DIEBOLD NIXDORF

BA9x and iPOS plus Advanced

Encrypted Magnetic Strip Reader

User Manual

We would like to know your opinion on this publication.

Please send us a copy of this page if you have any constructive criticism.
We would like to thank you in advance for your comments.
With kind regards.

Your Opinion:

BA9x and iPOS plus Advanced

Encrypted Magnetic Strip Reader

User Manual

Edition September 2018

Contents

Manufacturer´s Certification

The device complies with the requirements of the EEC directive 2014/30/EU with regard to 'Electro-magnetic compatibility" and 2014/35/EC "Low Voltage Directive" and RoHS directive 2011/65/EU.

Therefore, you will find the CE mark on the device or packaging.

FCC-Class A Declaration

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense. Modifications not authorized by the manufacturer may void users' authority to operate this device.

CAN ICES-3 (A)/NMB-3(A).

Safety Notes

The device may only be repaired by authorized qualified personnel. Unauthorized opening of the device and inexpertly carried-out repairs may not only seriously jeopardize the safety of the user, but also cancel all warranty and liability agreements.

Warranty

Diebold Nixdorf guarantees generally a warranty engagement for 12 months beginning with the date of delivery. This warranty engagement covers all those damages which occur despite a normal use of the product.

Damages because of

- improper or insufficient maintenance,
- improper use of the product or unauthorized modifications of the product,
- inadequate location or surroundings

will not be covered by the warranty.

For further information of the stipulation look at your contract.

All parts of the product which are subject to wear and tear are not included in the warranty engagement.

Please order spare parts at the Diebold Nixdorf customer service.

Supplier's Declaration of Conformity

Product Description: POS Terminal
Model: BEETLE /iPOS plus

Party issuing Supplier's Declaration of Conformity
Diebold Nixdorf Singapore PTE. LTD.
151 Lorong Chuan New Tech Park #05-01 A/B
Singapore 556741

Phone: +65 6747 3828

Responsible Party – U.S. Contact Information
Diebold Nixdorf
5995 Mayfair Road
N. Canton, OH 44720 / USA

Phone: +1 330 490 5049

FCC Compliance Statement (for products subject to Part 15)

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.

Introduction

The Magnetic Strip Reader (MSR) is designed for attaching to the BA92, BA93, BA93W, iPOS plus Advanced and the new generation of iPOS plus. It is a bi-directional card reader that reads up to three tracks of data from a card.

The reader conforms to ISO 7810, ISO 7811 and AAMVA standards and USB HID (Human Interface Device) Class specification Version 1.1. Host applications designed for most versions of Windows can easily communicate with the reader using standard Windows API calls through the HID driver that comes with Windows

Features at a glance

- Bi-directional card reading
- Reads up to three tracks of card data
- Reads encoded data that meets ISO 7810, ISO 7811 and AAMVA standards
- A red/green/amber LED for status
- Compatible with USB and HID specification
- Programmable USB serial number, interrupt In Endpoint polling interval and keyboard table to support alternate languages
- Triple DES encryption using DUKPT (Derived Unique Key Per Transaction) key management

About this manual

This manual is intended to help you to install and operate the Magnetic Strip Reader (MSR) for BA9x Displays and iPOS Plus Advanced Systems. The detailed table of contents will help you find the information you need quickly and easily.

Notes in the manual are marked by this symbol.

This symbol is used for warnings.

Product overview

General description

The Magnetic Strip Reader (MSR) is an add-on module for attachment to the BA92, BA93, BA93W and the iPOS plus Advanced for reading of magnetic strip cards.

The MSR can be operated in two different modes:

- HID mode and

- HID with Keyboard Emulation mode

When operating in the HID mode, the MSR will not use keyboard emulation. It behaves like a vendor-defined HID device so that a direct communication path can be established between the host application and the MSR, without interference from other HID devices.

When configured for the Keyboard Emulation (KB) mode, the MSR emulates a USB HID United States keyboard or, optionally, any international keyboard using ALT ASCII code keypad key combinations or customizable key maps. This allows host applications designed to acquire card data from keyboard input to seamlessly acquire the card data from the USB swipe reader.

When a card is swiped through the MSR, the track data information will be TDEA (Triple Data Encryption Algorithm, aka, Triple DES) encrypted using DUKPT (Derived Unique Key Per Transaction) key management. This method of key management uses a base derivation key to encrypt a key serial number that produces a unique initial encryption key which is injected into the MSR prior to deployment. After each transaction, the encryption key is modified per the DUKPT algorithm so that each transaction uses a unique key. Thus, the data will be encrypted with a different encryption key for each transaction.

Before first time use

Delivery items

Unpack the components and verify that what has been delivered is identical to the information on the delivery ticket.

The MSR kit consists of the following items, as shown in the picture below.

■ The module

■ Two Torx screws, M3x15mm

Hardware installation

The MSR can be installed on either the right or the left side of the screen. You will find a flap at the rear side of the display at the position for the peripherals.
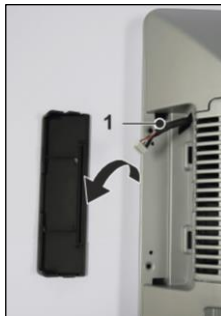
Mounting on the right side (seen from the front)

Follow the steps below to install the reader to BA9x Displays or iPOS Plus Advanced systems.
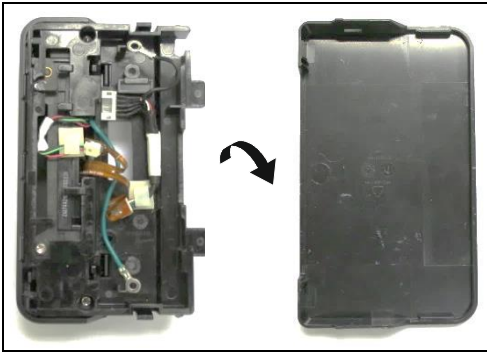
BA9x Displays

iPOS Plus Advanced Systems

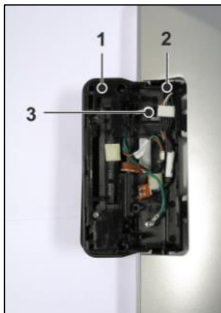1. Remove the flap using a screw driver, exposing one end of a connecting cable (1).

2. Release the catch on one side of the holder.

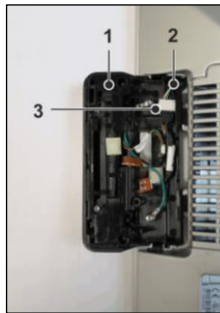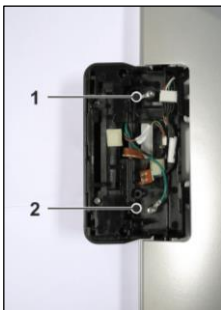3. Remove the back cover of the holder

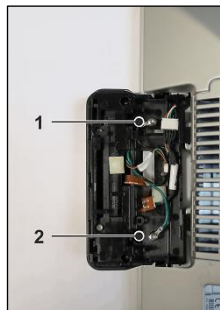**BA9x Displays**

iPOS Plus Advanced Systems

4. Locate the holder (1) to the side of the display uncovered in step 1.

   Route the connecting cable (2) into the holder and connect to the connector (3).

BA9x Displays

iPOS Plus Advanced Systems

5. Use the two screws supplied to secure the holder, at positions (1) and (2) with the ground cables.

BA9x Displays

**iPOS Plus
Advanced
Systems**

6. Place in the back cover of the holder.

   The installation is complete.

Mounting on the left side (seen from the front)

BA9x Displays

1. Place a piece of protection sheet on a flat surface e.g. a table.
2. Lay the display face down on the protection sheet.
3. Remove left side cover (1)
4. Route the supplied cable (2) as shown.
5. Install the reader by following the steps described in the section "Mounting on the right side (seen from the front)".

iPOS Plus Advanced Systems

1. Place a piece of protection sheet on a flat surface e.g. a table.
2. Lay the display face down on the protection sheet.
3. Remove left side cover (1)
4. Install the reader by following the steps described in the section "Mounting on the right side (seen from the front)".

Important information about cable routing and grounding

For compliance to CE and FCC standards, please adhere strictly to the cable routing and groundings of the MSR as shown below.

<table>
<tr>
<td align="center">Mounting from right (seen from front)</td>
<td align="center">Mounting from left (seen from front)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</table>
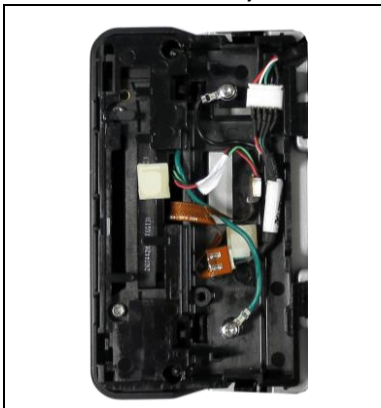
Operating the MSR

Swipe the card through the MSR slot when the LED indicator is solid green or flashing green. If there is data encoded in the card, the MSR will attempt to read the data, encrypt it and then send the results to the host via a USB HID input report or if in Keyboard Emulation mode, as if the data was being typed on a keyboard. After the results are sent to the host, the MSR will be ready to read the next card.

Swiping a magnetic card

The MSR is a bi-directional card reader. Swipe the card through the slot in either direction 1 or 2.

Swipe card in direction 1	Swipe card in direction 2

or
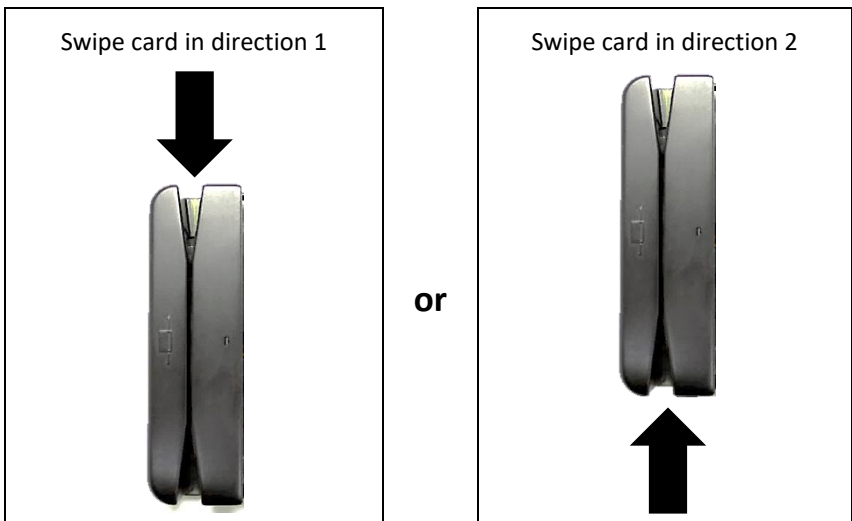
LED indicators

When a card is being swiped, the LED will turn off temporarily until the swipe is completed. If there are no errors after decoding the card data, the LED will turn green for approximately two seconds to indicate a successful read. The LED will remain solid green to indicate waiting for the next operation. If there are any errors after decoding the card data, the LED will turn

red for approximately two seconds to indicate that an error occurred and then turn solid green to indicate waiting for the next card swipe. The retries can go on indefinitely until a good read.

Care and cleaning instructions

When using the swipe cards, the following should be observed:

■ Swipe cards should never be allowed to come into contact with liquids.

■ Swipe cards should not be bent or folded in any way.

■ Swipe cards should not be allowed to come into close contact with a magnetic field.

In order to guarantee good reading results, the MSR should be cleaned from time to time. This is carried out by using a special cleaning card that can be purchased from Diebold Nixdorf.

Technical data

Model	BA9x eMSR
Rated voltage	5V +/- 5%
Rated current	100 mA
Physical interface	USB 2.0, bus-powered
Application interface	USB Keyboard
Number of tracks	3
Reading direction	Bi-directional
Card speed	15.4 to 152.4 cm/s (6 to 60 ips)
Applicable standards	ISO 7810 and ISO 7811/AAMVA
Programmability	Programmable USB serial number, interrupt In Endpoint polling interval and keyboard table to support alternate languages
Encryption	All track data and MagnePrint [1] value
Security level	Level 2
KSID	Magensa™ Standard key
Operating temperature	5 ^{o}C to 40 ^{o}C (41 ^{o}F to 104 ^{o}F)
Operating humidity	10 % to 90 % non-condensing
Weight	Approx. 127 g (4.5 oz)
Dimensions (overall)	125 mm x 73 mm x 34 mm (4.9 in x 2.9 in x 1.3 in)
(mounted)	125 mm x 36 mm x 34 mm (4.9 in x 1.4 in x 1.3 in)

[1]   *MagnePrint is a registered trademark of MagTek, Inc.*
Magensa™ is a trademark of MagTek, Inc.
MageSafe OEM module is a UL recognised component

Abbreviation index

AAMVA	American Association of Motor Vehicle Administrators
API	Application Programming Interface
CE	European symbol of Comformity
DUKPT	Derived Unique Key Per Transaction
eMSR	Encrypted Magnetic Strip Reader
EC	European Community
FCC	Federal Communications Commission
ICES	Inteference-Causing Equipment Standard
ISO	International Standards Organization
HID	Human Interface Device
MSR	Magnetic Strip Reader
POS	Point-Of-Sale
RoHS	Restriction of Hazardous Substances
TDEA(Triple DES)	Triple Data Encryption Algorithm
USB	Universal Serial Bus

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