unitech
because we care

Magnetic Stripe Reader

- MS242 -

User's Manual

Version 1.0

Change Log.

Date	Change Description	Version
2016/1/8	first published version	1.0

About This Manual

Thank you for purchasing the unitech product.
This manual explains how to install, operate and maintain our product.

Regulatory Compliance Statements

FCC Warning Statement

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

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

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure requirements, avoid direct contact to the transmitting antenna during transmitting.
3. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

Operation on the 5.15 - 5.25GHz frequency band is restricted to indoor use only. The FCC requires indoor use for the 5.15-5.25GHz band to reduce the potential for harmful interference to co-channel Mobile Satellite Systems. Therefore, it will only transmit on the 5.25-5.35 GHz, 5.47-5.725 GHz and 5.725–5.850 GHz band when associated with an access point (AP).

FCC Label Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

RF Radiation Exposure Statement

For body contact during operation, this device has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the handset a minimum of 1.5 cm from the body.
Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

Canadian Compliance Statement

This Class B Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe B respecte les exigences du Reglement sur le material broilleur du Canada.

European Conformity Statement

unitech Electronics co., Ltd herewith declares that the unitech product is in compliance with the essential requirements and all other provisions of the R&TTE 1999/5/EC directive, the EMC 2004/108/EC directive and the Low Voltage 2006/95/EC directive.
The declaration of conformity is available for download at :
https://portal.unitech.eu/public/Safetyregulatorystatement

RoHS Statement

This device conforms to RoHS (Restriction of Hazardous Substances) European Union regulations that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

Waste electrical and electronic equipment (WEEE)

unitech has set up a policy and process to meet the EU directive 2002/96/EC and update 2003/108/EC concerning electronic waste disposal.

For more detailed information of the electronic waste disposal of the products you have purchased from unitech directly or via unitech's resellers, you shall either contact your local supplier or visit us at :
https://portal.unitech.eu/public/WEEE

Taiwan NCC Warning Statement

交通部電信總局低功率電波輻射性電機管理辦法

第十二條：經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條：低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

低功率射頻電機需忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

注意事項:

1. 使用過度恐傷害視力。
2. 使用30分鐘請休息10分鐘；2歲以下幼兒不看螢幕，2歲以上每天看螢幕不要超過1小時。

Laser Information

The unitech product is certified in the U.S. to conform to the requirements of DHHS/CDRH 21CFR Subchapter J and to the requirements of IEC 825-1. Class II and Class 2 products are not considered to be hazardous. The unitech product contains internally a Visible Laser Diode (VLD) whose emissions do not exceed the maximum limits as set forth in the above regulations. The scanner is designed so that there is no human access to harmful laser light during normal operation, user maintenance or prescribed service operations.

The laser safety warning label required by the DHHS/IEC for the unitech product's optional laser scanner module is located on the memory compartment cover, on the back of the unit.

* Laser information only applies to the products with laser components.

CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Use of optical instruments with the scanner, including binoculars, microscopes, and magnifying glasses, with will increase eye damage. This does not include eyeglasses worn by the user.

LED Information

The unitech product contains LED indicator(s) or LED ring whose luminance is not harmful to human eyes during normal operation, user maintenance or prescribed service operations.

*LED information only applies to the products with LED components.

Battery Notice

1. To guarantee optimal performance, it is recommended that rechargeable batteries be replaced every year, or after 500 charging cycles are completed. It is normal for the battery to balloon or expand after one year or 500 cycles. Although it does not cause damage, it cannot be used again and must be disposed of according to the location's safe battery disposal procedures.
2. If a battery performance decreases more than 20%, the battery is at the end of its life cycle. Stop use and ensure the battery is disposed of properly.
3. The length of time that a battery lasts depends on the battery type and how the device is used. Conserve the battery life by doing the following:
   - Avoid fully uncharging the battery because this places additional strain on it. Several partial uncharges with frequent charges are better than a fully uncharged battery. Charging a partially charged battery does not cause harm to the unit.
   - Keep the battery cool. Avoid hot vehicles. For prolonged storage, keep the battery at a 40% charge level.
   - Do not leave the battery uncharged and unused for an extended period of time, the battery will wear out and the longevity of the battery will be at least half of one with frequent charges.
4. Protect battery life by not over or under charging the battery.
5. Please do not leave battery unused for long time without charging it. Despite unitech’s safety precautions, the battery pack may begin to change shape. If so, stop using it immediately. Please check to see if you are using a proper power adapter to charge the battery or contact your service provider for service.
6. If you cannot charge the battery after it has been idle for an extended period of time and it begins to heat up, please do not try to charge it. It may not be functional anymore.
7. Please only use the original battery from unitech. Using a third party battery can damage our products. Please note that when such damage occurs, it is not covered by your warranty.

CAUTION!

- RISK OF EXPLOSION IF BATTERY IS REPLACED INCORRECTLY.
  DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS..
- 如果更換不正確之電池行事會有爆炸的風險
  請依製造商說明書處理用過之電池
- 如果更换不正确之电池行事会有爆炸的风险
  请依制造商说明书处理用过之电池

Battery charge notice

It is important to consider temperature when the battery pack is charging. Charging is most efficient at normal room temperature or in a slightly cooler environment. It is essential that batteries are charged within the stated range of 0˚C to 40˚C. Charging batteries outside of the specified range could damage the batteries and shorten their life cycle.

CAUTION! Do not charge batteries at a temperature lower than 0˚C. This will and make the batteries unstable and dangerous. Please use a battery temperature detecting device for a charger to ensure a safe charging temperature range.

Storage and safety notice

Although charged batteries may be left unused for several months, their capacity may be depleted due to build up of internal resistance. If this happens, they will require recharging prior to use. Batteries may be stored at temperatures between -20°C to 60°C, however they may deplete more rapidly at higher temperatures. It is recommended to store batteries at room temperature.

** The message above only applies to the usage of the removable batteries. For the products with non-removable batteries / without batteries, please refer to the specification of each product.*

Product Operation and Storage Notice

The unitech product has applicable operation and storage temperature conditions. Please follow the limitation of suggested temperature conditions to avoid failure, damage or malfunction.

**For applicable temperature conditions, please refer to the specification of each product.*

Adapter Notice

1. Please do not leave the power adapter in the socket when it is not connected to your unitech product for charging.
2. Please remove the power adapter when the battery is fully recharged.
3. The bundled power adapter that comes with your unitech product is not meant to be used outdoors. An adapter exposed to water or rain, or a very humid environment can cause damage to both the adapter and the product.
4. Please only use the bundled power adapter or same specification of adapter to charge your unitech product. Using the wrong power adapter can damage your unitech product.

** The message above only applies to the product connected to the adapter. For the products without using the adapters, please refer to the specification of each product.*

Hearing Damage Warning

Zx.3 Warning

The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:

- the symbol of Figure 1 with a minimum height of 5 mm; and
- the following wording, or similar :

To prevent possible hearing damage, do not listen at high volume levels for long periods.

Figure 1 – Warning label (IEC 60417-6044)

Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.

Worldwide Support

unitech's professional support team is available to quickly answer questions or assist with technical-related issues. Should an equipment problem occur, please contact the nearest unitech regional service representative.
For complete contact information please visit the Web sites listed below:

Taipei, Taiwan – Headquarters		Europe	
Tel:	+886-2-89121122	**Tel:**	+31-13-4609292
E-mail:	info@hq.ute.com	**E-mail:**	info@eu.ute.com
Address:	5F, No. 136, Lane 235, Baoqiao Road, Xindian District, New Taipei City 231, Taiwan (R.O.C.)	**Address:**	Kapitein Hatterasstraat 19, 5015 BB, Tilburg, the Netherlands
Website:	http://www.ute.com	**Website:**	http://eu.ute.com
China		**Japan**	
Tel:	+86-59-2310-9966	**Tel:**	+81-3-35232766
E-mail:	info@cn.ute.com	**E-mail:**	info@jp.ute.com
Address:	Room401C, 4F, RIHUA International Mansion, Xinfeng 3nd Road, Huoju Hi-tech District, Xiamen, Fujan , China	**Address:**	Kayabacho Nagaoka Building 8F.,1-5-19 Shinkawa, Chuo-Ku, Tokyo, 104-0033, Japan
Website:	http://cn.ute.com	**Website:**	http://jp.ute.com
Asia & Pacific / Middle East		**Latin America**	
Tel:	+886-2-27911556	**Tel:**	+52-55-5171-0528
E-mail:	info@apac.ute.com info@india.ute.com info@mideast.ute.com	**E-mail:**	info@latin.ute.com
Address:	4F., No. 236, ShinHu 2nd Rd., NeiHu Chiu, 114, Taipei,Taiwan	**Address:**	17171 Park Row, Suite 210 Houston, TX 77084USA (Rep.)
Website:	http://apac.ute.com / http://mideast.ute.com	**Website:**	http://latin.ute.com
North America			
Tel:	+1-714-8916400		
E-mail:	info@us.ute.com / info@can.ute.com		
Address:	6182 Katella Ave, Cypress, CA 90630, USA		
Website:	http://us.ute.com / http://can.ute.com		

Warranty Policy

The items covered under the unitech Limited Warranty are free from defects during normal use.

The warranty period is varied from each country. Please consult with your supplier or unitech local office for actual length of warranty period to your purchased product.

Warranty becomes void if equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

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Chapter 1 - Overview

1.1 Package

Please make sure the following contents are in the MS242 gift box.
If something is missing or damaged, please contact your unitech representative.

The standard package contents:

- MS242 Scanner
- Quick Start Guide
- Regulatory Compliance Statements
- Velcro pads

1.2 Product Photos

1.3 Specifications

Power Requirements	Power supplied by the host computer via the USB port.
Operating Current	40 mA maximum for decoded magnetic stripe (3 tracks) with USB / keyboard interface
Operating Temperature	-10° C to 55° C (14° F to 131° F)
Storage Temperature	-40° C to 70° C (-40° F to 158° F)
Relative Humidity	10% to 90% non-condensing
Magnetic Head Life	1,000,000 passes minimum
Rail and Cover Life	1,000,000 passes minimum
Magnetic Stripe Recording Method	• Meets ISO 7811 specification • Supports AAMVA formats • Support single, dual or triple track cards
Maximum Number of Tracks	3 tracks
Swipe Speed	5 to 55 inches per second, bidirectional
Card Thickness	.015 to .045 inches
Slot Width	.050 inches
Dimensions	100mm (3.94 inches) x 35mm (1.38 inches) x 30mm (1.18 inches) (length x width x height)
Weight	120 g (4.2 oz)
Cable Length	6-foot straight cable
Electro-Static Discharges (ESD)	4kV contact, and 8kV air discharge
Mean Time Between Failures	260,000 POH based on Bellcore standard

1.4 Getting Started

The compact magnetic stripe reader can read 1, 2, or 3 tracks of magnetic stripe information. In addition, it has full formatted data capabilities. When connected to the host computer via the USB input port, the reader can be configured for compatibility with the host's software. The decoded data appears to the host as if it were entered manually by an operator through the keyboard. This unit is fully programmable with MagSwipe Configuration Utility. The data can be for-matted with preamble/postamble and terminator characters to match the format expected by the host.

Note : *Power is obtained from the host. No separate power supply is required.*

1.4.1 Host connections & Drivers

The reader is connected to the host computer via a USB input port. Since USB devices are designed to be "plug and play," the computer will search for a Human Interface Device (HID) driver when the reader is first connected. If one can-not be found, the computer will prompt you to make a selection. The Windows software CD may be needed to complete the installation.

The magnetic stripe data is transmitted and appears to the host as coming directly from the keyboard. This makes the reader, as a data source, completely transparent to the host's application software. In other words, if it is expecting data from the keyboard, that same data can be entered via the reader and make no difference to the host.

If the host computer's application software is expecting the MagStripe data in a particular order and format, the reader's output can be configured to output a simulated keyboard-entered data stream by re-arranging data blocks, adding terminating characters and special preamble and/or postamble character strings to the decoded card data.

1.4.2 Operation

The compact magnetic stripe reader is easy to operate.
Just follow these simple steps:

Step 1. Make sure the reader is properly connected and is receiving sufficient power.

Step 2. To read a card, slide the card, in either direction, through the reader slot, with the magnetic stripe facing the magnetic head.

Step 3. While swiping the card through the reader, the LED will go off.

Step 4. Once the entire magnetic stripe has been read, the LED indicator will light up as green to signal a "good read." If a good read is not obtained, the LED indicator will light up as red for about 1/2 second.

Step 5. A beep will also sound to indicate a good read on each track. If all three tracks have been read successfully, the reader will beep three times.

Chapter 2 – Configuration-General

2.1 MagSwipe Configuration utility Introduction

The magnetically encoded data on the magnetic stripe can be decoded (read) by magnetic card readers. The stripe data has a fixed format defined by the ISO standards. The ISO fixed format is not always convenient or useful for card reading applications. The solution is for the card reader to decode the stripe data and then arrange the data into useful format and content.
The reader-formatted data is transmitted from an intelligent communication interface.

The intelligent magnetic stripe reader provides extensive formatting capability. In addition, characters can be added to the formatted data.
To support the formatting capability, an easy way to use MagSwipe Configuration Utility software application is available. New file saving capabilities allow configurations to be saved and used again without having to repeat the full configuration process with each reader.

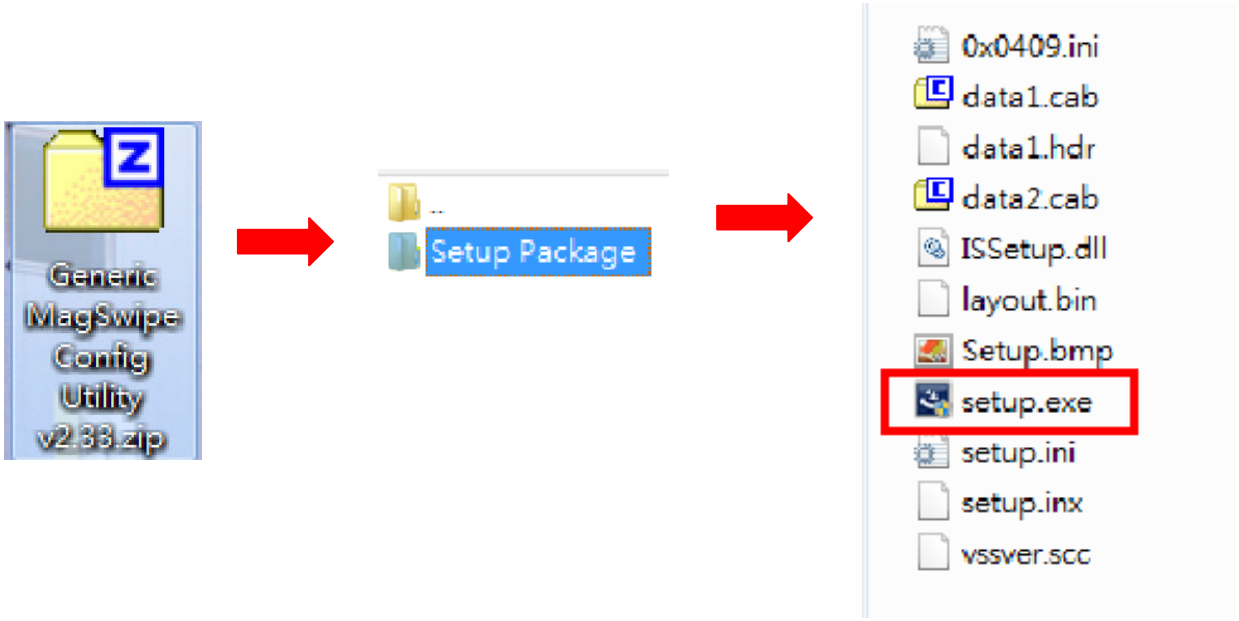
The MagSwipe Configuration Utility supports all reader interfaces.
The operating systems supported are Windows 98, Windows 2000, and Windows XP.

2.2 Running MagSwipe Configuration Utility

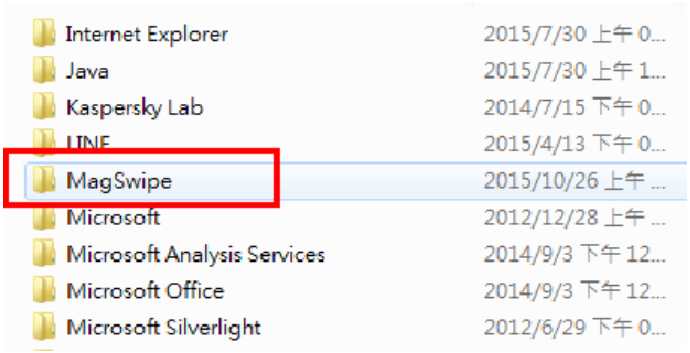
The reader is shipped from the factory with the "default configuration" programmed. The default configuration has the least restrictive settings, thus making it able to read all data of a standard encoded magnetic stripe card. See the default settings table for details.

Step 1. The configuration software can be downloaded from unitech website. From the website, download MagSwipe Configuration Utility ZIP file into a temporary file folder on your local hard drive.

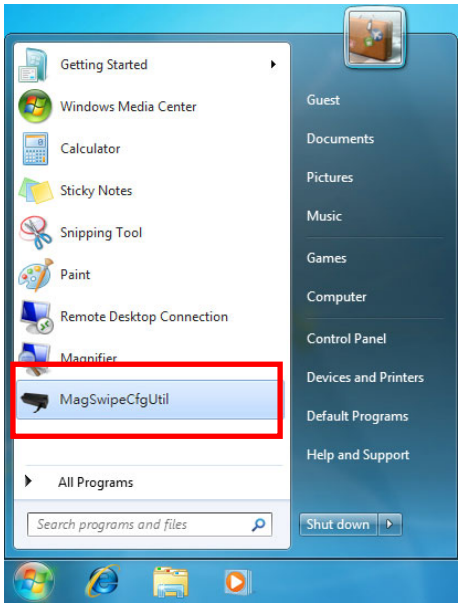
Double click the downloaded self extracting file and follow the screen prompts to expand the Zip file and run the SETUP.EXE application.



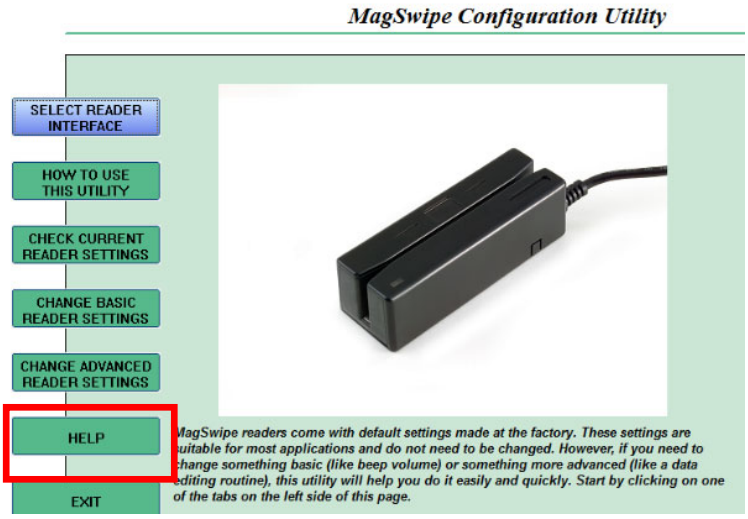
Step 2. The install wizard creates a new folder on the C: Drive.
A sub-folder MagSwipe is created in the program files folder.



Step 3. At the finish of the installation process, "MagSwipe configuration Utility" menu is installed in the programs folder of the Start menu. Connect the reader to the host computer and ensure it is getting power. Point to the "MagSwipe configuration Utility" menu and click on the IDT icon.



Step 4. The utility will start at the Home Page with a menu on the left border. Point and click on the menu items as needed. For information on using the utility, point and click the HELP menu selection.



2.3 How to use MagSwipe Configuration Utility

MagSwipe Configuration Utility is designed to make special configuration settings as easy as possible. Please follow the step-by-step instructions below.

Step 1. Download **MagSwipe Configuration Utility** to the Program Files folder on your local drive.

Step 2. Connect the reader to the host computer and ensure it is getting power.

Step 3. Open **MagSwipe Configuration Utility**.

Step 4. Click **SELECT READER INTERFACE**. This will open a new form.

Step 5. Select the appropriate interface based on the connector used to connect the reader to the host. (If you skip this step, the utility will automatically use the previously-selected interface, or find the appropriate USB interface.)

Step 6. **MagSwipe Configuration Utility** will automatically determine the correct port.

Step 7. Select **CONTINUE**.
MagSwipe Configuration Utility will return to the main screen.

Step 8. You are now ready to configure the reader using **MagSwipe Configuration Utility**. To check the reader's current settings, click **CHECK CURRENT READER SETTINGS**. The reader's settings will be displayed, along with the interface type and firmware version.

Step 9. To change basic settings, such as beep volume, reading direction, or RS-232 parameters, click **CHANGE BASIC READER SETTINGS**. To clone the settings of one reader into another, configure the reader for data editing or a different output format, or switch the chip from **APPLICATION** Mode to **BOOT LOADER** Mode, click **CHANGE ADVANCED READER SETTINGS**.

Step 10. Select the page containing the setting(s) you wish to change.

Step 11. Click the selection(s) you wish to make. (You can return the settings on a given page to their default values by clicking **DEFAULT**. You can return all the reader settings to their default values by clicking **DEFAULT ALL**.)

Step 12. When you have finished making your selections, click **SEND TO MSR** to send the changes to the reader.
The reader's response will always be the same:

- One slow beep indicates the host command has been accepted by the reader and the reader has saved the settings and has exited the setup mode successfully.

- A pop-up window will also confirm that the configuration settings have been written to the reader successfully.

Step 13. To save the configuration settings for future use, click on **SAVE TO FILE**.

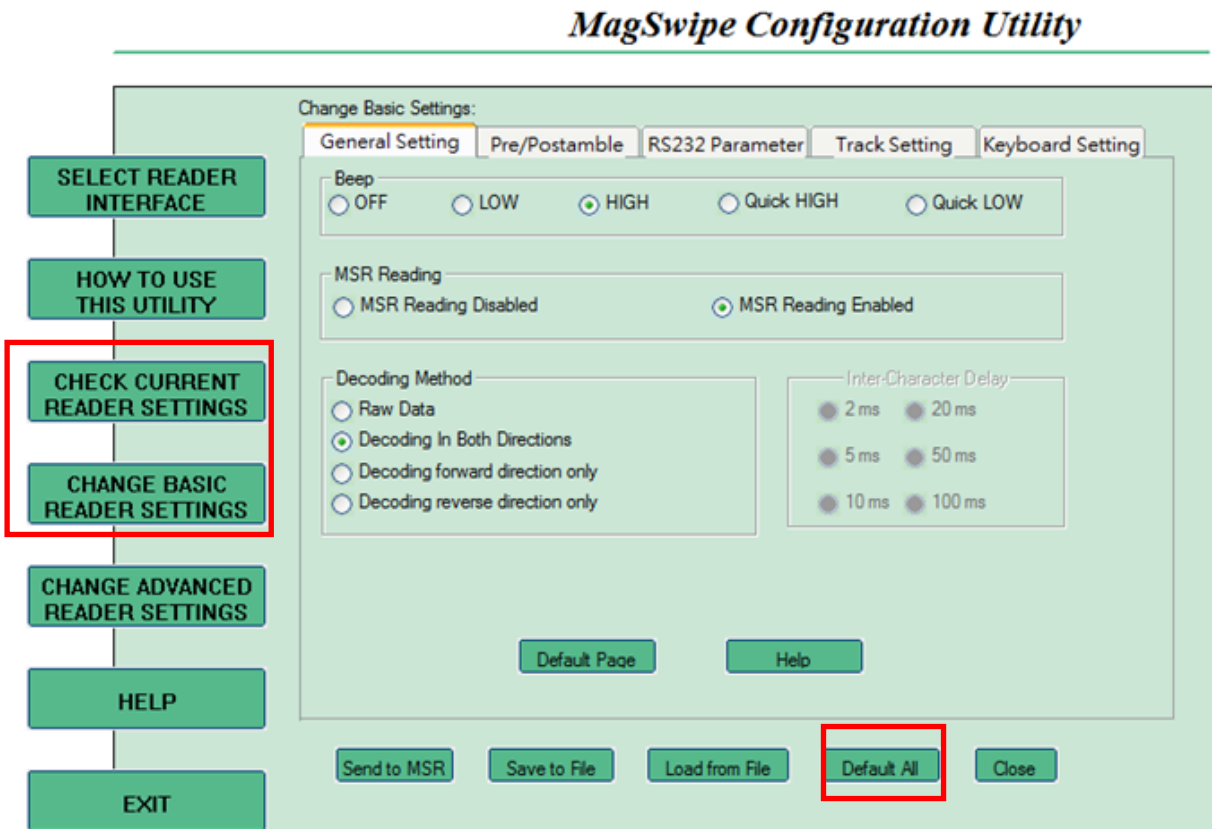
Step 14. To load configuration settings that have previously been saved, click **LOAD FROM FILE** to locate the desired configuration (.cfs2) file. Then click **SEND TO MSR** to send that file to the reader.

Step 15. To exit **MagSwipe Configuration Utility**, first click **CLOSE** to return to the main screen. Then click **EXIT**.

2.3.1 Operation

Default Settings
The reader is shipped from the factory with the default settings already programmed. By default, the reader has been programmed with the least restricted settings, thus making it able to read most standard format magnetic stripe cards out of the box.

The reader's output data format can be reconfigured to meet the expectations of the host application. To reset the reader to the factory defaults, click **CHANGE BASIC READER SETTINGS**. At the bottom of the screen, click **DEFAULT ALL**. You can confirm the reader's settings at any time by returning to the main screen and clicking **CHECK CURRENT READER SETTINGS**.



2.4 Factory Default Settings

The reader is shipped from the factory with the following default settings already programmed:

Magnetic Track Basic Data Format

Track 1: <SS1><T1 Data><ES><ENTER>*
Track 2: <SS2><T2 Data><ES><ENTER>*
Track 3: <SS3><T3 Data><ES><ENTER>*

where: SS1(start sentinel track 1) = %
SS2(start sentinel track 2) = ;
SS3(start sentinel track 3) = ; for ISO, ! for CDL, % for AAMVA
ES(end sentinel all tracks) = ?

Keyboard/USB Communication Default Settings

Polling interval : 1 ms
Language: US English

Start or End Sentinel	Characters in encoding format which come before the first data character (start) and after the last data character (end), indicating the beginning and end, respectively, of data.
Track Separator	A designated character which separates data tracks.
Terminator	A designated character which comes at the end of the last track of data, to separate card reads.
LRC	Check character, following end sentinel.
CDL	Old California Drivers License format.

*Note: The <ENTER> characters (shown above) between tracks 1 & 2 and 2 & 3 denote the default character for this position, the Track Separator position. The <ENTER> characters shown for track 3 denotes the default character for this position, the Terminator position.