Figure 1-1. Dynamag MagneSafe Reader

SECTION 1. FEATURES AND SPECIFICATIONS

MagTek's Dynamag, a secure card reader authenticator (SCRA), is a compact magnetic stripe card readers that conform to ISO standards. In addition to reading multiple tracks of data from a card, the Readers also include MagnePrint technology. The MagnePrint data will be included with the track data on each transaction. In order to maximize card security, the Readers incorporate data encryption within the head to protect the card contents and MagnePrint information. The Readers are compatible with any device having a host USB interface. A card is read in the swipe readers by sliding it, stripe down, through the slot either forward or backward; in the insert reader, it is read by inserting with the stripe to the right or left depending on the head orientation.

An LED (Light Emitting Diode) indicator on the Reader cover provides the operator with continuous status of the Reader operations.

The readers conform to the USB HID (Human Interface Device) Class specification Version 1.1. This allows host applications designed for most versions of Windows to easily communicate to the readers using standard Windows API calls that communicate to the reader through the HID driver that comes with Windows.

The Readers can be operated in two different modes:

- HID (herein referred to as "***HID*** mode") and
- HID with Keyboard Emulation (herein referred to as "***KB*** mode")

When operating in the HID mode, a reader 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 reader, without interference from other HID devices.

When configured for the Keyboard Emulation (KB) mode, a Reader 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.

Caution

When in Keyboard Emulation mode, if another keyboard is connected to the same host as the reader and a key is pressed on the other keyboard while the reader is transmitting, then the data transmitted by the reader may get corrupted.

When a card is swiped through the Reader, the track data and MagnePrint 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 an initial encryption key which is injected into the Reader 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.

FEATURES

Major features of the Readers are as follows:

- Hardware Compatible with a PC or any computer or terminal having a USB interface
- Bi-directional card reading
- Reads encoded data that meets ANSI/ISO/AAMVA standards
- Reads up to three tracks of card data
- Secure Red/Green/Amber LED for status
- Compatible with USB specification
- Compatible with HID specification
- Can use standard Windows HID driver for communications; no third party device driver is required
- Programmable USB serial number descriptor
- Programmable USB Interrupt In Endpoint polling interval
- Programmable Keyboard Table to support alternate languages
- Non-volatile memory for property storage
- Detachable USB cable using standard USB Micro-B connector
- Supplies 54 byte MagnePrint™ value
- Contains a unique, non-changeable serial number which allows tracking each reader
- Encrypts all track data and the MagnePrint value
- Provides clear text confirmation data including card holder's name, expiration date, and a portion of the PAN as part of the Masked Track Data
- Mutual Authentication Mode for use with Magensa.net®

HARDWARE CONFIGURATION

The hardware configuration is as follows:

Part Number	I/O Type	Connector	Included Cable
21073062	USB Keyboard Emulation	USB micro-B	6' USB-A
21073075	USB HID	USB micro-B	6' USB-A

ACCESSORIES

The optional accessories are as follows:

Part Number	Description
21042806	USB MSR Demo Program with Source Code (CD)
21051543	USB-A TO USB-Micro-B Black, 700mm Retractable Cable
21051545	USB-A TO USB-Micro-B Black, 1200mm Coiled Cable
99510026	USB MSR Demo Program with Source Code (WEB)

REFERENCE DOCUMENTS

MagTek Communication Reference Manual for USB MagneSafe V5 Readers (99875475)

Axelson, Jan. *USB Complete, Everything You Need to Develop Custom USB Peripherals*, 1999. Lakeview Research, 2209 Winnebago St., Madison WI 53704, 396pp., *http://www.lvr.com*.

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USB Human Interface Device (HID) Class Specification Version 1.1.

Universal Serial Bus (USB): HID Usage Tables Version 1.12 (1/21/2005)

USB (Universal Serial Bus) Specification, Version 1.1, Copyright© 1998 by Compaq Computer Corporation, Intel Corporation, Microsoft Corporation, NEC Corporation.

USB Implementers Forum, Inc., ***www.usb.org***.

SPECIFICATIONS

Table 1-2 lists the specifications for the USB MagneSafe Readers.

Table 1-2. Specifications

Reference Standards	ISO 7810 and ISO 7811/ AAMVA*
Power Input	5V from USB bus
Message Format	ASCII
Card Speed	6 to 60 ips (15.4 to 152.4 cm/s)
ELECTRICAL	
Current Normal Mode Suspend Mode	 100mA maximum 500uA maximum
MECHANICAL	
Dimensions	Length 3.92” (99.5mm) Width 1.24” (31.6mm) Height 1.20” (30.4mm)
Weight	1.8 oz. (50 gr) – without cable
Cable length	6 ft.
Connector	USB Type A plug
ENVIRONMENTAL	
Temperature	
Operating	0 °C to 70 °C (32 ^{o}F to 158 ^{o}F)
Storage	-40 ^{o}C to 70 ^{o}C (-40 ^{o}F to 158 ^{o}F)
Humidity	
Operating	10% to 90% noncondensing
Storage	10% to 90% noncondensing

* ISO (International Standards Organization) and AAMVA (American Association of Motor Vehicle Administrators).