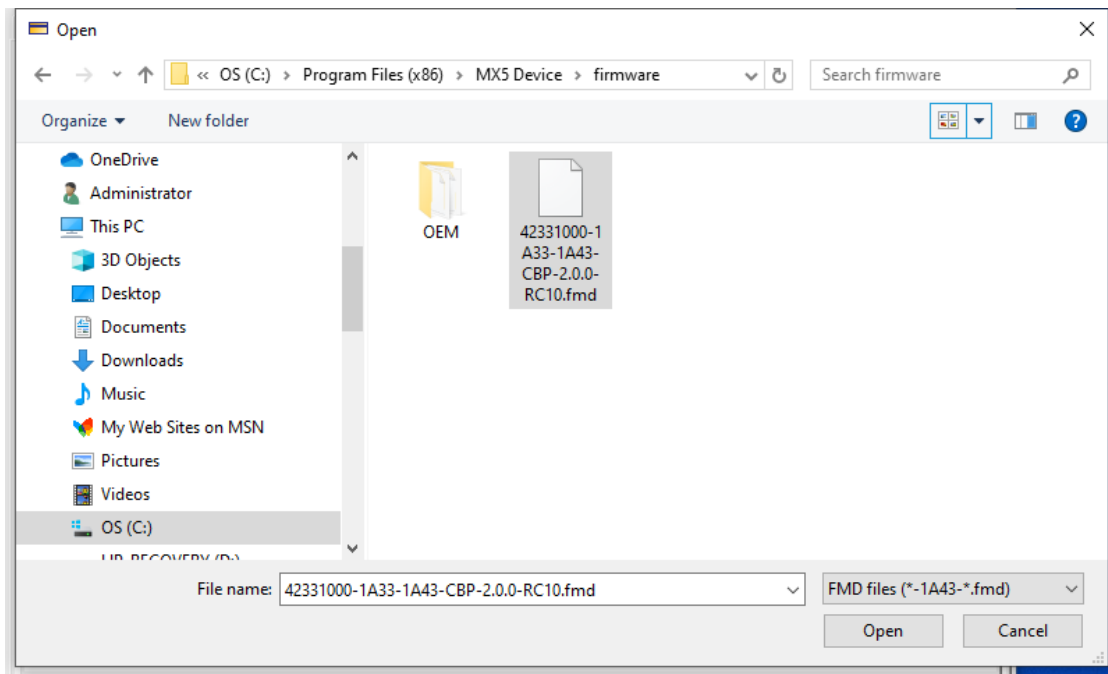


“**Current BOS Information**” area will display the MX5 Device’s current information stored in its flash memory of the selected MX5 Device. If you have started the upgrade process by error and do not wish to change the firmware, press the “**Reactivate BOS**” button and the MX5 Device will exit the Upgrade page and resume with the current BOS in the MX5 device. Should the BOS application be damaged or corrupt, The “**Reactivate BOS**” button will be greyed out and an Upgrade is needed.

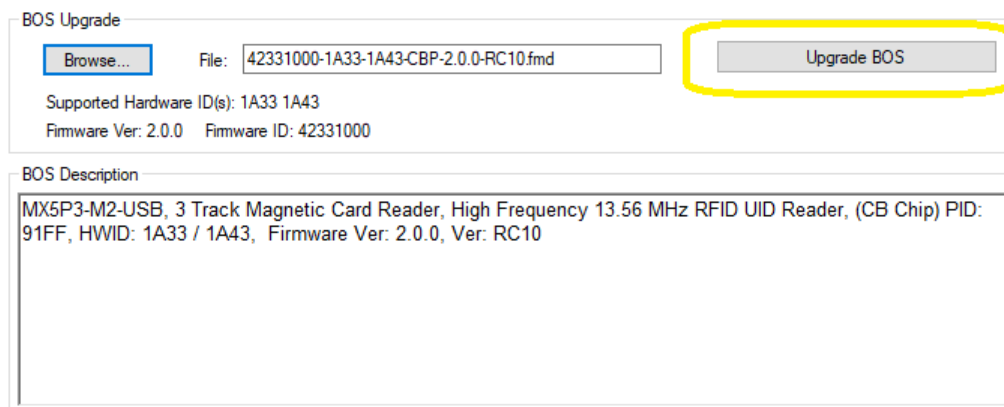
“**Device Information**” is the information about the device hardware that is connected; like the Device Name, the Hardware ID # and the Channel ID #currently installed. “**Clear BOS Info**” will clear all the current BOS information of the selected device’s flash memory. You will no longer be able to reactivate the device after selecting this option. A new BOS install will be required. In the “**BOS Upgrade**” area, Select the “**Browse**” button to open the File selection Dialog box. Select the directory where the Firmware files (FMD) you wish to install are stored . The MX5 Utility Default file locations is “C:\Program Files (x86)\MX5 Device\firmware” . Select the appropriate File listed or Using the File Filter Drop down box , Select the desired filter. Two options are shown. One is for All Files (*.*) and the other will filter the files to the matching HWID of the Device in Boot Load mode.



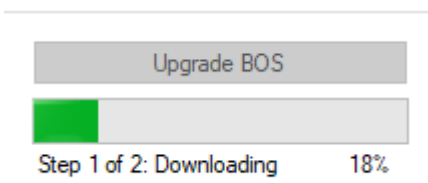
When the desired file is selected, press the “**Open**” button.



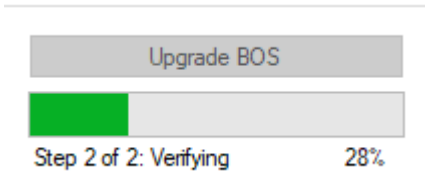
The “**BOS Upgrade**” and “**BOS Description**” dialog boxes will be updated with the selected files information. If the selected file HWID number matches the device HWID number, Then the “**Upgrade BOS**” Button will be available. Press the “**Upgrade BOS**” Button to proceed with the upgrade process.



The progress bar for the upgrade is shown in two steps:



1) The First Step is the Download File to Device. The MX5 Device will be beeping and the LED will be Flashing for this entire first Step.

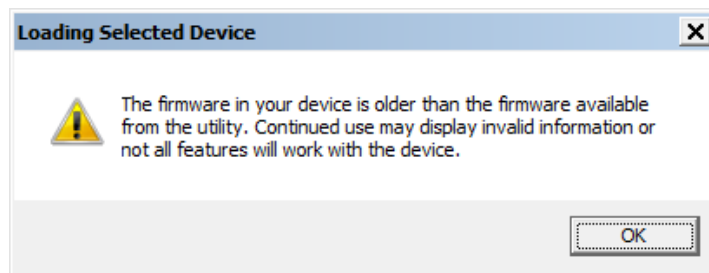


2) The Second Step is the Verification process. At this point the MX5 Device will stop beeping and the LED will be stop Flashing. Once the Verification process reaches 100% , The MX5 device will automatically restart with the new BOS installed and the Utility will switch to the **Device Selector** Tab.

Note: If the “**Update BOS**” button is clicked and if the USB cable for the device is disconnected or the power to the computer has stopped, the firmware process will fail and the device will need to be flashed once again. (All MX5 devices are designed with a Boot Load recovery program) So updates maybe interrupted without damaging the MX5 device. Should the device power up with the LED and Beeper sounding every second, Then the device has failed to upgrade and is ready to be updated once more. Simply open the MX5 Utility, select the device and repeat the UPGRADE Process above.

Helpful Tip:

When selecting the “**Device Settings**” TAB for your Selected MX5 Device, you may get this Dialog Box Warning. The MX5 Utility will automatically verify that your currently selected MX5 device has the latest BOS firmware version in order to support the current MX5 Utility Version.

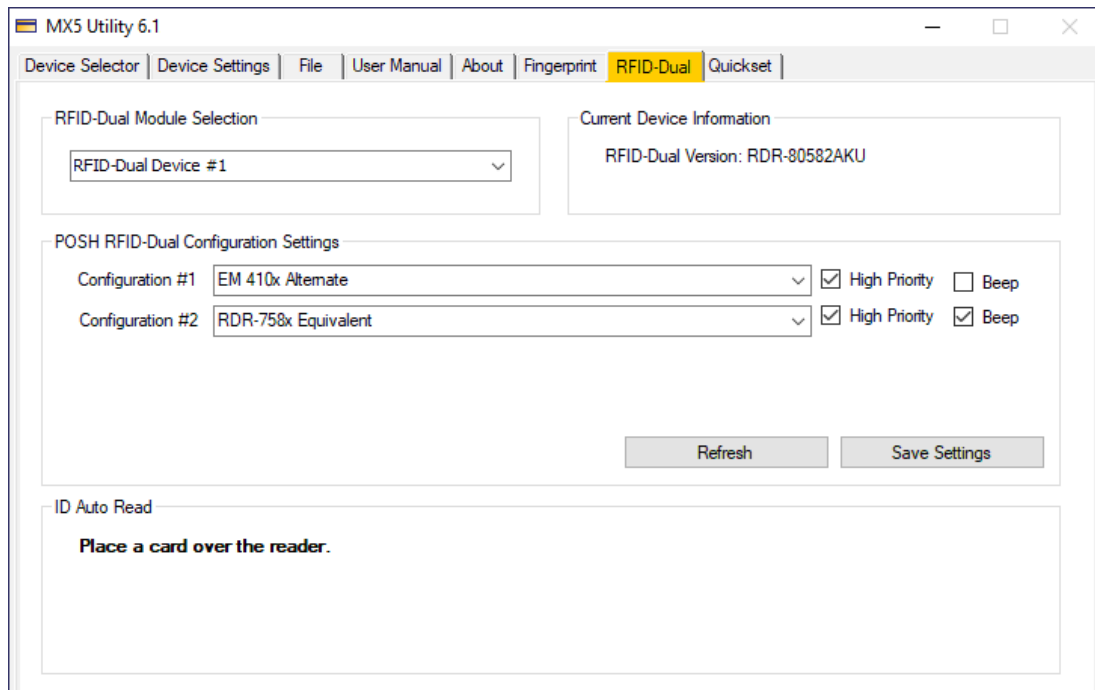


It is recommended that you Upgrade the BOS before using this Utility before proceeding to changing any settings.

RFID-Dual Tab

The **RFID-Dual** tab will only be present when an RFID-Dual device is part of the MX5 reader combo. The device is an RFIdeas Model RDR-80582AKU OEM module installed inside the MX5 reader, which allow you to read the UID of a variety of RFID card types. The settings for this reader are saved in the RFIdeas OEM Dual Frequency Device flash memory. The settings & options on this tab are simplified to only support selecting / saving a card type for configuration # 1 and #2 and a test area is provided for reading the “**ID Auto Read**” UID cards with the selected card types in configuration # 1 and #2. Other

RFIdeas OEM devices maybe used and can be configured using this tab. If you require additional configuration changes to the OEM module, We recommend that you use the utility provided with the OEM Module by the manufacture RFIdeas. For details of the card types and supported card list in each configurations, refer to the OEM manual provided by RFIdeas. Use the configuration pull down list to change the card type to read for each configuration. “**Save Settings**” once you have completed your changes. You can refresh your current settings by selecting the “**Refresh**” button. You will need to save your changes first before the ID card type will be able to be read in the “**ID Auto Read**” dialog box.

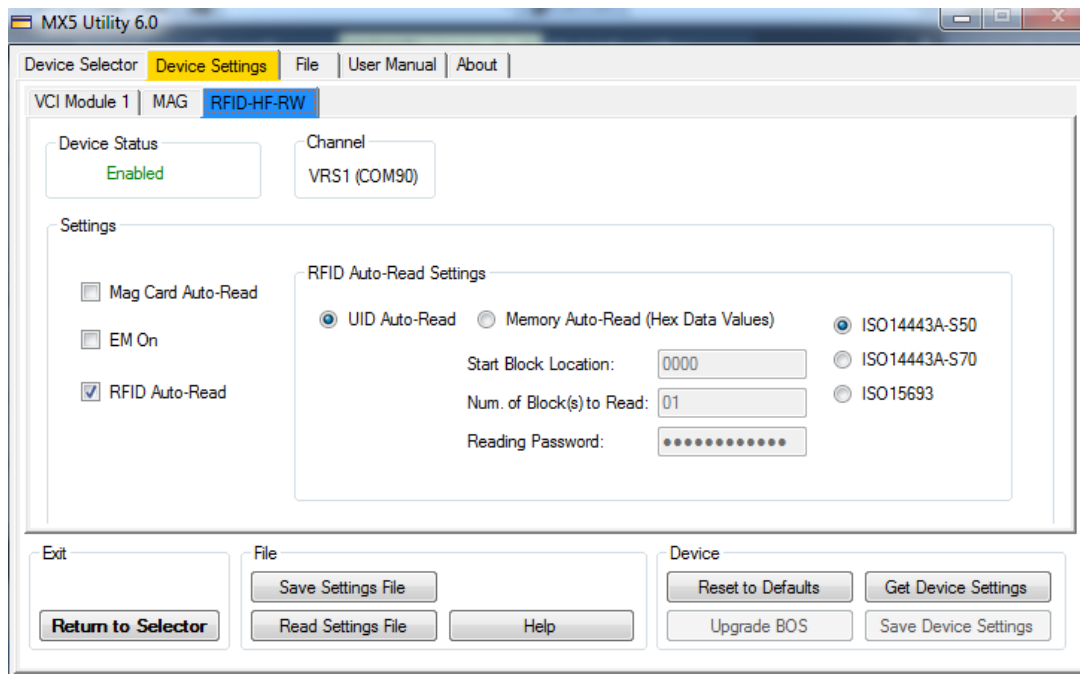


If multiple RFID-Dual modules are connected to the same computer, a dialog box may appear informing you of this and after pressing OK, the **RFID-Dual** Tab will open. At which time you will need to use the “**RFID-Dual Module Selection**” box to select the appropriate reader you wish to verify and / or configure. It is recommended to only have one RFID-Dual device connected to the same computer when configuring the device. This may avert configuring the wrong device. A beep will be heard from the selected OEM device upon selecting the tab and / or when the module selection has been changed. How to use or interface to the OEM Module is not explained in this manual and you should refer to the OEM manufacture for details on how to interface and use this OEM module.

Warning: Using this tab to configure other devices other than the model “RDR-80582AKU” OEM device is at your own risk. POSH will not be held responsible or libel for any damage that may result from using this utility with your own OEM device.

RFID-HF-RW Settings Tab

This tab is available to assist configuring some Read/Write features of the M2 HF RFID reader. Refer to the RFID-SDK manual for more information on how to Read/Write RFID cards using the MX5 Plus M2 reader Device. It is recommended to refer to the RFID-SDK manual for more information on available features and settings. We will only be covering basic features of the M2 RFID-HF-R/W in this manual.



“Mag Card Auto-Read” This option is used to enable the magnetic card data to be read when Auto Read is activated. Note that no magnetic card data will be sent from the MX5 device until the Auto Read command is sent. The desired magnetic data is selected by using the MX5-Utility. Not selecting this option will turn OFF the magnetic card from being read when Auto Read is activated. Press the **“Save Device Settings”** to save the desired setting for this option.

“EM On” This option will only enable the Auto Read function for the UID EM decoding module. This option will be ignored by your MX5 device should it not support the dual LF & HF decoding hardware. The EM UID (Unique ID number) will only be sent by the MX5 device once a card is presented to the reader. Note that the “RFID Auto-Read Settings” have no effect on the EM Data output. Press the **“Save Device Settings”** to save the desired setting for this option.

“RFID Auto-Read Settings” This option is used to enable the RFID Auto Read feature. You must configure the **“RFID Auto-Read Settings”** in order to ensure a desired result. Press the **“Save Device Settings”** to save the desired setting for this option.

“UID Auto-Read” This option will enable the RFID Unique ID number to be read when an RFID Card is presented to the MX5 Device. The Auto Read command has to be enabled in order for the Read to occur automatically. Press the **“Save Device Settings”** to save the desired setting for this option.

“Memory Auto-Read” This option, when enabled, will Auto-Read a specific memory location of the RFID card. You must specify the start address of the desired memory location, the number of 16 byte blocks to read and the password to perform this task. You can only read memory locations in blocks of 16 bytes. Depending on the card type you will have an address range of 0000 - 003F Hex for S50 Mifare 1K memory cards and an address range of 0000 – 0FFF Hex for S70 4K memory cards. The data must be entered in a 4 byte hex address. Press the **“Save Device Settings”** to save the desired setting for this option.

“Blocks to Read” This option is used to enter the desired number of block(s) to read starting at the Memory Auto Read address. The data is read in blocks of 16 bytes. Care should be taken when reading large number of blocks. It would be recommended to insert the card into the card holder or place the card on top of the table top MX5 device in order to ensure successful read or writes of large data blocks. Press the **“Save Device Settings”** to save the desired setting for this option.

“Reading Password” This option is used to enter the reading password for the card. Enter the hexadecimal representation of the password here. Note that the password is never shown for security reasons. Press the **“Save Device Settings”** to save the desired setting for this option.

“Select the Card type” This option is used to select the card type. If you are using the Limited Version RFID Utility you should only select the ISO1443A-S50 option. The Test Menu tab for the S-50 will not open until you have selected and saved this option. Press the **“Save Device Settings”** to save the desired setting for this option. Other card options are available; contact your hardware provider for more information on SDK software options. The reading password is never shown once it is saved.

- ☒ ISO14443A-S50
- ☐ ISO14443A-S70
- ☐ ISO15693

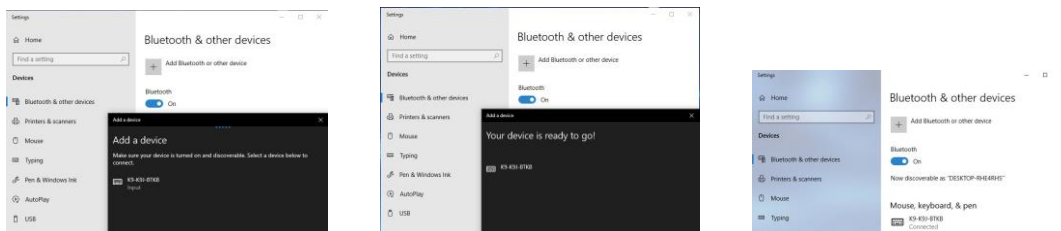
“Get Device Settings” This option will get the current settings that are saved in the flash memory of the MX5 device and it will be displayed onto the screen. Note that upon opening the port of the MX5 device, the MX5 saved options are automatically displayed.

“Save Device Settings” This option will save all the currently displayed options on the screen into the MX5 Plus Device flash memory.

Bluetooth Tab

The **Bluetooth** tab will only be present when a MX5-BT (Bluetooth) device is Selected. The settings & options on this tab are simplified to only support **“Clear Paired Device”** / **“Save New Reader Name”**. The “Bluetooth Status” is also displayed for the selected MX5-BT device, YES = BT-ON and NO = BT-OFF. **“Clear Paired Device”** will un-pair the selected MX5-BT device from the Paired BT-Receiver Device MAC ID shown. Replying “YES” to the POP-UP prompt will Automatically Un-pair/Save your MX5-BT new settings and place your MX5-BT device in Pairing Mode. Pairing mode is only invoked once the USB cable of the MX5-BT is Removed from your PC USB Port. The MX5-BT device will be in Pairing mode and will Double Beep/Flash to indicate Pairing Mode. The MX5-BT device will stay in Pairing mode and wait to be paired with your BT-Receiver for up to 10 minutes. If no device is paired after waiting 10 minutes, the MX5-BT device will auto shut off to conserve battery power. If the MX5-BT device is not paired when powered OFF, the MX5-BT will remain in pairing mode when power is restored. Once in pairing mode, you can pair your MX5-BT device by going to the pairing option of your BT-Receiver. Look for a Bluetooth device having the MX-BT reader name. (K9-K9J-BTKB default Name) or the custom Device name you have Saved. You can refresh your current MX5-BT settings by pressing the **“Get Device Settings”** button.

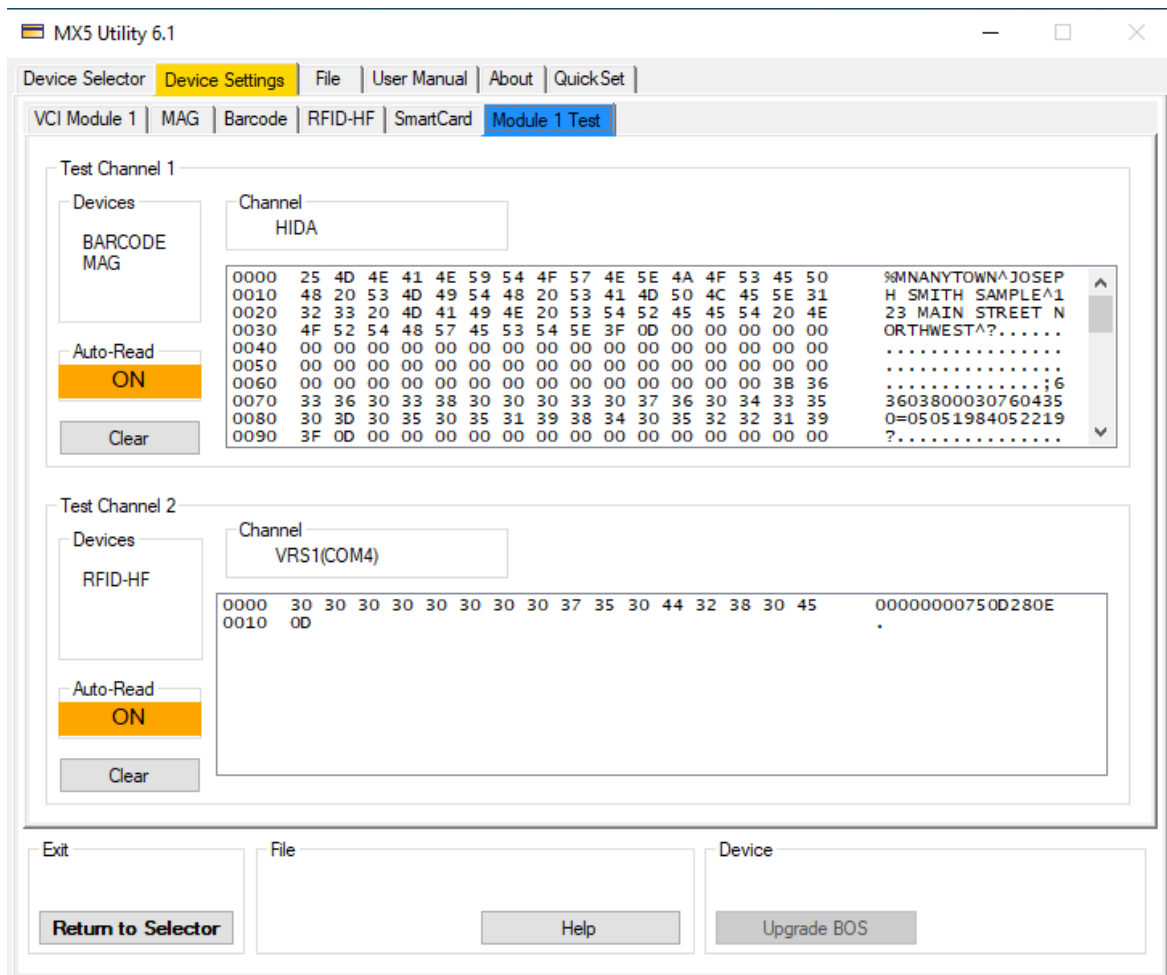
The Example below shows you how to connect the MX5-BT device to your Windows 10 OS. In this example the default MX5-BT device name is used.



To ensure Auto re-connection to the MX5-BT device to your Windows 10 PC, we recommend using the [Bluetooth-Live](#) which is a free application provided by POSH MFG Ltd. This app will maintain Win 10 Bluetooth to stay connected to the MX5-BT Device. See the application Manual of [Bluetooth-Live](#) for more details and use. It is always recommended to removing OLDER paired devices event if the name has not changed. The Mac address may have changed while the Device name remained the same. Not removing the older devices may cause connection issues. Do not have more then 9 BT devices on the same Windows PC. This limit is part of the BT- Dongle used on the PC. See the manual of your Tablet/Phone for pairing instructions. See the MX5-BT Device section for more pairing instructions on how to manually invoke Pairing mode for your selected MX5-BT Device.

Module 1 Test Tab

The **Module 1 Test** tab will allow you to test the selected MX5-Device using the selected USB interface(s) for each available Modules. This allows your to test KB, VRS and all HID1, 2, 3, A Channels without the use of external test software or applications to verify the functionality of the hardware module. (Excluding Smart Card module) Note that VRS testing can only support a single connection for testing. If you have any other applications or tools using the same VRS port, it is suggested to close the APP or Tool while testing VRS ports in the MX5-Utility.



While having the “Module 1 Test” tab open, you can test the functionality of each Devices. Each devices will be assigned to a specific Test Channel as per your “VC1 Module 1” configuration. The Data will be displayed in HEX format and ASCII printable format on the right hand side of test box. Each line will display 16 HEX Characters of the data proceeded by the 16 ASCII chars. Each line of the data read has a line number starting at 0000 for each read of the device. Use the “Clear” button to clear the data from the specific Channel. You can capture the data of each channel by highlighting the data and using Ctrl C to copy and Ctrl V

To paste the data. If testing the keyboard channel, ALL devices data will be sent to that one Channel. Ensure that the Cursor is inside the Channel BOX before reading any ID on all modules. This eliminates the use of NOTE PAD for testing Keyboard or Bluetooth-Keyboard mode. Note that the Channel will display the captured data Channel and the Device(s) Box will show where each module will output its data read. “Auto-Read” will be ON should the test Channel be active.

Appendices

Section A: RFID Output Manipulation Commands

This section will explain and illustrate the various available commands for the output manipulation of the UID read by the RFID device. The results will vary depending on your selection of a “decimal / hexadecimal” output and the “Selected Padding / Truncation”. (Factory default settings are used for the illustrations shown below)

Note that there is no limit on how many times you use the same command in the Instruction List.

The following illustration is using an RFID – HF card. The commands for the RFID – LF will be the same.

There are 6 Available Commands:

Some command have Bit/Byte adjustments. The Instruction List is a series of commands that will be executed on the data read from the reader and each command are executed from top to bottom of the list, one instruction at a time.

Here is the data read from an RFID – HF card read with the above defaults:

- 1) 00000000DDCCBBAA This data is in hexadecimal format with 16 characters zero padding.
- 2) 00000000CF45AC5A

By adding **Reverse By Byte** command to the list and Saving the changes, you output will look like the following:

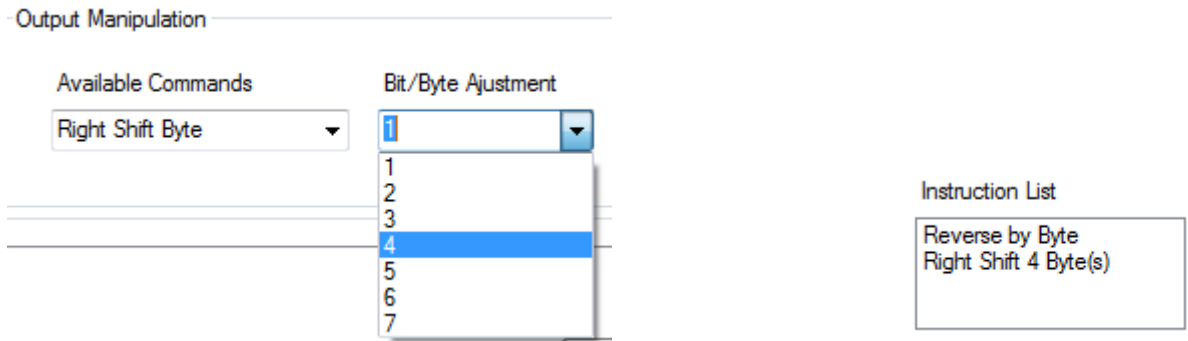
Instruction List

Reverse by Byte

- 1) AABBCDD00000000 Each byte are simply moved as is from front to back.
- 2) 5AAC45CF00000000 Notice that “5A” is moved in the same bit order from front to back.

The same bit order is maintained for each byte of data.

If you require the data reversed but the leading zeros to be in the front of the data and not in the back. Then you will need to “**Right Shift Byte**” the data by 4 bytes as show below and add the command to the **Instruction List**:



The data is the following before the manipulation:

- 1) 00000000DDCCBBAA
- 2) 00000000CF45AC5A

The resulting output will be :

- 1) 00000000AABBCCDD
- 2) 000000005AAC45CF

Also note that if you continue to shift the data to the right, all the bytes on the right will be lost once it is out of the field. New data on the left will be inserted with zeros keeping the data length to 16 bytes. There is no limit on how many times you use this command in the Instruction List.

Special Note:

Once again, care should be taken when you read the data cards, This illustration is using a 4 byte UID example. If you are using a 5 byte UID or a mix of 4 and 5 byte UIDs, then you should only shift the data 3 bytes otherwise you will loose one byte of data if it is a 5 byte UID that was read.

Left Shift Byte Command:

This command will shift the data left. All bytes of data that are shifted to the left that is out of the field will be lost. New data on the right will be inserted with zeros keeping the data length to 16 bytes. There is no limit on how many times you can use this command in the Instruction List.

Reverse by Bit Command:

This command will reverse the 8 bits of each byte of data read. For example if the byte is “AC” hexadecimal or “10101100” binary, the reverse by bit command will change the byte to “35” Hex or “00110101” Binary.

If the Card Data is the following:

- 1) 00000000AABBCCDD
- 2) 00000000CF45AC5A

After a Reverse by Bit Command the resulting data output will be the following:

- 1) 55DD33BB00000000

2) 5A35A2F300000000

Left Shift Bit Command:

This Command will shift the all the data Left (1 – 7) bits. The Left most bit(s) will be lost and a Zero(s) will be added to the Right most Bit(s).

If the Card data is the following: 1) 00000000DDCCBBAA This data is in hexadecimal format with 16 characters zero padding.

For our illustration bellow we will add the binary conversion of the data read to assist in the understanding of the left-bit-shift command.

The following Instruction List was used below:

Instruction List

Reverse by Byte
Left Shift 1 Bit(s)

The first command on the list is “Reverse by Byte” will produce the following data output:

1) AABCCDD00000000 Hex Binary:
1010101011101111001100110111010000000000000000000000000000000000

The second command on the list “Left Shift 1 Bit(s)” will shift the binary data 1 bit left and the left most bit will be lost. The Right Most bit will be filled with a Zero. The resulting data output will look like this:

1) 557799BA00000000 Hex Binary :
01010101110111100110011011101000000000000000000000000000000000

Looking at the Binary output will help to see what happened:

First Bit of Data is shifted Left and Lost

```

1010101011101111001100110111010000000000000000000000000000000000
01010101110111100110011011101000000000000000000000000000000000

```

A Zero is added to the Right Most Data Bit

The bottom of the illustration above is the resulting output data after the second command is executed.

Right Shift Bit Command:

This command will shift the all the data right (1 – 7) bits. The right most bit(s) will be lost and a zero(s) will be added to the left most bit(s).

For our illustration below we will add the binary conversion of the data read to assist in the understanding of the left bit shift Command.

The following Instruction List was used below:

Instruction List

Right Shift 1 Bit(s)

If the card data is the following:

[illegible]

After the first command “Right Shift 1 Bit(s)” the data will look like the following:

[illegible]

Looking at the Binary output will help to see what happened:

First Bit of the Data on the Right is Removed and lost

[illegible][illegible]

A Zero is added to the Left Most Data Bit

The bottom of the illustration above is the resulting output data after the first command is executed.

Left Shift Byte Command:

This command will shift the all the data Left (1 – 7) bytes. The left most byte (s) will be lost and a zero(s) will be added to the right most byte(s).

The following Instruction List was used below:

Instruction List

Left Shift 1 Byte(s)

If the card data is the following: 1) 00000000DDCCBBAA

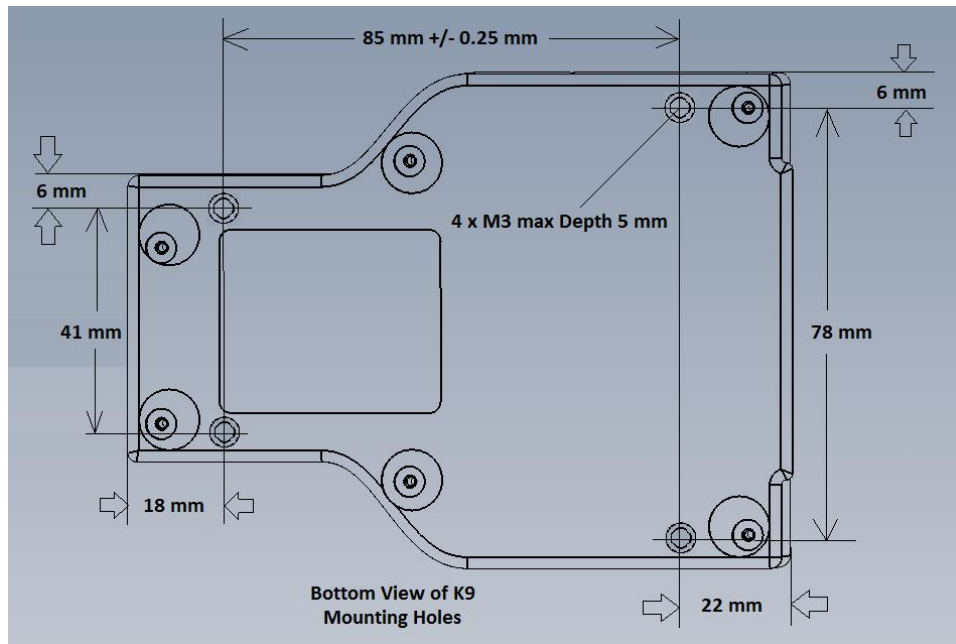
After the first command “Left Shift 1 Byte(s)” The data will look like the following:

1) 000000DDCCBBA00 Note that the left most byte was lost and 00 was added to the right most byte.

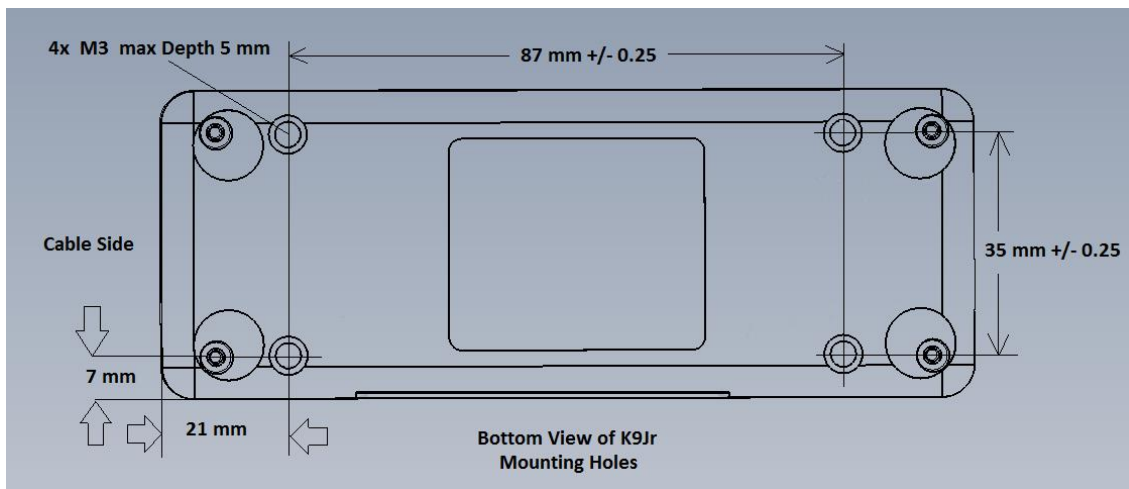
Note that all the above illustrations was using the data output in HEX mode. Should you use the data output in decimal mode then all the results will be different. Care should be taken when you chose your commands. Data maybe lost if the resulting decimal number is larger then 17 decimal positions. Negative numbers may also be generated by reverse commands and may produce lost data by the negative number generated. The output will always be truncated to the truncation selected. Auto Mode in decimal may result in lost Data. Also note that various card types will produce different number of bytes of UID. Unselecting unused card types may help.

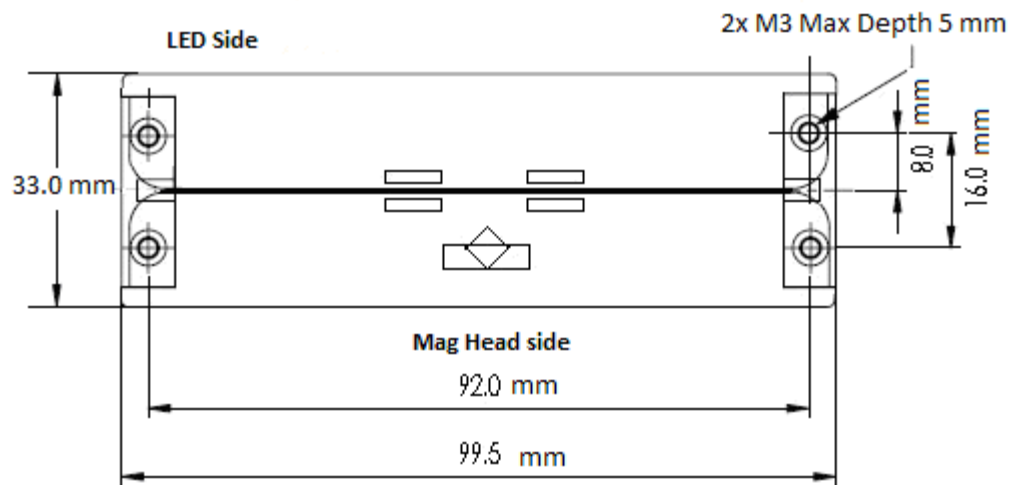
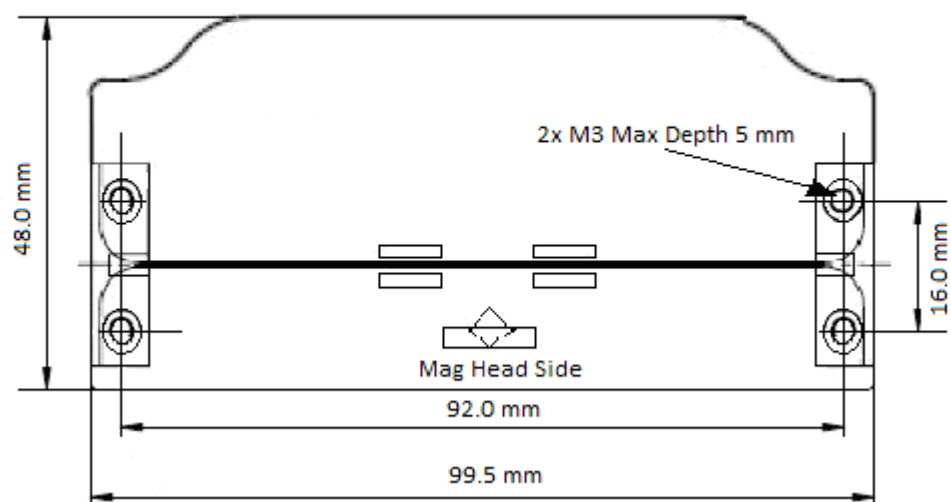
Section B: Product Mounting Dimensions

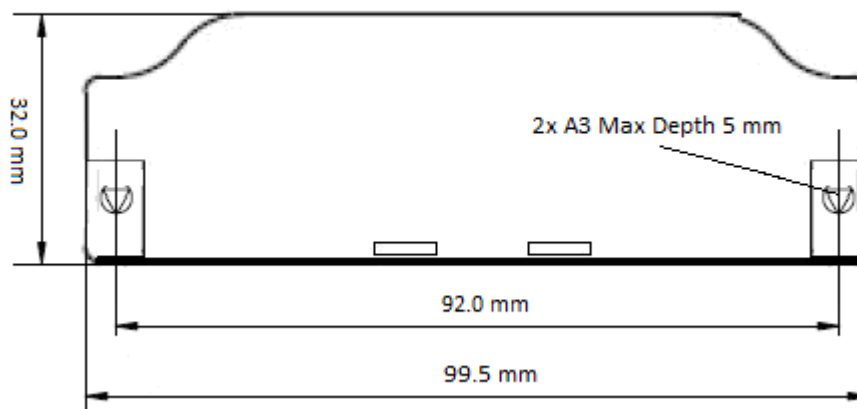
All K9 Versions:



All K9Jr Versions:



All MX5P3 Versions:**Bottom View of MX5P3****All MX5P3-R4-SC-EM Versions:****Bottom View of MX5P3-SC-R4-EM**

All MX5PC-R4-SC-EM Versions:**Bottom View of MX5PC-SC-R4-EM****Section C: Firmware Revision History**

Version #	Comment:
0.90	First Release of Firmware.
0.95	Added USB PORT Controls, Composite USB Ports.
0.98	Added RTOS, USB Channel Selector and Device Output Control, Quick Set Feature, Universal fixed VID PID for all MX5Plus series.
0.99	Fixed RFID HF read speed, RFID HF/LF Data Manipulation, SC Smart Card Features.
1.0.0	Added New 2D Camera 1CXX series, 2D/1D Auto Sense, Fixed RFID HF read Speed. Added AAMVA Auto Parsing to 2D barcode, Auto Sense Mode
2.0.11	Added Magnetic Card Data Parsing, Non Composite Support VID 0980, PID 91C4 to all K9 & K9Jr, Improved RFID-R4, Added RFID-M2-SC, + M2-R/W, and fingerprint modules, Magnetic setup card support for quick settings, added Save & Retrieve Settings from File for all MX5 Products.
2.0.12	Added RFID Custom Padding / Truncation from 1 to 16/17 Characters and “ Custom Padding ”. K9 & K9Jr, “ Bluetooth ” product Support. “ Module Test ” TAB for Testing Channel connections and Devices on each Channel. New & updated Camera support for all HWID: 1Cxx series for K9 & K9Jr products.

Section D: USB Power Requirement

Product Name:	Minimum USB Power Required:
MX5P3	100 mAmp
MX5P3-SC	100 mAmp
MX5P3-SC-R4 & SC-M2	100 mAmp
MX5P3-R4 & M2	100 mAmp
MX5P3-EM	100 mAmp
MX5PC-SC	100 mAmp
MX5PC-SC-R4 & SC-M2	100 mAmp
MX5PC-R4	100 mAmp
MX5PC-EM	100 mAmp
 MX5PT	 100 mAmp
 MX5-All K9 Series	 500 mAmp
MX5-All K9Jr Series	500 mAmp
MX5-All K9-BT Series	500 mAmp
MX5-All K9Jr-BT Series	500 mAmp

Special Note: It is recommended that you do not use the USB Power Smart or USB Power Saver options on any USB ports that is used by any of the MX5Plus series products listed above. It is recommended that you turn off these features. If you use Sleep mode on your computer, The USB Ports may need to be reactivated upon power up. When using a USB HUB, you will need to ensure that a Powered HUB is used that can provide 500 mAmp on each USB ports when using the K9 or K9Jr products on a USB HUB. Typically all unpowered 4 port USB HUBS may only provide MAX 100 mAmp per port.

Note that all Bluetooth and Wifi MX5 products require 500 mAmp USB power source for Charging. It is possible to connect the device to a PHONE USB Charger of 500 mAmp or Higher in order to get optimal charging speed for your MX5 BT device. A high Speed Charger and/or AIR Charger option is also available for your MX5-BT device, ask your sales associate for more details.

Section E: RS232 DB9F Cable Option

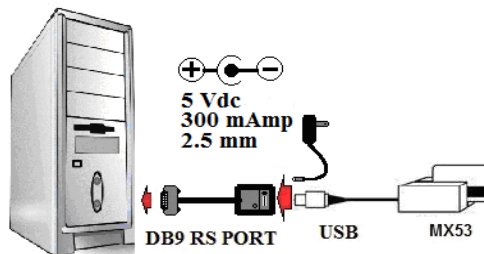


CBL-MXU-RS

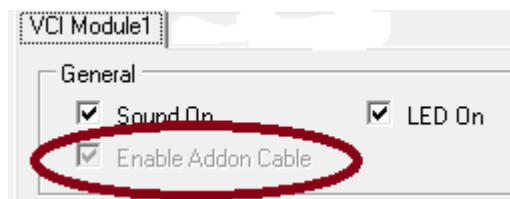


Connect any POSH USB device

The **CBL-MXU-RS** cable provides for a Serial RS232 connection using a DB9 connector. The cable length between the PC's serial port and the **CBL-MXU-RS** is limited up to 300 feet (100 Meters) in length with appropriate cable gauge. You will be required to use a custom firmware with the ADD ON cable option enabled. Also the hardware may require custom changes to support this feature. Contact POSH sales for more info.



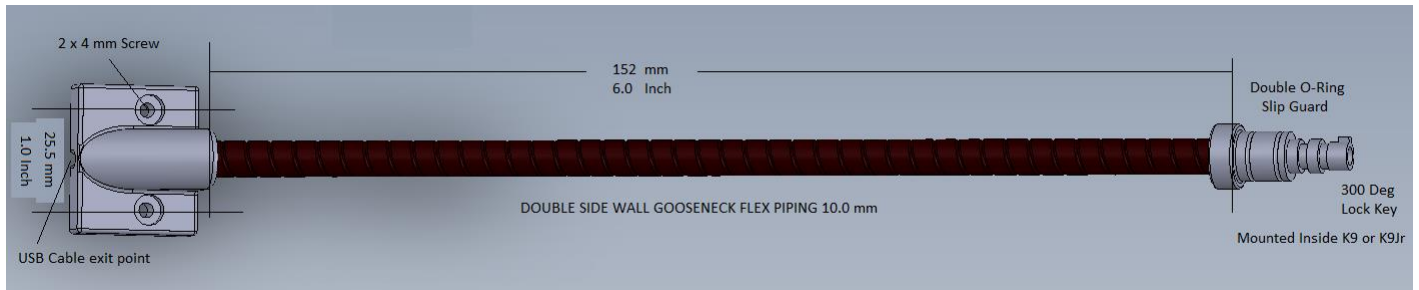
Note that the **CBL-MXU-RS** cable includes a 5 Volt dc,  center negative power adapter which supports both 120V/220V 50/60Hz. The SC Smart Card devices are not supported by this cable. Any device that has a SC Device combination should disable the DOC (Device Output Control) of the MX5 utility. Barcodes, RFID UID, Magnetic Cards when read by the MX5Plus products, will output to the computer via an RS232 port in ASCII. The fixed Baud Rate is 9600, No Parity, 8 data bits, 1 stop bit. (9600,N,8,1) If you require a different baud rate settings, Contact POSH sales for OEM firmware and add on cable for RS232.



Once you have installed the add on cable firmware version, In the VCI Module General Settings, the “Enable Add on Cable” will be checked. To uncheck this option, install the current firmware without the add on cable option.

Section F: Gooseneck Cable Option for K9 & K9Jr

The gooseneck cable option offers flexible orientation of your K9 and K9Jr product. It can be easily moved and turned for ease of use by either the driver or passenger giving easy access to the various readers. It includes a 167 cm (5.5 Ft) USB cable.



K9 with Gooseneck Cable



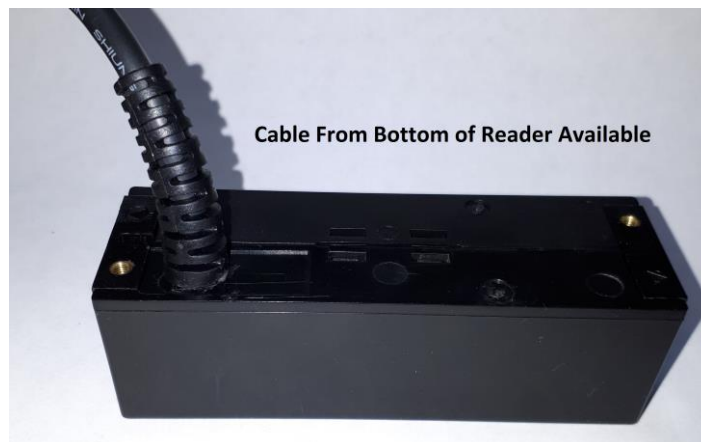
K9Jr with Gooseneck Cable

Section G: MX5P3 Classic & Lite Cable Position

The MX5P3-CLS and MX5P3-LIT are both identical readers with the exception of the cable exit location from the reader.



MX5P3 Bottom Feed Cable



“Cable from bottom of reader” is also available upon request.

Section H: How to Read Magnetic Stripe Cards

Most magnetic cards follow an ISO/IEC 7811 encoding format which can be two or three tracks as shown below.



Two Track CR80 Card (1 / 2)



Three Track CR80 Card (1/ 2 / 3)

The black strip on the bottom of magnetic cards above contains the magnetic card data and each track contains different data. The strip can contain 2 or 3 tracks. The thickness of the black strip determines how many tracks the card can have. Typically the thinner strip contains 2 tracks of data Track 1 & Track 2. The thicker black strip contains 3 tracks of data, track 1, track 2 and track 3. The encoding of the data will vary from credit cards and ID cards. Credit cards usually follow the ISO encoding standard and ID cards usually follow the AAMVA encoding standard. The MX5 reader will automatically determine which card type you are using automatically and will output the data as per your settings. (See Magnetic Card settings for more details)

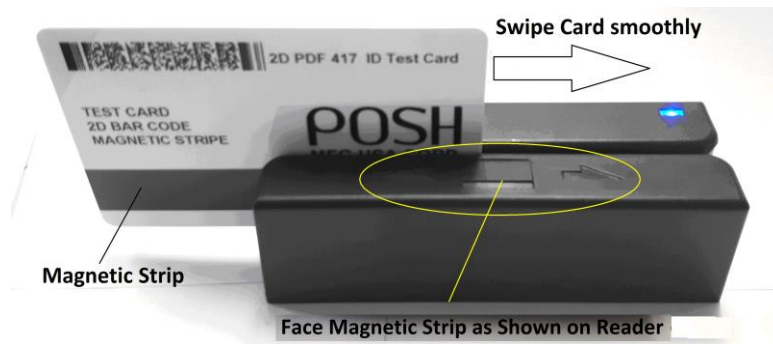
The ISO magnetic card strip can have three magnetic data tracks as shown below on your credit card:

		Recording Density (bits per inch)	Character Configuration (including parity bit)	Information Content (including control characters)
Track 1	IATA	210 BPI	7 Bits per Character	79 Alphanumeric Characters
Track 2	ABA	75 BPI	5 Bits per Character	40 Numeric Characters
Track 3	THRIFT	210 BPI	5 Bits per Character	107 Numeric Characters

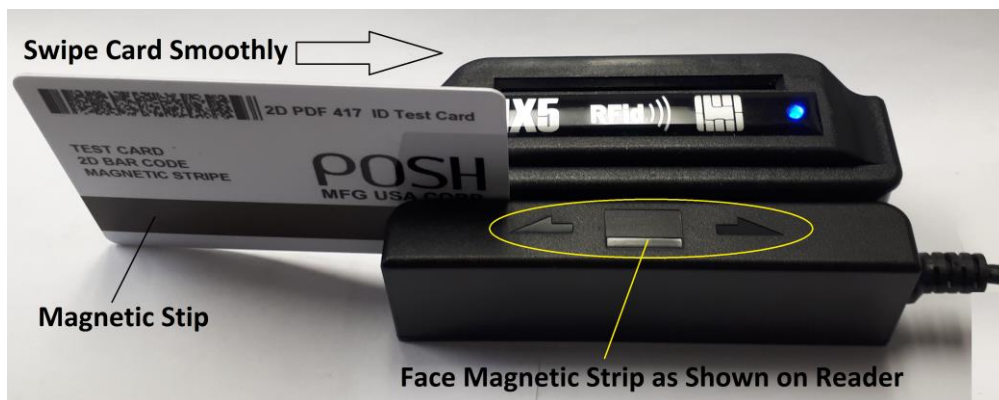
The AAMVA magnetic card strip has three magnetic data tracks as shown below on your ID / driver's license :

		Recording Density (bits per inch)	Character Configuration (including parity bit)	Information Content (including control characters)
Track 1	IATA	210 BPI	7 Bits per Character	82 Alphanumeric Characters
Track 2	ABA	75 BPI	5 Bits per Character	40 Numeric Characters
Track 3	IATA	210 BPI	7 Bits per Character	82 Alphanumeric Characters

Your application program will require the magnetic stripe reader to provide specific information from the card and will require the reader to be configured specifically for your application. Using the MX5 Utility, configure the magnetic reader to match your application track & settings requirements. (See your application magnetic stripe settings requirements) . Once your MX5 settings match your application requirements, you are now ready to read magnetic stripes. Position the magnetic stripe card as shown on the cover of the magnetic reader. Starting on either side swipe the card smoothly from one side to the other. You can read the magnetic stripe from left to right or right to left. Either way will give you the same output results. It is important to swipe the card in one smooth motion without stopping. You will hear a single beep from the buzzer on a successful read and two beeps will be heard on an error. When an error occurs, no data is output. The LED will also flash at the same time as the buzzer.



MX5P3 READER



MX5P3-SC-RFID READER



K9 READER

Section I: How to Read RFID Tags / Cards

Simply tap the RFID Card or tag by placing the RFID Card or tag within about 1 cm (1/4 Inch) of the RFID logo on the reader. Smaller tags may require to be positioned off to one side of the RFID reading field. A single beep / LED flash will be heard when a good read is completed.



MX5PC- RFID READER



MX5P3-SC-RFID READER



MX5PT- RFID READER



K9

READER



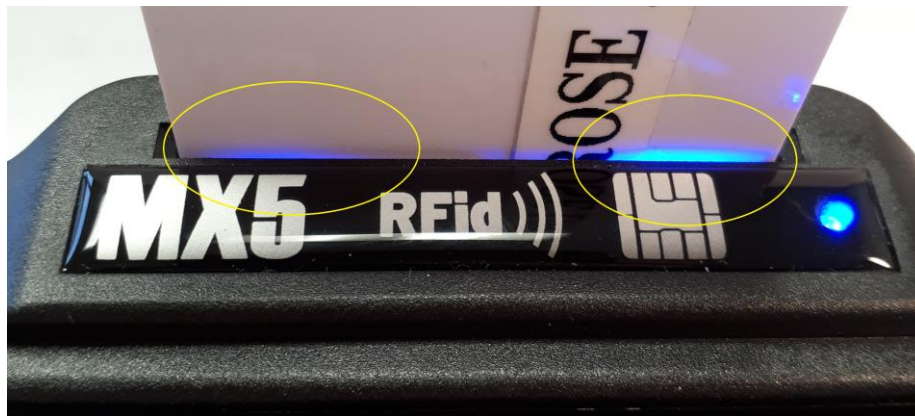
K9Jr READER

Section J: How to Read IC Smart Cards

Simply insert the SC Smart card as shown below for the various reader types. Note that the MX5Plus series supports Windows and Linux OS using Default CCID Drivers from the OS. For Linux you will need to edit the CCID file to include the POSH VID and PID & MI number for the Linux system to recognize the POSH SC CCID Reader. Vid : 0980 PID: 91FF MI: 07 Note that the MX5Plus SC Reader are composite USB devices which include a Machine Interface number MI: 07 . Windows will automatically recognize the MX5Plus SC Device and will install the Default OS CCID drivers. The Smart Card can be left in the SC reader when powering up the computer. The OS will automatically recognize the Smart Card and will read the Card. (Note that Older C8 version SC Readers will not support this feature and the Smart Card must be inserted once the OS has powered up for the OS to read the Smart Card)



MX5P3-SC-RFID



When the Smart Card is fully inserted two blue LEDs will light as shown indicating the card has been inserted.

**K9Jr****K9**

Led will Light when SC Card is Fully Inserted

Section K: How to Read Barcodes on K9 & K9Jr.

Both the K9 & K9Jr. use the same 2D/1D barcode cameras which do not emit laser for reading barcodes. An image is taken of the barcode and then decoded by the camera. The barcode result (Data) is output to the assigned Channel. (See D.O.C. Device Output Control and Channel Selector). The Camera is able to decode multitudes of barcode types from 1 Dimension to 2 Dimension Barcodes. See Barcode Tab for more details on Barcode types.



1D Bar Code Code 128



2D Bar Code PDF417

Drivers Licenses typically use 2D barcodes such as the PDF417 as shown above. The physical location of the barcode on the back of the drivers license can vary from state to state (Province) which is not a problem for the MX5 barcode readers. As long as the barcode faces the field of view of the camera, The barcode will automatically be found and decoded by the camera. Typical CR80 type ID (driver's licenses) follow AAMVA (American Association of Motor Vehicle Administrators) standards which depicts the Size, Barcode Type , Data Format and location area of the Barcode.



Typical Back of Drivers license ID with or without Magnetic Stripe.

The ease, accuracy and speed of reading the data from the 2D barcode on the back of the driver's license is greatly enhanced with the hands free 2D/1D barcode reader on the K9 & K9Jr. Located on both the K9 & K9Jr. you will find two ways to trigger the barcode reader. One method is by inserting the ID into the card holder slot located on the front of the K9 & K9Jr. This action will activate the built in optical sensor inside the card slot holder and will trigger the read action of the camera automatically. Once the camera has read the barcode from the field of view it will automatically output the data to the selected Channel. An alternative trigger method is by pressing the manual trigger button also located on the top of the K9 & K9Jr. which is also a blue LED indicator. See illustrations below.

**K9Jr.****K9**

The orientation of the barcode does not matter, just as long as the barcode is in the field of view of the 2D/1D camera. The camera when triggered, will turn on target lights which will flash onto the target area of the ID. Once the barcode is successfully read from the ID in the field of view, One beep will be heard from the reader after the data has been sent to the data Channel. If two beeps are heard, No data has been sent and the camera was unable to get any valid read from the ID presented in the field of view. Leaving the ID in the card slot, You can press the manual trigger button to have the 2D/1D camera try reading the ID barcode again. You can also choose to remove the ID and replace the ID in the card slot to retrigger the camera read cycle. The 2D/1D camera has a built in auto aperture adjustment when the lighting environment changes and may require multiple reads before the adjustment is automatically made. This is a normal process that may occur when the lighting changes.

Section L: How to configure SC CCID to work with Linux Ubuntu 20.+

This is the link to the Ubuntu official site for installing CCID:

<https://help.ubuntu.com/community/CommonAccessCard>

1. Login to a Linux console with root privilege
2. Install Pcsclite/CCID and test tools packages, or skip this step if they have already been installed

```
$sudo apt-get install libpcsclite1 pcscd pcsc-tools
```

3. Modify “/etc/libccid_Info.plist” text file to add support of K9 products

A) Find

```
<key> ifdVendorID</key>
<array >
    <string>0x08E6</string>
    ...
</array>
```

Add POSH vendor ID before </array>:

```
<string>0x0980</string>
```

B) Find

```
<key> ifdProductID</key>
<array >
    <string>0x2202</string>
    ...
</array>
```

Add POSH K9 product ID before </array>:

```
<string>0x91FF</string>
```

C) Find

```
<key> ifdFriendlyName</key>
<array >
    <string>Gemalto Gem e-Deal Pro</string>
    ...
</array>
```

Add POSH K9 string before </array>:

```
<string> K9 Multi Reader </string>
```

4. Reboot to restart pcscd service:

```
$ service pcscd restart
```

6. Run test utility:

7. *\$ pcsc_scan*

Section M: Quick Start

Quick Start

MX5 Utility 6.1

Device Selector | Device Settings | File | User Manual | About

Progress

Refresh Cancel Status Completed

Device List

53-CBP-MAG

Edit Selected Device

Message

To edit a device's settings, double click a device in the Device List or highlight a device from the Device List and then click the Edit Selected Device button.

Selected Device Details

Model: 53-CBP-MAG
Hardware ID: 1A30

Modules

☒ MAG ☐ Barcode
☐ RFID-HF ☐ RFID-LF
☐ Smart Card ☐ iButton
☐ Fingerprint ☐ RFID-Dual

Exit File Help

Exit File About Help

Callouts:

- If your device is not shown in the Device List, use the Refresh Button to generate the new Device List.
- When the desired device is shown in the Device List, Click the Image to Select the Device. Double Click the Image to Edit the Selected Device or Press the "Edit Selected Device" Button.
- To Exit and Quit the Setup Application Use the Exit Button
- Use the Help Button to open the User Manual to the Page of the Current Screen

MX5 Utility 6.1

Device Selector | **Device Settings** | File | User Manual | About

VCI Module 1 | MAG

General

☒ Sound On ☐ LED Status ☐ Card Slot Sensor ☐ External Trigger Button

☐ Enable Addon Cable

KB Character Case

☐ Upper ☐ Lower ☒ As Is

Variable Channel Interface Options

All Current USB Channels

MAG: KB

USB Channel Selector: KB (9101) Channel Selector Description:

Device Output Control

Device	Channel	Encryption	Device	Channel	Encryption
☒ MAG	KB		☐ Barcode		
☐ RFID-HF			☐ RFID-LF		
☐ SmartCard			☐ iButton		

Device Information

Model: 53-CBP-MAG Hardware ID: 1A30 Channel Number: 9101 BOS Version: 2.0.0

Exit File Device

Return to Selector Save Settings File Read Settings File Help Reset to Defaults Get Device Settings Upgrade BOS Save Device Settings

Callouts:

- Using the USB Channel Selector, Select the desired Channel Number for the USB Interface required by your Application Software. Do not change anyother settings until this option has the correct USB Channel
- Use the "Return to Selector" Button to leave the Device Settings Page and go to Device Selector

Section N: 2D Barcode Data Parsing to Magnetic stripe Data format

This section covers a special feature only available on version 1.0 or higher firmware revision for all K9 and K9Jr 2D units. AAMVA (American Association of Motor Vehicle Administration) is the standard used in North America to Encode both Magnetic Card Stripe and 2D barcodes found on most Government issued DL or ID. The 2D barcode used on the ID is typically a PDF417 barcode format. This barcode can hold up to about 2K of data. The Magnetic Strip on the ID can typically hold about 240 Bytes of Data. As you can see more data is available on 2D barcodes than the Magnetic stripe. The magnetic strip contains all the typical information required for most system queries on ID's. The 2D barcode contains all the same information as the Magnetic stripe plus much more. Many applications have been developed using the magnetic stripe data format for its system queries since it was first released prior to the 2D barcode format. Many older applications do not currently support 2D barcode formats and may only support Magnetic stripe data formats. More than 75% of new ID's now do not have Magnetic Stripe data. To support older applications, The K9 & K9Jr now have Auto Parsing of 2D barcodes and the data format is outputted in Magnetic Stripe format automatically. To enable this feature follow the instructions below.

There are currently three Auto Parsing features available, **Feature 1** typically follows the **AAMVA standard** and is set by going to the Barcode tab and enabling Prefix character # **254** as shown below:

Barcode Prefix/Suffix

Prefix ☒ (254)

Suffix ☐ (0)

☒ SendCR

☐ Direct Sunlight Reading

You may also add a suffix and / or the Carriage Return CR if it is needed.

Save New Settings to enable this feature.

Reserved Barcode Prefix Characters:

Prefix character # **240** Invoke 2D data parsing of the AAMVA 2D DL and extract the first name, last name, driver's license.

Prefix character # **241** Invoke 2D data parsing of the **Ontario Health Card** and output 10 digit Health number.

Prefix character # **242** Invoke 2D data parsing of the **Ontario Health Card** and output “#” + 10 digit Health number.

Prefix character # **243** Invoke 2D data parsing of the **Ontario Health Card** and output 10 + AA digit Health number & code.

Prefix character # **244** Invoke 2D data parsing of the **Ont. Health Card** and output “#” + 10 + AA digit Health number & code.

Prefix character # **245 & # 246** Invoke 2D data parsing of Ont. Health Card (Custom OEM) Call POSH for more details.

Prefix character # **249** Invoke 2D data parsing of the AAMVA 2D DL and convert the **Ontario Health Care Card** 2D barcode to Magnetic Stripe

Track 1-2-3 Data Format Automatically.

Prefix character # **250** Invoke 2D parsing of the **Ontario Health** 2D DL and convert to Magnetic Stripe Track 1 Data Format only.

Prefix character # **251** Invoke 2D parsing of the **Ontario Health** 2D DL and convert to Magnetic Stripe Track 2 Data Format only.

Prefix character # **252** Invoke 2D parsing of the **Ontario Health** 2D DL and convert to Magnetic Stripe Track 3 Data Format only.

Prefix character # **253** This will convert the **Ontario Health Care Card** 2D barcode to Magnetic Track 1-2-3 Data Format.

Prefix character # **254** Invoke 2D data parsing of the AAMVA 2D DL and convert to Magnetic Stripe Track 1-2-3 Data Format.

Prefix character # **255** Invoke 2D data parsing of the AAMVA DL and convert to Magnetic Stripe Data Format for “Rent Centrix”

Custom parsing is also available, Contact your supplier for more details or go to www.poshmfg.com and contact sales.

Section O: Magnetic Stripe Data Parsing

This section covers a special feature only available on version 2.0 or higher BOS firmware revision for all MX5 Magnetic Card readers. The Magnetic Strip on the ID can typically hold about 240 Bytes of Data. The magnetic strip contains all the typical information required for most system queries on ID's. Many applications have been developed using the magnetic stripe data format for its system queries since it was first released. That being said, many older applications software used Manual Card ID entries by typing in the ID number by Hand. This manual process is tedious, slow and prone to error. Since the data on the Magnetic stripe may contain more information than needed, we devised a simple way to parse specific data from any of the three Magnetic tracks on the Magnetic ID card. To enable this feature follow the instructions bellow. We have included in this manual a basic magnetic card explanation in the [Mag Tab section](#). More information on the various magnetic stripe data can be found on the web. For this example, a basic understanding of your ID Magnetic card data will be required and being familiar with the [Mag tab section](#) for the MX5 Mag reader will be helpful.

Using the MX5 Magnetic card reader, enable **All three tracks for both ISO and AAMVA**. Also enable “**Send Any Valid Selected Track(s)**” option. Ensure that the Output Channel for the Magnetic Card is set for **KB** (Keyboard Mode) Open Notepad or any word processor and read the ID you will be using. The magnetic card we are using in this example contains the following data for our illustration. The card type format for this example is AAMVA data and this card has data on all three tracks as follow:

Sample Data From New Ontario Health ID card:

Track 1 Data:

%B6100567554689748^BAYLEE/CHANTAL ELIZABETH^2203799219911013DDCHANT17042801?

Track 2 Data:

;6100567554689748=22037990000100000000?

Track 3 Data:

[illegible]

If your application only requires the 10 highlighted digits account number which can be found in all three tracks of data stream shown above ID card sample (Note the ID Sample is of a Newer Ontario Health ID) Older IDs data will vary. This ID number is also displayed on the front of your ID Card. We have reserved SS and ES number 200 – 255 for our data parsing. The SS Character 200 is the first location of the tracks Data and that location 255 is the end of the parsing Buffer location.

USE the SS & ES of **Each Data Tracks** to cut the desired data from your data stream in each desired tracks.

The example below shows Track 1 being used to obtaining the ID number. We are interested in Location 208 as the Start point of the ID and will put Char 208 in the SS field of track 1. The last byte of the ID number is located at location 217 and we will put Char 217 in the ES field of track 1.

%B6100567554689748^BAYLEE/CHANTAL ELIZABETH^2203799219911013DDCHANT17042801?

 $\wedge$ $\wedge$ $\wedge$ $\wedge$

200

208

217

255

The **first character Position** of the data of each track is represented by character number 200. The data that we wish to retrieve is located in location 208 – 217 on Track 1. You will need to disable the unused tracks ISO and AAMVA for tracks 2 & 3 and only enable ISO data for track 1 for our example above.

We enter the SS for track 1 (208) and the ES (217) as shown below. If you require a Carriage Return CR then enable CR at the end of Track 1. You can disable the SS/ES/CR of all unused tracks as shown below. **Save the Device Settings** when done and test the results by reading your ID card in Notepad or any text editor.

The resulting data should be your ID number **7554689748** followed by a CR as per our sample ID card.

Now you can test this in your application. Simply go into your application and put the cursor in the location where the ID data needs to be entered and read the ID card. The data will be automatically typed in the field. If your application requires a prefix or a suffix character to be entered, This can be accomplished by simply enabling the “Group Prefix” and / or “Group Suffix” with the desired character (). This option works for any and all three magnetic tracks.

Our next example will show how to insert a prefix character to the ID number. In this next example we wish to have the “#” character to precede the ID number. **# 7554689748** with a CR at the end. To accomplish this, you will need to use the Group Prefix field. First Enable the Group Prefix and enter character 35 # in the Group Prefix selector box.

Note, the Group Prefix character is the first character to be displayed when a Magnetic card is presented. The track output order determines the order of the data stream from each selected and active tracks will be presented. In our example we use the default 1,2,3 track output order. Track 1 ISO is the only active track in this example. Set the Mag tab as show below and **Save Device Settings**

The resulting data should be your ID number **#7554689748** followed by a CR as per our sample ID card.

We have reserved the Group Suffix Character 255 for a special parsing task. When using Char 255 in the Group Suffix selection box, you will be invoking a special routine designed specifically for the “**Ontario Health card**” in obtaining the two character letters as part of the ID number. In this example we will be only using track 1 data. The Sample ID Card data looks like the following:

%B6100567554689748^BAYLEE/CHANTAL ELIZABETH^2203799219911013DDCHANT17042801?

^

^

^

^

200

208

217

255

As before, we will be using the Track 1 parsing method explained in the above examples to obtaining the ID number from the ID sample card and set the settings as shown below. This time we wish to have the “DD” data as part of our ID. This is accomplished by firstly disabling the CR on track 1 and enabling Group Suffix Char to 255. Enable Group CR to get a Carriage Return at the end of your ID# + XX should it be needed. In this example we enabled Group CR after Data.

VCI Module 1 MAG

Device Status: Enabled

Channel: KB

Card Control Options

Track 1

☒ ISO ☐ AAMVA SS: ☒ (208) ES: ☒ (217) ☐ SendCR

Track 2

☐ ISO ☐ AAMVA SS: ☐ (59) ES: ☐ ? (63) ☐ SendCR

Track 3

☐ ISO ☐ AAMVA SS: ☐ % (37) ES: ☐ ? (63) ☐ SendCR

Group Track Output Options

Track Output Order: 1, 2, 3

☐ Send Any Valid Selected Track(s)

Group Prefix ☐ (0)

Group Suffix ☒ (255)

☒ Group CR After Data

The resulting data should be your ID number + XX 7554689748DD followed by a CR as per our sample ID card.

Please note that Group Prefix & Suffix characters 200 – 255 are can be reserved for special tasks to be invoked when used. Contact POSH Support for a detailed updated list of Reserved Characters for your Mag Readers. OEM settings are also available should you require custom data parsing for your application.

The current supported Device Channels that support these special Group Prefix & Suffix characters 200 – 255 are Keyboard mode (KB) , Virtual Serial mode (VRS) and HIDA mode. Contact your POSH support team should you required any customization.

Section P: USB Device Channel Selector Number

Below you will find the Channel Selector Numbers list which will identify the type of USB connection that will be installed when selecting this Channel Selector number in “Device Settings” using the “USB Channel Selector”. All the MX5 Devices will have its unique list of available devices numbers for each product. You can request a custom Device number for your specific product by contacting the support@poshmfg.com

USB Device(s)	Selector Number
KB	9101
VRS1	9117
VRS1_R/W	9170
VRS1-VRS2	910E
HID1-HID2	9133
HIDA-HID2	9132
VRS1-HID1	9134
VRS1-HID2	9163
VRS1-HID3	9164
HID1	912A
HID2	9165
HID3	9166
HIDA	9118
HID1-HID3	9168
HID2-HID3	9169
HIDA-HID1	916A
HIDA-HID3	916B

USB Device(s)	Selector Number
SCCCID	9115
SCCCID-KB	9103
SCCCID-VRS1	9113
SCCCID-VRS1_R/W	9173
SCCCID-VRS1-VRS2	9110
SCCCID-VRS1-HID1	912C
SCCCID-VRS1-HID2	9158
SCCCID-VRS1-HID3	9152
SCCCID-HIDA-HID1	9159
SCCCID-HIDA-HID2	911F
SCCCID-HIDA-HID3	915A
SCCCID-HID1-HID2	9135
SCCCID-HID1-HID3	915B
SCCCID-HID2-HID3	915C
SCCCID-HID1	912D
SCCCID-HID2	915D
SCCCID-HID3	914F
SCCCID-HIDA	9116

POSH Vendor ID = 0980 PID = 91FF MI = XX see list below for various USB Devices

MI List for each USB Connection Type:

KB = 00	HID1 = 0C
VRS1 = 00	HID2 = 0E
VRS2 = 03	HID3 = 0F
HIDA = 00	SCCCID = 07 **

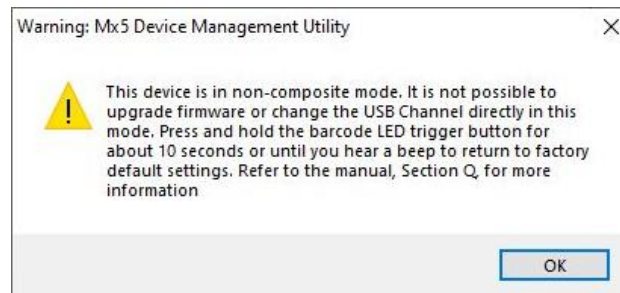
All MX5 Devices will have one Utility Connection Channel each, using **MI = 20** which is reserved.

Note: Firmware Version 3.0.0 or higher KB, VRS1 and HIDA are now “Non Composite Ports”.

Smart Card Non composite ports are only support for HWID: 1804 , 1806 , 1809, 1934 , 1944

For all Bluetooth devices and specifications regarding MX5-BT Devices, See Bluetooth Addendum.

The following message will appear when an Mx5 device is in non-composite mode. To change the devices settings, USB channel, or upgrade the firmware, press and hold the manual trigger button for **10 seconds**. After 10 seconds the device will beep. This indicates that the device has reset to factory defaults and is now ready for settings to be changed or firmware to be upgraded. This option can be used on any K9 or K9Jr (Except BT versions) to force the MX5-Device to Factory Defaults at any time.



The manual trigger button can be found on the device in the following locations on the K9J and K9 devices. Please see the image below.



K9J



K9

Section Q: Symbol Definitions & Device Technical Specifications

The listed symbols below describe the hardware function that the various MX5 Devices utilizes. Depending on your specific needs, you can easily match the MX5 hardware to the symbols to find the right hardware mix for your project needs.

	Magnetic Strip Reader 3 Tracks for Credit card and Drivers Licenses		Smart Card Read/Write CCID/PCSC Compliant
	2D & 1D Barcode Reader for Drivers Licenses		Takes B/W images of ID Cards, Documents JPEG / PGM Formats
	Reads UID @ 13.56 MHz Cards/Tags, ISO14443A, ISO14443B, ISO15693, ISO18092		Reads UID @ 125 KHz Cards & Tags, EM, TK, AT Brand Cards
	Reads Both 125 KHz & 13.56 MHz Cards & Tags Selectable HF/LF add on Module, requires internal Hub		Biometric Finger Print Reader FIPS201, FAP 10 Certified, Authentication Software Available
	TDES, SHA, AES Encryption Available May Require SAM		Internal Secured Access Module SAM / SIM Available for extra IC SC or Memory or Encryption Services
	Internal USB Memory Stick Connected to Internal USB HUB Option		Bluetooth Device

All MX5 Plus Magnetic Stripe Device Technical Specifications

Product:**MX5P3, MX5P3-EM, MX5P3-R4, MX5P3-SC, MX5P3-R4-SC, MX5-K9**

Specifications	
Built-in Magnetic Card Decoder	Yes
Communications	USB : VRS, HID, KB
Power	Via USB port
Current mA	65 mA Magnetic Reader only
Connectors	USB Type A (See Optional Add on Cables)
Cable Length	6 Ft (180 cm)
Operating Temp.	- 20 C to 55 C
Humidity	10% - 90% relative humidity
Set-up Utility	Yes
QuickSet® Factory Default Magnetic Card	Available upon Request
Flash Memory Upgrade	Yes
Selectable Tracks	Yes (Separate Track selection for both ISO & AAMVA)
Selectable Available Tracks	1, 2, 3 (Selectable Output Track Order)
Track Swipe Rates	2 : 125 ips at 75 bpi 1, 3: 60 ips at 210 bpi
Head Life	Over 1,000,000 passes
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Programmable Inter character Delay	Yestest
Programmable SS/ES Selectable Character	Yes (Per Tack SS/ES and Magnetic Track Group SS/ES)
Parity and LRC Data Checking	Built-in, audible and LED good read and error indicator
Classifications Supported (Magnetic Card Specific)	MAG=ABA, ANSI, ISO, AAMVA, CADMV
Certifications (MX5P3 Only) No Module	CE, FCC, UL, RoHS
Other Available Options	3Des Encryption output (Inject able 3Des Key) OEM
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty	2 years

**Symbol for 3 Track Magnetic Stripe Reader****Dual Frequency 125 KHz / 13.56 MHz RFID Technical Specifications**

Product:**K9, K9Jr**

Specifications	
Built-in RFID UID Card Decoder	Yes
Communications	USB : HID
Power	Via USB port
Current mA (Module only)	70 mA
Frequency	125 KHz & 13.56 MHz
Read Distance	2 cm (1/2 inch) Max
Operating Temp.	- 30 C to 65 C
Humidity	5 - 95% relative humidity Non Condensing
Set-up Utility	Yes
Flash Memory Upgrade	Yes
Selectable RFID Card Types	Yes (only 1 HF and 1 LF Card Type at any one time)
Supported HF RFID Cart types	ISO14443A, ISO14443B, ISO15693, ISO18092
Supported LF RFID Cart types	Cotag, Deister, GProx-II ID, ID Teck Alternate (128 bits), Isonas, NEDAP, and Postech.
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Data Padding & Truncation	Yes
Card Data Manipulation of UID	Yes
Programmable SS/ES Selectable Character	Yes
Other Available Options	3Des Encryption output (Inject able 3Des Key) OEM
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty Dual Frequency Module	2 years



Symbol for Dual Frequency 125 KHz & 13.56 MHz RFID UID Reader

All MX5 Plus R4 RFID 13.56 MHz Device Technical Specifications

Product:

MX5PC-R4, MX5PC-R4-SC, MX5P3-R4, MX5P3-R4-SC, K9, K9Jr, MX5PT

Specifications	
Built-in RFID UID Card Decoder	Yes
Communications	USB : VRS, HID, KB
Power	Via USB port
Current mA (Module only)	35 - 45 mA
Frequency	13.56 MHz
Read Distance	2 cm (1/2 inch) Max
Operating Temp.	- 20 C to 55 C
Humidity	10% - 90% relative humidity
Set-up Utility	Yes
Flash Memory Upgrade	Yes
Selectable RFID Card Types	Yes
Supported RFID Card types	ISO14443A, ISO14443B, ISO15693, ISO18092
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Data Padding & Truncation	Yes
Card Data Manipulation of UID	Yes (Both Bit and/or Byte Commands) Hex or Decimal
Programmable SS/ES Selectable Character	Yes
Data Checking	Built-in, audible and LED good read
Other Available Options	3Des Encryption output (Inject able 3Des Key) OEM
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty	2 years



Symbol for High Frequency 13.56 MHz RFID UID Reader

All MX5 Plus EM RFID 125 KHz Device Technical Specifications

Product:

MX5PC-EM, MX5P3-EM, MX5PT

Specifications	
Built-in RFID UID Card Decoder	Yes
Communications	USB : VRS, HID, KB
Power	Via USB port
Current mA (Module only)	35 - 45 mA
Frequency	125 KHz
Read Distance	3.5 cm (1.5 inch) Max
Operating Temp.	- 20 C to 55 C
Humidity	10% - 90% relative humidity
Set-up Utility	Yes
Flash Memory Upgrade	Yes
Selectable RFID Card Types	Yes
Supported RFID Cart types	EM4100, EM4102, TK, AT and other compatible LF chips
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Data Padding & Truncation	Yes
Card Data Manipulation of UID	Yes (Both Bit and/or Byte Commands) Hex or Decimal
Programmable SS/ES Selectable Character	Yes
Data Checking	Built-in, audible and LED good read
Other Available Options	3Des Encryption output (Inject able 3Des Key) OEM
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty	2 years



Symbol for Low Frequency 125 KHz RFID UID Reader

All MX5 Plus IC Smart Card Device Technical Specifications

Product:

MX5PC-, MX5P3-SC, -R4, -SC-R4, -M2, -M2-SC, K9, K9Jr

Specifications	
Communications	USB : CCID
Power	Via USB port
Current mA (Module only)	35 - 45 mA
Operating Temp.	- 20 C to 55 C
Humidity	10% - 90% relative humidity
Set-up Utility	Yes
Flash Memory Upgrade	Yes
Programmable Sound On/Off	Yes
Support IC Smart Card CCID	ISO7816(1-4), ISO7816-3 (T=1, T=0)
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty	2 years



Symbol for IC Smart Card CCID Reader/Writer

All MX5 2D/1D Barcode Device Technical Specifications

Product:

K9, K9Jr (Excluding Bluetooth Models)

Specifications	
Built-2D / 1 D Barcode Decoder	Yes
Communications	USB : VRS, HID, KB (Bluetooth KB, VRS) Available
Power	Via USB port
Current mA (2D Module only)	350 mA
Read Distance	10 cm (4 inch) Min - 20 cm (8 inch) Max
Operating Temp.	- 20 C to 55 C
Humidity	5 % - 95% Non Condensing humidity
Set-up Utility	Yes
Flash Memory Upgrade	Yes
QuickSet® Custom Default Barcode	Yes Barcode Generated by Utility QuickSet option
Selectable Barcode Types	Yes (Two Read Sequences)
Supported Barcode types	Matrix 2 of 5, Straight 2 of 5, PDF417, QR Code, Maxicode, Code 39 ASCII, GS1 Data Bar, MSI Plessey, Code 39, Code 93, Code 128, Interleaved 2 of 5, Codabar
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Programmable SS/ES Selectable Character	Yes
ID Imager	Available for OEM Only
Selectable Barcode Trigger(s)	Yes (Card Slot Opto, Push Button and Auto Sense mode)
Data Checking	Built-in, audible and LED good read
Other Available Options	3Des Encryption output (Inject able 3Des Key) OEM
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty 2D/1D Camera Module	2 years



Symbol for 2D / 1D Barcode Reader



Bluetooth Support



Symbol for ID Imager Option (Camera Specific)

Fingerprint Device Technical Specifications

Product:

MX5P3-MX5PC-M2, M2-SC, R4, R4-SC, K9, K9Jr, MX5PT

Specifications	
Built-Biometric Reader	Yes
Communications	USB : VRS
Power	Via USB port
Current mA (2D Module only)	80 mA
Touch Sensor	Array Size: 256 x 360, 508 DPI, 18 x 12.8 mm Image Area
Operating Temp.	- 20 C to 70 C
Humidity	5 % - 93% Non Condensing humidity
Rating	FIPS-201 Compliant (EIM)
Hardware Engine	TCD58E
Embedded Firmware Support	Authen Tec SDK, PerfectPrint,
Finger Detection	Yes
Latent Print Detection	Yes
On-Chip NV Memory	Yes (256 Bytes)
Functional States	Yes (Deep Sleep, Stand-By)
USB Power Management Support	Yes
Data Encryption	Yes DES (56), AES
Coating Performance	4 Million Touches
Module Type	Silicon
FBI Fingerprint Acquisition Profile	FAP-10
Support Operating Systems	Win11, Win 10, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win Ce, Unix, Linux
Warranty Finger Print Module	2 years



Symbol for Biometric Fingerprint Reader



Section R: Troubleshooting and FAQ

In most instances, your MX5 product is a plug and play device and should operate trouble free. The drivers for all MX5 devices are included with your Windows operating system (OS). It is highly recommended that you insure that your OS has all the latest service packs installed in order to experience proper operation of your MX5 device.

Depending on the version of your OS, additional installation files (.INF) may be required with the use of the Virtual Serial communication channel (VRS). These files are included as part of the installation for the MX5 and can be found in the **MX5 Device** folder of your Program Files directory. C:\Program Files (x86)\MX5 Device

Below you will find a list of Frequently Asked Questions (FAQ) and the solutions which may be helpful in resolving any issue(s) you may have with your MX5 product.

❖ My MX5 device is not recognized by my Operating System (OS)?

Solution: Unplug your MX5 from your computer and confirm you have installed the latest service pack and updates for your OS. You may need to restart your computer to complete the updates. Try re-connecting the MX5 after your system has restarted. Windows should automatically install the appropriate drivers for your MX5. Your system may request driver information when using VRS firmware of the MX5. If this is the case, you can find these files in the MX5 device directory which is created when you install the MX5 Utility. Check the device Manager in the control Panel to verify that there is no problem with the installation of the OS drivers. Sometimes changing the USB Port can help. Pay attention if the system is installing the drivers for the newly installed hardware. Allow the system to finish the process before unplugging the MX5 device from the USB port.

❖ My system reports a device error when I install my MX5?

Solution: Do not unplug your MX5 device from your computer. Open your Device Manager and list the device in question. Right click on the device in question and select properties of the device. Select the option to Remove or Uninstall the device and click OK. Now unplug your MX5 from your computer and wait a few seconds before you plug it back in. Some older versions of the Windows OS need to reboot after removing the device. You may want to try this option if you are still getting this error after removing the device.

❖ My MX5 Device LED flashes and beeps every second?

Solution: This means your MX5 is in Boot load mode. Use the MX5 Utility to install the firmware into the MX5. By upgrading your firmware, your system may install different drivers for your MX5 device. This is normal and you should let the process complete. You can change the settings of your MX5 device using the MX5 Utility.

- ❖ When using my MX5 as a Virtual Serial (VRS) device, my software cannot see the MX5 when I change USB ports?

Solution: The Windows OS will assigned a different COM port for each USB port that you connect the MX5 device to. This is normal and you will need to adjust the COM port to be the same on each USB port used for the MX5 device. You can adjust the COM port for each USB by using your device manager and going to properties of the MX5 device. You will need to access the advanced settings to change the COM port number. Make sure that your software port setting matches the selected COM port number. You will need to change this option for every USB port you wish to connect the MX5 device to. We recommend a reboot of your computer anytime after you have made all the changes to your VRS port. If you have made changes to the Channel Selector using the MX5 Utility, you will need to reboot your computer. If you are experiencing problems with your VRS ports, reboot your computer. If all else fails, reboot your computer. This is an OS issue with Windows. Note that if you are using a HUB, you will need to prep the same COM port number for all the USB ports that you intend to connect the MX5 device to. Note that the OS will memorize the MX5 device in VRS and assign the same COM port # for all the USB ports that you have initialed as above. It is also important to note that you cannot use more then one MX5 Device in VRS mode on the same computer. The OS will try to assign the same COM port to both MX5 devices in VRS mode. COM ports cannot be shared by more then one Device, The OS may not operate properly if this occur. Select a different COM port on the USB port of the second MX5 Device if you require two MX5 devices on the same computer. NOTE: You can have multitudes of MX5 devices sharing the same HID1, HID2 and HID3 ports should your application support HID devices.

- ❖ After mounting my MX5 Device to my monitor, two beeps are randomly heard from the device?

Solution: Older CRT monitors emit electromagnetic fields and mounting the MX5 to this type of monitor is not recommended. The CRT will interfere with the Magnetic Head and RFID device. Two beeps from the MX5 indicate an error state was detected which was caused by the CRT electromagnetic fields. Try moving the MX5 to a less sensitive area of the CRT or use a LCD panel instead.

- ❖ I plugged the MX5 into a USB hub and random beeping is happening to the MX5?

Solution: Some hubs do not have enough power output on the USB port to meet the minimum power requirements of the MX5. Unplug the MX5 from the hub and plug directly into a USB port on the computer or get a powered hub that can handle at least 100mA on each port for most MX5 devices. All the MX5 K9 and K9Jr series require a minimum of 500 mA USB power. Your computer's USB port usually only provides 100 mA of power. Use a powered USB hub which is able to provide at least 500 mA of current per USB port for proper operation of the MX5 K9 & K9Jr devices.

- ❖ After I upgraded the firmware or reset to default, My application program does not receive any data from the MX5 device?

Solution: The default output interface for the MX5 device is a keyboard device. If you have upgraded the firmware or reset to factory defaults, The output device by default will be a keyboard device. You will need to change the USB Channel output by using the USB Channel Selector using the MX5Utility to match your application output requirement of the device. Your application maybe looking for a Virtual Serial port (VRS) or a HID device, the

data will no longer sent to those ports after a firmware upgrade of reset to defaults. Your application software will determine which interface you are required to use for your MX5 device.

- ❖ I have updated the firmware on my MX5 device and the RFID stopped working?

Solution: Check the DOC (Device Output Control) hardware configuration setting using the MX5 Utility. You can enable or disable any portion of your readers. By doing so, you will not be able to read any data from any device that has been unselected in the DOC. The factory default setting of a firmware upgrade is typically all devices are Selected on the DOC. Verify the DOC and confirm that the RFID Device is Selected. Verify that the status is Enabled in the RFID Tab. If all is correct in the MX5 Utility, exit and close the MX5 Utility. Then unplug the MX5 device from the USB port, and then reinstall the USB cable to the USB port. Ensure that no RFID card is in the RFID field of the MX5 reader. Allow the MX5 unit to power up properly which will be one long beep from the device. Observe the LED on the MX5 device and pay attention to any beeps that may sound after the long initialization beep. While the MX5 is initializing the RFID port the LED may flash 3 times per second. Once the RFID port has completed successfully, the LED will be ON without flashing. If the RFID device has failed, three beeps will be sounded to indicate a problem with the RFID module of the MX5 device. Should you hear three beeps, contact your support team at POSH for help. Note that if you are using an MX5 K9 or K9Jr, the RFID initialization period is preceded by the 2D camera initialization process. The LED will flash 4 times per second when it is initializing the 2D camera which may take 20 to 30 seconds. Only after the last initialization process is done, the MX5 will report the errors by beeping the buzzer 3 times for a RFID failure, and beep the buzzer 4 times for a 2D camera failure in that order.

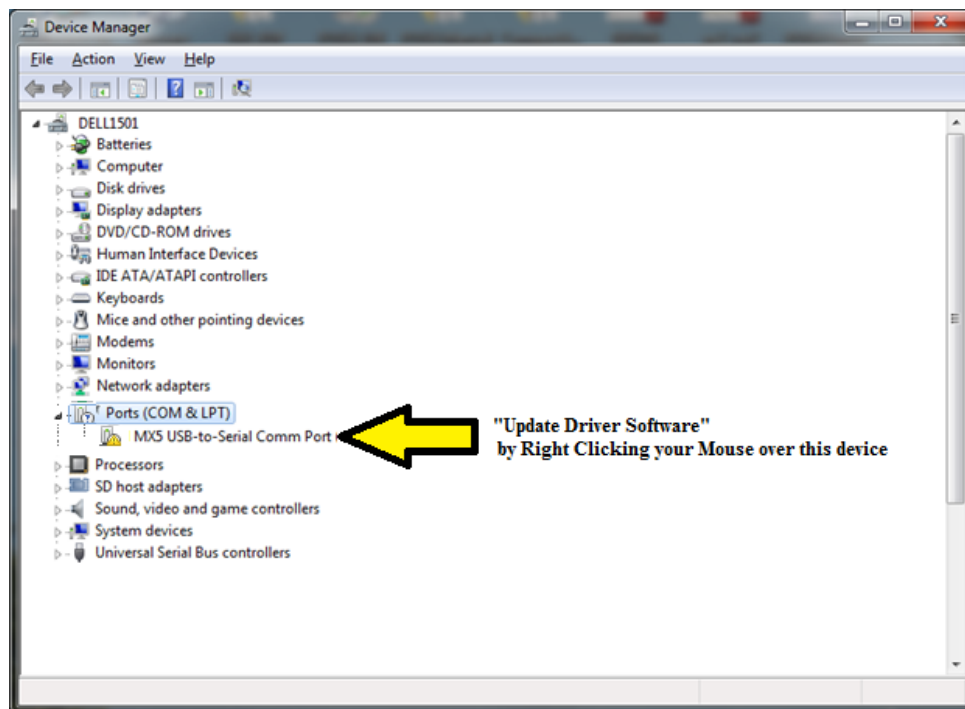
- ❖ I am using the MX5 and after I upgraded the firmware, the utility does not see the device?

Solution: At times the Windows OS will not initialize the USB ports correctly after a firmware upgrade. This is common and to resolve this, exit the MX5 Utility. Then wait a few seconds and confirm that your system is not busy installing the drivers for the newly found product. Remember that when you install new firmware into the MX5 device, The USB device will have changed to the new defaults which may require the system drivers to be installed before it is recognized by the system and the MX5 Utility. Wait until the OS has completed installing the new drivers before starting the MX5 Utility.

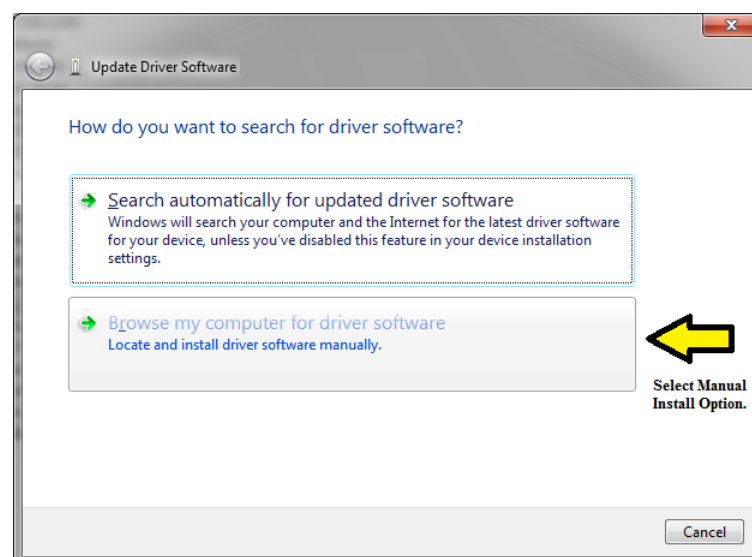
- ❖ After I selected the USB Channel Selector to use a VRS (Virtual Serial Port) port, my computer failed to install the device and returned an error message that the hardware did not install properly?

Solution: The MX5 devices use only generic system drivers which are included as part of your Microsoft Operating System(OS). We recommend that you keep your OS up to date with the latest upgrades and service packs available for your system. Also make sure that you are using the latest MX5 Utility available. By downloading the latest MX5 Utility and installing it on your system, all the required updated firmware files are automatically installed and updated. The USB Virtual serial Port (VRS) makes use of a driver called usbser.sys which is included with your OS. You will find an installation file (.INF) located in the directory that you have selected during the install of the MX5 Utility. The default location is “C:\Program Files (x86)\MX5 Device”. The general configuration file is a system setup information file called **MX5_EN_3X.inf**.

Use this file to update the drivers listing for the MX5 device. See the illustrations below on how to use this file. Open your Device Manager for your OS and locate the device which did not install properly. You will see an “!” or “?” beside the device in question. Right click your mouse cursor over the device and select “Update Driver Software” option. See illustration below.

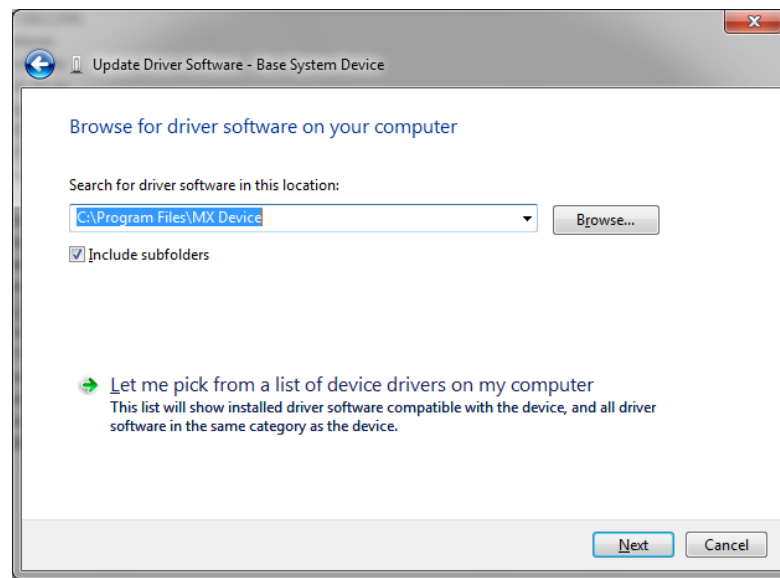


Once you have selected Update Driver Software, You will need to select “Locate and install driver software manually” option. See illustration below.

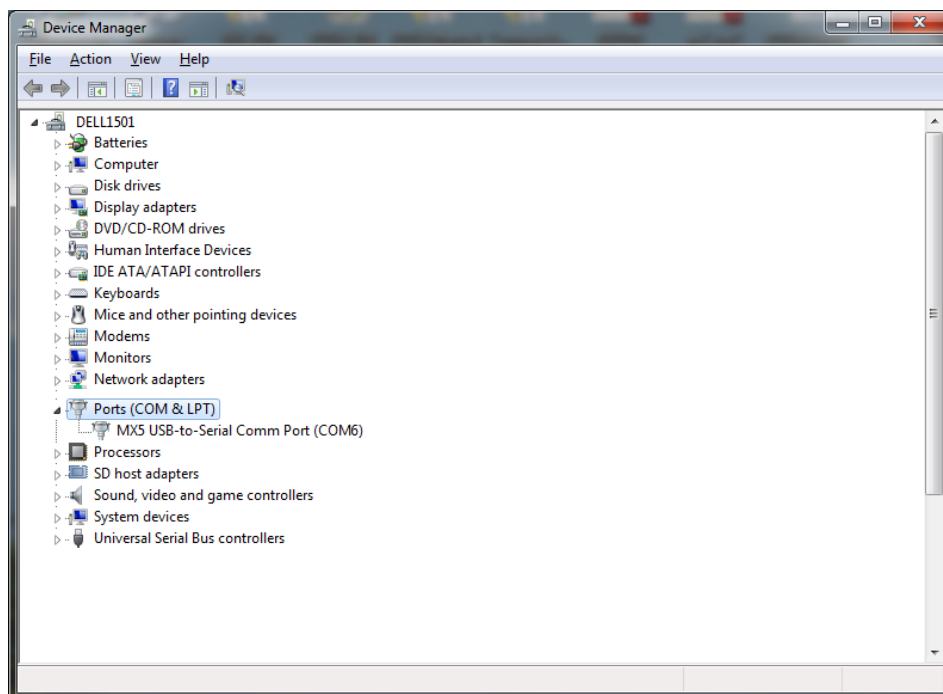


You will then be asked to provide a search directory which contains the INF files for the MX5 Device. For this illustration the files are saved in the “C:\Program Files (x86)\MX5 Device” by default when you install the MX5 Utility. Use the Browse...

option to select the location. See illustration below. Click “Next” once you have selected the location.



The system will then install the INF file for the MX5 Device. The system may ask you if you want to install this device driver or it needs the authorization to install it. If so, select Install. When the installation completes, your device will automatically be configured and a COM port will be assigned to this device. (You can change this port number by going into properties of the device and selecting advance options). See illustration below.



You may need to close and re-open the MX5 Utility in order for the new device to be detected. It is recommended to always keep your operating system updated with the latest service pack and updated. The MX5 Device only uses the drivers which are supplied with your operating system. The INF file only contains the information on which files the operating system will need to install for the selected MX5 device.

❖ My MX5 device does not beep on power up and the LED is flashing rapidly?

Solution: The MX5 Device goes through various initialization processes during the power on cycle of the computer. The first process of the MX5 is setting up communication with the USB port it is attached to. The MX5 will turn the LED to rapid flashing mode until the OS has initialized and configured the USB port that the MX5 device is attached to. Until the computer has initialized the USB port that the MX5 is connected to, the MX5 will wait indefinitely with the LED in rapid flashing mode. If the MX5 is still rapid flashing after the computer has gone thru its power on cycle, Then verify the USB port that the MX5 is connected to is working properly. Unplug the MX5 from the computer and plug the MX5 to a known working USB port. Confirm that the USB port being used is able to provide adequate power to the MX5 Device being used. See the Power requirements for the various MX5 devices. Also confirm that the Computer USB port being used does not have power saving options or USB shut down for power saving enabled . (Also see the “**Add on Cable Option**” section in this manual for related helpful information) Should the MX5 continue to rapidly flash after trying the above suggestions, Contact your POSH Support team for further help.

Section S: Bluetooth MX5-BT Devices

The following applies to all MX5-BT K9 / K9Jr Devices with Battery Modules.

- Locate the Battery ON-OFF switch (When shipping the K9 / K9Jr ensure that the battery switch is turned OFF) Make sure that the Battery switch is turned ON before connecting the USB charging cable or Charging Power adaptor. There are two possible locations of the ON-OFF switch. Earlier versions the K9Jr, the ON-OFF switch was located in the Smart Card Slot. All newer models of both K9 / K9Jr, the Battery ON-OFF switch are located under the USB Cable Connector on the back of the K9 / K9Jr Devices. The DOT on the USB Cable port indicates that the SW is in the ON state.
- Once you have turned the Battery Switch ON, you can turn ON the Power to the MX5-BT device by Pressing the Manual Trigger button as shown below. The Trigger button is a multi functional switch to invoke certain features which include Turning the Device ON-OFF / Un-pairing - Pairing / switching Boot load mode, obtaining the Battery Voltage Level and Manual Trigger a bar code read request.

The manual trigger button can be found on the device in the following locations on the K9J and K9 devices. Please see the image below.



K9J



K9

Upon receiving your MX5-BT Device, when you turn the device ON, the unit should be in Pairing mode.

Manual Trigger Button States (Normal Mode):

- **Turn ON Device:** Press the Trigger Button to Turn on the POWER to the MX5-BT device (To initially turn ON the MX5-Device) Once turned ON, the Device will Rapid LED Flash NO sound. See LED POC (Power On Cycle) states below. Battery Switch must be turned ON first.
- **Turn OFF Device:** Press and HOLD Trigger button for about 5 Seconds (Until LONG BEEP IS Heard and then immediately Release Trigger button) This Action will TURN off the MX5-BT device. The LED will turn OFF when shut down is completed.
- **Trigger Barcode Read:** Press the Trigger button for about 1 second (This action will auto trigger the Bar Code camera to Read) The Bar Code Camera Light will turn ON indicating a Bar code Read. Present the Bar Code in front of the Camera to Read.
- **Battery Status:** Press and hold the Trigger button for 2 to 3 Seconds and Release (This Action will

trigger the Battery Status) The Battery LED indicators will Light up and indicate the Battery Percentage power level. 4 Led are used to indicate the battery Level. One LED ON is 25%, Two LED ON is 50%, Three LED ON is 75% and Four LED ON is 100% battery Level. The BEEPER will also sound the number of LED ON. The Battery LED indicators are found thru the Smart Card Slot.

- **UNPAIR Device: Press and HOLD Trigger Button for about 10 seconds (Until two BEEPS are heard, Ignoring the LONG Beep which will be heard for the Turn OFF state)** Once the Two BEEPs is heard, release the Trigger Button. This will clear the Paired Host from the MX5-BT Device List. The MX5-BT will now be in Pairing mode and two consecutive beeps will be repeated until paired.
- **Force to Boot load Mode: Press and HOLD Trigger Button for about 15 seconds (Until three BEEPS are heard, Ignoring the LONG Beep and also ignoring the two BEEPS which will be heard)** Once the Three BEEPs is heard, release the Trigger Button. This will re-boot the MX5-BT Device into Boot Load Mode. The MX5-BT will now be Boot load mode and one consecutive beeps will be repeated with the LED Flashing once per beep. This mode is only used to upgrade the Firmware of the MX5-BT Device. Refer to Upgrade for more details on the process of upgrading the Firmware.

Manual Trigger Button States (When in Boot Load Mode):

- **Trigger Barcode Read: Press the Trigger button for about 1 second (This action will auto trigger the Bar Code camera to Read)** The Bar Code Camera Light will turn ON indicating a Bar code Read. Present the Bar Code in front of the Camera to Read. (No Data will be sent, Only used for Camera initialization barcodes)
- **Battery Status: Press and hold the Trigger button for 2 to 3 Seconds and Release (This Action will trigger the Battery Status)** The Battery LED indicators will Light up and indicate the Battery Percentage power level. 4 Led are used to indicate the battery Level. One LED ON is 25%, Two LED ON is 50%, Three LED ON is 75% and Four LED ON is 100% battery Level. The BEEPER will also sound the number of LED ON. The Battery LED indicators are found thru the Smart Card Slot.
- **Turn OFF Device: Press and HOLD Trigger button for about 5 Seconds (Until LONG BEEP IS Heard and then immediately Release Trigger button)** This Action will TURN off the MX5-BT device. The LED will turn OFF when shut down is completed.
- **Force to Restart Device: Press and HOLD Trigger Button for about 10 seconds (Until two BEEPS are heard, Ignoring the LONG Beep)** Once the Two BEEPs is heard, release the Trigger Button. This will re-start the MX5-BT Device. Should the main program be damaged or not start, The MX5-BT Device will return to Boot Load mode after a failed boot up, otherwise the MX5-BT device will start in Normal Mode.

LED / BEEPER States:

- **Bluetooth Pairing Mode (LED Flash ON/OFF two times with repeated two Beeps)** Note that if the MX5-BT device is left turned ON in Pairing mode for more then 10 minutes. The MX5-BT Device will auto shut OFF to conserve Battery.
- **Boot Load Mode (LED Flash ON/OFF once with a single Beep)** This mode is used for “Upgrading the MX5-BT Devices firmware only”. Upgrading the firmware will require the use of the USB Cable, MX5 7.1Utility, a WIFI connection on the PC running the MX5 7.1Utility and you will need to be logged in as Administrator to Upgrade the Firmware. If the firmware file is damaged or did not load up properly, then the MX5-BT device will be switched to Boot Load mode automatically by the BOS. (Boot Operating System)
- **POC – Power On Cycle with Bluetooth Connection to HOST (LED Rapid Flashing, NO Sound. This can**

take about 5 - 45 seconds . Then one long beep & “LED ON” will be heard indicating a successful initialization and the LED will go ON solid once BT-Connection is established)

- POC – Power On Cycle & NO Bluetooth Connection to Host (**LED Rapid Flashing, NO Sound. This can take about 5 - 45 seconds. Then one long beep will be heard indicating a successful initialization and the LED will triple Flash ON indicating an attempt for BT-Connection with paired host is not ready)** The MX5-BT device is waiting to connect to your computer/table/phone. Ensure that the BT of the HOST is turned ON. On a Windows 10 PC, Use the BT-Live App to Auto Turn ON your Bluetooth. Once the MX5-BT device is connected to the HOST, the LED Will stay solid ON.
- POC - Power On Cycle with Camera Failure. (**LED Flash /BEEP Two times, pause then LED Flash/BEEP Four times** followed by a POWER on Beep) This will only occur when the Bar code Camera Failed to Initialize properly. The Camera will not read a bar code. Should this occur, Simply Turn off the MX5-BT device, Wait five seconds and then Turn on the MX5-BT Device. Should this problem persist, contact your Technical support team for the Device.

Battery Charging LED:

It is important to turn off the MX5-Device before attempting to Change the Battery. The Battery will take longer to Change if the MX5-BT Device is turned ON. If you are Charging the MX5-BT Device using a USB Cable, Plug the device to a Powered USB HUB able to provide at minimum 500 mAmps of power. You can use a USB Cell phone charger adaptor with a minimum 500 mAmp power output as an alternative mean of charging your device. To time required to charge a the battery on the MX5-BT Device, will take up to 6 to 7 hours from a depleted battery to 100 % fully Charged. If the MX5-BT device is left ON while charging, The time to fully Charge may double. A fast Charger is also Available for your MX5-BT device which will charge your battery 50% faster. Prevent static charge damage by grounding yourself before connecting the MX5-BT device to any USB charger. When the MX5-BT device is charging, a Green LED will be ON. The Green LED will be turned OFF when the device is not Charging or Fully Charged.

Other Considerations

- All the Device settings are stored inside each individual MX5 device flash memory. Moving the MX5 device to another computer will not affect the internal settings.
- Custom or OEM firmware installed on your MX5 device may be designed to disable the utility and upgrade functions. Contact POSH Support team for more details.

The MX5 Utility and firmware updates are available on the POSHMFG.COM website. Custom applications, SDK (System Development Kits) are also available for the MX5 product. Contact your device supplier for more details.

Data encryption features are available on custom or OEM firmware. Contact your device supplier for more details.

Special Quick Set setup magnetic cards are available for all the MX5 magnetic readers. Certain features of the MX5 device can be changed in the flash memory of the device by simply reading the Quick Set setup magnetic card. You do not need to use the utility if using the Quick Set setup magnetic card. The new settings are stored in the Flash of the MX5 Device. QuickSet barcode is a better choice if your device has a 2D/1D camera. See QuickSet barcode for more details.

- All K9 / K9Jr Bluetooth Devices have BT-Keyboard and VRS output channels only. Battery Modules and various charging options are available. All MX5-BT devices may not have all the same features and functions as the regular non-Bluetooth versions.