MX5 Series

Magnetic Stripe Card Reader

RFID/SC Reader/Writer

Manual



Revision 1.0

2012/01/27

Table of Contents

TABLE OF CONTENTS....1

INTRODUCTION....2
- MX5 Accessories....2
- Warranty....2
- Disclaimer....2

GENERAL FEATURES....3
- Technical Specifications....4
- Dimensional Views:....8
- Connection Views:....9
- MX5-CBL (Add-on Cable for MX5)....9
- Typical MX5 Device Setup....11

MX5 UTILITY SOFTWARE....13
- System Requirements....13
- MX5 Utility Installation....13
- MX5 Utility General Information....14
- Definitions of Settings....14
- Magnetic Card Reader Settings Panel....16
- RFID UID Reader Settings Panel....17
- Smart Card Testing Panel....18
- QuickSet Panel....19
- MX Device Firmware Upgrade Panel....20
- Hardware Mounting....21
- Hardware Maintenance....21
- Reading / Writing RFID....21
- Reading / Writing SC Smart IC Cards....21

APPENDICES....22
- HID Software Developer Notes on MagTek Compatible Format:....22
- Troubleshooting and FAQ....23
- Firmware Listing....25

Introduction

Thank you for purchasing the MX5 Magnetic Swipe Card Reader and RFID/SC Reader/Writer. It is ideal for access control, time keeping, banking, ID recognition, credit verification and related applications. In fact, wherever a RFID/SC/Magnetic stripe ID or transaction card is used, one can find a related use for the versatile, user-friendly MX5 device.

The MX5 is designed to offer a versatile and expandable solution that will attractively complement an existing system for years to come. The MX5 units are the products of choice for versatility, expandability and productivity.

MX5 Accessories

The accessories content will vary based on the type of device purchased:

1. MX5 Unit.
2. Velcro adhesive strip.
3. Quick Set Default Setup Card. (only with MX53 series).
4. CD ROM: Utility, Firmware, SDK, Manual(s) and Product specifications.

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. A ny alteration and/or erasure or modification of the MX5 will void the warranty.

Disclaimer

The Manufacturer makes no claims or warranties with respect to the contents or accuracy of this publication or the product it describes, including warranties of fitness or merchantability for a particular purpose. The Manufacturer shall not be liable for any special, incidental or consequential damages, nor damages due to use or misuse born from Integration into any mechanical, electrical or computer system. The Manufacturer is not responsible for the accuracy of any device connected to the MX5. The Manufacturer reserves the right to make any changes to this manual or product(s) without the obligation to notify any person of such changes. Any alteration and/or erasure or modification of the MX5 will void the warranty.

General Features

The MX5 series of devices communicates with a host computer or other terminal using a USB interface. Unlike any other reader on the market today, you will not need to stock different models to support USB Serial, Keyboard, HID or custom applications. Just plug it in, download the desired firmware and your MX5 is ready to meet your needs.

The MX5 series product offering is based on the core of an MX5 Magnetic Card Reader which utilizes an ARM 7 (32 bit processor) CPU. By simply removing the side cover of the MX5 Magnetic card reader, you now can add a variety of snap-on modules designed to add combination Reading/Writing for RFID or IC Smart Cards. If you do not require a Magnetic Card Reader, the Compact version – MX5C – is also available for all the MX5 add on modules. For the RFID power user, we have created our MX5T table top model which supports both Low Frequency 125 kHz and High Frequency 13.56 MHz cards/tags, all in one Reader. All of our MX5 product line is fully flash upgradeable, customizable and a wide range of firmware is available, making the MX5 product the most versatile product currently on the market. The MX5 product is the one and only Card Device you will ever need for many years to come.



MX53



MX5C-RFID/SC



MX53-RFID/SC



MX5T-RFID

The MX53 products currently support all the ISO, ABA, ANSI, ISO magnetic card standards and the AAMVA and CADMV drivers license standards. We can also provide support for non-standard magnetic decoding methods and cut-and-paste of magnetic card data on the fly. Data encryption can also be performed inside the reader and various data encryption standards are available for data output. Currently Triple DES, Advanced Security Features, Masked Data is available and AES-128 encryption will also be available soon for your custom application requirements. These features are specifically designed to meet PCI DSS Requirements.

Custom firmware applications can be provided exclusively upon request. This unique feature built into all our MX5 products will protect your custom firmware and guarantee exclusive hardware to all your clients.

Another exclusive feature only available on the MX53 magnetic card reader or MX53 combination reader is the **QuickSet** setup card. This feature is great when deploying large installations or if you just wish your client to have a default card customized to their application. All your custom parameters and options for the MX53 can be programmed in a simple swipe of this card. Custom **QuickSet** setup cards are available from your supplier. This great little feature will save you technical support time, increase productivity and help improve hardware deployment time.

System Development Kits (SDK) are available for all our MX5 series products. Our kits include a Windows DLL, Demo software, sample code, code description manual and protocol manual. Contact your MX5 device provider for a listing and pricing.

Technical Specifications

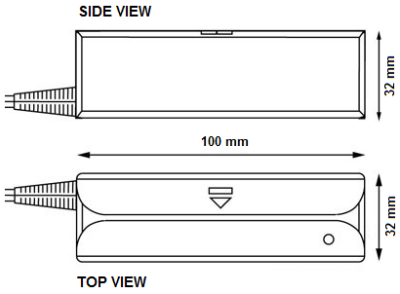
MX53-USB	
Built-in Magnetic Card Decoder	Yes
Supported Standard	ABA, ANSI, ISO, AAMVA, CADMV
Communications	USB port (RS232 – DB9, PS2 KB Wedge using MX5-CBL)
Power	5V via USB port
Current	35 mA
Connectors	USB Type A
Cable Length	6 ft; (180 cm); also available in 2 ft (60 cm) and 15 ft (450 cm)
Dimensions (LxWxH)	100 x 32 x 32 mm
Total Weight	130 g
Operating Temperature	-20 ºC to 55 ºC
Humidity	10% to 90% relative humidity
Quick Set® Factory Default Card	Yes – One step default setup card, customizable
Flash Memory Upgrade	Yes
Selectable Tracks	Yes (Separate Track selection for both ISO and AAMVA)
Selectable Available Tracks	1, 2, 3
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	Yes
Programmable SS/ES Selectable Character	Yes
Parity and LRC Data Checking	Built-in, audible and LED, good read and error indicator
Certifications	CE, FCC, UL, RoHS
Add-on Modules	Smart IC Chip Card, EM RFID, MIFARE RFID options
Supported Operating Systems	Mac OS X 10.5+, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win CE, Unix
Warranty	2 years

MX53-RFID	
Built-in Magnetic Card Decoder	Yes
Supported Card Types (module specific)	EM, TI, AT, MIFARE, ICode
Communications	USB port (RS232 – DB9, PS2 KB Wedge using MX5-CBL)
Power	5V via USB port
Current	45 mA to 65 mA
Connectors	USB Type A
Cable Length	6 ft; (180 cm); also available in 2 ft (60 cm) and 15 ft (450 cm)
Dimensions (LxWxH)	100 x 48 x 35 mm (RFID add-on)
Total Weight	150 g
Operating Temperature	-20 ºC to 55 ºC
Humidity	10% to 90% relative humidity
Set-up Utility	Yes
Quick Set® Factory Default Card	Yes – One step default setup card, customizable
Flash Memory Upgrade	Yes
Selectable Tracks	Yes (Separate Track selection for both ISO and AAMVA)
Selectable Available Tracks	1, 2, 3
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	Yes
Programmable SS/ES Selectable Character	Yes
Parity and LRC Data Checking	Built-in, audible and LED, good read and error indicator
Classifications Supported (module specific)	ABA, ANSI, ISO, AAMVA, CADMV, ISO14443A, ISO14443B, ISO15693, ISO7816-(1-4)
Certifications	CE, FCC, UL, RoHS
Add-on Modules	Smart IC Chip Card
Supported Operating Systems	Mac OS X 10.5+, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win CE, Unix
Warranty	2 years

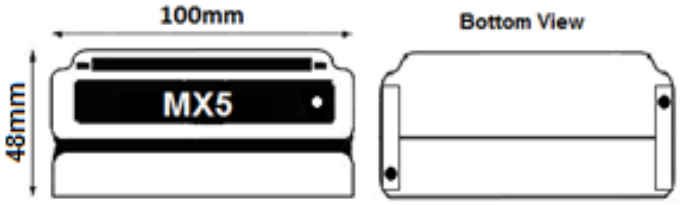
MX5C (Compact)	
Communications	USB port (RS232 – DB9, PS2 KB Wedge using MX5-CBL)
Power	5V via USB port
Current	45 mA to 65 mA
Connectors	USB Type A
Cable Length	6 ft; (180 cm); also available in 2 ft (60 cm) and 15 ft (450 cm)
Dimensions (LxWxH)	100 x 32 x 35 mm (RFID add-on)
Total Weight	130 g
Operating Temperature	-20 ºC to 55 ºC
Humidity	10% to 90% relative humidity
Set-up Utility	Yes
Flash Memory Upgrade	Yes
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Programmable Inter-character Delay	Yes
Programmable SS/ES Selectable Character	Yes
IC Cards Supported (MX5C-SC only)	ISO7816-(1-4) (T=1, T= 0); SLE4418-4428; SLE4432/4442; SLE4436/5536; I2C memory cards
Classifications Supported (module specific)	ISO14443A, ISO14443B, ISO15693, MIFARE Classic, DESFire, Ultra
Certifications	CE, FCC, UL, RoHS
Supported Operating Systems	Mac OS X 10.5+, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win CE, Unix
Warranty	2 years

MX5T (Tabletop)	
Communications	USB port (RS232 – DB9, PS2 KB Wedge using MX5-CBL)
Power	5V via USB port
Current	65 mA to 100 mA
Connectors	USB Type A
Cable Length	6 ft; (180 cm); also available in 2 ft (60 cm) and 15 ft (450 cm)
Dimensions (LxWxH)	100 x 32 x 32 mm
Total Weight	130 g
Operating Temperature	-20 ºC to 55 ºC
Humidity	10% to 90% relative humidity
Set-up Utility	Yes
Frequency (RFID)	LF: 125 kHz; HF: 13.56 MHz
Selectable Tracks	Yes (Separate Track selection for both ISO and AAMVA)
Programmable Sound On/Off	Yes
Programmable Carriage Return	Yes
Programmable Inter-character Delay	Yes
Programmable SS/ES Selectable Character	Yes
Data Checking	Built-in, audible and LED, good read and error indicator
Classifications Supported	ISO14443A, ISO14443B, ISO15693, EM, TK, AT
Certifications	CE, FCC, UL, RoHS
Add-on Modules	Smart IC Chip Card, EM RFID, MIFARE RFID options
Supported Operating Systems	Mac OS X 10.5+, Win 7, Win 2008 ,Vista, Win 2003, Win 2000, XP, Win CE, Unix
Warranty	2 years

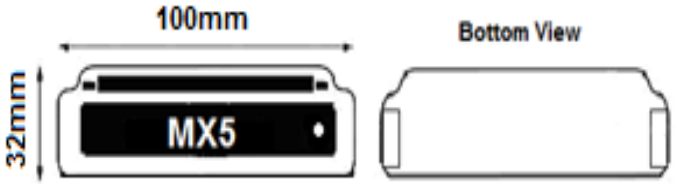
Dimensional Views:



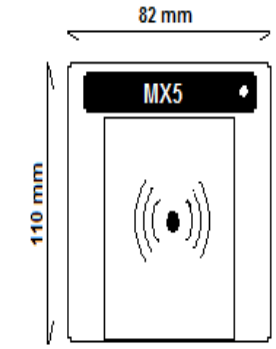
MX53-USB



MX53-COMBO-USB



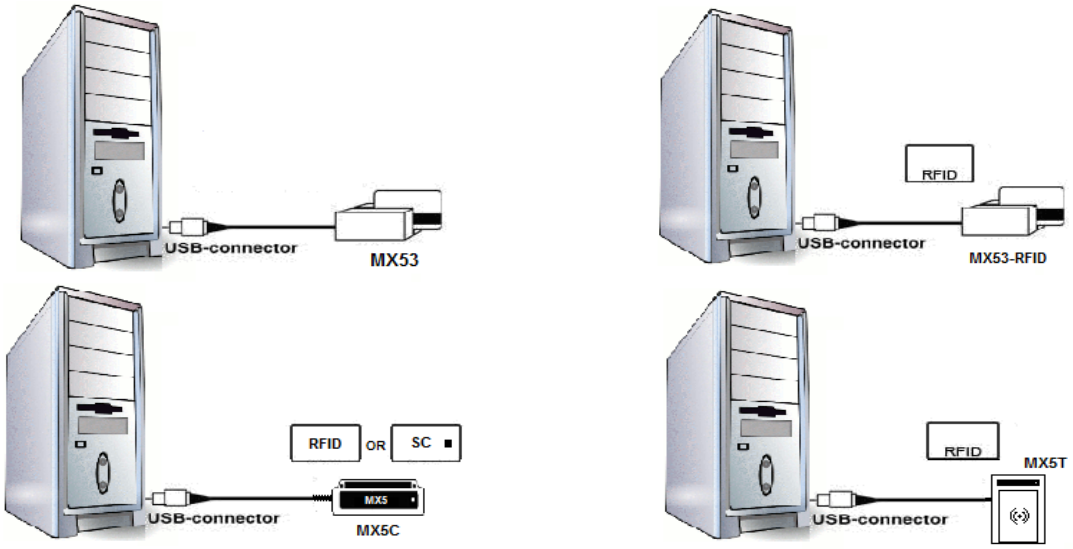
MX5C-USB



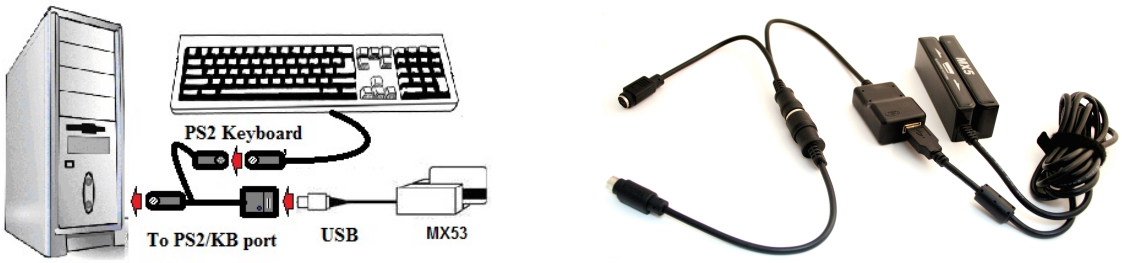
B

MX5T-USB

Connection Views:

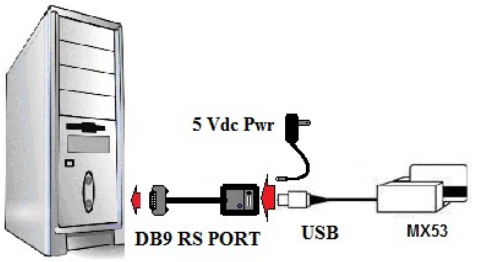


MX5-CBL (Add-on Cable for MX5)



Typical connection of the MX5-CBL-KB to a MX53-USB reader

Note that the device connected could be an MX53 (as shown above), MX5C or MX5T device. All devices connected to this keyboard wedge cable (MX5-CBL-KB) must have keyboard firmware installed using the latest version of the Utility (2.8.0) or higher. This cable is designed to utilize the existing keyboard port on your Windows PC (Mini DIN6 or DIN5) concurrently with your existing keyboard. The card information is transferred to your computer as if someone had manually typed the information. In order to change any settings of the device, you must connect the device directly to a USB port and use the Utility. Power is provided by the keyboard port.



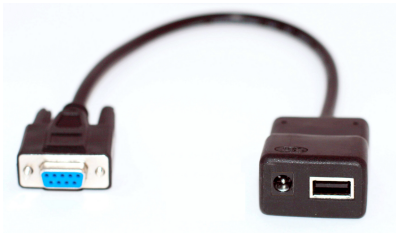


Typical connection of the MX5-CBL-RS to a MX53-USB reader

When utilizing the MX5-CBL-RS cable, the device must have the latest VRS firmware from the Utility (version 2.8.0 or higher). Power is provided by a power adapter. In order to change any settings of the device, you must connect the device directly to a USB port and use the Utility.



MX5-CBL-KB



MX5-CBL-RS

Typical MX5 Device Setup

1. Power on your computer system.
2. Insert the MX-5 Utility CD into your system and install the MX5 Setup Utility.
3. Connect the USB cable of the MX5 to a free USB port .(See **Connection Views**)
4. Mac OS X does not require special drivers to use MX5 devices – it recognizes the keyboard and VRS output formats directly and applications can easily interface to the HID report output. Note: if this is the first time that a keyboard output MX5 is attached, you will see the following display –



   Simply close this window, and the Macintosh will recognize the MX5 as an ANSI keyboard. This dialog is presented so that the operating system can identify where specific keys are, which is not required for the MX5.

5. You are now ready to configure your MX5 device using the MX5 Device Utility. Note that the MX53 magnetic card reader or combination reader can be configured using the **QuickSet** setup card. All your custom parameters can be programmed with a simple swipe of this card through the MX53 reader. Custom **QuickSet** setup card settings are available from your supplier. This feature is great when deploying large installations or if you just wish your client to have a default card customized to their application. This will save you technical support time and increase productivity.
6. If you need to upgrade or change the device characteristics, for example USB serial or HID or custom USB, you will need to use the MX5 Device Utility to enable the Flash upgrade function of the device. See the **MX5 Device utility software** section for more details.
7. Once you have placed the MX5 Device in upgrade mode, you can select from an extensive list of various firmware upgrades known to the Utility or available from your supplier. Select the upgrade based on the device type you are using, since. each device has specific firmware upgrades; see the Firmware list section for descriptions of the available firmware. Do not worry should you install the wrong firmware, the Utility and MX5 hardware is designed to prevent any damage or lock-up of your device. The Flash function of the MX5 Device is designed to be upgraded as many times as desired to help keep your hardware up to date. All the MX5 Device settings and options are also saved into the MX5 Device Flash memory. This allows you to move the hardware to any computer without losing your custom settings.

8. Note that when the MX5 Device is upgraded, the MX5 Device will automatically restart. You do not need to unplug the Device from the USB port to restart the Device. Mac OS X will recognize the MX5, regardless of which USB port it is plugged into. Special care should be noted when using VRS (USB Virtual Serial Port), since the port name may change if multiple serial devices are installed. Refer to the VRS section for hints on configuring your MX5 Device on all your computer's USB ports.
9. System Development Kit (SDK) Utility located on the CD is designed for software developers who wish to integrate the MX5 Device to their own application using our Windows DLL and sample code. The SDK Utility is available to demonstrate proper operation of the device using the Windows DLL with the hardware.

MX5 Utility Software

Every MX5 comes with a utility setup and test program that is included on the CD. This program is designed to configure selectable functions for each MX5 Device and to demonstrate the functionality of various MX5 devices. The MX5 Utility can also be used to demonstrate Smart Card reading and writing functions using the SmartCard Module.

System Requirements

1. iMac, Macbook and any other Intel based Apple computer.
2. The Macintosh OS X operating system version 10.5 or higher.
3. A free USB port.

MX5 Utility Installation

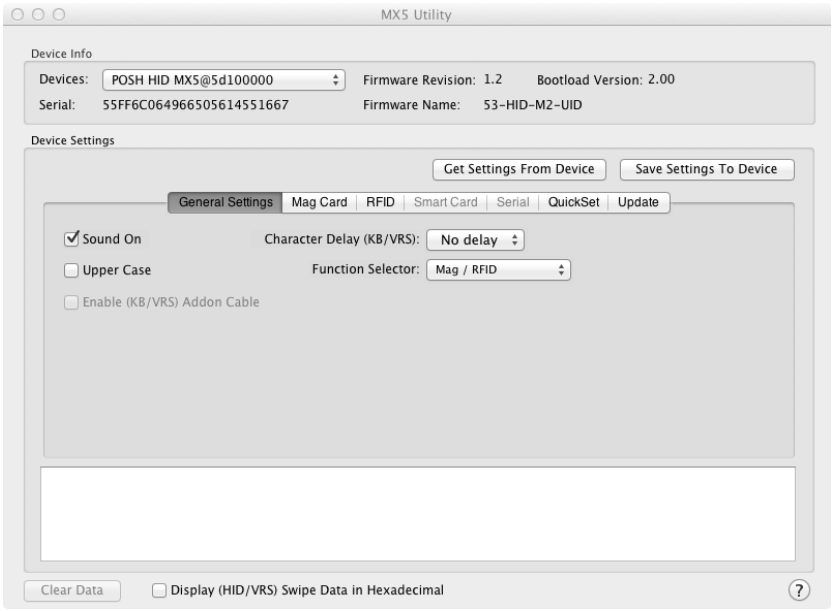
Use the following steps below in order to install the MX5 Utility program.

A. Open the MX5 Utility package (MX5 Utility.pkg) on the CD or download the Utility from: http://www.poshmfg.ca/GeneralInfoFiles/Downloads_MX5.html.

B. Follow the installation instructions; the application will be installed in your Applications folder.

C. Connect your MX5 Device to a free USB port.

D. Select the application **MX5 Utility** to start the program.



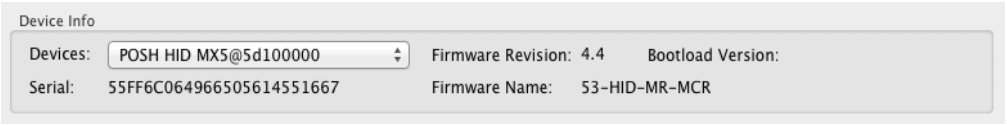
E. The MX5 Utility program will auto-detect any attached MX5 Devices.

F. If NO device appears in the information dialog box, check to see that the Device is plugged into the USB port and the power LED of the MX5 device is **ON**. exit the Utility and Repeat from step **C.**

G. If you are still unable to see the device in the dialog box, exit the Utility and go to the **Troubleshooting Section**.

MX5 Utility General Information

The MX5 Utility detects the hardware configuration and will automatically read the MX5 Device settings and display the settings in its appropriate dialog boxes. Tabs which are not related to this firmware version will be grayed out and disabled.

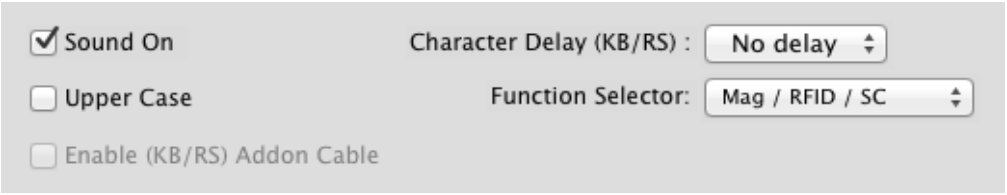


Should you have more than one MX5 Device connected to your system, you can select a different MX5 Device by using your mouse and selecting from the pull down list in the **Device Info** panel. The Device Name and device address will be listed in the pull down list. After selecting a device, the screen will automatically update and the tabs and fields will be updated with the selected device settings. The **Device Info** will display the internal device serial number, the device name and the firmware version installed in the device selected.

You may choose to enable or disable any available options which are not grayed out.

Definitions of Settings

General Settings



"**Sound On**" – Selecting this option will enable sound. A single beep is heard when a good read is made, two beeps are heard when an error is detected in a selected track. No data is sent out by the device when an error is detected on any of the selected tracks.

"**Upper Case**" – By selecting this option all the card data will be output in "***CAPITAL***" letters. This option overrides the Caps Lock status. By unchecking this option, all the data output will be in "***lower case***" only and this mode is not affected by the Caps Lock status.

"**Character Delay (KB/RS)**" – This option is used to add a delay between each character sent out by the device. This setting only affects keyboard or virtual serial output format. A delay may be needed if your computer is busy or slow at accepting data entry. Increase the delay if data loss is noticed when reading your data card.

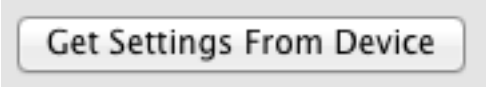
"**Function Selector**" – You can select the active modules (functions) for the device. Multiple functions only apply to devices which have more than one Module attached. (E.g.: Magnetic card / RFID / Chip Card).

"**Enable (KB/RS) Addon Cable**" – By selecting this option, the special add-on cable for keyboard or virtual serial output is enabled. Most Macintosh computers do not have built-in serial ports and computers on which the MX5 Utility runs must have at least one USB port, there is no need to enable this option. If the device is being set up for use with an older Windows computer, this option may be relevant.

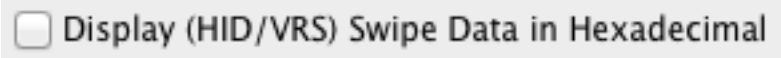
Function Buttons



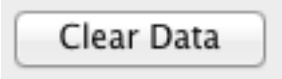
– All changes will be saved to the MX-Device once you have selected this option. All saved settings are automatically updated and stored inside the MX-Device flash memory.



– Your options settings will be updated to reflect the current device settings when you click on this button.



– Selecting this option will result in swipe data (from a device set for HID report or virtual serial output) being displayed as a block of hexadecimal data, rather than as a stream of characters.

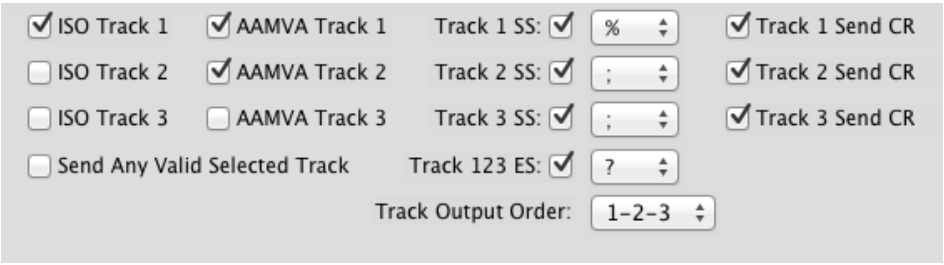


– The data area above this button will be cleared.



– This button will bring up the context-sensitive help.

Magnetic Card Reader Settings Panel



"**ISO Track Selectors**" – Select which Credit Card or Data Card tracks you would like the reader to read. See your application notes to determine which track should be selected.

"**AAMVA Track Selectors**" – Select which Driver License data tracks you would like the reader to read. This option only applies to driver licenses and has no effect on ISO cards.

"**Track SS Selectors**" – Enable or disable the Track Start Character (Start Sentinel). You can also select your own start sentinel by using the pull down list associated with each checkbox. Use the default settings unless notified otherwise by your application vendor. Each track can have a unique start sentinel.

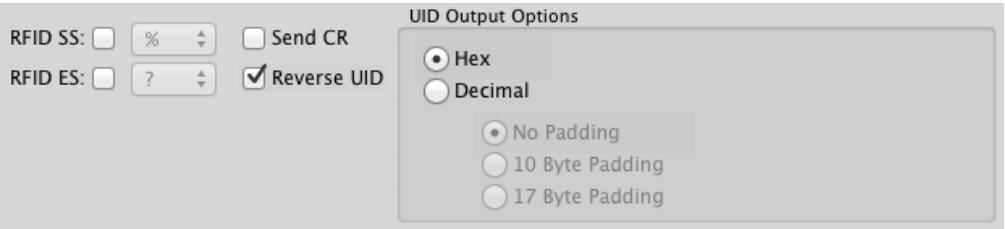
"**Track 123 ES**" – Enable or disable the Track End Character (End Sentinel). You can also select your own end sentinel by using the pull down list associated with the checkbox. Use the default settings unless otherwise notified by your application vendor. All the tracks share the same end sentinel.

"**Track Send CR Selectors**" – Select this option to send a Carriage Return "CR" at the end of the selected track of magnetic strip data.

"**Track Output Order**" – This option allows you to change the output order of the selected tracks. The default order is (1-2-3).

"**Send Any Valid Selected Tracks**" – Enabling this option will tell the device to send out ANY VALID data tracks "that have been selected" only (Track Error "OFF"). Not selecting this option will tell the reader to only send ALL the selected tracks only if they are ALL valid. Any track data error on any selected tracks will flash the LED twice and sound two beeps. NO DATA will be sent out. This option is handy for trouble shooting.

RFID UID Reader Settings Panel



"**RFID SS**" – Enable or disable the RFID Start Character (Start Sentinel). You can also select your own start sentinel by using the pull down list associated with the checkbox. Use the default settings unless notified otherwise by your application vendor.

"**RFID ES**" – Enable or disable the RFID End Character (End Sentinel). You can also select your own end sentinel by using the pull down list associated with the checkbox. Use the default settings unless otherwise notified by your application vendor.

"**Send CR**" – Select this option to end a Carriage Return "CR" at the end of the UID read from the RFID data card.

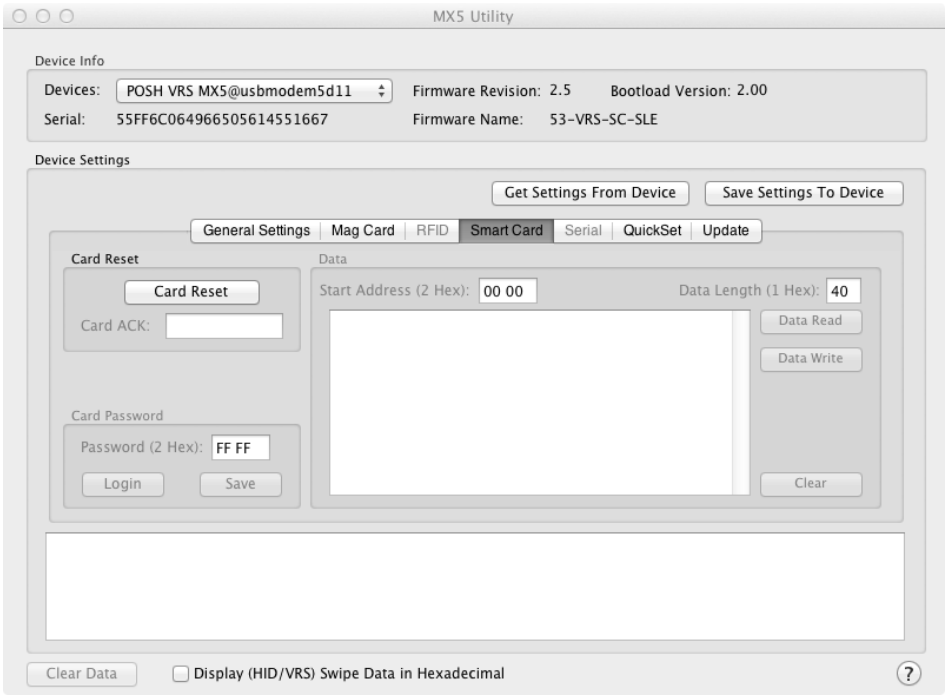
"**Reverse UID**" – Select this option to reverse the order of the digits of the UID being sent.

UID Output Options

"**Decimal/Hex**" – The UID can optionally be output to in either Decimal or Hexadecimal format.

"**Padding**" – Sending the UID in Decimal output without any padding of zero characters is the default. Optionally, the UID can be padded with leading zeroes to a length of 10 characters or to a maximum length of 17 characters (13 characters for EM Cards).

Smart Card Testing Panel



This panel is for testing the Contact Smart Card Module using an SLE memory card. The SLE 4428 is a 1 kilobyte memory card which is a recommended or equivalent memory card from SLE. The Smart Card utility is very basic and only supports simple commands for the purpose of TESTING the device only.

"**Card Reset**" – This option is the first command which needs to be selected once the SLE card has been inserted into the contact card slot. Press the card down firmly until the LED changes color. If the card contacts are inserted the wrong way, the Device will sound two short Beeps to indicate an ERROR and the LED will not change color. Remove the SLE card and rotate the card so that the gold contacts on the card face the opposite direction and then insert the card by pressing the card down firmly. Once the card is inserted properly the LED will change color and other options will be un-grayed.

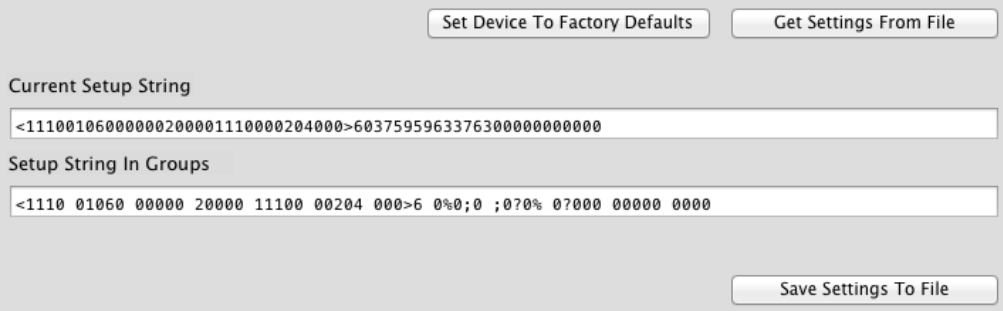
"**Login**" – Once you have entered the two byte HEX password (Default is FF FF) press the Login button. If the password is successful, the "**Save**" and "**Data Write**" options will be un-grayed. If the wrong password is entered then an error panel will pop up.

"**Save**" – Once this option is un-grayed, the card is unlocked and the value of the "Password (2 Hex)" can be written to the card, changing to the new password. Removing the card performs an Auto Log out. The new password will need to be entered in order to Login once the card is inserted back into the SmartCard module.

"**Data Read**" and "**Data Write**" – Before pressing these options, you should select the Start Address and the Data Length. The start address is two hex bytes ("FF FF") and should not exceed the memory size of the memory card. A 1 KB card has an address range off "00 00" to "04 00" hex. A data length of "40" hex will display 64 bytes of data. Using the default values is recommended for first time users. The card data will be displayed in HEX on the screen, with each data byte composed of two hex characters. You can edit the value of each character by typing over the data bytes displayed. An error screen will pop up should the data length or data format be invalid once the Data Write option is pressed. The data written to the card is not verified by this command and a Data Read should be performed to confirm that the data was written to the card properly. If you did not login then the **Data Write** button will be grayed out and you will be unable to save any data to the card. You can read data from the card without logging in.

"**Clear**" This option will clear all the data in the data window. This will not affect or change the information on the memory card. If you have not saved the data before pressing **Clear**, changes to the data will be lost.

QuickSet Panel



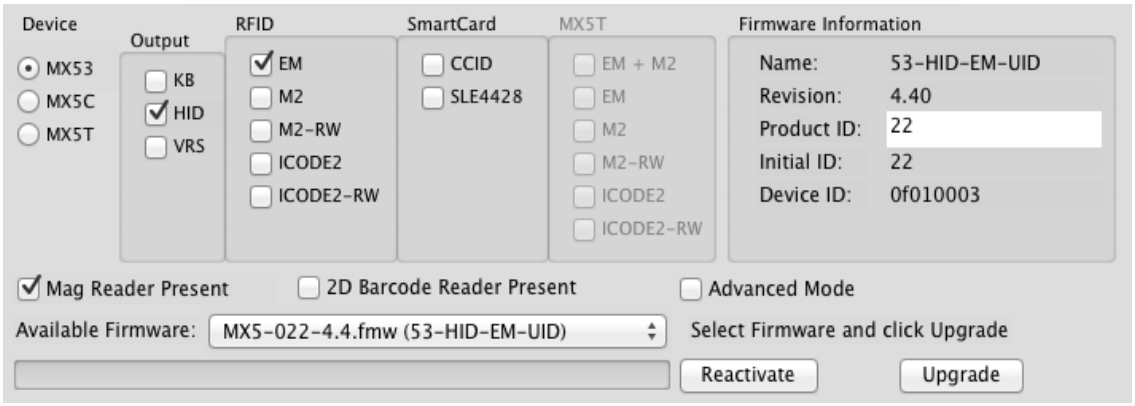
This panel supports saving and restoring configurations in external files, so that multiple devices can be set to the same configuration without the use of custom **QuickSet** magnetic cards.

"**Set Device To Factory Defaults**" – Restore the device to its factory default settings. This will also refresh all the fields in the Utility to match the new settings.

"**Get Settings From File**" – Read the configuration settings from an external file, which you select use the standard Open dialog.

"**Save Settings To File**" – Write the configuration settings to an external file, which can be placed anywhere on your system, using the standard Save dialog. It is recommended that you create a directory specifically to hold the configurations. Note that the default name for the settings file is formed from the serial number of the device.

MX Device Firmware Upgrade Panel



The MX Device Firmware Update panel is automatically opened when the utility recognizes that the selected device has been turned "**ON**" to update mode. In upgrade mode the MX-Device will sound a beep and flash the LED every second.

If you have more than one device connected, use the pull down list to select from the available devices on your system. Select the appropriate MX-Device to be upgraded. Note that the MX-Device selected must be in Upgrade mode in order for this Menu to be shown. Selecting a MX-Device which is not in Upgrade mode will automatically change the menu selection according to the current settings of the selected MX-Device.

The **Device Info** area will display the MX5 Device's current information stored in its flash memory. If you do not wish to change the firmware, press the **Reactivate** button and the MX5 Device will restart with its current firmware.

The **"Device Update"** area lists all the features of each Firmware File that can be flashed into the MX5 Device. The Device Type, Output Format, RFID and Smart Card options as well as the presence of a Magnetic Card or 2D Barcode reader can be selected and the most appropriate Firmware File will be selected. Note that certain combinations of options are not possible, and the Utility disables incompatible selections. Alternatively, you can select a particular firmware file by entering the Product ID or by selecting a file that has been downloaded, using the 'Custom File' entry in the "Available Firmware" pulldown list.

"**Reactivate**" – This button will reactivate the current firmware inside the MX-Device. The device will automatically restart once it has completed the "Upgrade" or "Reactivate" action and the Utility will return to the General Settings panel.

"**Upgrade"** – You may choose to install new firmware using the "Upgrade" button into the MX-Device. You must select a valid MX-Device firmware file before the "Upgrade" Button can be selected – the "Upgrade" button will be grayed out until you have chosen a valid file.

Advanced Mode

If the Product ID number of the file selected is for a different module than what was initially installed on the Device and the "Update" button is clicked, a warning message will be displayed. ***An override option is available. Clicking on the Advanced Mode button displays a password entry dialog. The password required for changing a MX5 Device to a new Product ID within the Model's possible modules is 'MASTER'***.

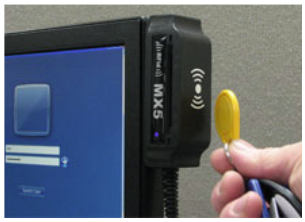
If for some reason there is a need to change the Model to be something other than what it was designated to be from the factory, there is a password that provides the option to load any firmware file. This can render the product non-functional if an incorrect firmware file is loaded. Using this mode will lock up an MX5 device and will void the warranty. The override password to load any firmware into a unit is 'SUPER'.

Hardware Mounting

The MX5 compact, MX5 combination and MX5 stand alone unit can all be easily attached on any existing computer system with the use of the double sided Velcro adhesive strip which is included with your unit. Various configurations are possible for mounting your MX5 to your computer, see the illustrations below.

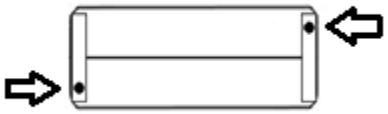








Bottom View of MX5



Mounting Lugs

The MX5 can also be mounted to your table top or wall using the Velcro adhesive strip. Mounting lugs included on the bottom of each MX5 reader make it easy to mount and secure to your kiosk or work area.

Hardware Maintenance

You can increase the life and maintain the performance of your MX5 magnetic head reader by periodically cleaning the read head with a pre-saturated cleaning card. It is recommended to clean the head once a week if heavily used and once a month for light use. Cleaning the head will improve successful read rates and ensure long life of the reading head. The same cleaning card can also be used to clean the chip card contacts of your Smart Card (SC) module. Cleaning cards should be available from your MX5 vendor.

Reading / Writing RFID

To Read/Write RFID cards on the MX5 combination or Compact RFID device, place the card near the side of the case indicated by the RFID symbol (((o))). The card can be read from up to 3 cm from the device. For writing cards, it is best to have the card as close to the device as possible. For table top models place the card directly over the RFID symbol (((o))).

Reading / Writing SC Smart IC Cards

To Read/Write SC smart cards on the MX5-SC module, insert the card such that the chip on the card is facing the device. Once inserted correctly, the red LED will be turned on. If the card is incorrectly inserted, the device will beep and flash twice.

Appendices

HID Software Developer Notes on MagTek Compatible Format:

The MX-HID USB device ID numbers are:

- Vendor ID: 0x0980 (decimal: 2432)
- Product ID: 0x9025 (decimal: 36901)
- Revision ID: 0x0100 (decimal: 256)

Data definition:

<Count> runs from 0 to 336 in rows of 16 bytes.

<ASCII number> values range from 0 to 255 (displayed in decimal base).

Example:

```
  5"  %B6035294427068858^
0000  00 00 01 35 22 00 00 25 42 36 30 33 35 32 39 34
0010  34 32 37 30 36 38 38 35 38 5E 54 41 59 4C 4F 52
0020  2F 42 52 4F 4F 4B 20 41 5E 34 39 31 32 31 30 31
```

The values represented:

Byte Offset	Usage Name
0	Track 1 decode status ('0' = good read, '1' = read error)
1	Track 2 decode status ('0' = good read, '1' = read error)
2	Track 3 decode status ('0' = good read, '1' = read error)
3	Track 1 data length (up to 110 bytes)
4	Track 2 data length (up to 110 bytes)
5	Track 3 data length (up to 110 bytes)
6	Card encoding type ('00' = ISO/ABA, '01' = AAMVA, '02' = CADL, '04' = RFID)
7 – 116	Track 1 ASCII data (Magnetic card data or RFID UID number)
117 – 226	Track 2 ASCII data
227 – 336	Track 3 ASCII data

For a more detailed explanation of HID and coding examples, refer to the MX5 HID Programmers Manual on the CD. That document can be found in the MX5-Manuals folder.

Troubleshooting and FAQ

Normally your MX5 product is a plug-and-play device and should operate trouble-free.

Below you will find a list of various Frequently Asked Questions (FAQ) and solutions which maybe helpful in resolving any issues with your MX5 product.

- **My MX5 LED flashes and beeps every second**

  Solution: Your MX5 is set in upgrade mode. Use the MX5 Utility to reactivate your existing firmware or install a different Version of 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 normally.

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

  Solution: The MX5 may be assigned a different device name if it is inserted when other MX5 VRS devices are present. This is normal and you will need to insert each device in a specific order or leave them attached.

- **After mounting my MX5 Device on my monitor, two beeps are randomly heard from the MX5**

  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 MX5 Magnetic Head and RFID device. Two beeps from the MX5 indicate an error state was detected which was caused by the CRT electromagnetic fields.

- **After I upgraded my firmware on the MX5, I cannot see any data from the MX5 Device**

  Solution: The default firmware installed into the MX5 device is commonly a keyboard device. When you read a card using the MX5, data is automatically typed to your computer as if someone has entered the data manually. If you have installed a new firmware application which is a Virtual Serial port (VRS) or HID Report device, the card data will no longer be sent to your keyboard port. Your software application will determine which interface you are required to use for your MX5 device. The MX5 Utility is designed to be used to upgrade, configure and test your MX5 device. The data window in the Utility will display data from the card, regardless of the output format selected. If your MX5 is a keyboard device, you can view card data in any word processing or note pad document.

- **I have updated my firmware on my MX5 combination device and my RFID stopped working**

  Solution: Check the hardware configuration setting using the MX5 Utility. You can enable or disable any portion of your combination reader. You can turn off the Magnetic card option of the MX5 and only use the RFID or SC option of the firmware. By doing so, you will not be able to read any magnetic cards. Alternatively, you can also turn off the RFID or SC of your MX5 device and only enable the Magnetic card option. The factory default setting is only the Magnetic card option is enabled. You need to change this setting to enable other options and save your changes.

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

  Solution: As new firmware applications are created and released for the MX5 Devices, upgrades are also done to the MX Utility and the Configuration. If you download new firmware files from the Internet, also make sure that you are using the latest MX Utility available. By downloading the latest MX Utility and installing it on your system, all the required updated files are automatically installed and updated.

Other Considerations

- All the Device settings are stored inside the flash memory of each individual MX5 device. Moving the MX5 device to another computer will not affect the MX5 settings.
- All the configurable settings available through the MX5 utility can be configured by using a special QuickSet “Default Card”. A factory default QuickSet card is provided with all our MX5 Magnetic card devices to setup the device to a known factory default mode. You can have your own Custom versions of the QuickSet setup card to meet your system and software requirements. This feature is ideal for hardware deployment and setting up your hardware. You do not need to use the MX5 Utility to setup your MX5 magnetic device when you use the QuickSet setup card. Just read the QuickSet card and all your settings are automatically saved into the flash memory of the MX5 device.
- Your MX53 magnetic card readers are all designed to be easily upgraded with an RFID or SC solution. Just remove the side cover from the MX53 card reader and attach the correct cable to your RFID or SC module. The module is designed to snap on the MX53 reader. The MX53 combo unit is now ready to be flashed with the appropriate supporting firmware.
- Custom firmware applications installed on your MX5 device may be designed to disable utility and upgrade functions. Contact your device vendor for more details.
- Data Encryption features are only available on custom firmware applications. Contact your device vendor for more details.

Firmware Listing

The following is a list of the most recent firmware versions available to be upgraded into MX5 devices, as of the date that this manual was written. Each firmware file may require a specific set of hardware modules in order to function properly. Some upgrades are hardware specific and can only be installed on specific hardware versions of the MX5 device. Accidental loading of the wrong firmware is prevented by the MX Utility (version 2.8.0 or higher). Caution should be taken when using an older version of the utility; it is recommended to always use the latest version of the MX Utility.

MX53 List:

MX53-KB-MR-MCR **Version 4.1, product ID: 10** Magnetic card reader, keyboard output	Use this firmware on the MX5T-EI ONLY. EM 125 kHz and Mifare 13.56 MHz RFID Reader. The unique random serial number of the EM and Mifare S50 RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system.
MX53-VRS-MR-MCR **Version 4.5, product ID: 11** Magnetic card reader, virtual serial output	Use this firmware on any MX53 with a three track Magnetic card reader. Magnetic card data is sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device.
MX53-HID-MR-MCR **Version 4.5, product ID: 12** Magnetic card reader, HID report output	Use this firmware on any MX53 with a three track Magnetic card reader. The three track Magnetic card data is sent out via an HID report when a magnetic card is swiped on the reader. This reader will send an interrupt to the system and then send a fixed report of characters from 0 - 336 in the Mag-Tek report format. This Report also includes Error status of each track, data length and type of card read. The MX5 setup utility Help File has more details on this report. (ISO7810). Product ID: 0x9025.
MX53-KB-MR-MCR **Version 4.5, product ID: 14** Magnetic card reader, keyboard output	Use this firmware on any MX53 with a three track Magnetic card reader with an attached 2D Barcode reader. Magnetic card data or 2D Barcode data is typed out when a magnetic card is swiped or a barcode is read by the reader. This firmware creates a second HID keyboard attached to the system..
MX53-VRS-2D-MCR **Version 4.5, product ID: 15** Magnetic card reader, 2D bar code reader, virtual serial output	Use this firmware on any MX53 with a three track Magnetic card reader with an attached 2D Barcode reader. Magnetic card data or 2D Barcode data is sent out to the virtual serial port when a magnetic card is swiped or a barcode is read by the reader. This firmware will create a Virtual serial device.
MX53-HID-2D-MCR **Version 4.4, product ID: 16** Magnetic card reader, 2D bar code reader, HID report format output	Use this firmware on any MX53 with a three track Magnetic card reader with an attached 2D Barcode reader. Magnetic card data or 2D Barcode data is sent out via an HID report when a magnetic card is swiped or a barcode is read by the reader. This reader will send an interrupt to the system and then send a fixed report of characters from 0 – 336. This Report also includes Error status of each track, data length and type of card read for Magnetic Cards. The MX5 setup utility Help File has more details on this report. (ISO7810). Product ID: 0x9025.

MX53-EM List:

MX53-KB-EM-UID **Version 4.3, product ID: 20** Magnetic card reader with EM ID reader, keyboard output	Use this firmware on the MX53 with a 125 kHz RFID "EM" Module only. The unique random serial number on the EM RFID card is read automatically and typed out as if someone manually typed the number. Magnetic card data is also typed out when a magnetic card is swiped on the reader. This firmware creates a second HID keyboard attached to the system. (EM4100, EM4102, TK4100,ISO7810).
MX53-VRS-EM-UID **Version 4.5, product ID: 21** Magnetic card reader with EM ID reader, virtual serial output	Use this firmware on the MX53 with a 125 kHz RFID "EM" Module only. The UID on the EM RFID card is read automatically and sent out directly to the virtual serial port. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device. (EM4100, EM4102, TK4100, ISO7810).
MX53-HID-EM-UID **Version 4.4, product ID: 22** Magnetic card reader with EM ID reader, HID report output	Use this firmware on the MX53 with a 125 kHz RFID "EM" Module only. The UID on the EM RFID card is read automatically and sent to Track 1 of the HID Device in MagTek report format. This Report also includes Error status of each track, data length and type of card read. The MX5 setup utility Help File has more details on this report. Magnetic card data is also sent out to the HID device when a magnetic card is swiped on the reader. An event flag is set by the HID device when data is available in the buffer. (EM4100, EM4102, TK4100, ISO7810). Product ID: 0x9025.

MX53-M2 List:

MX53-KB-M2-UID **Version 4.8, product ID: 30** Magnetic card reader with MIFARE S50 ID reader, keyboard output	Use this firmware on the MX53 with a 13.56 MHz RFID "M2" add on Module only. The unique random serial number on the RFID card is read automatically and typed out as if someone manually typed the number. Magnetic card data is also typed out when a magnetic card is swiped on the reader. This firmware creates a second HID keyboard attached to the system. (MIFARE M50, M70, ISO-14443A).
MX53-VRS-M2-UID **Version 4.3, product ID: 31** Magnetic card reader with MIFARE S50 ID reader, virtual serial output	Use this firmware on the MX53 with a 13.56 MHz RFID "M2" add on Module only. The unique random serial number on the RFID card is read automatically and sent out directly to the virtual serial port. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device. (MIFARE M50, M70, ISO-14443A).
MX53-HID-M2-UID **Version 1.2, product ID: 32** Magnetic card reader with MIFARE S50 ID reader, HID report output	Use this firmware on the MX53 with a 13.56 MHz RFID "M2" Module only. The UID on the RFID card is read automatically and sent to Track 1 of the HID Device in MagTek report format. This Report also includes Error status of each track, data length and type of card read. The MX5 setup utility Help File has more details on this report. Magnetic card data is also sent out to the HID device when a magnetic card is swiped on the reader. An event flag is set by the HID device when data is available in the buffer. (MIFARE M50, M70, ISO-14443A). Product ID: 0x9025.
MX53-VRS-M2-RW **Version 2.9, product ID: 33** Magnetic card reader with MIFARE S50 ID reader/writer, virtual serial output	Use this firmware on the MX53 with a MIFARE 13.56 MHz RFID "M2" add on Module only. This version can write MIFARE cards. The unique random serial number on the RFID card is read automatically and sent out directly to the virtual serial port. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device. (MIFARE M50, M70, ISO-14443A).
MX53-KB-M2-UID2 **Version 4.6, product ID: 40** Magnetic card reader with ICode2 ID reader, keyboard output	Use this firmware on the MX53 with an I-Code 2 (MIFARE II) 13.56 MHz RFID "M2" Module only. The unique random serial number on the I-Code2 RFID card is read automatically and typed out as if someone manually typed the number. Magnetic card data is also typed out when a magnetic card is swiped on the reader. This firmware creates a second HID keyboard attached to the system. I-CODE2 (ISO-15693).
MX53-VRS-M2-UID2 **Version 4.2, product ID: 41** Magnetic card reader with ICode2 ID reader, virtual serial output	Use this firmware on the MX53 with an I-Code 2 (MIFARE II) 13.56 MHz RFID "M2" Module only. The unique random serial number on the I-Code2 RFID card is read automatically and sent out directly to the virtual serial port. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device. I-CODE2 (ISO-15693).
MX53-VRS-M2-RW2 **Version 1.7, product ID: 43** Magnetic card reader with ICode2 ID reader/writer, virtual serial output	Use this firmware on the MX53 with an I-Code 2 (MIFARE II) 13.56 MHz RFID "M2" Module only. This provides writing to I-Code cards/tags. The unique random serial number on the I-Code2 RFID card is read automatically and sent out directly to the virtual serial port. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device. I-CODE2 (ISO-15693).

MX53-SC List:

MX53-KB-SC-CCID **Version 2.8, product ID: 50** Magnetic card reader with CCID SmartCard reader/writer, keyboard output	Use this firmware on the MX53 with an IC Smart Card (SC) add on Module. Magnetic card data is typed out when a magnetic card is swiped on the reader. This firmware creates a second HID keyboard attached to the system. This Firmware also creates a composite USB smart card class-device that is compliant with the USB Chip/Smart Card Interface Devices (CCID) Specification.
MX53-VRS-SC-SLE **Version 2.5, product ID: 51** Magnetic card reader with SLE 4428/5528 reader/writer, virtual serial output	Use this firmware on the MX53 with an IC Smart Card (SC) add on Module for the SLE 4428/5528 Memory Cards. The SLE 4428/5528 Smart Card can be written or read through the virtual serial port using the POSH command Set 1.0. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a virtual serial device. (SLE-4428) Use VRS Protocol Ver. 1.0-SLE.
MX53-HID-SC-CCID **Version 1.0, product ID: 52** Magnetic card reader with CCID reader, HID report output	Use this firmware on the MX53 with an IC Smart Card (SC) add on Module. The Smart Card or Magnetic Card is Read and data is sent to the HID Device in MagTek report format. This firmware creates a second HID keyboard attached to the system. This Firmware also creates a composite USB smart card class-device that is compliant with the USB Chip/Smart Card Interface Devices (CCID) Specification.

MX5C-EM List:

MX5C-KB-EM-UID **Version 4.3, product ID: 60** EM ID reader, keyboard output	Use this firmware on the MX5C with a 125 kHz RFID “EM” Module only. The unique random serial number on the EM RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system. (EM4100, EM4102, TK4100, ISO7810). (SLE-4428) Use VRS Protocol Ver. 1.0-SLE.
MX5C-VRS-EM-UID **Version 4.5, product ID: 61** EM ID reader, virtual serial output	Use this firmware on the MX5C with a 125 kHz RFID “EM” Module only. The unique random serial number on the EM RFID card is read automatically and sent out directly to the virtual serial port. This firmware will create a Virtual serial device. (EM4100, EM4102, TK4100, ISO7810).
MX5C-HID-EM-UID **Version 4.4, product ID: 62** EM ID reader, HID report output	Use this firmware on the MX5C with a 125 kHz RFID “EM” Module only. The UID on the EM RFID card is read automatically and sent to Track 1 of the HID Device in MagTek report format. This Report also includes Error status of each track, data length and type of card read. The MX5 setup utility Help File has more details on this report. An event flag is set by the HID device when data is available in the buffer. (EM4100, EM4102, TK4100,ISO7810). Product ID: 0x9025.

MX5C-SC List:

MX5C-KB-SC-CCID **Version 2.8, product ID: 70** CCID SmartCard reader/writer, keyboard output	Use this firmware on the MX5C with an IC Smart Card (SC) Module. This firmware creates a second HID keyboard attached to the system. This Firmware also creates a composite USB smart card class-device that is compliant with the USB Chip/Smart Card Interface Devices (CCID) Specification.
MX5C-VRS-SC-SLE **Version 2.5, product ID: 71** SLE 4428/5528 reader/writer, virtual serial output	Use this firmware on the MX5C with an IC Smart Card (SC) Module for the SLE 4428/5528 Memory Cards. The SLE 4428/5528 Smart Card can be written or read through the Virtual serial port using the POSH command Set 1.0. This firmware will create a Virtual serial device. (SLE-4428) Use VRS Protocol Ver.1.0-SLE.
MX5C-HID-SC-CCID Version 1.0, product ID: 72 CCID SmartCard reader, HID report output	Use this firmware on the MX5C with an IC Smart Card (SC) add on Module. The Smart Card is Read and data is sent to the HID Device in MagTek report format. This firmware creates a second HID keyboard attached to the system. This Firmware also creates a composite USB smart card class-device using **(Usbccid.sys)** that is compliant with the USB Chip/Smart Card Interface Devices (CCID) Specification.

MX5C-M2-List:

MX5C-KB-M2-UID **Version 4.8, product ID: 80** MIFARE S50 ID reader, keyboard output	Use this firmware on the MX5C with a 13.56 MHz RFID “M2” add on Module only. The unique random serial number on the RFID card is read automatically and sent out directly to the virtual serial port. Magnetic card data is also sent out to the virtual serial port when a magnetic card is swiped on the reader. This firmware will create a Virtual serial device. (MIFARE M50, M70, ISO-14443A).
MX5C-VRS-M2-UID **Version 4.3, product ID: 81** MIFARE S50 ID reader, virtual serial output	Use this firmware on the MX5C with a MIFARE 13.56 MHz RFID “M2” Module only. The unique random serial number on the RFID card is read automatically and sent out directly to the virtual serial port. This firmware will create a Virtual serial device. (MIFARE M50, M70, ISO-14443A).
MX5C-HID-M2-UID **Version 1.2, product ID: 82** MIFARE S50 ID reader, virtual serial output	Use this firmware on the MX5C with a 13.56 MHz RFID “M2” Module only. The UID on the RFID card is read automatically and sent to Track 1 of the HID Device in MagTek report format. This Report also includes Error status of each track, data length and type of card read. The MX5 setup utility Help File has more details on this report. An event flag is set by the HID device when data is available in the buffer. (MIFARE M50, M70, ISO-14443A). Product ID: 0x9025.
MX5C-VRS-M2-RW **Version 2.9, product ID: 83** MIFARE S50/S70 reader/writer, virtual serial output	Use this firmware on the MX5C with a MIFARE 13.56 MHz RFID “M2” Module only. This version can write MIFARE cards. The unique random serial number on the RFID card is read automatically and sent out directly to the virtual serial port. This firmware will create a Virtual serial device. (MIFARE M50, M70, ISO-14443A).
MX5C-KB-M2-UID2 **Version 4.6, product ID: 90** ICode2 ID reader, keyboard output	Use this firmware on the MX5C with an I-Code 2 (MIFARE II) 13.56 MHz RFID “M2” Module only. The unique random serial number on the I-Code2 RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system. I-CODE2 (ISO-15693).
MX5C-VRS-M2-UID2 **Version 4.2, product ID: 91** ICode2 ID reader, virtual serial output	Use this firmware on the MX5C with an I-Code 2 (MIFARE II) 13.56 MHz RFID “M2” Module only. The unique random serial number on the I-Code2 RFID card is read automatically and sent out directly to the virtual serial port. This firmware will create a Virtual serial device. I-CODE2 (ISO-15693).
MX5C-VRS-M2-RW2 **Version 1.7, product ID: 93** ICode2 ID reader/writer, virtual serial output	Use this firmware with Read / Write ICode Cards using the MX5C with a 13.56 MHz RFID “M2” add on Module only. This firmware is designed to be used with the RFID SDK (System Development Kit) and the MX5-RFID Utility, using a serial protocol to read and write data to the ICode Card. This firmware will create a Virtual serial device. (ICode, ISO-15693) Use VRS Protocol Ver. 2.0-RFID.

MX5T List:

MX5T-KB-EM-UID **Version 4.0, product ID: 100** EM ID reader, keyboard output	Use this firmware on the MX5T ONLY. EM 125 kHz RFID Reader. The unique random serial number on the EM RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system.
MX5T-KB-M2-UID **Version 4.2, product ID: 110** MIFARE S50/S70 reader, keyboard output	Use this firmware on the MX5T ONLY. MIFARE 13.56 MHz RFID Reader. The unique random serial number on the RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system. (MIFARE M50, M70, ISO-14443A).
MX5T-VRS-M2-RW **Version 2.3, product ID: 113** MIFARE S50 ID reader/writer, virtual serial output	Use this firmware on the MX5T ONLY to Read / Write MIFARE S50 Cards. MIFARE 13.56 MHz RFID Reader/Writer. The unique random serial number of the MIFARE RFID card can also be read automatically. This firmware is designed to be used with the RFID SDK (System Development Kit) and the MX5-RFID Utility, using a serial protocol to read and write data to the S50 MIFARE Memory Card. This firmware will create a Virtual serial device. (MIFARE M50, ISO-14443A) Use VRS Protocol Ver. 2.0-RFID.
MX5T-KB-M2-UID2 **Version 4.2, product ID: 120** ICode2 ID reader, keyboard output	Use this firmware on the MX5T ONLY. MIFARE 13.56 MHz RFID Reader. The unique random serial number on the I-CODE2 RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system. I-CODE2 (ISO-15693).
MX5T-VRS-M2-RW2 **Version 1.0, product ID: 123** ICode2 ID reader/writer, virtual serial output	Use this firmware on the MX5T ONLY to Read / Write I-CODE2 Reader/Writer. This firmware is designed to be used with the MX5-RFID SDK Utility. Using a serial Protocol to Read and Write data to the I-CODE2 Card/Tag. This firmware will create a Virtual serial device. (I-CODE2 (ISO-15693) **Use VRS Protocol Ver. 2.0-RFID.**.
MX5T-KB-EI-UID **Version 4.0, product ID: 130** EM ID reader and MIFARE S50/S70 reader, keyboard output	Use this firmware on the MX5T ONLY. EM 125 kHz and MIFARE 13.56 MHz RFID Reader. The unique random serial number of the EM and MIFARE S50 RFID card is read automatically and typed out as if someone manually typed the number. This firmware creates a second HID keyboard attached to the system. I-CODE2 (ISO-15693).

New firmware applications and updates are available off the manufacturer's website. Custom applications and SDK (System Development Kits) are available for all the MX5 series products. Contact your MX5 device supplier for more details.