



ViVOPay Vend User Manual

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Product Overview

The *ViVOPay VEND Vending Reader* (the Reader) is an electronic module capable of communicating with ISO 14443 Type A and Type B compatible cards and tags using Radio Frequency (RF). Data stored on the cards and tags is read by the Reader and transmitted to a host. This section provides general information about the Reader. Refer to Appendix A, B, and C for technical details.

Overview

The Reader consists of a set of printed circuit boards consisting of a Control PCA and an Antenna PCA. The two circuit boards together contain all circuitry required to communicate with between the host and RFID cards and tags. An optional Interface PCA may be connected to the Control PCA to add additional Reader to Host configurations. All circuit boards are designed to be assembled as a single module for simple mounting, or they may be separated to accommodate space constraints.

Type A & B cards and tags do not contain internal power and are activated by the RF power transmitted by the Reader. When a card or tag is positioned close to the antenna the card/tag is powered and activated, and it transmits its data as a modulated RF signal to the RF receiver. The RF receiver demodulates the signal and sends the demodulated tag data to the microcontroller. The microcontroller collects the tag data, decrypts it (if required), and transmits it to the host terminal. The LEDs and beeper indicate when a tag has been read successfully.

Features

- Read of ISO 14443 Type A & Type B cards and tags.

- ARM 32-bit Microcontroller.

- Crypto data processing for contactless Smartcards (optional).

- RS-232 (9600, 19200, 38,400, 57,600 baud)

- Magnetic Stripe Card and Magnetic Stripe Card Reader emulation.

- Horizontal (4) or Vertical (3) LED indicators, or external LED drive.

- Beeper or external beeper drive.

- Field replaceable firmware.

- Compact packaging fits in the space of a typical Card Reader or Bill Collector.

- Expandable interface for use with custom Interface PCAs.

FCC Regulatory Compliance

Notices Class B Equipment

This equipment 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 to radio communications. However, there is no guarantee that interference will not occur in a particular installation. 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

For IC Regulatory Compliance: "Operation is subject to the following two conditions: (1) this device may not cause interference, and this device must accept any interference, including interference that may cause undesired operation of the device.

Information to user

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

Cautions and Warnings



CAUTION: Danger of Explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturers instructions.



CAUTION: The unit should be mounted 1-2 feet away from other units. Can be adjusted based on lane setup.



CAUTION: The unit should not be placed directly on or within 4 inches of any large metal surfaces.



WARNING: Avoid close proximity to items such as cellular telephones and portable 2-way radios which may reduce the ability of the reader.



Applying Power

The *ViVOpay Vend* does not have a switch to turn on/off power. After connecting the cable from the Reader to the host apply power to the host and/or power supply. The Reader will perform a power-up sequence as follows:

All LEDs will illuminate an internal self-test is being performed.

The default RS-232 parameters (19,200 bps, 8 data, 1 stop, no parity) will be set.

If self-test and initialization is successful the beeper will emit two short beeps and the leftmost LED will remain illuminated indicating the Reader is ready.

With the power-up sequence successfully completed, the unit will read a valid card or tag if presented and send the data to the host.



Technical Operation Description

User Experience:

Contactless devices as cell phones and plastic cards are enabled with RF tags that securely release the payment information to the VEND terminals without the need of physical contact with the Point of Sale terminal using contactless technology. The VEND is constantly emitting a magnetic field, when it detects an RF tag in the field it communicates with it and retrieves the payment information. The card information is then transmitted to the POS device via the contactless technology, magnetic strip.

1. The customer approaches the clerk with one or more items to purchase. The clerk enters the items into the cash register, and once done, asks the consumer for the form of payment and mentions the contactless payment option by pointing to the VEND.
2. The consumer pulls it's contactless cell phone or plastic card and holds it in front of the VEND.
3. The VEND quickly reads the information from the card through RF technology - no physical contact is necessary. In a fraction of a second the reader validates the card, and secures the transaction. (As the reader is facing the customer and probably the clerk won't be seeing the LEDs, a beep will let the clerk know that the read was successful).
4. VEND automatically sends the information to the POS, which processes it as a conventional magnetic stripe card, though with increased security.-(Besides mentioning contactless payments and pointing to the ViVOpay unit no intervention from the clerk is necessary during the entire procedure).-5. The POS terminal prints the receipt, which the clerk gives to the consumer for signature as with any other purchase.

Behind the scenes:

Contactless smart cards compliant with the ISO 14443 international standard for contactless cards are used with VEND in numerous payment applications, with over 200 million cards in use worldwide. Contactless payment cards based on ISO 14443 communicate with readers at 13.56 MHz and have an operational range of up to 10 centimeters (approximately 4 inches). The ISO 14443 standard provides an option for two different types of signaling schemes: Type A and Type B. Both signaling schemes offer half duplex communication with a 106 Kbit per second data rate in each direction, and use a subcarrier modulation frequency of 847.5 KHz to transmit data. An ISO 14443 card is powered by the RF field and does not require its own battery.

Applications based on ISO 14443 A/B are highly secure when compared to those using magnetic stripe cards and other RF-based technologies. Counterfeit cards are extremely difficult to manufacture and the cards themselves are tamper-resistant. Security features allow the encryption of data on the card and during communication with the POS terminal and prevent the "replay" of transactions. Contactless smart cards can now achieve the same degree of security as contact smart cards.

All of the major card associations are endorsing the ISO 14443 standard, with RF-based contactless payment initiatives using the technology.+



1. What is MasterCard PayPass? How is it different from other MasterCard cards?

The MasterCard *PayPass* card has built-in chip technology as well as a standard magnetic stripe. This enables the card to be used in the traditional manner at all MasterCard acceptance locations (over 30 million locations) by swiping the magnetic stripe. However, at *PayPass*-accepting retail locations, the cardholder can pay with one simple touch of the card. No swipe of the card or signature is required for most transactions under \$25.

2. How does the PayPass technology work?

A MasterCard card enhanced with *PayPass* contains a chip and a tiny antenna inside the card. The card and specially equipped *PayPass* terminals communicate payment card details using very short range radio waves, to make the transaction process simpler and quicker for all. This type of wireless payment is ideal for merchant locations where speed is essential, such as fast food restaurants, gas stations, convenience stores, toll roads, mass transit, vending machines, etc.

3. Where can I use the MasterCard PayPass card?

The MasterCard *PayPass* card may be used in the traditional manner (i.e., swiping the magnetic stripe) anywhere that MasterCard cards are accepted worldwide. The *PayPass* feature is used only at merchants that are equipped to accept payments using *PayPass* technology. To see a complete listing of these merchants, please visit our "[PayPass Merchant Locations](#)" page. Additional *PayPass* merchant locations are being added every month.

4. How do I use the PayPass feature on this card?

You can use it wherever you see a *PayPass* terminal. Simply tap, touch or place your *PayPass* card on the *PayPass* reader when the merchant asks for payment—no swiping or inserting of your card is needed. Four green lights will illuminate to signal that your card has been successfully read. Within seconds, the transaction will be authorized and that's it, you're done! Also, no signature is required for most purchases under \$25—making this the simpler way to pay.

5. How far away from the reader do I have to be?

Typically, your *PayPass* card must be within a few centimeters (1 inch) of the *PayPass* reader to be read. If there are two *PayPass* cards in your wallet, the card you wish to use will need to be removed and presented to the *PayPass* reader.

6. Do I have to treat it in any special way?

Treat your *PayPass* card as you would any payment card.

7. Do I need to turn it on/off? Is there a battery?

There is no battery in the card. Therefore, you do not need to turn it on or off.