ViVOpay®

8600 User Guide

Version 0.9.0

Draft dated 120508

Part Number: 631-1075

Regulatory Compliance

FCC Part 15 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 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.

FCC Information for 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.
[54 FR 17714, Apr. 25, 1989, as amended at 68 FR 68545, Dec. 9, 2003]

Industry Canada Class B Equipment

This Class B digital apparatus complies with Canadian ICES-003

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Industry Canada Information for User:

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cautions and Warnings

⚠️	**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 (does not apply to ViVOpay Vend).
⚠️	**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 manufacturer's instructions.

⚡	**WARNING:** Avoid close proximity to radio transmitters which may reduce the ability of the reader.

Table of Contents

The ViVOpay 8600 seamlessly integrates with existing POS systems and requires minimal counter space at checkout stands. The ViVOpay 8600 is a PCI 2.0 certified counter-top contactless reader with integrated display, MSR, signature capture and PIN pad. This device features a resistive touch pad, serial RS-232, and USB 2.0 connectivity.

ViVOpay 8600 supports the following contactless payment applications:

- PayPass ISO/IEC 144443
- MasterCard M/Stripe
- Visa MSD
- American Express – ExpressPay
- Discover Zip
- Mifare ePurse (Passthrough)
- ViVOcard 1 & 2

ViVOpay 8600 supports the following magnetic stripe applications:

- Debit/Credit
- Other (Loyalty, Promotions, Coupons, etc.)

This document assumes that users are familiar with their host POS systems and all related functions.

Features

The following features are supported:
- Power - 9-12VDC regulated, 1.5 Amp
- ISO14443 type A/B Mifare based Contactless payment transactions (certified global open-loop applications AND closed-loop applications)
- NFC enabled wallet content exchange
- PIN entry for PIN Debit transactions
- Magnetic-stripe card transactions
- Electronic Signature capture

ViVOpay 8600 Specifications

Hardware	
Contactless	13.56 MHz
Interface	ISO 14443 Type A/B
Physical	
Length	179.65 mm (7.07 in)
Width	(Widest) 129.45 mm (5.1 in)
Depth	51.03 mm (2 in)
Weight	0.4 Kg (0.9 lbs)
Environmental	
Operating Temperature	0° to 40° C (32° to 104° F)
Storage Temperature.	-20° to 70° C (-4° to 158° F)
Operating Humidity	10% to 90% non-condensing
Operating Environment	Indoor only
Power	
Voltage	9-12VDC regulated, 1.5 Amps

PCI PED Compliance

The ViVOpay 8600 is a PCI 2.0 certified PIN-Debit capable payment device. As part of the PCI 2.0 certification it is required that sufficient protection must be provided to ensure that the PIN number CANNOT be viewed by a 3rd party (e.g. another customer standing nearby, the cashier or security camera etc) when being entered.

The ViVOpay 8600 has design elements such as a recessed keypad which meets SOME of these requirements HOWEVER it is essential that the device should be installed with the following considerations in order to fully implement this requirement.

1. The device must be in a location that will NOT force a customer to enter a PIN that can be viewed by a 3rd party (i.e. a customer may tilt or rotate the device for better accessibility due to objects blocking card-swipe for example).

2. If the device is elevated due to the use of a mounting stand then sufficient shielding must be provided on the mount to prevent a PIN being viewed by a 3rd party.

3. If the device is mounted on a counter top, additional shielding (this can include other devices such as the cash register as long (1) above is met) must be provided to ensure that the PIN cannot be viewed by a 3rd party (including cashier and security camera).

> **Warning:** PCI requires that the device is mounted so that the PIN entry can not be observed by a 3rd party (such as another customer standing in line, the cashier at the counter, or a security camera mounted in the ceiling to observe the cash register area). If the PIN entry can be observed, the store owner may be responsible for any losses incurred by the customer if it can be determined that the customer's PIN was stolen at this location.

Testing to Verify PCI Compliance

Before the installation is finished, the installer must verify that the ViVOpay 8600 is positioned so that the PIN entry is not visible to other customers, the cashier behind the counter, or to video surveillance cameras. If the PIN entry is visible, the ViVOpay 8600 must be repositioned so that the PIN entry is secure.

These test usually require at least 2 people - 1 to simulate entering the PIN and the other person to attempt to view the PIN.

Can Another Customer Standing Nearby View the PIN?

While one person stands at the ViVOpay 8600 with their hand positioned to enter the PIN, the other tester should stand beside the first person and see if they can observe the PIN keypad. The second tester should move around a little to see if there is a position where they can observe the PIN entry to learn the customer PIN.

If the PIN can be observed from any position, the ViVOpay 8600 might have to be repositioned and retested. If there is a single location where the PIN can be observed, consider placing a display such that the observation position is blocked so that the person cannot get in the position to observe the PIN entry.

Can the Cashier View the PIN?

While one person stands at the ViVOpay 8600 with their hand positioned to enter the PIN, the other tester should stand behind the counter and see if they can observe the PIN keypad. The second tester should move around a little to see if there is a position where they can observe the PIN entry to learn the customer PIN.

If the PIN entry can be observed by the cashier, the ViVOpay 8600 must be repositioned so that it is not observable by the cashier.

Can the Video Camera View the PIN?

While one person stands at the ViVOpay 8600 with their hand positioned to enter the PIN, the other tester should observe what is being recorder by the video camera. This may require playing back the recording to see if the PIN entry is visible. If the video camera is moveable, the second person should move the video camera to determine if there is a position where the PIN entry can be observed.

If the PIN entry can be observed by the video camera, the ViVOpay 8600 must be repositioned so that the PIN entry is not observable by the camera.

Retesting Requirements

If the PIN entry on the ViVOpay 8600 is observable in any of the above testing, you must reposition the ViVOpay 8600 and completely retest all locations to verify that the device is situated correctly so that the PIN entry is not visible.

Remember, repositioning the ViVOpay 8600 to block observance of the PIN entry at one location may expose the PIN entry at another location. PCI requires the repositioning and retesting be done until the ViVOpay 8600 PIN entry is secure from observation.

Using an Additional Shield

At times, it may be impossible to position the ViVOpay 8600 so that the PIN entry is blocked from viewing at all positions - especially from overhead cameras. In these instances, the cashier should advise the customer to use their other hand to block any observation of the PIN entry.

The angles in the figures are defined as follows:

α: Angle between the horizontal plane through the '5' key and a virtual line which connects the '5' key and an observer's eye (the protected angle should be **40°**)

β: Horizontal position of an observer relative to the PED user's position

γ: Horizontal range which is to be covered by the privacy screen

δ: Angle between the keypad plane and the horizontal plane (tilt angle)

Horizontal angle β	Remark	Vertical angle α
315° ≤ β ≤ 45°:	Within this range of β the cardholder deters an observer with her/his body.	N/A
45° < β ≤ 90° 270° ≤ β ≤ 315°:	Within these ranges visual observation of the keypad is partially blocked by the cardholder. The protection angle α shall be at least 35°. Please note that the front end of the privacy screen must be higher if the PED is tilted.	α ≥ **35°**
90° < β ≤ 270°:	The protection angle shall be at least 40°. The display side of the privacy screen may be lowered as the PED is tilted against the horizontal plane.	α ≥ **40°**

Horizontal observation range: γ = 270° (bird's eye view)

90° ≤ β ≤ 270°
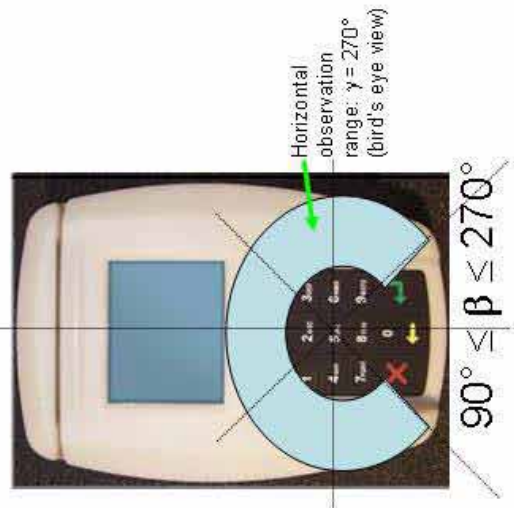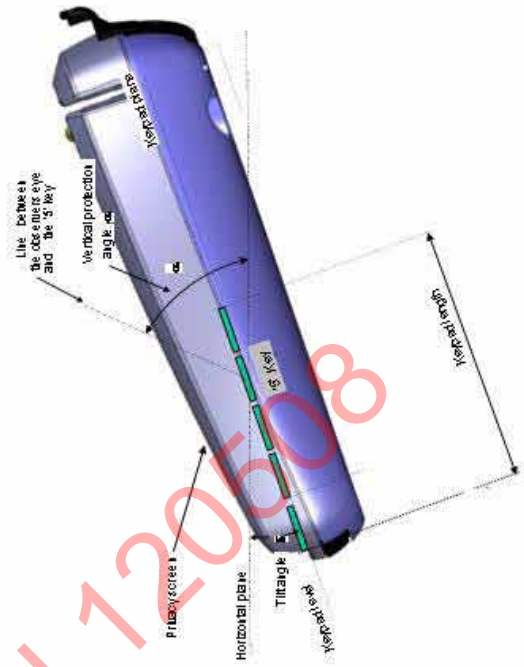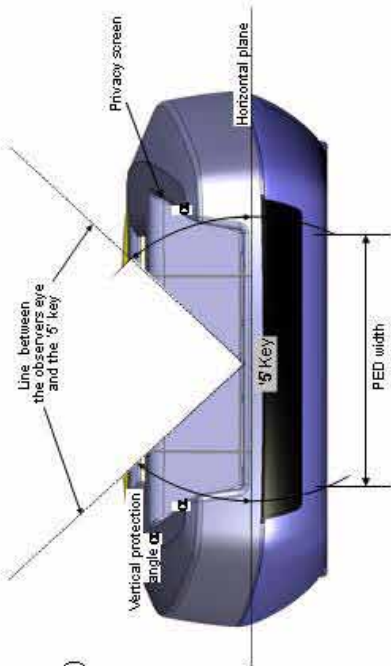
Installing the ViVOpay 8600

This section describes how to install the ViVOpay 8600. Installation methods may vary depending upon the location of the POS and counter configuration.

ViVOpay 8600 Installation

1. Verify that you have all the required components for the installation.

ViVOpay 8600 (Part Number 525-2299-00)	
Data Cable (varies by POS)	
Power Module (Part Number 140-2035-00 - US version)	

2. Turn the ViVOpay 8600 over so that the connector cover is visible.

3. Use a Phillips #1 screwdriver to remove the screw holding the connector cover in place.
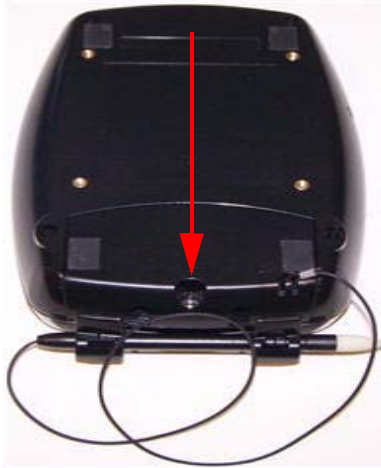
4. Remove the connector cover by sliding the cover away from the unit.

Note: do not pry the door upward to remove it from the base as it will damage the ViVOpay 8600 and possibly break the connector cover.

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5. Verify that the lanyard for the stylus is attached to the bottom of the connector cover. If it has become detached, insert the loop of the lanyard into the slot on the connector cover, loop it over the retaining pin, and pull the lanyard away from the slot opening to secure it in place.
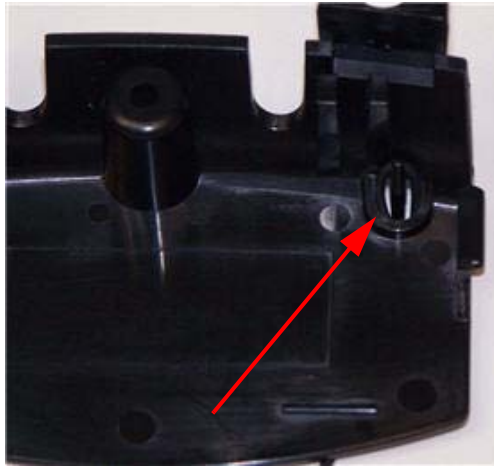
6. Position the ViVOpay 8600 so that you can access the sockets in the base of the unit.

7. Insert the power cable into the power socket.

8. Plug the data cable into the RJ45 socket directly beside the power socket.
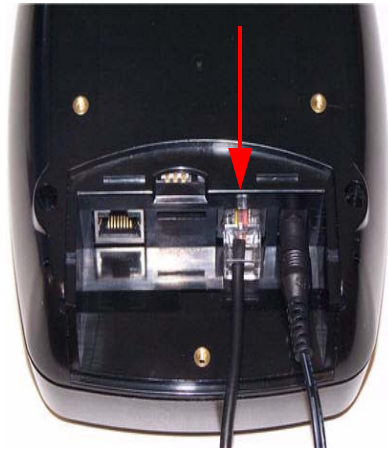
Note: The socket on the left in the above illustration is an Ethernet port and is currently unused. Do not plug the data cable into this port.

9. Carefully slide the connector cover back into place being careful to align the cables into the slots. One cable should be in each slot.

10. Secure the connector cover using the Phillips screw.

11. Place the stylus in the holder at the back of the ViVOpay 8600.

12. Attach the serial data cable from the ViVOpay 8600 to the appropriate port on the POS.

13. Plug in the power adapter. The ViVOpay 8600 emits a double beep and the left LED illuminates. The LCD backlight turns on.

Note: It takes approximately 30-45 seconds for the ViVOpay 8600 to boot up once power is applied. The unit is not usable until the **Welcome** screen appears.

Using the ViVOpay 8600

Startup Sequence

The ViVOpay 8600 emits a double beep when power is applied. The LEDs flash during startup until only the left-most (power) LED is lit..

Note: It takes approximately 30-45 seconds for the ViVOpay 8600 to boot up once power is applied. The unit is not usable until the **Welcome** screen appears.

The display shows the opening screen which contains the following:

- ViVOtech screen
- Copyright screen
- Firmware Version screen

It should then display **Welcome** or **Please present card** or similar wording, depending upon the configuration.

If the unit fails to power up, try reseating the power connector (or change to a different power outlet).

If the unit still fails to power up, try replacing the power supply. If the unit still fails to power up, and the power supply is definitely good, then the unit should be rejected as a failure and returned to your local support representative.

Presenting Cards, Fobs, or NFC Phones

Present the card/fob/phone in close proximity to the reader and so that maximum surface area is parallel to the LCD screen.

When a card/fob/phone has been successfully read, an audible beep is emitted and all green LEDs illuminate.

If you use a test card and the reader is attached to the POS, a dummy transaction can be tested. The transaction will not be authorized and will come back with a decline, but will at least test for end-to-end connectivity.

Testing by Swiping a Card

To test the magstripe reader, you need to ring up a sale on the register or POS and swipe a magstripe card through the slot. For correct orientation, the magstripe should be visible and at the bottom of the card as illustrated below.

When a magstripe card has been successfully read, an audible beep is emitted and all green LEDs illuminate.

Making a Purchase

The exact wording that appears on the ViVOpay 8600 depends on the POS used and the application that is running on it.

1. After the transaction has been rung up on the POS, the ViVOpay 8600 may show **Welcome** or similar wording. The customer should now present their card/fob/phone in close proximity to the reader.

2. A single beep and the LED flashes to indicate that the card/fob/phone has been validated. The ViVOpay 8600 may display **Processing** or similar wording while the transaction is being processed.

3. If the software requires a PIN entry, you will see **Please enter PIN**. Use the keypad to enter the PIN.

4. If the software requires a signature, you will see **Please sign below**. Use the stylus to enter your signature.

> **Note:** Only use the stylus to write on the LCD screen. If you use another instrument such as a ball point pen, you can damage the LCD screen which may require that the ViVOpay 8600 be replaced.

5. A receipt is printed by the POS with the purchase amount. The ViVOpay 8600 may show **Thank You** or similar wording for a successful transaction.

The ViVOpay 8600 readers are reliable and easy to troubleshoot. The components that may require troubleshooting include the power module, the reader and the data cable.

Symptom	Possible Cause	Remedy
General Issues		
Reader does not appear to be powered on --- no LEDs lit, no LCD display.	• Reader not powered on or incorrect voltage. • Incorrect power supply used.	• Check cable connections. • Verify that power is on and correct voltage and current are present. • Replace the power module. • Verify that power cable plug is fully inserted. • Replace the power module. • Replace the reader.
Reading Cards/Fobs/Phones		
LEDs do not light and beeper is not audible when card/fob/phone is presented.	• Card/fob/phone not properly presented. • Metal or RF interference. • Firmware issue (contact your local support representative). • Reader not powered on or incorrect voltage. • Incorrect power supply used. • Unsupported card/fob/phone used.	• Present card/fob/phone closer to the reader antenna and ensure it is parallel to the face of the reader. • Verify that the card/fob/phone is valid/current. • Test with "ViVOcard Contactless Test Card" part number 241-0015-03 Rev A. • Verify that the Phone Wallet is enabled for payments. • Try a different card/fob/phone. • Verify that the unit is not near any large metal objects. • Verify that correct firmware is loaded (local support representative only). • Verify that power is on and correct voltage and current are present. • Verify that power cable plug is fully inserted. • Replace the reader.
Some cards/fobs/phones read, but not all.	• Wrong firmware (contact your local support representative). • Possible bad card/fob/phone. • Unsupported card used.	• Verify that correct firmware is loaded on reader (local support representative only). • Check to see if card/fob/phone is damaged. • Try a different card/fob/phone.

Symptom	Possible Cause	Remedy
Communication to POS/ECR		
No data is received, or data is garbled.	• Faulty or incorrect cable connections. • Unsupported card used. • Contactless application is not installed on terminal (for serial connections only). • Magstripe card not swiped correctly. • Magstripe card not level during card swipe.	• Check that the cable connection is secure and in the correct port on the POS/ECR. • Check that the POS/ECR has the correct software application to accept data from the contactless reader (may need assistance from the POS vendor). • Try a different card/fob/phone or magstripe card if testing the magstripe reader. • If testing with the magstripe card, try turning the card around; make sure that the card is level during the card swipe. • Contact the payment processor for an application upgrade. • Check that the cable is correctly attached to the back of the ViVOpay 8600

Electronic Cash Register (ECR)

The combination of a traditional cash register and a POS terminal, often PC-based.

ExpressPay from American Express

American Express contactless payment product that utilizes contactless technology.

Firmware

Software that is embedded in a hardware device that allows reading and executing the software, but does not allow modification, e.g., writing or deleting data by an end user.

Example: Firmware is a computer program in a read-only memory (ROM) integrated circuit chip. A hardware configuration is usually used to represent the software.

Example: Firmware is a program embedded in an erasable programmable read-only memory (EPROM) chip, which program may be modified by special external hardware, but not by an application program.

Fob

A key chain device or other non-standard credit card sized form factor that has an embedded radio frequency (RF) chip.

MasterCard PayPass

MasterCard's contactless payment product that utilizes contactless technology.

MTBF

Mean time between failure. MTBF is the average time a device will function before a failure.

NFC

Near Field Communications.

NFC Phone

Near Field Communications (NFC) phone. A technology that enables communication between a secure element in a mobile device and a contactless reader to make credit/debit payments. Also see UICC.

Point of Sale (POS)

Refers to terminals used in retail stores with a magnetic stripe reader, keyboard, display and autodialer modem or IP connection, connected to the telephone/internet network and used for on-line credit/debit authorization. Can also be connected to a host computer, which handles all transaction processing including item price look-up, data collection, and credit/debit authorization.

Proximity Payments

Payment method utilizing contactless technology such as RF, Infrared (IrDA) or Near Field Communications (NFC).

Radio Frequency (RF)

Any frequency that corresponds to radio signals, including those used by cellular telephones and wireless networks.

RF Reader

The Point of Sale device that receives the RF transmission from a card, fob or NFC phone.

UICC

The UICC (Universal Integrated Circuit Card) is the chip card used in mobile terminals in GSM and UMTS networks.

Visa Contactless

Visa's contactless payment product that utilizes contactless technology.

Contact your local support representative for all support questions.