

VX 805

Reference Guide



VX 805 Reference Guide

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This guide is the primary source of information for setting up and installing the VX 805 terminal.

Audience

This document has two primary audiences, but is useful for anyone installing and configuring the VX 805 terminal:

- **Deployment Administrators** who prepare multiple units for deployment to their customers, configuring the units with applications, network configurations, phone numbers, and security. Deployment Administrators may work for a bank, credit card service company, or any company with a vertical application for the VX 805 terminal.
- **Local Administrators** who integrate and maintain VX 805 terminals into a single business site. Business owners or store managers generally perform this function.

Organization

This guide is organized as follows:

[Chapter 1, Overview](#). Provides an overview of the VX 805.

[Chapter 2, Setup](#). Explains setup and installation of the VX 805, selecting a location, and establishing connections with other devices.

[Chapter 3, Using the Terminal Keys](#). Explains the operational features of the VX 805 unit and describes how to use the VX 805 keys to perform all the data entry or Terminal Manager tasks described in this manual.

[Chapter 4, VeriX Terminal Manager](#). Describes password-controlled, system-mode operations, as well as how to use it to perform a variety of test and configuration procedures.

[Chapter 5, Performing Downloads](#). Documents procedures for downloading applications and files to VX 805 units

[Chapter 6, Specifications](#). Discusses power requirements and dimensions of the VX 805.

[Chapter 7, Maintenance and Cleaning](#). Explains maintenance of the VX 805.

[Chapter 8, Service and Support](#). Provides information on contacting your VeriFone service provider and information on how to order accessories or documentations from VeriFone.

[Chapter 9, Troubleshooting Guidelines](#). Provides troubleshooting guidelines should you encounter a problem in terminal installation and configuration.

This guide also contains appendices for [System Messages](#), [Port Pinouts](#), [ASCII Table](#), [Keypress Scan Codes](#), and [Glossary](#).

Related Documentation

To learn more about the VX 805, refer to the following set of documents:

VX 805 Certifications and Regulations Sheet	VPN - DOC280-001-EN-A
VX 805 Quick Installation Guide	VPN - DOC280-002-EN-A
VX 805 Installation Guide	VPN - DOC280-003-EN-A
Verix eVo Volume I: Operating System Programmers Manual	VPN - DOC00301
Verix eVo Volume II: Operating System and Communication Programmers Manual	VPN - DOC00302
Verix eVo Volume III: Operating System Programming Tools Reference Manual	VPN - DOC00303

Guide Conventions

Various conventions are used to help you quickly identify special formatting. [Table 1](#) describes these conventions and provides examples of their use.

Table 1 Document Conventions

Convention	Meaning	Example
Blue	Text in blue indicates terms that are cross referenced.	See Guide Conventions .
<i>Italics</i>	Italic typeface indicates book titles or emphasis.	You <i>must</i> not use this unit underwater.
	The pencil icon is used to highlight important information.	RS-232-type devices do not work with the PIN pad port.
	The caution symbol indicates possible hardware or software failure, or loss of data.	The device is not waterproof or dustproof, and is intended for indoor use only.
	The lightning symbol is used as a warning when bodily injury might occur.	Due to risk of shock do not use the device near water.

Acronym Definitions

Various acronyms are used in place of the full definition. [Table 2](#) presents acronyms and their definitions.

Table 2 Acronym Definitions

Acronym	Definitions
3DES	Triple Data Encryption Standard
AES	Advanced Encryption Standard Algorithm
DUKPT	Derived Unique Key Per Transaction Method as defined in the VISA's POS Equipment Requirement: PIN processing and Data Authentication, International Version 1.0, August 1988
ECR	Electronic Cash Register
EMV	Joint Europay, MasterCard and Visa Standard
LCD	Liquid Crystal Display
MSAM	Multiple Secure Access Module
OS	Operating System
PIN	Personal Identification Number
POS	Point-of-Sale
SAM	Secure Access Module
SC	Smart Card (Integrated Chip Card)
SD	Secure Digital
SR	Ship Release
UI	User Interface
USB	Universal Serial Bus

Overview

This chapter provides a brief description of VeriFone's VX 805.

VX 805

VeriFone's VX 805 has packed a performance punch in this high security PIN pad without sacrificing the demands of the consumer with a large white backlit display, large keypad, and an intuitive Vx user interface. This sleek device contains the features needed to start taking EMV payments as well as powerful enough to meet future requirements from merchants. The 128x64 white backlit display is brilliant and provides excellent readability under any environment. The large keypad and user interface are designed for ease of use and to minimize consumer mistakes. The form factor is designed to make it feel great in the palm of your hand, while equally impressive in a mounted scenario.

Features at a Glance

The VX 805 continues to take an evolutionary approach to PIN pads and offer market leading features and functionality. USB and RS-232 connectivity are both integrated into the device to conveniently suit any retail environment. The PCI PED 3.0 approved VX 805 is market leading in terms of security, combined with support for VeriShield Protect. The VX 805 securely and efficiently handles credit and PIN-based debit cards with a vertical mag-stripe reader, secure PIN entry capability, and smart card. The VX 805 is EMV Level 1 and 2 Type Approved, offering the most reliable security available for EMV markets.



- Intuitive VX function/ATM key interface
- PCI PED 3.0 approved
- EMV Level 1 and 2 Type Approved, offering the most reliable security available, including SSL and VeriShield file authentication, and VeriShield Protect to help prevent Fraud

Figure 1 **VX 805 with New Handheld Design**

Features and Benefits

Exceptional Ease of Use

- Efficient, stylish, ergonomic design provides for convenient consumer handling, minimizing user errors
- Intuitive telco-style interface with large, colored control keys simplify training and reduce support requests
- Highly readable 128x64 white backlit display provides excellent usability and handles multiple languages for global use

Critical Security Protection

- PCI PTS 3.0 approved
- Supports VeriShield Protect to encrypt and protect consumer card information
- Integrated security modules simultaneously support sophisticated encryption (AES, DES, 3DES, RSA) and key management schemes, including single and 3DES Master Session, single, and 3DES Derived

Strong Feature Set

- Ensures uncompromising reliability from VeriFone, the worldwide leader in e-payment
- Primary smart card reader support for synchronous and asynchronous smart cards
- Support for international character sets and Unicode standard
- EMV Level 1 and Level 2 approved for smart card solutions
- Offers the most reliable security available, including SSL, VeriShield file authentication, and VeriShield Protect to help prevent fraud and other intrusions

Extended PIN pad Capabilities

- Optional privacy shield
- Patent-pending MAXui design, highlighted by a 128x64 white backlit display and large keypad, makes it easy to use under any lighting condition
- Triple-track, high-coercivity, bi-directional card reader handles most magnetic stripe cards
- Up to three Security Access Modules (SAMs) safeguard sensitive financial data and support multiple smart card schemes
- Can be powered by other Vx series terminals through a single multi-port connector which supports RS-232 and USB 2.0 device



Setup

This chapter describes the setup procedure for the VX 805, in the following sections:

- Selecting a Location
- Unpacking the Shipping Carton
- Examining Device Features
- Installing or Replacing MSAM Cards
- Establishing Cable Connections
- Using the Smart Card Reader
- Using the Magnetic Card Reader
- Optional Accessories

Selecting a Location

Use the following guidelines to select a location for the VX 805.

Ease of Use

- Select a location convenient for both merchant and cardholder.
- Select a flat support surface, such as a countertop or table.
- Select a location near a power outlet and the terminal, ECR, or computer connected to the VX 805. For safety, do not string cables or cords across a walkway.

Environmental Factors

- Do not use the unit where there is high heat, dust, humidity, moisture, or caustic chemicals or oils.
- Keep the unit away from direct sunlight and anything that radiates heat, such as a stove or a motor.
- Do not use the VX 805 outdoors.



The VX 805 is not waterproof or dustproof, and is intended for indoor use only. Any damage to the unit from exposure to rain or dust can void any warranty.

Electrical Considerations

- Avoid using this product during electrical storms.
- Avoid locations near electrical appliances or other devices that cause excessive voltage fluctuations or emit electrical noise (for example, air conditioners, electric motors, neon signs, high-frequency or magnetic security devices, or computer equipment).
- Do not use the VX 805 near water or in moist conditions.

WARNING



Due to risk of shock or damage, do not use the VX 805 near water, including a bathtub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.

Unpacking the Shipping Carton

Open the shipping carton and carefully inspect its contents for possible tampering or shipping damage. The VX 805 is a secure product and any tampering can cause it to cease to function or to operate in an unsecured manner.

- 1 Remove and inspect the contents of the shipping carton, since the VX 805 ships in multiple configurations, the carton may include any or all of the following:
 - VX 805
 - Data cable
 - Power adapter
 - ECR cable
 - Privacy shield
- 2 Remove all plastic wrapping from the terminal and components.
- 3 Remove the clear protective film from the display.
- 4 Save the shipping carton and packing material for future repacking or moving of the device.

WARNING



Do not use a unit that has been tampered with or damaged.

The VX 805 comes equipped with tamper-evident labels. If a label or component appears damaged, please notify the shipping company and your VeriFone service provider immediately.

Examining Device Features

Before you continue with the installation process, familiarize yourself with the VX 805 features:

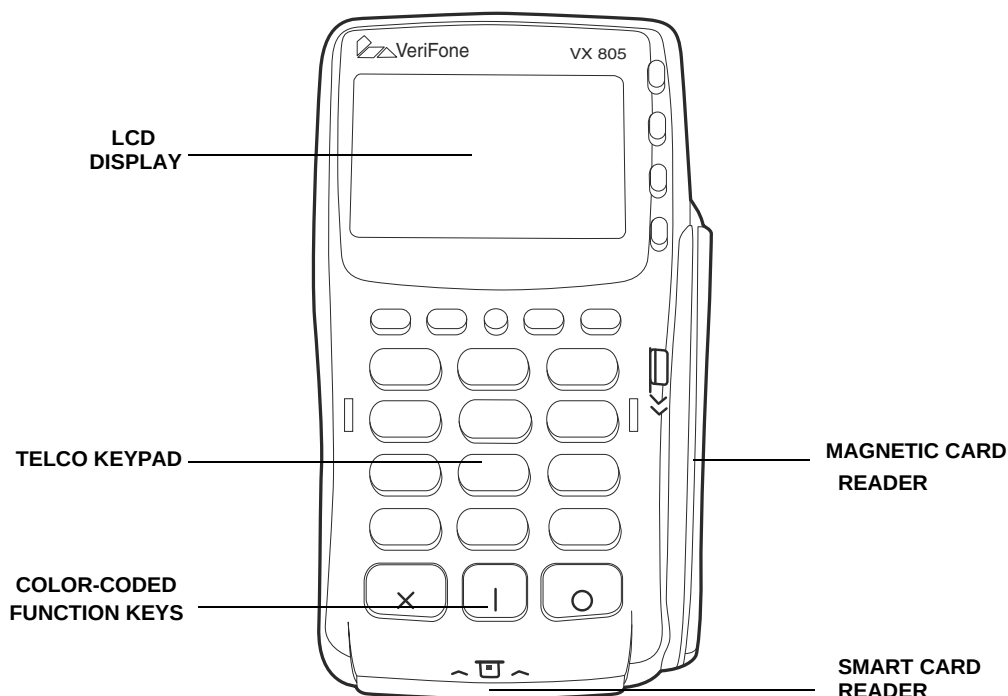


Figure 2 **VX 805 Features**

The VX 805 includes the following features:

- An **LCD display**.
- Three **color-coded function keys** below the keypad (CANCEL [RED], BACKSPACE [YELLOW], ENTER [GREEN]).
- A **magnetic card reader**, built into the right side. An icon shows the proper swipe direction, with the stripe facing down and towards the keypad.
- A **smart card reader**, built into the unit's front side. An icon indicates the proper card position and insertion direction.
- A **SAM (Security Access Module) compartment**, built into the back side of the unit. The VX 805 contains multiple-SAM (MSAM) cardholders to support multiple stored-value card programs or other merchant card requirements.

Installing or Replacing MSAM Cards

You may need to install one or more multiple security access module (MSAM) cards or replace the old cards.



CAUTION Observe standard precautions in handling electrostatically sensitive devices. Electrostatic discharges can damage the equipment. VeriFone recommends using a grounded anti-static wrist strap.

To install or replace MSAM cards

- 1 Remove the data cable from the back of the unit.
- 2 Place the VX 805 face down on a soft, clean surface to protect the lens from scratches.
- 3 Loosen the retaining screw. The restraining screw is captive, which means that it cannot be fully removed from the slot.
- 4 Slide out and lift the compartment door. The MSAM cardholders are now accessible. Each cardholder consists of a slot inboard of a numbered tray.

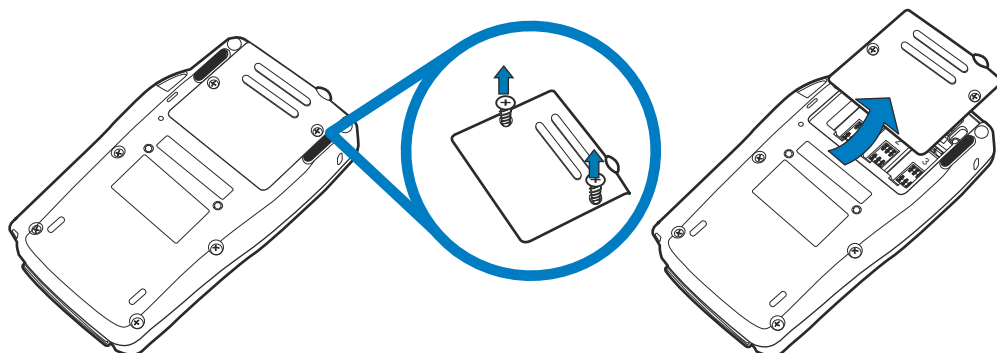


Figure 3 Removing Screw and Opening Compartment Door

NOTE



Before inserting the MSAM card, position it as shown in [Figure 4](#), with the card's gold contacts facing away from you, toward the unit. The cardholder slot in the VX 805 has a set of contacts. The MSAM card has a notch on one corner to ensure that it fits into the connector base in only one way; the VX 805 has a matching notch cast into the backside of the MSAM compartment door to ensure the MSAM card is positioned correctly when the cover is closed.

- 5 Install the MSAM card by aligning the card to match the embossed number and carefully sliding it into the slots until fully inserted.

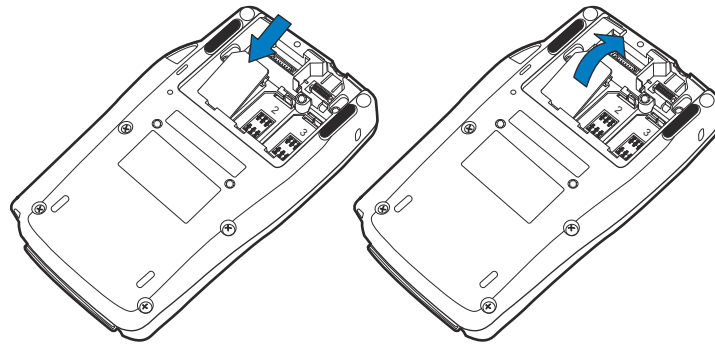


Figure 4 MSAM Insertion

- 6 Close the VX 805 compartment door after inserting/replacing the necessary cards and tighten the locking screw.

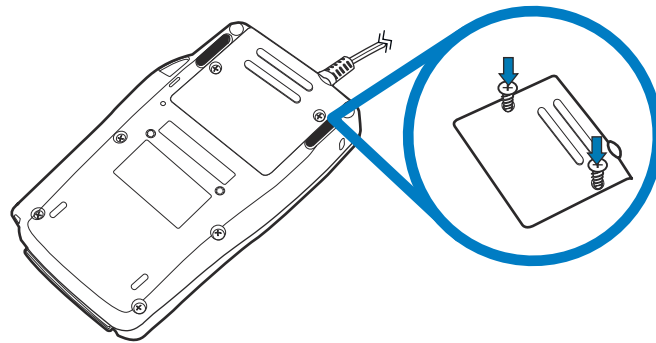


Figure 5 Closed VX 805 Compartment

Power Supply

Not all VX 805 configurations and device contexts require the use of a power supply – VeriFone ships power supplies with the VX 805 as required.

If you have changed the context in which the VX 805 is used or have questions about which power supply should be used, contact your VeriFone representative.

CAUTION

Using an incorrectly rated power supply can damage the unit or cause it not to work properly. Use only a power pack with VPN PWR282-001-01-A (see [Specifications](#) for detailed power supply specifications).

Before connecting a power supply, disconnect the power pack cord from the power outlet.

Connect and route all cables between the VX 805 and the ECR or PC before plugging the power pack cord into a wall outlet or surge protector.

WARNING

Do not plug the power pack into an outdoor outlet or operate the VX 805 outdoors. Also, disconnecting power during a transaction can cause transaction data files not yet stored in memory to be lost.

NOTE

To protect against possible damage caused by lightning strikes and electrical surges, VeriFone recommends installing a power surge protector.

When the VX 805 has power and an application is loaded, the application starts after the initial VeriFone copyright screen and displays a unique copyright screen. If no application is loaded, **DOWNLOAD NEEDED** appears on the display after the initial VeriFone copyright screen.

Establishing Cable Connections

The VX 805 has three general cabling scenarios, depending on what the VX 805 connects to:

- 1 Connecting to Another VeriFone Terminal
- 2 RS232 Connection Using an External Power Brick
- 3 Direct USB Connection



CAUTION Using an incorrectly rated power supply can damage the unit or cause it not to work properly. Use only a power pack with VPN PWR282-001-01-A (see [Specifications](#) for detailed power supply specifications).

Attaching a Cable Connector to the VX 805

Before going into each cabling scenario, the cables first have to be attached to the VX 805. To attach a cable to the VX 805, follow steps 1-4 in the [Installing or Replacing MSAM Cards](#) section to open the compartment door then attach the 28 pin connector of the cable to the VX 805 as illustrated below:

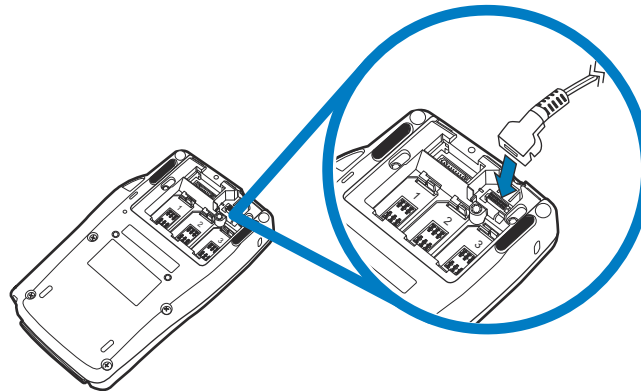


Figure 6 Attaching a Cable Connector to the VX 805

Connecting to Another VeriFone Terminal

The VX 805 connects to a VeriFone terminal via a coiled cable (VPN - 08361-xx-R). There is a minimum power requirement for the VX 805, currently specified at 2W.

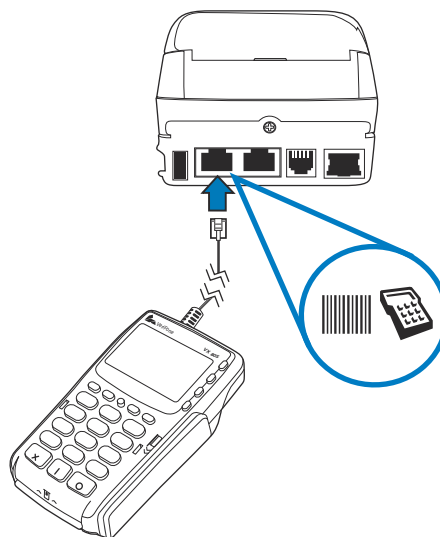


Figure 7 VX 805 Connected to another VeriFone Terminal

RS232 Connection Using an External Power Brick

A special dongle cable is used, where one end of the cable plugs into the VX 805 while the other end terminates in a DB-9 connector housing. On the housing, a DC jack is provided to connect to an external power brick. This is a generic cable for all RS232-based hosts (VPN - 08870-XX-R).

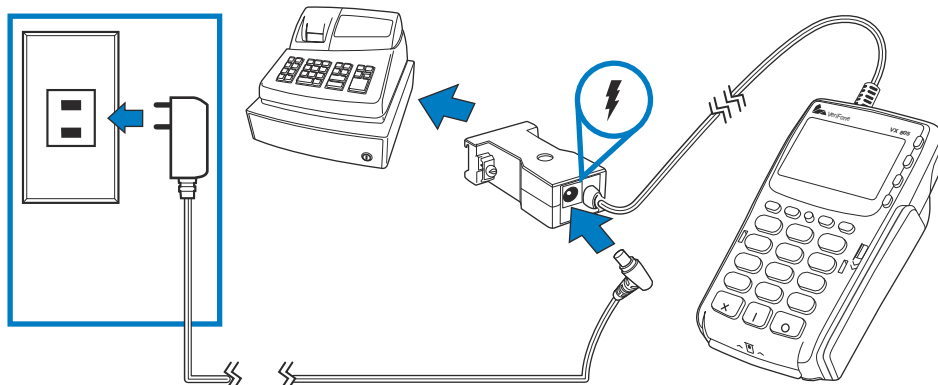


Figure 8 VX 805 with an RS232 Connection Using an External Power Brick

Direct USB Connection

Similarly, a USB cable (VPN - 08374-XX-R) is required in standard USB environments. For this cable option, the host end has a molded housing which exposes the standard USB plug.

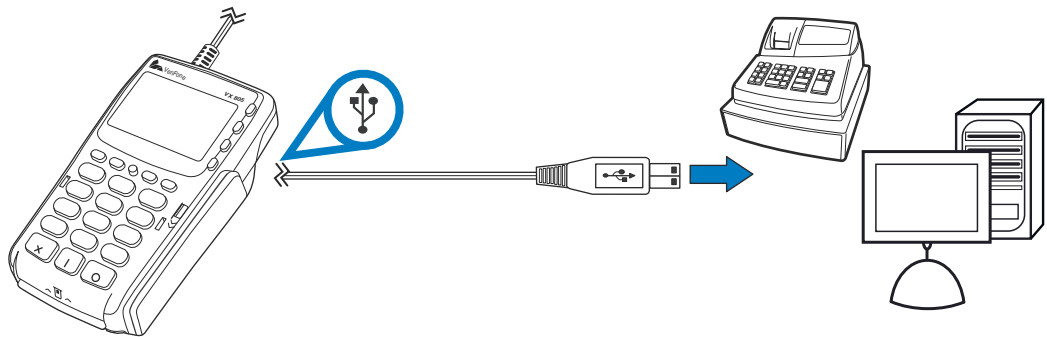


Figure 9 Direct USB Connection

Using the Smart Card Reader

The smart card transaction procedure can vary depending on the application. Verify the proper procedure with your application provider before performing a smart card transaction.

To conduct a smart card transaction

- 1 Position the smart card with the gold contacts facing upward (see [Figure 10](#)).
- 2 Insert the card into the smart card reader slot in a smooth, continuous motion until it seats firmly.
- 3 Remove the card when the display indicates the transaction is completed.

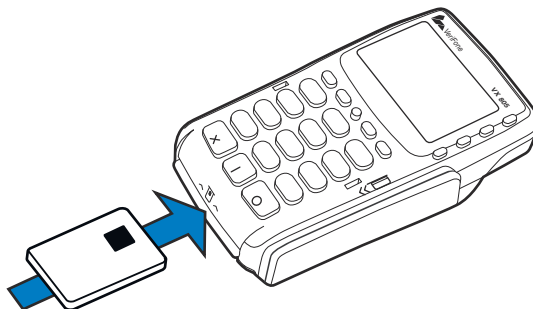


Figure 10 Inserting a Smart Card



Leave the smart card in the card reader until the transaction is completed. Premature removal can void the transaction.

Using the Magnetic Card Reader

The VX 805 has a magnetic card reader that uses a triple track stripe reader. This gives the unit greater reliability over a wide range of swipe speeds and operating environments.

To conduct a credit or debit card transaction

- 1 Position a magnetic card with the stripe facing the keypad.
- 2 Swipe it through the magnetic card reader.

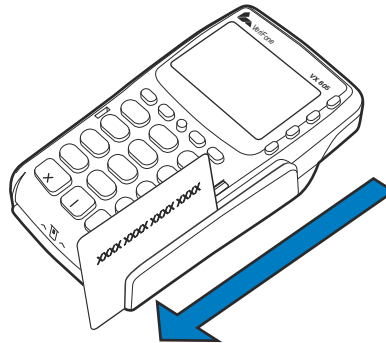


Figure 11 Using the Magnetic Card Reader

Optional Accessories

These accessories can be used to further enhance the device's functionality. See [Supplementary Hardware](#) for additional information.

Using the Privacy Shield

The privacy shield is used to hide the keys a user is pressing to enter the password for a transaction.

Installing the Privacy Shield

- 1 Align the hooks on the privacy shield with the corresponding slots beside the keypad on the VX 805.
- 2 Once the hooks are in place, gently push down on the privacy shield until it snaps into place.

The figure below shows an example of a VX 805 with the privacy shield installed.

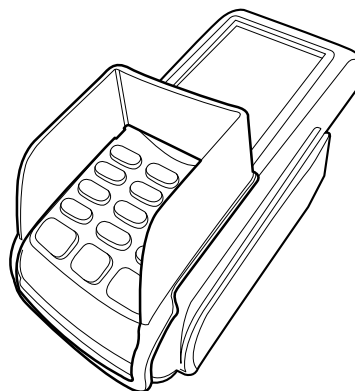


Figure 12 Installed Privacy Shield

Using the Terminal Keys

Before proceeding to other tasks, familiarize yourself with the operational features of the VX 805 terminal keypad to enter data.

This section describes how to use the keypad, which consists of a 12-key Telco-style keypad, three color-coded keys below the keypad, the ALPHA key above the keypad, four ATM-style function keys (F1, F2, F3, and F4) to the right of the display (Figure 13), and four *programmable* function (PF) keys directly above the keypad. Using these keys you can perform all data-entry tasks described in this manual.

The function keys allow you to navigate through the terminal manager menus and select specific operations.



NOTE The PF and ATM-style keys can also be assigned application-specific functions in addition to those assigned to terminal manager operations. These functions are not discussed in this manual.

For added convenience, the keypad is automatically back-lit when you power on the terminal. The backlight may be turned off at any time.

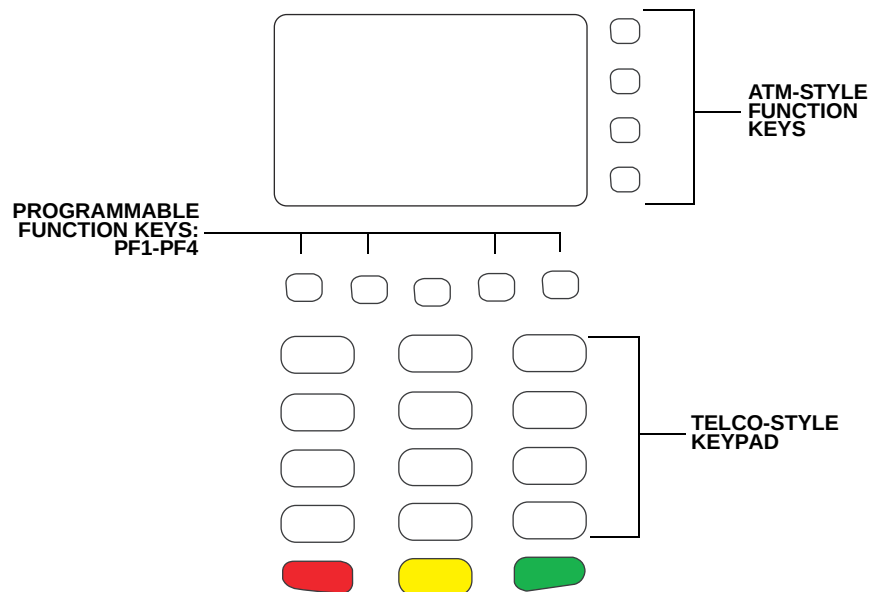


Figure 13 Front Panel Key Arrangement

Data Entry Modes

Before you can use the keys on the front panel to enter ASCII characters, the VX 805 terminal must be in a mode that accepts keyed data entry. There are two terminal operating modes, each enables you to press keys to enter data under specific circumstances:

- **Normal mode:** This is the terminal operating mode where an application program is present in SRAM and currently running.
- **Verix Terminal Manager:** This is a special, password-controlled terminal operating mode for performing a variety of test and configuration procedures that cannot be performed when an application is running.



CAUTION If you enter Verix Terminal Manager while a terminal application is running in normal mode, terminal manager preempts the application and takes control of the display and keyboard. The only way to exit terminal manager is to restart the terminal. For this reason, once you enter terminal manager, you cannot return to the application in the same session.

If you turn on a VX 805 terminal that does not have an application stored in terminal memory, the system prompt **DOWNLOAD NEEDED** appears. You can enter Verix Terminal Manager by simultaneously pressing F2 and F4, and then entering the password ([Entering Verix Terminal Manager](#)). Once in terminal manager, you can configure the terminal as required and perform the necessary download.

NOTE



Enter Verix Terminal Manager by simultaneously pressing F2 and F4 or the 7 and enter keys. For simplification in this manual, only F2 and F4 are mentioned from this point on.

If you turn on a VX 805 terminal with an application stored in SRAM, the application executes and the terminal automatically enters normal mode. The application then controls how terminal keys—including the PF keys and the ATM-style keys—process transactions and when you can use specific keys to type characters or respond to prompts.

NOTE



If an application is in terminal memory, the default system password into Verix Terminal Manager may have changed. If so, you must press the F2 and F4 keys and then enter the required system password to enter terminal manager. The behavior of key entries depends on the specific active terminal manager menu.

Keypad Functions

The keypad is a 13-key arrangement, consisting of a 12-key Telco-style keypad and the ALPHA key (Figure 13).

NOTE



The terminal manager functions described in the [Entering Verix Terminal Manager](#) section requires you to enter numbers, letters, or symbols using the keypad.

Using the keypad, you can enter up to 50 ASCII characters, including the letters A–Z, the numerals 0–9, and the following 20 special characters: (*), (,), ('), ("), (-), (.), (#), (%), (:), (!), (+), (@), (=), (&), (space), (;), (\$), (_), (\), and (/).

Function Key Descriptions

The following are the function keys of the terminal's keypad.

NOTE



The terminal's operating mode and context determine the specific action performed when you press one of the function keys. The following descriptions are provided solely to acquaint you with some general characteristics of these function keys before presenting more detailed terminal manager procedure descriptions.



Cancel Key

Pressing the cancel key in normal mode—when the terminal's application is loaded and running—usually has the same effect as pressing the Esc (escape) key on a PC. That is, it terminates the current function or operation.

In terminal manager, use cancel to perform a variety of functions. The most common use of cancel in terminal manager is to exit a terminal manager submenu and return to the main Verix Terminal Manager menu. The specific effect of pressing the cancel key depends on the currently active terminal manager menu.



Backspace Key

In normal mode, the backspace key is commonly used to delete a number, letter, or symbol on the terminal's display screen. Press backspace one time to delete the last character typed on a line. To delete additional characters, moving from right-to-left, press backspace once for each character or hold down backspace to delete all characters in a line.

In Verix Terminal Manager, the specific effect of pressing the backspace key depends on the currently active terminal manager menu.



ALPHA Key

In normal mode, the ALPHA key enables you to enter one of the two or more characters or symbols assigned to individual keys on the 12-key Telco-style keypad (note that this is in normal mode and is application-specific).

Use the ALPHA key to enter up to 50 different ASCII characters through the following procedure:

- 1 Press the key on the 12-key keypad that shows the desired letter or symbol (for example, press 2 to type 2, A, B, or C). The number (1–9 or 0) or the symbol (* or #) pressed now displays.
- 2 Press ALPHA once to display the first letter. Continuing our example, press the 2 key, then ALPHA to display the letter A.
- 3 Press ALPHA as many times as required to display the desired character. For example, press 2 to display the number 2; press ALPHA once to display the letter A, twice to display B, or three times to display C. If you press ALPHA one more time, the number 2 displays.

NOTE



If you firmly press and hold down one of the keys on the 12-key keypad without using ALPHA, the same character repeats until you stop pressing the key. For example, if you press 2 and hold it down, “222222...” appears on the display.

If two or more characters display on the VX 805 screen, pressing ALPHA changes the last character on the line to the next letter, number, or symbol in the key sequence.

Table 3 provides additional examples of how to use the ALPHA key to select ASCII characters from the 12-key Telco-style keypad.

Table 3 **Example ALPHA Key Entries**

Desired Character	Press Keys
2	2
A	2 ALPHA
S	7 ALPHA ALPHA ALPHA
!	# ALPHA
Space	0 ALPHA ALPHA
Comma (,)	* ALPHA
Plus sign (+)	0 ALPHA ALPHA ALPHA

Table 4 lists all the ASCII characters you can type using the ALPHA key and the Telco keypad.

Table 4 Using ALPHA and the 12-Key Keypad

Key to Press	Without Pressing ALPHA	Press ALPHA One Time	Press ALPHA Two Times	Press ALPHA Three Times
1 QZ.	1	Q	Z	.
2 ABC	2	A	B	C
3 DEF	3	D	E	F
4 GHI	4	G	H	I
5 JKL	5	J	K	L
6 MNO	6	M	N	O
7 PRS	7	P	R	S
8 TUV	8	T	U	V
9 WXY	9	W	X	Y
0 -SP	0	—	[space]	+
*, ' "	*	,	'	"
# ^a	#	!	:	;

- a. The # key also supports eight additional characters: (@), (=), (&), (/), (\), (%), (\$), and (_). To enter @, press # once, then ALPHA four times. To enter =, press # once, then ALPHA five times. To enter &, press # once, then ALPHA six times. To enter /, press # once, then ALPHA seven times. To enter \, press # once, then ALPHA eight times. To enter %, press # once, then ALPHA nine times. To enter \$, press # once, then ALPHA ten times. To enter _, press # once, then ALPHA eleven times.



Enter Key

In normal mode, the enter key is generally used the same as the enter key on a PC, that is, to end a procedure, confirm a value or entry, answer “Yes” to a query, or select a displayed option.

In Verix Terminal Manager, press the enter key to begin a selected procedure, step forward or backward in a procedure, and confirm data entries. The specific effect of the enter key depends on the currently active terminal manager menu.

Programmable Function (PF) Key Descriptions

The row of four PF keys directly above the keypad ([Figure 13](#)) from left-to-right are referred to as PF1, PF2, PF3, and PF4. These keys can be assigned application-specific functions. Because such functions are often unique and can vary greatly between applications, they are not discussed in this manual.

NOTE



For questions regarding application-specific PF-key functions, please contact your application service provider.

The PF keys are also used to navigate through the Verix Terminal Manager menus. These keys are functioning when arrows appear in the display screen above the associated key, indicating that the keys can be used as follows:

- PF1 ↓ Move to the next menu or screen
- PF2 ↑ Move to the previous menu or screen
- PF3 ↓ Scroll down menu options
- PF4 ↑ Scroll up menu options



Verix Terminal Manager

This chapter describes a category of terminal functions called *terminal manager operations*.

- Press F2 and F4 at the same time and enter the password to invoke Verix Terminal Manager. See [Entering Verix Terminal Manager](#).
- Assign files and applications to groups for access control. See [File Groups](#).
- Use the system and file group passwords to secure applications and information on the terminal. See [Passwords](#).
- Use the terminal manager menus and submenus to configure terminals; download, test, and debug applications; and perform routine tests and terminal maintenance. See [Verix Terminal Manager Menus](#).

Verix Terminal Manager is used exclusively by those responsible for configuring, deploying, and managing on-site VX 805 terminal installations.

When to Use Verix Terminal Manager

Use the Verix Terminal Manager functions to perform different subsets of related tasks:

- **Application programmers** configure a development terminal, download development versions of the VX 805 application program, then test and debug the application until it is validated and ready to be downloaded to other terminals.
- **Deployers of terminals to end-user sites** perform the specific tasks required to deploy a new VX 805 terminal on-site, including configuring the terminal, downloading application software, and testing the terminal prior to deployment.
- **Terminal administrators or site managers** change passwords, perform routine tests and terminal maintenance, and configure terminals for remote diagnostics and downloads.

To perform the subset of tasks that corresponds to a job, select the appropriate terminal manager menu(s) and execute the corresponding procedure(s).

Local and Remote Operations

The terminal manager operations available on a VX 805 terminal can be divided into the following two categories or types:

- **Local operations** address a stand-alone terminal and do not require communication or data transfers between the terminal and another terminal or computer. Perform local terminal manager operations to configure, test, and display information about the terminal.
- **Remote operations** require communication between the terminal and a host computer (or another terminal) over a telephone line or a cable connection. Perform remote terminal manager operations to download application software to the terminal, upload software from one terminal to another, perform diagnostics over a telephone line, or update the operating system.

This chapter contains descriptions on how to perform local terminal manager operations. For information on performing remote operations, such as downloads, refer to [Chapter 5, Performing Downloads](#).

Verifying Terminal Status

The VX 805 terminal you are using may or may not have an application program running on it. After you have set up the terminal ([Chapter 2, Setup](#)) and the terminal is turned on, use the following guidelines to verify terminal status regarding software and current operating mode:

- If no application program is loaded into terminal RAM or flash, the message **DOWNLOAD NEEDED** appears on the display screen. From this point, press F2 and F4 to access terminal manager and perform the required download.

NOTE



You can enter Verix Terminal Manager either by simultaneously pressing F2 and F4 or by pressing the 7 and Enter  keys. For simplification in this manual, only F2 and F4 are mentioned from this point on.

- If an application program is loaded into terminal RAM or flash, an application-specific prompt appears. The application is running and the terminal is in normal mode. If all installation steps are complete, the terminal can process transactions.

TIP



If necessary, you can press F2 and F4 simultaneously to interrupt the application and enter Verix Terminal Manager.

Entering Verix Terminal Manager

To prevent unauthorized use of the Verix Terminal Manager menus, the VX 805 terminal OS requires a system password each time you enter terminal manager. To access the Verix Terminal Manager password entry screen, simultaneously press the F2 and the F4 keys. The default, factory-set system password is "1, Alpha, Alpha, 66831." After entering the correct password, the terminal enters the terminal manager and displays the first terminal manager main menu, **VERIX TERMINAL MGR MENU 1**. You can now toggle through all three terminal manager main menus by pressing  or the PF1 and PF2 keys.

File Groups

The VX 805 Verix operating system implements a file system in RAM and in flash memory. Files are assigned to one of the groups for access control. Groups are similar to computer directories---in that different applications can be stored in separate file groups, just like different computer applications can be stored in separate directories. Groups are referred to as *Group n* or *GIDn* throughout this manual.

Each group is protected by a separate password, and each has a separate `CONFIG.SYS` file. The following rules apply to the VX 805 file group system:

- The primary application must be downloaded into Group 1.
- On terminal power up and after a restart, the terminal defaults to Group 1 as the controlling group.
- Group 1 applications have access to files stored in *all* groups. Other applications can reside in Groups 2–14.
- Applications in a group other than Group 1 have access only to themselves and files stored in Group 15.
- Group 15 is globally accessible, making it an ideal location for files shared by multiple applications, such as shared libraries.
- File Groups 1–15 are empty until they are filled through a download to the VX 805 terminal.

For more information on managing file groups, refer to the *Verix V Operating System Programmers Manual* (VPN 23230).

Passwords Handle passwords as you would PC passwords.

System Password When you key in the system password to enter terminal manager, an asterisk (*) appears for each character you type. These asterisks prevent your password from being seen by an unauthorized person. You can use the ALPHA key to change the characters or symbols you enter. This does not cause additional asterisks to appear.

NOTE  Some application program downloads automatically reset the system password. If your system password no longer works, check if a download has changed your password.

File Group Passwords The default password for each file group is “1, Alpha, Alpha, 66831” (without the quotation marks).

NOTE  This default password is the same as the password for Verix Terminal Manager entry.

Verix Terminal Manager Menus The three main terminal manager menus are listed in the following table.

Table 5 Verix Terminal Manager Menus

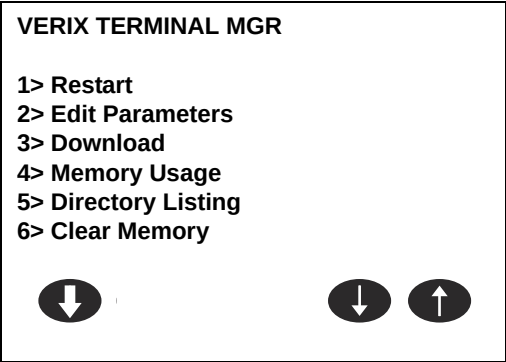


Figure 14 Menu 1

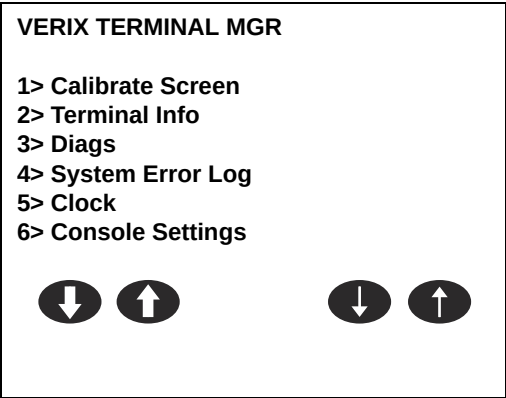


Figure 15 Menu 2

Table 5 Verix Terminal Manager Menus

VERIX TERMINAL MGR

- 1> Clock
- 2> Console Settings
- 3> Change Passwords
- 4> Key Management



Figure 16 **Menu 3**

To return to a previous menu, press the PF2 key . To go to the next menu, press the PF1 key (the leftmost key above the keypad). To return to the main terminal manager menu and cancel any changes, press the cancel key.

To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press the enter key. Use the PF4 key to scroll up the menu options.

When performing downloads or operations that change or clear files, the password for each file group is required. The password is only required once per session per file group.

Verix Terminal Manager Procedures

The procedures in this section explain how to use each of the terminal manager menus listed in [Table 5](#). Each procedure description starts at a main Verix Terminal Manager menu. Each procedure takes you step-by-step through a complete terminal manager operation in the following sequence:

- 1 When the main terminal manager menu appears, select an operation by pressing the corresponding number on the keypad or scroll down to the option using the PF3 button then press the enter key. Use the PF4 key to scroll up the menu options.
- 2 Complete the operation.
- 3 Return to the main Verix Terminal Manager menu.

Procedure descriptions are arranged in the following table:

Table 6 Procedural Description Example

Display	Action
Screen displayed	Action required

Table 6 **Procedural Description Example**

Display	Action
Submenu Row	
Screens displayed on submenu selection	Action required

The Display column in [Table 6](#) indicates what appears on the terminal display screen at each step of the procedure. Please note the following conventions used in this column:

- If a prompt or message appears on the screen exactly as it is described, it is shown in Arial bold font and ALL CAPS. For example, **DOWNLOAD NEEDED**.
- If text is enclosed in parentheses, the actual text or message may vary depending on the terminal version you have. For example, in (Application Prompt), the normal font is used and text is typed in initial caps.

The Action column provides a procedural description that:

- Describes the current step and context of the procedure.
- Indicates the entries to perform using the keypad in response to a prompt or message.
- Provides additional explanations or information about the steps of that particular terminal manager menu.

A submenu row indicates a specific menu evoked from a main menu screen. A description of that screen and procedure immediately follows the submenu row.

The following keys have the same function on all submenus:



- Press the enter key to save changes from a submenu and return to the menu screen.



- Press the cancel key to exit any submenu without saving changes.

Enter and Exit Verix Terminal Manager

To enter terminal manager after you have turned on the VX 805 terminal, follow the procedure described in [Table 7](#).



On successful completion, some operations automatically exit terminal manager and restart the terminal. Other operations require that you exit terminal manager and restart the terminal. To manually exit terminal manager, select **1> RESTART** in **VERIX TERMINAL MGR**.

Table 7 Enter Verix Terminal Manager

Display	Action
VERIFONE VX805 QT85001Z - EVAL OS xx/xx/xxxx Verix *DEFAULT CERTIFICATE* COPYRIGHT 1997-2011 VERIFONE ALL RIGHTS RESERVED	At startup, the terminal displays a copyright notice screen that shows the terminal model number, the OS version of the VX 805 stored in the terminal's flash memory, the date the firmware was loaded into the terminal, and the copyright notice. This screen appears for three seconds, during which time you can enter Verix Terminal Manager by simultaneously pressing F2 and F4. You can extend the display period of this screen by pressing any key during the initial three seconds. Each keypress extends the display period an additional three seconds.
VERIFONE VX805 QT85001Z - EVAL OS xx/xx/xxxx Verix COPYRIGHT 1997-2011 VERIFONE ALL RIGHTS RESERVED	If some other certificate is loaded by a reseller (e.g., bank), the fourth line is left blank.
VERIFONE VX805 QT85001Z - EVAL OS xx/xx/xxxx Verix ** T A M P E R ** COPYRIGHT 1997-2011 VERIFONE ALL RIGHTS RESERVED	If an attempt to break into the terminal's system has been made, the message ** T A M P E R ** is displayed in place of the certificate. The terminal will remain in this state until the condition has been remedied.
<application prompt>	If an application already resides on the terminal, an application-specific prompt is displayed. Otherwise, an error message is displayed. For more information on startup errors, see STARTUP ERRORS.

Table 7 Enter Verix Terminal Manager

Display	Action
TERMINAL MGR ENTRY Please Enter Password _____	If an application prompt appears and you choose to enter terminal manager, you are prompted to type the system password. Use the default password "1, Alpha, Alpha, 66831". Use  to delete the entry and correct any mistakes. If you enter an incorrect password, the terminal exits the TERMINAL MGR ENTRY screen. Verify your password and reenter it. To quit this operation and return to the application prompt or DOWNLOAD NEEDED screen, press .
VERIX TERMINAL MGR 1> Restart 2> Edit Parameters 3> Download 4> Memory Usage 5> Directory Listing 6> Clear Memory 	The first of three VERIX TERMINAL MGR menus is displayed. To toggle through to the other two menus, press the PF1 and PF2 keys. To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press the enter key. Use the PF4 key to scroll up the menu options.

Menu 1 In this menu you can restart the terminal, edit parameters, download terminal software updates, check memory usage and availability, as well as view the contents of RAM and Flash directories.



NOTE

Before performing a download to flash memory in an initialized terminal (one that contains an application), reclaim all available flash space. Unused RAM/flash and duplicate RAM/flash information are automatically reclaimed after a doing FULL download. To reclaim this space, perform a merge operation from terminal manager. This operation makes all files in flash memory contiguous. You must also clear some or all flash memory if your terminal does not have enough space for the impending download.



CAUTION

Some application program downloads automatically reset the system password.

Edit Keyed Files A *keyed* file is a collection of individual records that contain data and are identified by unique search keys. You can edit the data directly from the terminal keypad using the terminal's built-in keyed file editor. Each record has two parts: *parameter* and *value*. A parameter identifies the record while value is the information assigned to a specific parameter.



NOTE A parameter has a maximum length of 32 characters and its value has a maximum length of 128 characters. In some documents, 'parameter' is also sometimes referred to as 'key'

For example, *ZT is the terminal ID used by VeriCentre to identify which downloads should be sent to the terminal. The value for the key is the actual application ID number. By entering *ZT using the editor, the terminal can quickly locate the application serial ID number. You can also use the PF keys to scroll through the list of parameters instead of entering the characters *ZT through the keypad. Press  to toggle between a parameter and its value.



NOTE For a complete list of the ASCII characters supported by the VX 805 series, as well as their decimal and hexadecimal equivalents, please refer to [Appendix C](#).

CONFIG.SYS: Protected and Non-protected Records

The concept of protected and non-protected records applies only to the CONFIG.SYS files in your terminal. Protected records are those with search keys beginning with an asterisk (*) or a pound/hash symbol (#).

Prior to a download, the recommended procedure is to clear RAM files. Protected records in the file Group 1 CONFIG.SYS file are retained in a full application download and when RAM is cleared. Non-protected records, all other CONFIG.SYS parameters/files not beginning with the symbols '*' and '#', and records of other files are deleted when RAM is cleared.

Editing CONFIG.SYS with an External Editor

You can create and edit the CONFIG.SYS files of VX 805 applications through an IBM PC-compatible computer when you download files to the terminal. For more information on editing an application's CONFIG.SYS file, refer to the *VeriCentre Reference Manual* and the *Verix V Operating System Programmers Manual* (VPN 23230), or contact your local VeriFone representative.

For more information about using VeriCentre Download Management Module in client/server installations, please contact your local VeriFone representative.

Table 8 Verix Terminal Manager Menu 1

Display	Action
VERIX TERMINAL MGR 1> Restart 2> Edit Parameters 3> Download 4> Memory Usage 5> Directory Listing 6> Clear Memory 	To restart the terminal, select 1> RESTART. To edit the <code>CONFIG.SYS</code> or another keyed file, select 2> EDIT PARAMETERS. (For more information, refer to the Edit Keyed Files section that follows this main menu description.) To download an application to your terminal, select 3> DOWNLOAD. To check the memory used and available memory allocation, select 4> MEMORY USAGE. To view the contents of the RAM and Flash directory, select 5> DIRECTORY LISTING. To clear the internal memory, select 6> CLEAR MEMORY. To toggle to Verix Terminal Manager menu 2, press PF1.
2> EDIT PARAMETERS	
VTM SELECT GROUP Group ID: nn APP: <*APNAME or application or EMPTY> 	To search for keyed records in a particular file group, type the appropriate group number and press . You can also press PF1 or PF2 to scroll through the group ID numbers to find the application you are looking for. If you cannot locate a particular keyed record, it may be stored in another file group. Press  to delete the number and type a new entry.
VERIX TERMINAL MGR Please enter Password for GID nn _____	Note: If you have not previously entered a group's password in this session, the terminal prompts for the group's password prior to editing variables. To continue, enter the required password. If you enter an incorrect password, PLEASE TRY AGAIN appears. Press . Verify your password and reenter it.
TERMINAL MGR EDIT Gnn FILE CONFIG.SYS_ _____	To edit the <code>CONFIG.SYS</code> file, press . You can also create a new keyed file or edit an existing one. First, press  to clear any previous filename from the display screen. Then, type a filename and press . Skip to 2> EDIT PARAMETERS 1> ADD VARIABLE / 1> NEW or 2> EDIT PARAMETERS 3> EDIT for the next procedures.

Table 8 Verix Terminal Manager Menu 1

Display	Action
GID nn: *APNAME FILE CONFIG.SYS <curr value> 1> Add Variable	To create a new variable, select 1> ADD VARIABLE .
GID nn: *APNAME Parameter: nn Value: nn 1> New 3> Edit 2> Find 4>Clear	If the GID contains a keyed file, you have the option to create a new file (1> NEW), find files (2> FIND), edit (3> EDIT) or clear files (4> CLEAR). Note: Use 2> FIND to search for a keyed file. You can then edit or delete the file. If the specified parameter name does not exist, it can be added as a new file. After completing your edit operations, press  to return to the first VERIX TERMINAL MGR menu.
2> EDIT PARAMETERS 1> ADD VARIABLE / 1> NEW	
GID nn: *APNAME Parameter: _____ _____	After selecting 1> ADD VARIABLE or 1> NEW , enter a parameter name and press  .
GID nn: *APNAME Parameter: <parm name> Value: _____ _____	Enter a value for the new parameter and press  . Press  to cancel creating a new variable.

Table 8 Verix Terminal Manager Menu 1

Display	Action
2> EDIT PARAMETERS 2> FIND	
GID nn: *APNAME Parameter:	After selecting FIND, enter the parameter name to locate and press . The current value of the parameter is displayed on the next screen. Press  to select the parameter and go back to the parameter editor. If the entered parameter name cannot be found, <parm name> NOT FOUND appears. Select 1> CANCEL to go back to the parameter editor or 2> ADD VARIABLE to add the entered parameter name as a new variable. Press  to cancel locating a variable.
GID nn: *APNAME Parameter: <parm name> Value: <curr value> 1> New 2> Find 3> Edit 4>Clear  	
2> EDIT PARAMETERS 3> EDIT	
GID nn: *APNAME Parameter: <parm name> Value: <curr value>	After selecting 3> EDIT, enter the new value for the variable. To correct a mistake, press  and type the new entry. After completing your edits, press . Press  to cancel editing a variable.
2> EDIT PARAMETERS 4> CLEAR	
GID nn: *APNAME DELETE PARAMETER: <parm name> <curr value> 1> Yes 2> No  	After selecting 4> CLEAR, select 1> YES to continue or 2 >NO to cancel the deletion.

Table 8 Verix Terminal Manager Menu 1

Display	Action
3> DOWNLOAD	
VERIX TERMINAL MGR Group ID: nn	Type the number of the file group (1 for the primary application; between 1–15 for other applications) into which to perform the download. (Refer to Chapter 5 for detailed download instructions and information.) After you type a file group number, press .
VTM DOWNLOAD MGR Gnn 1> Single-app 2> Multi-app	Select to download single or multiple applications.
VTM DOWNLOAD MGR Gnn 1> Full dnld 2> Partial dnld	Select full or partial download. A full download will delete all data on the group's RAM and flash memory. The flash memory is then merged before downloading new data. A partial download only adds new files to the group's memory. If a downloaded file is identical to an existing file in the memory, the existing file is replaced. For detailed download instructions and information, see Chapter 5.
VERIX TERMINAL MGR DOWNLOAD Gnn **** WARNING **** ALL FILES WILL BE CLEARED FROM GROUP nn	If you selected FULL on a single application download, a screen will appear warning you that all existing files in the selected group will be deleted. Press F3 to cancel or F4 to continue downloading an application.
VERIX TERMINAL MGR DOWNLOAD Gnn CLEAR Application FROM GROUP nn?	If you selected FULL on a multiple application download, you will be prompted to clear the existing application on the currently selected group. Select YES to continue or NO to cancel downloading applications.

Table 8 Verix Terminal Manager Menu 1

Display	Action
VERIX TERMINAL MGR DOWNLOAD Gnn **** WARNING **** CONFIRM DELETION FOR Application	If you selected YES from the previous screen, a confirmation screen appears. Select YES to confirm or NO to cancel the deletion.
VERIX TERMINAL MGR DOWNLOAD Gnn GIDS TO REASE: 1,2,4	If a FULL multiple download has been previously done, this screen appears instead of the previous two screens. This screen lists all the erased GIDs on the previous download. Select CONTINUE to erase all RAM and flash memory. The flash memory is then merged.
VTM DOWNLOAD MGR Gnn 1> Modem 2> COM1 3> COM7 4> SD Card 5> USB Flash Memory 6> TCPIP   	Select a download mode. Press the PF1 key to view more system download modes. An application that supports the TCP stack <i>must</i> be loaded to use the 6> TCPIP option. If no application can be found, an error message appears. Note: *ZTCP is the name of the application that implements the TCP/IP functionality (e.g., *ZTCP=TCPAPP.OUT in the CONFIG.SYS file). Verix Terminal Manager runs the TCPAPP.OUT when you select 6> TCPIP.
VTM DOWNLOAD MGR Gnn 1> USB Dev 2> COM6   	To return to the main menu without saving your selection, press .
VTM DOWNLOAD MGR Gnn *ZP Host Phone num _____ _____	If you selected 1> MODEM and *ZP (host phone number) is not defined, you must enter valid phone number (up to 32 characters long) and press .

Table 8 Verix Terminal Manager Menu 1

Display	Action
VTM DOWNLOAD MGR Gnn Unit Receive Mode WAITING FOR DOWNLOAD	Choose 2> COM1 to download via the COM 1 port. To return to the main menu without saving your selection, press .
VTM DOWNLOAD MGR Gnn Unit Receive Mode WAITING FOR DOWNLOAD	Choose 3> COM2 to download via the COM 2 port. To return to the main menu without saving your selection, press .
Unavailable	Select 4> SD CARD to download from a stored digital (SD) card. To return to the main menu without saving your selection, press .
Unavailable	Press 5> MEMORY STICK to download from a memory stick. To return to the main menu without saving your selection, press .
No *ZTCP Variable and no VxEOS	Selected 6> TCPIP to download from your TCPIP connection. An application that supports the TCP stack <i>must</i> be loaded to use the 6> TCPIP option. If no application can be found, the error message appears. Note: *ZTCP is the name of the application that implements the TCP/IP functionality (e.g., *ZTCP=TCPAPP.OUT in the CONFIG.SYS file). Verix Terminal Manager runs the TCPAPP.OUT when you select 6> TCPIP.

Table 8 Verix Terminal Manager Menu 1

Display	Action
VTM DOWNLOAD MGR Gnn Unit Receive Mode WAITING FOR DOWNLOAD	Choose 1> USB DEV in Menu 2 of the Download screen to download using the USB connection. To return to the main menu without saving your selection, press .
Unavailable	Choose 2> COM6 to download via the COM 6 port. To return to the main menu without saving your selection, press .
VTM DOWNLOAD MGR Gnn *ZP HOST ADDR (IP:PORT) _____ _____	If you selected 6> TCPIP and *ZP (TCP address) is not defined, you must enter a valid TCP address (up to 40 characters long including the colon and port number) and press . Note: Alternatively, you can enter the address and port on separate screens. Press the PF2 key, enter the address and press . Then, press the PF3 key, enter the port number and press . terminal manager then inserts the colon between the address and port number.
VTM DOWNLOAD MGR Gnn *ZP HOST ADDR _____ _____	Press  once the TCP address is set.
VTM DOWNLOAD MGR Gnn *ZP HOST ADDR PORT _____	

Table 8 Verix Terminal Manager Menu 1

Display	Action
VTM DOWNLOAD MGR Gnn *ZT TERMINAL ID _____	If *ZT (terminal ID used by VeriCentre) is not defined, you must enter a valid terminal ID (up to 15 characters long) and press .
VTM DOWNLOAD MGR Gnn *ZA APPLICATION ID _____	If *ZA (application ID) is not defined, you must enter a valid application ID (up to 10 characters long) and press .
VTM DOWNLOAD MGR Gnn *ZA= nnnn *ZP= nnnn *ZR= nnnn *ZT= nnnn 1> Edit 2> Start	You can view the specified values on the confirmation screen. Select 1> EDIT to go back and modify the specifications or 2> START to begin the download.
VTM DOWNLOAD MGR Gnn GID: nn APP ID: nnnn STATUS: DOWNLOADING *** _____	If you selected 1> MODEM or 6> TCPIP, this screen appears. If the download is successful, the message DOWNLOAD DONE is displayed. If an error occurs during connection or download, an error message is displayed. For more information on downloading errors, see DOWNLOADING ERRORS.
VTM DOWNLOAD MGR Gnn UNIT RECEIVE MODE *** _____	If you selected 2> COM1 or 3> COM2, a line of asterisks appears that shows the percentage of completion. Each asterisk equals approximately 10% of the download. You can cancel a download in progress by pressing . Doing so restarts the terminal.

Table 8 Verix Terminal Manager Menu 1

Display	Action
VTM DOWNLOAD MGR GROUP n PASSWORD _____	Note: If you have not previously entered a group's password in this session, the terminal prompts for the group's password prior to downloading applications. To continue, enter the required password. If you enter an incorrect password, PLEASE TRY AGAIN appears. Press  . Verify your password and reenter it.
4> MEMORY USAGE	
MEMORY USAGE Drive I: Files nnnn INUSE nnnn Drive F: Files nnnn INUSE nnnn RAM Avail nnnn 	This screen displays how much RAM is used and how much is available. • INUSE - Closest estimate of used memory (in KB). • AVAIL - Lowest number of free memory (in KB). Select the PF1 key to view Flash memory usage.
MEMORY USAGE Flash Avail nnnn 	This screen displays how much flash memory is used and how much is available. Select the PF2 key to return to the RAM usage screen.
5> DIRECTORY LISTING	
SELECT DRIVE I: F: N:	You can view the files listed on each directory. Use the numbers 2 and 8 to toggle up and down the selection. After you select a directory, press  .
N:/1/ CONFIG.SYS	This screen displays the files in the directory. Use the numbers 2 and 8 to toggle up and down the selection. After you select a file, press  .

Table 8 Verix Terminal Manager Menu 1

Display	Action
6> CLEAR MEMORY	
VERIX TERMINAL MGR Group ID: nn	To clear a file group's memory, enter the group ID and press .
VTM MGR MEMORY CLEAR 1> Clear CONFIG.SYS 2> Clear Split Files 3> Clear GID Files 4> Clear all Groups  	To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press . Use the PF4 key to scroll up the menu options. Select which files to delete: Select 1> CLEAR CONFIG.SYS to delete only the CONFIG.SYS file. On the next screen, press 1 to completely delete the CONFIG.SYS file or 2 to retain protected records that begin with * or #. Select 2> CLEAR SPLIT FILES to delete all split files. Select 3> CLEAR GID FILES to delete all files in the currently selected file group from the RAM and Flash memory. Select 4> CLEAR ALL GROUPS to delete all files in all file groups. On the next screen, press 1 to cancel or 2 to confirm the deletion. Note: This option is only available when file Group 1 is entered as the group ID. To go back to the second menu of the VERIX TERMINAL MGR without deleting files, press .

Menu 2 In this menu, you can adjust the clock, clear memory, calibrate the screen, view terminal information and logs, and run diagnostic functions.

Table 9 Verix Terminal Manager Menu 2

Display	Action
VERIX TERMINAL MGR 1> Calibrate Screen 2> Terminal Info 3> Diags 4>System Error Log 5> Clock 6> Console Settings ↓ ↑ ↓ ↑	To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press . Use the PF4 key to scroll up the menu options. To calibrate the screen, select 1> CALIBRATE SCREEN.. To view the terminal's system information, select 2> TERMINAL INFO. To run diagnostic applications, select 3> DIAGS. To view error view logs, select 4> SYSTEM ERROR LOG. Select 5> CLOCK to adjust date and time settings. Select 6> CONSOLE SETTINGS to modify the terminal sound and display settings. To return to the previous terminal manager menu, press the PF2 key; to return immediately to the first menu of VERIX TERMINAL MGR or to quit any operation within this menu, press ; to toggle to the third menu VERIX TERMINAL MGR, press the PF1 key.
1> CALIBRATE SCREEN Unavailable	To go back to the second menu of VERIX TERMINAL MGR, press .

Table 9 Verix Terminal Manager Menu 2

Display	Action
2> TERMINAL INFO	
VTM MGR TERMINAL INFO Serl No nnn- nnn-nnn PTID 20610351 PN XXXXXXXXXXXX Rev nnn OS Ver QT00E20B Model VX805 	The following screens show configuration information specific to your terminal. For a detailed description of each screen, see TERMINAL INFORMATION. Use the PF1 and PF2 keys to scroll through the terminal information screens. To return to the main menu, press .
VTM MGR TERMINAL INFO Ctry XXX Keypad nn Display 128064 Mag RDR nn Printer nn PinPad nn  	
VTM MGR TERMINAL INFO Modem Type nn Ver: NO PROFILE Model: NO PROFILE Ctry: NO PROFILE Life 182700 Rset 110418152548  	
VTM MGR TERMINAL INFO Rcnt 213 Tamper Detected N HeaP 1232 Stack 2240 CERT nnnnnnnn 1> Next Cert	

Table 9 Verix Terminal Manager Menu 2

Display	Action
3> DIAGS	
VERIX DIAGS MGR 1> Printer Diag 2> IPP Diag 3> ICC Diags 4> Keyboard Diag 5> Mag Card Diag 6> Debugger   	To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press . Use the PF4 key to scroll up the menu options. To run printer diagnostics and test the printer, select 1> PRINTER DIAG. To test the internal PIN pad, select 2> IPP DIAG. To test the Smart Card and list synch drivers, choose 3> ICC DIAGS. To test the keyboard, select 4> KEYBOARD DIAG. To check the magnetic card swipe, choose 5> MAG CARD DIAG. To debug the terminal, select 6> DEBUGGER. To return to the second menu of the VERIX TERMINAL MGR or quit any operation within this menu, press .
3> DIAGS 1 > PRINTER DIAG	
Printer ID P Version 0PRED1A2 Status 60 1> Test 2> Paper Feed  	When you select 1> PRINTER DIAG, the printer ID, firmware version, and the printer status appear. Press 1 to run the printer test. A print sample begins that uses approximately 30.5cm (12 in) of paper. This allows you to test the print quality and adjust your code for print optimization. See the <i>Verix V Operating System Programmers Manual</i> (VPN 23230) for specifics on application development and the internal thermal printer. Press 2 to run approximately 5cm (2 in) of paper through the printer without printing. To go back to the VERIX DIAGS MGR screen, press .
3> DIAGS 2 > IPP DIAG	
INTERNAL PIN PAD MEMORY TEST PASSED IPP8 EMUL02A 05/08 01 SN: nnnnnnnnnnnnnnnnnnn BAUD: 1200 RESET F3 MODE: VISA EXIT F4	When you select 2, the INTERNAL PIN PAD screen appears and the diagnostic test begins. The firmware version and download date, IPP serial number, baud rate, and mode are displayed. To reset the IPP, press F3; to exit the test and return to the VERIX DIAGS MGR screen, press F4 or .

Table 9 Verix Terminal Manager Menu 2

Display	Action
3> DIAGS 3 > ICC DIAGS	
VoyLib 03.07 0000 VxOS11 PSCR Build 05 SCRLIB 2.E 5/10 1> SMART CARD DIAG 2> LIST SYNC DRIVERS 3> EXIT	When you select 3, the software library version appears. Choose 1> SMART CARD DIAG to run diagnostics on the Smart Card reader. Select 2> LIST SYNC DRIVERS to view the drivers. Select 3> EXIT to return to the VERIX DIAGS MGR screen, or press or .
3> DIAGS 4 > KEYBOARD DIAG	
TERMINAL MGR KBD TEST KEYCODE nn	This screen displays the hexadecimal ASCII keycode for each key you press. The value displayed corresponds to the actual key pressed. Other values assigned to keys are software dependent. To test the keyboard, press some keys and check that they match their keycodes (for example, the 1 key displays keycode 31). For more hexadecimal ASCII keycodes, refer to the ASCII table in Appendix C. For information about the keypress scan codes, see Keypress Scan Codes. To stop the test and return to the VERIX DIAGS MGR screen, press either  or .
3> DIAGS 5 > MAG CARD DIAG	
VERIX TERMINAL MGR TRK 1:VALID DATA TRK 2:VALID DATA TRK 3:VALID DATA	To test the magnetic-stripe card reader, swipe a magnetic-stripe card through it. A successful test displays VALID DATA for each track that reads valid data. An error generates one of the following error messages for each track with an error: • NO DATA • NO START • NO END • LRC ERR • PARITY ERR • REVERSE END For more information about magnetic card error messages, refer to the <i>Verix V Operating System Programmers Manual</i> (VPN 23230). To stop the test and return to the VERIX DIAGS MGR screen, press .

Table 9 Verix Terminal Manager Menu 2

Display	Action
3> DIAGS 6 > DEBUGGER	
VERIX TERMINAL MGR Group ID: nn	Select 6> DEBUGGER to run the debugging application for the terminal.
VERIX TERMINAL MGR Please enter Password for GID nn -----	Enter the current password for the selected file group and press  . If you enter an incorrect password, PLEASE TRY AGAIN appears. Press  . Verify your password and reenter it.
To return to the VERIX DIAGS MGR screen press  .	
3> DIAGS > PF1 KEY (second DIAGS menu)	
VERIX DIAGS MGR 1> Tamper Log 2> RKL log 3> RKL log export 4> USB Info 5> Display Testscreen 6> Verix Hash    	To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press  . Use the PF4 key to scroll up the menu options. To view all tampering attempts, select 1> TAMPER LOG . To view the RKL logs, select 2> RKL LOG . To export the RKL logs, choose 3> RKL LOG EXPORT . To view the USB device settings and availability, choose 4> USB INFO . To calibrate the screen, select 5> DISPLAY TESTSCREEN . To view Verix hash information, select 6> VERIX HASH . To return to the second menu of the VERIX TERMINAL MGR or quit any operation within this menu, press  .
3> DIAGS > PF1 KEY > TAMPER LOG	
TAMPER LOG 05/29/09 06:29 00001 05/29/09 06:16 00009 11/01/08 08:21 00001 10/30/08 19:36 00001	The Tamper Log screen displays a list of possible tamper events. The list is sorted from the most current tamper event to the oldest event. The date is displayed in MM/DD/YY format, while the time is displayed as a 24-hour clock. To go back to the VERIX DIAGS MGR screen, press  .

Table 9 Verix Terminal Manager Menu 2

Display	Action
TAMPER LOG <EMPTY>	If the Tamper Log is empty, <EMPTY> is displayed on the screen. To go back to the VERIX DIAGS MGR screen, press  .
3> DIAGS > PF1 KEY > RKL LOG	
RKL LOG INFO pg nn <EMPTY>	To go back to the VERIX DIAGS MGR screen, press  .
3> DIAGS > PF1 KEY > RKL LOG EXPORT	
Outputting log . . . Log output done	To go back to the VERIX DIAGS MGR screen, press  .
3> DIAGS > PF1 KEY > USB INFO	
USB DEVICE INFO USB Device 1 Info Serial No ***** Vendor ID 0X0000 NOT AVAILABLE Release NO 00.00 ↓	To go back to the VERIX DIAGS MGR screen, press  .
USB DEVICE INFO Product ID 0X0000 ***** HUB 0 Port 1 Class 9 Sub Class 0  	To go back to the VERIX DIAGS MGR screen, press  .

Table 9 Verix Terminal Manager Menu 2

Display	Action
USB DEVICE INFO Power 0 mA Speed FULL 	To go back to the VERIX DIAGS MGR screen, press .
3> DIAGS > PF1 KEY > DISPLAY TESTSCREEN	
	To go back to the VERIX DIAGS MGR screen, press .
3> DIAGS > PF1 KEY > Verix Hash	
DISPLAY HASH *HASHKEY=VERIFONE HASH=nnnnnnnnnnnnnnnnnnnnn nnnnnnnnnnnnnnnnnnnnn nnnnnnnnnnnnnnnnnnnnn 1>Continue	To go back to the VERIX DIAGS MGR screen, press . .
4 > SYSTEM ERROR LOG	
VERIX ERROR LOG TYPE 1 TASK 2 GID 2 TIME 070806150146 CPSR 20000030 PC 7042A126 LR 70420C5D ADDR 00000008	The error log screen displays internal diagnostic information about the most recent unrecoverable software error. If you report a terminal problem, you may be asked to provide this information. This first screen displays the following: • TYPE - Error type • TASK - Task number • TIME - Time of crash • CPSR - Current Program Status Register • PC - Program Counter • LR - Link Register • ADDR - Fault address For detailed error log descriptions, see ERROR LOG. After making any notations, press the key under the down arrow (PF1) to view additional error log information, if shown. To go back to the VERIX DIAGS MGR screen, press .

Table 9 Verix Terminal Manager Menu 2

Display	Action
5> CLOCK	
Note: The terminal clock is battery-backed to retain date and time settings when the terminal is shut off.	
VTM CLOCK MANAGER 1> INCREMENT HOUR 2> EDIT TIME 3> EDIT DATE 4> DECREMENT HOUR  	To adjust the current time one hour forward, select 1> INCREMENT HOUR. To see the time, select 2> EDIT TIME. To set the date, select 3> EDIT DATE. To adjust the current time one hour back, select 4> DECREMENT HOUR.
5> CLOCK 1> INCREMENT HOUR	
TIME AND DATE HH:MM:SS MM:DD:YY	Select 1> INCREMENT HOUR to add an hour to the current time setting.
5> CLOCK 2> EDIT TIME	
VTM TIME Current Time: HH:MM:SS New Time: _/_/_	Enter the new time in <i>HOURS:MINUTES:SECONDS</i> (HH:MM:SS) format. To correct a mistake, press  to delete and enter the correct number; press  to set the new time. The current time and date is then displayed on the next screen. Press  to return to the third menu of the VERIX TERMINAL MGR.
5> CLOCK 3> EDIT DATE	
VTM DATE Current Date: MM:DD:YY New Date: _/_/_	Enter the new date in <i>MONTH/DAY/YEAR</i> (MM/DD/YY) format. To correct a mistake, press  to delete and enter the correct number; press  to set the new date. The current time and date is then displayed on the next screen. Press  to return to the third menu of the VERIX TERMINAL MGR.

Table 9 Verix Terminal Manager Menu 2

Display	Action
5> CLOCK 4> DECREMENT HOUR	
TIME AND DATE HH:MM:SS MM:DD:YY	Select 4> DECREMENT HOUR to reduce an hour from the current time setting.
6> CONSOLE SETTINGS	
VTM CONSOLE MGR 1> Console Beeper OFF 2> Console Beeper ON 3> Backlight DOWN 4> Backlight UP 5> Keypad BL OFF 6> Keypad BL ON   	Turn the terminal beeper sounds on or off by pressing the 1 or 2 key. Switch the backlight on or off by pressing the 3 or 4 key. Select 5 or 6 to turn on or turn off the keypad backlight. To return to the main menu and save your changes, press . Otherwise, press  to go back to the third menu of the VERIX TERMINAL MGR without saving the changes.
6> CONSOLE SETTINGS> PF1 KEY	
VTM CONSOLE MGR 1> Contrast DOWN 2> Contrast UP	Select 2> CONTRAST UP or 1> CONTRAST DOWN to increase or decrease display contrast respectively. To go back to the VERIX DIAGS MGR screen, press .

Menu 3 In this menu, you can change passwords, and check the IPP key loading mode.

NOTE



When entering any password, an asterisk (*) appears on the display screen for each character you type. These asterisks prevent your password from being seen by an unauthorized person. Pressing the ALPHA key changes the characters or symbols you enter, but does not cause additional asterisks to appear. Secure a copy of every password to ensure it is not forgotten or lost.

Table 10 Verix Terminal Manager Menu 3

Display	Action
VERIX TERMINAL MGR 1> Change Passwords 2> Key Management   	To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press . Use the PF4 key to scroll up the menu options. Select 1> CHANGE PASSWORDS to change terminal manager and file group passwords. The file groups and terminal manager all use a default password preset at the factory: "1, Alpha, Alpha, 66831". Select 2> KEY MANAGEMENT to test the internal PIN pad key loading mode. To return to the previous terminal manager menu, press the PF2 key; to return immediately to the first VERIX TERMINAL MGR menu or to quit any operation within this menu, press .
1> CHANGE PASSWORDS	
VTM PASSWORD MGR 1> File Group 2> VERIX TERMINAL MGR Entry  	To change the password of a file group, type the number of the file group and select 1> FILE GROUP. Then, go to the VERIX TERMINAL MGR FILE GROUP nn PASSWORD screen below. See Passwords for more information. To change the system password, select 2> VERIX TERMINAL MGR ENTRY. Then, skip to VTM PASSWORD NEW screen below. Note: Some application downloads automatically reset the terminal manager password.
VERIX TERMINAL MGR GROUP nn	Enter the current password for the selected file group and press . If you enter an incorrect password, PLEASE TRY AGAIN appears. Press . Verify your password and reenter it.

Table 10 Verix Terminal Manager Menu 3

Display	Action
VTM PASSWORD MGR NEW _____	Type the new password and press . Note: The new password MUST be five to ten characters long. If you enter a new password that is less than or exceeds the required number of characters, the terminal will sound an alarm and display an error screen. The only way to get out of the CHANGE PASSWORD screen is to enter a password that is five to ten characters long, or to press . If  is pressed, the password will not be changed. To correct a mistake, press  to delete the number, and then reenter the new password.
VTM PASSWORD MGR AGAINN _____	The terminal requests that you verify the new password. Reenter the new password and press .
VTM PASSWORD MGR PASSWORD CHANGED	The new password is now in effect. To exit this screen, press  to return to the third menu of the VERIX TERMINAL MGR.
2> KEY MANAGEMENT	
Key Management 1> IPP Key Load 2> RKL Key Load 3> RKL Key Status  	

Table 10 Verix Terminal Manager Menu 3

Display	Action
2> KEY MANAGEMENT 1> IPP KEY LOAD	
VERIX TERMINAL MGR Please enter Password for GID nn _____	Enter the current password for the selected file group and press  . If you enter an incorrect password, PLEASE TRY AGAIN appears. Press  . Verify your password and reenter it.
INTERNAL PIN PAD KEY LOADING MODE BYTES SENT 0 BYTES RCVD 0 END F4	Select this mode when you use the SecureKit or programming from your PC to inject keys into your terminal. In this mode, a pass-through connection is established between COM1 and COM5 (IPP port) to allow key loading. Press  to stop the key load session; press F4 when finished with the key load.
2> KEY MANAGEMENT 2> RKL KEY LOAD	
VERIX TERMINAL MGR Please enter Password for GID nn _____	Enter the current password for the selected file group and press  . If you enter an incorrect password, PLEASE TRY AGAIN appears. Press  . Verify your password and reenter it.
RKL RSA KEY LOADING BYTES SENT 0 BYTES RCVD 0 PRESS CANCEL TO END	Press  to stop the key load session; press CANCEL when finished with the key load.
2> KEY MANAGEMENT 3> RKL KEY STATUS	
RKL Key Status Public key name <EMPTY>	Press  to view the Private Key Hash. Press  to return to the KEY MANAGEMENT screen.

Table 10 Verix Terminal Manager Menu 3

Display	Action
RKL Key Status Private key hash	Press  to return to the KEY MANAGEMENTscreen.



Performing Downloads

This chapter contains information and procedures to allow you to perform the various types of data transfers required to:

- Develop applications for the VX 805 terminal.
- Prepare VX 805 terminals for deployment.
- Maintain VX 805 terminals installations in the field.
- Transfer data to and from terminals.

In this chapter, information pertaining to file authentication is only discussed in the context of procedures while performing file downloads. See [Chapter 5](#) for further file authentication discussion.

The VX 805 terminal contains ports that allow connection to a network, telephone line, or other terminals (for back-to-back downloads). See [Download Methods](#).

Downloads and Uploads

Data can be transferred from a sending system to a receiving system while performing downloads. The term *download* also refers to a terminal receiving data. The term *upload* describes the process of a terminal sending data.

Use any of the following two operations to program, deploy, transfer data files from, and support VX 805 terminals:

- **Host computer downloads:** Applications, operating systems or OS updates, and associated files transfer from a host PC to a VX 805 terminal
- **Back-to-back downloads:** Applications and associated files transfer from one VX 805 terminal to another VX 805 terminal

Download Methods

The following methods are available for file and data downloads through the VX 805 download and upload procedures:

- **Direct downloads:** File and/or data transfer directly from the sending system (a host computer) to the receiving system (a VX 805 terminal). A special cable (VPN 05651-xx) connects the RS-232 serial ports of the two systems.
- **Downloads by telephone:** File and data transfer over a telephone line from the sending system (a host computer) to the receiving system (a VX 805 terminal). The modem of the sending host computer and the internal modem of the receiving terminal are connected by a telephone line. Data transfers into the VX 805 terminal through the communication port.
- **TCP/IP downloads:** File and data transfer over the TCP/IP connection from the sending system (a host computer) to the receiving system (a VX 805

terminal). A special cable (VPN 05651-xx) connects the RS-232 serial ports of the two systems.

- **Back-to-back downloads:** File and data transfer from a sending terminal to a receiving VX 805 terminal. A special cable (VPN 05651-xx) connects the RS-232 serial ports of the two terminals.
- **USB downloads:** File and data transfer from a USB-connected drive. The terminal searches for the `VeriFone.zip` file on the drive and downloads data from it.

NOTE

The terminal will automatically download the file `VeriFone.zip` from a USB flash drive without the user having to go through [Entering VeriX Terminal Manager](#) under the following conditions:

- The USB flash drive is inserted before the terminal is powered up.
- The USB flash drive is inserted when the initial `DOWNLOAD NEEDED` message is displayed.

In both cases, the **USB DOWNLOAD COMPLETE** message appears on the terminal screen after the `VeriFone.zip` file has been downloaded.

Download Tools

Three software tools are available from VeriFone for performing downloads: **VeriCentre Download Management Module (DMM)**, **VeriCentre**, and **DDL.EXE (Direct Download Utility)**.

NOTE

Because of the large size of some download files, VeriFone recommends only using download tools provided by VeriFone. CRC and other error checking is not supported on the GSM system. VeriFone download tools provide these error checking mechanisms.

The following tools perform direct downloads and downloads by telephone from a host computer to a VX 805 terminal:

- **VeriCentre DMM:** Multi-user environment for software downloads. DMM supports Windows NT clients and has a sophisticated database to manage up to 100,000 terminals. The VX 805 operating system supports file decompression for archives created using DMM.
- **VeriCentre:** PC-based software tool to manage applications and data for VeriFone. In addition to being a database and communications management tool, VeriCentre automates application downloads and updates to terminal records.
- **DDL.EXE:** Downloads files and data from a development system or another host computer, directly to a VX 805 terminal over a serial cable connection.

DDL.EXE is a Windows program included in the VeriX V DTK (VeriX V Developer's Toolkit).

NOTE

No special software tool or utility is required to perform back-to-back application downloads. Only a serial cable connected between two terminals is required. This data transfer procedure, invoked from within terminal manager, is handled by the OS software and firmware of the sending and receiving VX 805 terminals.

Download Content

In general, you can download files *and* data to a VX 805 terminal. The types of files and data can be grouped into the following functional categories:

- **Operating system files:** A set of related programs and data files provided by VeriFone to control the terminal's basic processes and functions. Files that belong to the OS are stored in a reserved area of the terminal memory.

A complete OS is downloaded to each VX 805 terminal during the manufacture. If necessary, download newer versions during application development, or when preparing for deployment to on-site terminals.

- **Applications and related files:** An application is a computer program consisting of one or more executables, including compiled and linked object files (*.out), and one or more function libraries (*.lib). Most applications also include font files (*.vft, *.fon), data files (*.dat), and other related file types.

VX 805 applications can be developed by VeriFone, customers, or third parties on customer request. One or more applications must be downloaded to the VX 805 terminal before it can be deployed at a customer site and used to process transactions.

- **Files related to file authentication:** The logical component of the VeriShield security architecture in the VX 805 terminal is *file authentication*. For an executable to run on a VX 805 terminal, it must be authenticated by the VeriShield file authentication module.

NOTE

For details on file authentication, see [Chapter 5](#).

Two special types of files are required for the file authentication process: digital certificates (*.crt) and signature files (*.p7s). These file types must be downloaded to the terminal together with the application files to authenticate.

- **Terminal configuration settings:** Files or records that contain various types of data can also be downloaded to a VX 805 terminal, including CONFIG.SYS variables, passwords for accessing protected terminal manager functions, the current date and time, and the modem country code setting (refer to [Chapter 4](#)).

Full and Partial Downloads

When preparing to initiate a download procedure, choose either a *full* or *partial* download and the COM1 port, through the Verix Terminal Manager menu options (refer to [Chapter 4](#)). Depending on the type of files you are downloading and the download method you are using, there are some restrictions on whether a full or partial download is permitted.

The various types of full and partial download procedures are listed and described in [Table 11](#).

Table 11 **Types of Full and Partial Downloads**

Download Type	Description and Effects	Download Methods Supported
Full application download	An entire application, including all executables and data files, transfers from one system to another in a single operation. Files related to the file authentication process and terminal configuration settings can be included in a full application download. During this process, RAM is cleared. Following a full application download, the terminal restarts and the file authentication module is invoked. If application files are authenticated and <code>CONFIG.SYS *GO</code> variable is set, then the application executes.	• Direct downloads • Telephone downloads • Back-to-back downloads
Partial application download	A subset of application executables, font files, and/or data files transfer from one system to another to modify or update an existing application. Files related to file authentication and terminal configuration settings can be included in a partial application download. During this process, RAM is <i>not</i> cleared. Following a partial application download, the terminal does not restart and returns control to terminal manager or the issuing application. The file authentication module is not invoked, nor are any applications allowed to execute, until the terminal is manually restarted from within terminal manager.	• Direct downloads • Telephone downloads Note: Partial back-to-back downloads are <i>not</i> supported.

Table 11 **Types of Full and Partial Downloads**

Download Type	Description and Effects	Download Methods Supported
Full operating system download	An <i>entire</i> OS version transfers from a host PC to the VX 805 terminal. Files related to file authentication and terminal configuration settings can be included in a full OS download. During this process, RAM is cleared. Following a full OS download, the terminal restarts and the file authentication module is invoked. If the OS files are authenticated, the new OS updates (replaces) the existing OS. Application files stored in the memory area where the OS downloads (Group 1) are erased.	• Direct downloads • Telephone downloads Note: Full back-to-back OS downloads are <i>not</i> supported.
Partial operating system download	Either an <i>entire</i> or a <i>partial</i> OS version transfers from a host PC to the VX 805 terminal. Files related to file authentication and terminal configuration settings can be included in a partial OS download. Following a partial OS download, the terminal does not restart and returns control to terminal manager or the issuing application. The file authentication module is not invoked, and the new OS is not processed until you manually restart the terminal from within terminal manager. If the new OS is authenticated, it then updates (replaces) the existing OS. Application files stored in the memory area where the OS downloads into (Group 1) are retained.	• Direct downloads • Telephone downloads Note: Partial back-to-back operating system downloads are <i>not</i> supported.

Implementation of full and partial downloads generally follow the following rules:

- The most common download procedure is a full (complete) application download.
- Partial application downloads are useful when developing and testing new applications, but are seldom performed by those who deploy terminals on-site.
- Full OS downloads are usually performed by VeriFone at the factory and, on occasion, by those who deploy terminals on-site to upgrade older terminals to a newer OS version.
- Partial OS downloads are performed mainly by VeriFone for development purposes and are rarely performed in the field.

- Partial downloads are routinely performed by many applications. This procedure, which can be automated by an application running on a remote host computer, permits the host application to update data files and terminal configuration settings in a VX 805 terminal and then return control to the main application.
- Full downloads restart the terminal; partial downloads return control to terminal manager or the issuing application. OS and application downloads can be combined. The file authentication module is not invoked until the terminal is restarted following the download procedure.

Support for Multiple Applications

The VX 805 terminal architecture supports multiple applications. This means that more than one application can reside in terminal memory, and that more than one application can run (execute) on the terminal.

The application memory of the VX 805 terminal uses a system of file groups to store and manage multiple applications, as well as operating system files. This system of file groups are used in such a way that the data integrity of each application is ensured and applications do not interfere with each other (see [File Groups](#)).

How the File System Supports Multiple Applications

The application memory partition of the VX 805 terminal is divided into 15 logically-defined sub-partitions called file groups or *GIDs* (for example, Group 1, Group 2, and so on through GID15).

Another partition of the terminal memory area, called Group 0, is reserved for the operating system and is logically separated from the application memory area. So, including Group 0, there is a total of 16 file groups.

An application must be downloaded into a specific file group, along with any related files. Select the target file group for the download using terminal manager menu options and by entering a file group password.

Usually, one application is stored in one file group. An application can consist of more than one executable program file, and any number of executables (*.out or *.lib) can be stored in a given group. In most implementations, there is a main application, one or more related programs or secondary applications, and one or more libraries.

The main application, or the application to execute set in the `*GO CONFIG.SYS` variable, must always be stored in the Group 1 sub-partition. Related programs or secondary applications can be stored in GIDs 2–14. GID15 is available to all other groups.

Main Application is Always Stored in GID1

The main application stored in GID1 is the controlling application for the terminal. Any function call that invokes a related program or a secondary application stored in GIDs 2–14 must be initiated by the GID1 application.

An application stored in a file group other than GID1 is limited in that it can only access executables and files stored in its own file group and in GID15.

Physical and Logical Access to File Groups

The VX 805 operating system controls *physical* access to GIDs 1–15 using password-protected terminal manager functions.

To download data into a specific file group, first enter terminal manager and choose the target group by making the appropriate menu selections, then, enter the correct password for that file group.

Each file group has its own `CONFIG.SYS` file. The `CONFIG.SYS` settings of the selected target group are used as the system parameters for the download operation.

The system of file groups also imposes some *logical* restrictions on which files can download into specific file groups:

- If GID1 is selected as the target group in terminal manager, you can download files into GID1 and redirect files into any of the other file groups, as required, in the same download operation.
- If another file group is selected as the target file group, you can download files only into that group and redirect files only to GID15. For example, if you select GID5 as the target group for the download, files can only download into GID5 and be redirected to GID15.

Use of RAM and Flash Memory

The VX 805 application memory partition has two separate file systems:

- RAM (battery-backed volatile memory, also called SRAM), partition designator `I` :
- Flash (non-volatile memory), partition designator `F` :

Having two different file systems has the following important implications for data transfer procedures:

- Depending on the requirements of a specific application, some files must download into RAM and others into flash.
- There are also rules that restrict which types of files you can download and store in a file system (RAM or flash).

With application files, the application designer or programmer usually decides which file types to download into which file system. Other file types, such as operating system files, digital certificates, and signature files, *must* download into RAM.

In a typical download procedure, all files are loaded into the RAM file system of the target group selected in terminal manager. Specific files included in the download package must be redirected, as necessary, to the flash file system of the target group or to the RAM or flash file system of another file group.

Defragment Flash For Application Downloads

Before performing an application download, defragment terminal flash memory. For information on performing this terminal manager operation, see [Verix Terminal Manager Menu 2](#).

To ensure the best results when performing back-to-back downloads, defragment the flash memory of both the sending *and* receiving terminals. A terminal manager procedure is also available for clearing the RAM or flash memory, either entirely or for a specific file group, to prepare a VX 805 terminal for a *clean* download.

NOTE



The flash defragment operation is not necessary for a VX 805 terminal just out of the box. In this case, the terminal flash file system is still in factory-new condition.

Redirection of Files During Application Downloads

You can download application files into RAM or flash memory. By default, files downloaded to a specific file group are stored in the RAM of that group. To store a file in the flash memory of that file group, provide instructions to redirect the file to flash as part of the procedure (see [Manually Redirecting Files](#)).

There are two methods used to redirect files during an application download, depending on the download tool:

- If you are using DMM, you must manually create and include special zero-length files called `SETDRIVE.x` and `SETGROUP.n` on the download computer, and add these files to the batch download list to direct files to a specific file system (drive) or file group.
- If you are using `DDL.EXE` to perform direct downloads, you can use a special command-line option that automatically redirects files to the drive and file group you specify.

Both of these methods are described in the following sections.

Manually Redirecting Files

To manually redirect files for DMM application downloads, create one or more files on the download computer with the special filename, `SETDRIVE.x`, where, `x` is the name of the partition (memory area) to download files to.

- Partition designator `I`: is RAM: This is the terminal manager default for downloads.
- Partition designator `F`: is flash.

To create a zero-length `SETDRIVE` file on the download computer, use the DOS command, `REM`, as in the following example:

```
REM >SETDRIVE.F
```

To redirect a file from the RAM of the target group to the flash memory of the same file group, insert the zero-length `SETDRIVE.F` file into the batch of application files to download. All files that follow the `SETDRIVE.F` file in the download list automatically load into the flash memory (`F:`) of the target group.

If you do not insert a `SETDRIVE.F` special file in the download list, all files download by default into the RAM (Drive `I :`) of the target file group. You can also insert a zero-length file with the name `SETDRIVE.I` into the download list at any point to indicate that all following files will download into RAM.

For example, the following batch download list loads the executable code file `FOO.OUT` into the RAM of the selected file group (default Group 1). Because the signature file, `FOO.P7S` is included, `FOO.OUT` is also authenticated when the terminal restarts after the download.

The `*GO` variable in this example indicates that the `FOO.OUT` application executes on restart, after successful authentication. The two data files that follow the zero-length `SETDRIVE.F` file, `FOO.DAT` and `FOO.VFT`, are redirected into GID1 flash. Because it follows the inserted zero-length `SETDRIVE.I` file, `GOO.DAT` downloads into Group 1 RAM.

```
FOO.OUT
FOO.P7S
*GO=FOO.OUT
SETDRIVE.F
FOO.DAT
FOO.VFT
SETDRIVE.I
GOO.DAT
```

You can also insert zero-length `SETGROUP.n` files into a batch download list to redirect files from the target file group to other file groups (see [Redirecting Files to Other File Groups](#)). Together, the zero-length `SETDRIVE.x` and `SETGROUP.n` files allow you flexibility to store files as required in the RAM or flash file systems, and in specific file groups in a single batch download operation.



NOTE

You can only use zero-length `SETDRIVE.x` files for *batch application downloads*, either direct or by telephone, and only using the DMM download tool (and not `DDL.EXE`).

You cannot use this special file convention for operating system downloads or for back-to-back application downloads.

Redirecting Files to Other File Groups

GID1 is the default terminal manager setting for performing downloads. Using the terminal manager menu options, you can select another file group (GID 2–15) as the target group for the application download. If you select another group, files download directly into the RAM of that file group.

To redirect files from the selected target file group to another file group as part of the download operation, insert a zero-length `SETGROUP.n` file in the batch download list (the same as `SETDRIVE.x`). The syntax of this convention is `SETGROUP.n`, where $n = 1-15$ for GIDs 1–15.

To create a zero-length `SETGROUP` file on the download computer, use the DOS command `REM` as in the following example:

```
REM >SETGROUP.2
```

If you do not insert `SETGROUP.n` special files into the download list, all files download into the target group selected in terminal manager. If no number is added to the `SETGROUP` filename, `SETGROUP.1` (GID1) is assumed.

Restrictions on File Redirection

The VX 805 file system restricts how you can redirect files to other file groups. Here are the important points to remember:

- The main application must always be downloaded into GID1.
- Because of the way file groups are managed in the VX 805 file system, only two schemes are available for redirecting files during a batch application download:
 - If using terminal manager menu options, select Group 1 (default) as the target group for the download; files can be redirected to any other file group, including GID15.
 - If using terminal manager menu options, select a file group other than Group 1 (GIDs 2–14) as the target group for the download; files can be redirected only into the selected file group or into GID15.

In the following example, GID1 is selected as the target group for the download. The download list loads `FOO.OUT` into Group 1 RAM, `GOO.OUT` into GID2, and `COMN.LIB` shared library into GID15. When the terminal restarts after the download, the file authentication module is invoked for all three files, based on the certificate data that authorizes them to be stored in their respective file groups.

If `FOO.OUT` is authenticated, the GID1 application, `FOO.OUT`, executes as specified by the `*GO` variable when the terminal restarts following successful file authentication. The function library stored in GID15 can be shared by both applications, as both Group 1 and Group 2 applications can access Group 15.

```
FOO.OUT
FOO.P7S
*GO=FOO.OUT
SETGROUP.2
GOO.OUT
GOO.P7S
SETGROUP.15
COMN.LIB
COMN.P7S
```

NOTE



You can only use zero-length `SETGROUP.x` files for *batch application downloads*, either direct or telephone, and only using the Download Manager or ZonTalk 2000 download tools (not `DDL.EXE`). You cannot use this special file convention for operating system downloads or back-to-back application downloads.

Using DDL.EXE to Automatically Redirect Files

The version of DDL.EXE included in the VX 805 SDK allows you to change the default drive and file group for a direct download by preceding the filename(s) on the DDL command line with a special filename. The syntax is as follows:

```
SETDRIVE.<drive letter>
```

where, drive letter is I: for RAM, (default) or F: for flash, and/or

```
SETGROUP.<group number>
```

where, group number is 1–15.

For example, the command-line entry

```
DDL SETDRIVE.F cardco.lib SETDRIVE.I SETGROUP.15 card.dat
```

downloads the executable file `cardco.lib` into the flash of the selected target group and the data file `card.dat` into Group 15 RAM. (Because drive or group settings apply to all files that follow in the list, it is necessary to use `SETDRIVE.x` to reset the drive from F: back to I:.)

If you are using this DDL.EXE method, zero-length `SETDRIVE.x` and `SETGROUP.n` files do not need to exist as files on the download computer.

File Redirection in Operating System Downloads

When performing an operating system download, you *must* download the OS files into Group 1 RAM and not into flash memory or into another file group.

OS files are downloaded into Group 1 RAM because it is not possible to download these files directly into Group 0. OS files are redirected to Group 0 depending on if you perform a full or partial download (see [Table 11](#)).

- For full OS downloads, the redirection of OS files into Group 0 is performed automatically, after the terminal restart, and as part of the download procedure.
- For partial OS downloads, OS files are redirected from the RAM of Group 1 into Group 0 on manual terminal restart by selecting the appropriate terminal manager menu option.

A downloaded OS is processed and authenticated while stored in Group 1 RAM. As the files are authenticated under the authority of the certificates and signature files included in the OS download package, they move automatically into Group 0. This process, which usually takes a few moments, is completely transparent during the download procedure.

File Redirection in Back-to-Back Application Downloads

In a back-to-back application download, *all* application files stored on the sending terminal—in both file systems and in all file groups—transfer to the receiving terminal in a single operation.

For this type of download, you *must* select Group 1 as the target group on the sending *and* receiving terminals. When you initiate the download on the receiving terminal, all application files, as well as all special files required for file authentication and terminal configuration settings on the sending terminal, download to the receiving terminal.

In this type of data transfer operation, some file redirection does occur automatically as a result of the file authentication procedure that occurs on the receiving terminal. This redirection process is transparent during the download.

Briefly, all files initially download into RAM, and are then redirected based on the directory and subdirectory names of the sending terminal's file system. Signature files must always be authenticated in RAM. If the target file that the signature file authenticates is stored in flash, the signature file is moved to flash only after the target file successfully authenticates.

To successfully perform a back-to-back download, all signature files that are required to authenticate application executables must reside in the memory of the sending terminal. If the `*FA` variable is present in the Group 1 `CONFIG.SYS` file of the sending terminal, it must be set to 1 to retain all previously downloaded signature files.

If a signature file is missing on the sending terminal, the target application file that it authenticates is not authenticated on the receiving terminal and, if the target file is an executable, it is not allowed to run on the receiving terminal.

File Authentication Requirements

Chapter 5 provides a general introduction to the file authentication process. The following procedures show how the file authentication process affects the various download procedures.

Required Certificates and Signature Files

The following important points highlight how certificates and signature files relate to application download procedures:

- Before an executable file can be downloaded to and allowed to run on a VX 805 terminal, the file must be digitally signed on the download computer using the VeriShield File Signing Tool. The result of this procedure is a signature file recognized by its `*.p7s` filename extension.
- A signature file must be downloaded with each executable that makes up an application. An executable can be a compiled and linked object file (`*.out`) or a shared function library (`*.lib`).

In most cases, an application consists of multiple executables and requires a number of corresponding signature files.

- In a typical batch application download, all files, including executables, signature files, and any required certificates, download in the same operation.
- After the download is complete and the terminal restarts, the file authentication module is invoked if a new signature file (or certificate) is detected. If the application (executable) is authenticated, it is allowed to run on the terminal. Otherwise, it does not execute.
- If one executable file required by an application with multiple executables fails to authenticate, the main application may crash when it attempts to access the non-authenticated executable.

- Application files other than executables (for example, font and data files) may also require logical security under file authentication. In these cases, each protected non-executable file also requires a corresponding signature file.
- Digital certificates (*.crt) and signature files (*.p7s) are required to authenticate both application files and operating system files, which must be downloaded into the RAM of the target file group.
- Certificate files are deleted from application memory after they are authenticated. If a certificate is not authenticated, it is retained in terminal memory.
- If the *FA variable in the CONFIG.SYS file of the target group is set to 1, signature files are redirected to the same location where the application file it authenticates is stored. If *FA is 0, signature files are deleted from RAM when the file authentication process is complete.

File Authentication Process During an Application Download

In the following example of a typical file authentication process, assume the following:

- An application is being downloaded to prepare a VX 805 deployment terminal for deployment. That is, a sponsor certificate and a signer certificate download in batch mode to GID1 RAM of the receiving terminal, together with the application to authenticate.
- A signature file is generated for each executable that comprises the application on the download computer using the VeriShield File Signing Tool, with the signer certificate, signer private key, and signer password as required inputs. These signature files are also downloaded to the receiving terminal.

In a typical batch application download, file authentication proceeds as follows:

- 1 All certificate files (*.crt), signature files (*.p7s), and application files (*.out, *.lib, *.fon, *.vft, *.dat, and so on) download to the VX 805 deployment terminal in batch mode.
- 2 When the terminal restarts after the download, the file authentication module searches the RAM-based file system for the following two file types:
 - Authenticated certificate files (*.crt) to add to the permanent certificate tree.
 - Signature files (*.p7s) that authenticate corresponding target application files.

Certificate files and signature files can download into the RAM of any file group. For this reason, the file authentication module searches through the entire file system (all file groups) for new files with these filename extensions each time the terminal restarts.

- 3 The file authentication module builds a list of all newly detected certificates and signature files. If no new certificates or signature files are located, the module just returns. If one or more new files of this kind are detected, the file authentication module starts processing them based on the list.
- 4 Certificates are always processed first (before signature files). The processing routine is called one time for each certificate in the list. If a certificate is authentic, it is noted, and the next certificate is processed. This process continues in random order until all certificates are authenticated.

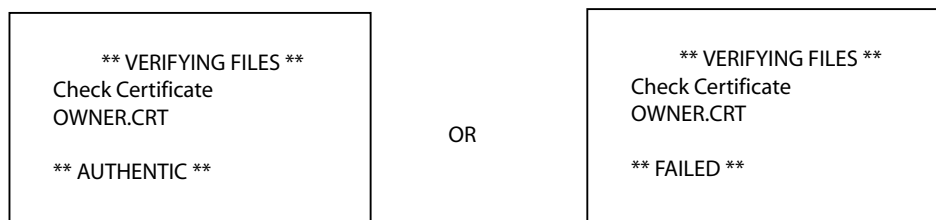
When a certificate file in the processing list is authenticated, the “Authentic” message is displayed below the corresponding filename. If it fails to be authenticated, the ****FAILED**** message is displayed for five seconds and the terminal beeps three times (see [Figure 17](#)). The routine then resumes processing and continues until all certificates are successfully processed.

The processing routine gives both visible and audible indications if a specific certificate authenticates successfully. The file authentication module does not halt the process if a certificate fails to authenticate, but continues to the next step, which is authenticating signature files.

If one or more certificates fail to authenticate, the ensuing file authentication process based on signature files probably also fails, resulting to an application not authenticated and not allowed to execute on the terminal.

When a certificate file is authenticated, the data it contains is added to the certificate tree and the certificate file is deleted from the RAM. When all required certificates are authenticated and stored in the certificate tree, the file authentication process for signature files can proceed.

Step 1: Authenticate Certificate File



Step 2: Authenticate Signature Files

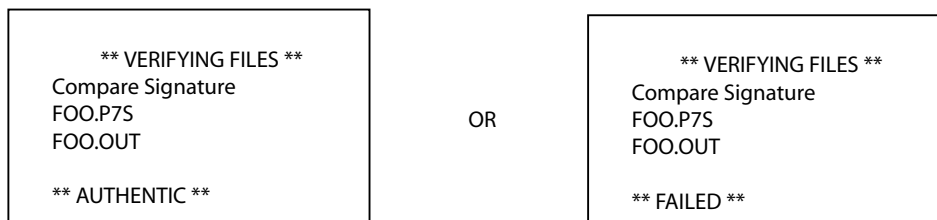


Figure 17 Display Prompts During the File Authentication Process

- 5 Signature files are now processed (after certificate files). The file authentication module calls the signature checking routine once for each new signature file it detects. Each *.p7s file is checked as it is detected; a list is not built and multiple processing passes are not required.
 - If a signature file is authenticated, ***AUTHENTIC*** is displayed and the target file is flagged authentic.
 - If the authentication process fails, ***FAILED*** is displayed for five seconds and the terminal beeps three times (see [Figure 17](#)). The routine then continues processing the next signature file until all newly detected signature files are checked.
 - If a signature file fails to authenticate and its target file is an executable code file, such as *.out or *.lib, the executable is not allowed to run on the terminal on terminal restart.

For data files, font files, and any other files that require authentication to meet the application's design specification, the application must ensure that these files successfully authenticate.

While a signature file is being processed, it remains stored in the RAM file system of the target file group. The target application file may be redirected immediately on download to the RAM or flash.

When the signature file successfully authenticates its target file, it is automatically moved to the same file system and file group as the target file it authenticates (that is, if *FA = 1).

The processing routine gives visible and audible indications when a specific signature file authenticates successfully. The file authentication module does not halt the process if a signature file fails to authenticate, but continues to the next step, storing the downloaded files in their final locations in the terminal file system.

- 6 Certificate files and signature files are retained in the RAM file system until the file authentication process is complete. These special files are then either deleted or automatically redirected to another file system or file group, as previously described.

When an application file is authenticated, the operating system sets the file's read-only attribute to protect it from being modified while stored in terminal memory. This is also true for a signature file retained in terminal memory. When a signature file is assigned the read-only attribute, it is no longer detected as a new signature file by the file authentication module on terminal restart.

- 7 When all certificates and signature files are processed and special files are deleted or redirected as required, the terminal restarts and the *GO application executes.

File Group Permissions

This section discusses how file authentication controls *who* (which business entity) can store application files in which file groups in the VX 805 file system.

By inserting zero-length `SETDRIVE.x` and `SETGROUP.n` files into a download list, you can specify which drive ($x = I$: RAM or F : flash) and in which group ($n = 1-15$) to store an application file. In addition to this file redirection protocol, the file authentication module controls which files are allowed, under the authority of the signer certificate used to sign them, to be stored in which file groups in the VX 805 file system.

For example, if the terminal owner specifies storing a *loyalty* application in GID2, the information is encoded in the sponsor and signer certificates and issued by the VeriFone CA for that terminal.

Chapter 5 discusses how signer certificates are required inputs to the VeriShield File Signing Tool when preparing a deployment terminal. Each signature file generated under that signer certificate contains a logical link that allows the application to authenticate and run on the terminal *only* if the signature files and corresponding target files are downloaded into the target GID.

Although you *can* store files in any file group simply by selecting the target group in terminal manager, the files downloaded are not authenticated for the selected target group unless they are properly signed under the authority of the sponsor and signer certificates issued for that terminal.

Download an Operating System Update Provided by VeriFone

Because the operating system software for the VX 805 is developed and controlled by VeriFone for its customers, VeriFone provides the necessary certificates and signature files to ensure the authenticity and integrity of the operating system update as part of the download package.



Operating system files can only be transferred to a VX 805 terminal using a PC-to-terminal download procedure, either direct or by telephone. OS files cannot be downloaded to a VX 805 terminal in a back-to-back operation.

The file authentication procedure for OS downloads is much the same as application downloads, with the following exceptions:

- VeriFone provides all files required for the OS download, including:
 - The operating system files (such as `Q.out`, `1.out`, and `2.out`).
 - An encrypted list of the new files, called `VFI.PED`.
 - A signature file generated by the VeriFone CA under the authority of a higher-level OS *partition sponsor certificate*, called `VFI.crt`. The file authentication logic on the receiving terminal uses this signature file to confirm the origin and authenticity of the encrypted list of files, `VFI.PED`.
- The entire OS package must download into Group 1 RAM. If you select a target group other than Group 1, the operation fails.

- Before initiating an OS download, either full or partial, ensure that enough memory space is available in Group 1 RAM to temporarily store the OS files, verify that any application files can also be stored in Group 1.
- If a *full* OS download was selected in VeriX Terminal Manager, the terminal automatically restarts and the new OS is processed and replaces the existing OS. In this download operation, all application files stored in Group 1 are automatically erased.
- If a *partial* OS download was selected in terminal manager, the operating system returns control to terminal manager after the download completes. To process the new OS, you must *manually* restart the terminal by selecting the appropriate terminal manager menu option. In a partial OS download operation, application files stored in Group 1 are not erased.
- When the OS download is initiated, the OS file authentication progress is displayed on the screen as new certificates are authenticated and added to the terminal's certificate tree, and as signature files for corresponding OS files are detected and authenticated, as shown in [Table 17](#).
- While the new OS is being processed, there is no visible indication on the terminal display of the progress of processing. When the new OS is processed (this usually takes a few moments), the terminal restarts automatically and the OS download procedure is complete.



CAUTION If the power supply to the receiving terminal is accidentally cycled during an operating system download procedure, the terminal may permanently lock up. In that case, return the terminal to VeriFone for service.

File Authentication for Back-to-Back Application Downloads

When performing a back-to-back application download between two VX 805 terminals, the file authentication process on the receiving terminal is similar to an application download from a host computer to a standalone VX 805 terminal. There are some important differences to take into account:

- Only a *full* application download is supported for back-to-back data transfers. You cannot perform partial back-to-back application downloads.
- Before you can initiate the back-to-back download, you must enter terminal manager in *both terminals*, select Group 1 as the target group for both terminals, and enter all required passwords.
- All signature files required to authenticate the download application(s) must reside in the memory of the sending terminal. They *must not be deleted* through the *FA variable being cleared to 0 on previous downloads.
- Any sponsor and signer certificates downloaded to and authenticated on the sending terminal are stored in the certificate tree of that terminal. When you perform a back-to-back download, certificate files are reconstructed from the data present in the sending unit's certificate tree.

- All certificates transfer to Group 1 RAM on the receiving terminal, except for the highest-level *platform root certificate*, which can never be transferred to another terminal.
- When certificates are detected by the file authentication module of the receiving terminal, they are processed exactly as in a direct download: All certificates are checked one by one and, on authentication, are added to the certificate tree of the receiving terminal. Then, all signature files are checked.
- Downloaded certificates (receiving terminal) must synchronize with the certificate data present in the certificate tree.

“Synchronized” means that the certificate tree of the receiving terminal can be no more than one revision out-of-sync with the certificate tree on the sending terminal or the files on the receiving terminal do not successfully authenticate. In this case, the term *revision* refers to any generic change to the current sponsor and signer certificates stored in the certificate tree of a deployment terminal.

- When the back-to-back download completes and all certificates and signature files authenticate, the receiving terminal restarts. If the name of the *GO application is specified in the Group 1 `CONFIG.SYS` file of the receiving terminal, the application executes and the application prompt or logo is displayed on the terminal.

Timing Considerations Due to the Authentication Process

The file authentication process takes some time. The total amount of time required depends on a number of factors:

- The number and size of application files.
- The number of certificates and signature files.
- Whether the file compression feature of Download Manager is being used to perform the download.

Here are a few additional considerations that may affect the total elapsed time required to complete the download operation:

- Because additional processing steps are required, an operating system download takes longer to complete than an application download (several minutes as opposed to a few seconds).
- The download order of a batch of certificate files may affect total processing time. Digital certificates are validated in a looping process where the validation process cycles as many times as necessary to establish the proper relationship and position of a given certificate in the certificate tree that exists in the terminal.

To optimize the authentication process, download certificates in a higher-level-certificates-first order. This way, they process faster than a random order download.

Optimize Available Memory Space for Successful Downloads

One certificate file or signature file requires approximately 400 bytes of memory space. The application designer must account for the extra memory required to download and store these special files.

When planning your download procedure, carefully consider the total amount of memory space required to store certificates and signature files *and* the application files. In some cases, a considerable number of 400-byte signature files reside in terminal memory at any given time. Here are some general guidelines to follow:

- Know the size of available memory (RAM and flash) of the receiving terminal; also in back-to-back downloads, know the size of available memory on both the sending and receiving terminals.
- Know in advance how application files are redirected to RAM or flash and to file groups other than the target group.
- Defragment flash memory before performing a download to optimize the available space in the flash file system.
- Before performing a download, use the Verix Terminal Manager menu selections to clear the entire RAM and/or flash of a specific file group, as necessary, to ensure proper use of available memory in the target group.

Support for File Compression

For information regarding file compression, refer to the *Verix V Operating System Programmers Manual* (VPN 23230).

Effect of Downloads on Existing Files and Data

When downloading application files and data to a VX 805 terminal, an important consideration is the effect of download procedure on existing application files, files used in the file authentication process, and terminal configuration settings stored in `CONFIG.SYS` files in the receiving terminal. Here are some important points:

- If a file already exists in the target file group, the existing file is replaced with the new file of the same name. (Files in separate file groups can have identical names).
- Always download executable files (and any other files to logically protect under VeriShield file authentication) with the certificates and signature files required to authenticate them.
- In full or partial application downloads, all `CONFIG.SYS` records on the receiving terminal, both protected and non-protected (that is, beginning with * or #), are retained. New `CONFIG.SYS` variables included in the download package, including the *GO variable, selectively replace existing variables with the same key name in the `CONFIG.SYS` file of the target group.

- All current passwords are retained on the receiving terminal during an application or operating system download (direct, by telephone, and back-to-back). This includes the terminal manager password and file group passwords. If required, you can replace existing *file group* passwords with new values as part of the data transfer operation.

NOTE

Always modify the *Verix Terminal Manager* password in a separate, securely-controlled operation. Ensure that this password is retained in a secure place.

- For back-to-back application downloads, clear the RAM and flash of the receiving terminal before initiating the download. All application files stored on the receiving terminal, including `CONFIG.SYS` settings, are replaced by those of the sending terminal. Verix Terminal Manager and file group passwords are retained on the receiving terminal.
- For full operating system downloads, Group 1 RAM is cleared as part of the operation and any application files stored in GID1 are erased. In this case, previously downloaded and authenticated applications must be downloaded in a subsequent operation, together with the certificates and signature files required to authenticate them.

Set Up the Download Environment

The first step in performing a download to a VX 805 terminal is to establish the physical communication link between the sending and receiving systems required to support the following download methods:

- **Direct serial cable connection for direct application and OS downloads:**

The link is between the COM1 port of a download computer (PC) and the COM1 port on the receiving VX 805 terminal.

Two special cables are available from VeriFone to support direct downloads: one for computers with DB-25-type serial connectors (VPN 26263-02) and another for DB-9-type connectors (VPN 26264-01). Both of these cables have a 10-pin RJ-45 modular plug on one end for the terminal-side connection.

- **Telephone line connection for application or OS downloads by telephone:** The link is from the modem connection of a host computer to the integrated modem direct in the receiving terminal (see [Figure 18](#)).

For this type of download operation, a standard telephone line cord with modular Telco connectors is required.

- **Direct serial cable connection for back-to-back application downloads:**

The link is between the RS-232 ports of the sending and receiving VX 805 terminals.

A special cable is required for back-to-back downloads (VPN 05651-00). This cable has two 10-pin RJ-45 modular plugs on each end to establish the terminal-to-terminal connection.

Cable Connection for Direct Downloads

There are two cables for direct downloads:

- DB-25 serial connector (VPN 26263-02)
- DB-9 connector (VPN 26264-01)

The following steps describe how to establish the cable link between the sending host computer and the receiving VX 805 terminal (see [Figure 18](#)):

- 1 Connect the DIN-type connector on one end of the cable to the COM1 (or COM2) serial I/O port on the download computer.
- 2 Connect the RJ-45 connector on the other end of the download cable to the RS-232 port on the back panel of the VX 805 terminal.

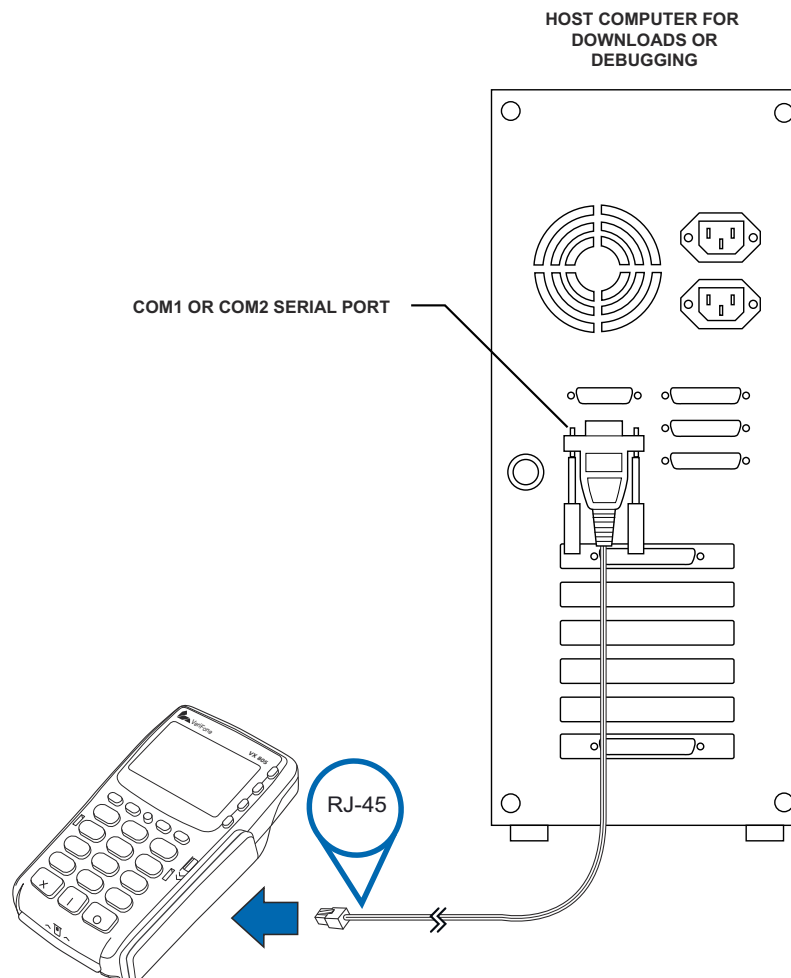


Figure 18 Serial Cable Connection for Direct Downloads

Telephone Line Connection for Telephone Downloads

To set up the telephone line connection for application or OS downloads between a host computer and a VX 805 terminal:

- 1 Confirm proper configuration of the dial-up telephone line and modem connection on the host computer.

- 2** Confirm that the parameters for the download by telephone are set in the download tool.
- 3** Confirm that the receiving VX 805 terminal has a direct telephone line connection.
- 4** Ensure that the correct keyed variables used to control downloads by telephone are stored in the `CONFIG.SYS` file of the target file group on the receiving terminal.

Cable Connection for Back-to-Back Application Downloads

To prepare for a back-to-back application download:

- 1** Insert the RJ-45 modular connector on one end of the download cable (VPN 05651-00) into the RS-232 port of the sending terminal.
- 2** Insert the RJ-45 connector on the other end of the cable into the RS-232 port on the back panel of the receiving terminal.
- 3** Power up both terminals.

Common Steps to Start a Download

After setting up the appropriate cable connections, power up the terminal and initiate the downloading session. [Table 12](#) guides you through the common steps when initiating a download. Procedures specific to a download type is discussed in the later sections.

Table 12 Common Steps to Start a Download

Step	Display	Action
1	VERIFONE VX 520 QT00E20B 12/22/2009 Verix COPYRIGHT 1997-2009 VERIFONE ALL RIGHTS RESERVED	At startup, the terminal displays a copyright notice screen that shows the terminal model number, the OS version of the VX 805 stored in the terminal's flash memory, the date the firmware was loaded into the terminal, and the copyright notice. This screen appears for three seconds, during which time you can enter Verix Terminal Manager by simultaneously pressing F2 and F4. You can extend the display period of this screen by pressing any key during the initial three seconds. Each keypress extends the display period an additional three seconds.

Table 12 Common Steps to Start a Download

Step	Display	Action
3	<application prompt> DOWNLOAD NEEDED <error message>	If an application already resides on the terminal, an application-specific prompt is displayed. If no application resides on the terminal or an application error is detected, the following message is displayed: DOWNLOAD NEEDED For more information on startup errors, see STARTUP ERRORS. To enter Verix Terminal Manager from this screen, simultaneously press F2 and F4. Note: The terminal will automatically download the file <code>VERIFONE.ZIP</code> from a USB flash drive without the user having to go through Verix Terminal Manager under the following conditions: • The USB flash drive is connected before the terminal is turned on. • The USB flash drive is inserted when the initial DOWNLOAD NEEDED message is displayed. In both cases, the USB DOWNLOAD COMPLETE message will appear on the terminal screen after the <code>VERIFONE.ZIP</code> file has been downloaded.
4	TERMINAL MGR ENTRY Please Enter Password _____	If an application prompt appeared and you chose to enter terminal manager, you are prompted to type the system password. If DOWNLOAD NEEDED appeared, use the default password “1, Alpha, Alpha, 66831.” Use  to delete the entry and correct any mistakes. If you enter an incorrect password, the terminal exits the VERIX TERMINAL MGR ENTRY screen. Verify your password and reenter it. To quit this operation and return to the application prompt or DOWNLOAD NEEDED screen, press .

Table 12 Common Steps to Start a Download

Step	Display	Action
5	VERIX TERMINAL MGR 1> Restart 2> Edit Parameters 3> Download 4> Memory Usage 5> RAM Directory 6> Flash Directory ↓ ↑ ↓	The first of three VERIX TERMINAL MGR menus is displayed. To toggle through to the other two menus, press the PF1 and PF2 keys. To choose an option in the menu, press the corresponding number on the keypad or scroll down to the option using the PF3 button then press the enter key. Use the PF4 key to scroll up the menu options. Select 3> DOWNLOAD to start a download session.

Direct Application Downloads

This section provides the hardware and software checklist needed for direct application downloads. The procedure for direct application downloads is also discussed.

Hardware Checklist

- ☐ The correct cable connects the download computer serial port (COM1 or COM2) to the RS-232 serial port (COM1) of the VX 805 terminal (refer to [Cable Connection for Direct Downloads](#)).

Software Checklist

- ☐ Download Manager, VeriCentre, or DDL.EXE running on the host computer.
- ☐ The application file to download (full or partial) is located on the host computer.
- ☐ The correct keyed record variables exist in the CONFIG.SYS file(s) of the file group(s) to store the application files.
- ☐ Certificate files (*.crt) required for file authentication on the receiving terminal are stored in memory or they are located on the host computer, and must download with the application files.
- ☐ All required signature files (*.p7s) generated using the VeriShield File Signing Tool are located on the host computer. One signature file downloads for each executable (*.out or *.lib) to run on the terminal.
- ☐ The filenames in the batch download list on the host computer indicate which application files to redirect to flash and file groups other than the target group.
- ☐ Ensure that filenames and CONFIG.SYS variables to download are correct in relation to those stored in the memory of the receiving terminal to avoid accidental overwrites.
- ☐ The required terminal manager and file group passwords are available to make the required terminal manager menu selections and to prepare the receiving terminal to receive the application download.
- ☐ Sufficient memory space exists in the RAM of the target group so that it can accept the entire download package, including certificates, signature files, and all data files.

- ❑ Use the terminal manager menu options to clear the entire RAM or flash or specific file groups on the receiving terminal (as necessary). Perform a flash defragment (merge) operation to optimize the flash file system (as necessary, the application itself can issue a function call to defragment the flash on restart after the download.) For more information on terminal manager operations, refer to [Chapter 4, Verix Terminal Manager](#).

Checklist for Effects on Files and Settings in the Receiving Terminal

- ❑ Protected records in the `CONFIG.SYS` file(s) of the receiving terminal — keyed records that begin with * or # — are not erased.
- ❑ The bootloader, OS, and other firmware on the receiving terminal are not modified as a result of the application download.
- ❑ The certificate tree that exists on the receiving terminal is not modified unless one or more new certificate files are downloading to the terminal. When new certificates are authenticated on the receiving terminal, the data they contain is stored in the certificate tree and the certificate files are deleted from the RAM of the target group.

Direct Application Download Procedure

The procedure in [Table 13](#) describes how to perform a direct application download from a host download computer into the Group 1 application memory area of a VX 805 deployment terminal.

Steps described in the *Action* column are performed directly on the VX 805 terminal. Notes provided in this column indicate and explain actions you must perform on the host computer.



The eight steps listed in [Table 13](#) are required for all download and upload procedures. In each of the following procedural tables, step numbering starts at 1 to indicate the unique steps of the specific download method. In subsequent procedures, only the method-specific steps are documented; the five steps in [Table 12](#) are assumed to be complete.

Table 13 Direct Application Download Procedure

Step	Display	Action
1	VERIX TERMINAL MGR GROUP ID: nn	Enter the target file group for the download. FILE GROUP _1 (Group 1) is displayed as the default selection. Note: File Group 1 is reserved for the operating system. Try using a different file group when downloading additional applications. For more information on operating system downloads, see Direct Operating System Downloads. To select a file group other than Group 1, type the one or two-digit number of the desired file group (2–15) for the download.
2	TERMINAL MGR ENTRY Please Enter Password _____	Enter the password of the selected file group. For example, if Group 2 is the target group, the GROUP _2 PASSWORD message is displayed. Note: If you have not previously entered a group's password in this session, the terminal prompts for the group's password prior to downloading applications. To continue, enter the required password. If you enter an incorrect password, PLEASE TRY AGAIN appears. Press . Verify your password and reenter it.
3	VTM DOWNLOAD MGR 1> Full dnld 2> Partial dnld	Select whether to run a full or partial download. Note: If you selected 1> FULL DNLD on a single application download, a screen will appear warning you that all existing files in the selected group will be deleted. Press F3 to cancel or F4 to continue downloading an application. If you selected 1> FULL DNLD on a multiple application download, you will be prompted to clear the existing application on the currently selected group. Select 1> YES to continue or 2> NO to cancel downloading applications.

Table 13 Direct Application Download Procedure

Step	Display	Action
4	VTM DOWNLOAD MGR Gnn 1> Modem 2> COM1 3> COM2 4> SD Card 5> Memory Stick 6> TCPIP ↓ ↑ ↓ VTM DOWNLOAD MGR Gnn 1> USB Dev 2> COM6 ↑ ↑ ↓	Select 2> COM1 for a direct application download. When you press 2, the terminal is ready to receive the application download from the host computer. Press the PF1 key to view more system download modes.
5	VTM DOWNLOAD MGR Gnn *** _____ DOWNLOADING NOW	Initiate the download by executing the proper command(s) in the download tool running on the host computer. The data transfer operation starts, and the status messages are displayed on the terminal screen. The progress of the download is indicated by a series of ten asterisks (each asterisk indicates that 10% of the download is complete). When the last asterisk is displayed, the download is complete. If you performed a full download, the terminal restarts automatically. Otherwise, you must restart the terminal manually by selecting RESTART on the first menu of VERIX TERMINAL MGR. If an application resides on the terminal following the download, it executes on restart.

Table 13 Direct Application Download Procedure

Step	Display	Action
6	**VERIFYING FILES** CHECK CERTIFICATE FILENAME.CRT *AUTHENTIC*	On startup, the file authentication module authenticates any new signature files downloaded with the OS files. When the signature file authentication routine starts, the status display informs you of the progress of the authentication process.
	VERIFYING FILES COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *FAILED*	If file authentication succeeds for a specific signature file, the “AUTHENTIC” message is displayed directly below the filename of the signature file. If file authentication fails for a specific signature file, the “FAILED” message is displayed for five seconds below the filename and the terminal beeps three times, allowing you to note which signature file failed to authenticate. The authentication process then proceeds to the next signature file until all signature files are validated. When all new signature files are authenticated, the terminal restarts, and the application specified in the *GO variable or the default application in Group 1 executes and starts running on the terminal.
7	<application prompt>	If the downloaded application successfully authenticates, the corresponding application prompt or logo is displayed upon restart. The terminal can now process transactions.
	DOWNLOAD NEEDED <error message>	Note: The message DOWNLOAD NEEDED appears if: • The *GO variable is not set. • *GO does not specify that an application is present. • The application did not authenticate (invalid or missing *.p7s file). • The application uses shared libraries that are missing or were not authenticated (invalid or missing *.p7s files). If one or more executables in the application fail to successfully authenticate, the application may not run. If the application attempts to access an unauthenticated executable or library, it may crash. Repeat the Direct Application Download Procedure using the correct certificates and/or signature files. For more information on startup errors, see STARTUP ERRORS.

Direct Operating System Downloads

This section provides the hardware and software checklist needed for direct operating system downloads. The procedure for direct operating system downloads is also discussed.

Hardware Checklist

- ☐ The correct cable connects the download computer serial port (COM1 or COM2) to the RS-232 serial port (COM1) of the VX 805 terminal (refer to [Cable Connection for Direct Downloads](#)).

Software Checklist

- ☐ Download Manager, VeriCentre, or DDL.EXE running on the host computer.
- ☐ The complete OS version to download is located on the host computer.
- ☐ Select full or partial download of the OS. In a full OS download, the terminal restarts automatically and the new OS is processed, replacing the existing OS. In a partial OS download, the terminal returns to terminal manager and the new OS does not process until you manually initiate a terminal restart from terminal manager.
- ☐ The correct keyed record variables for the download exist in the `CONFIG.SYS` files of Group 1. (OS files must always download into GID1 RAM). The required variables can also be written into the `CONFIG.SYS` file as part of the download operation.
- ☐ The following files provided by VeriFone CA for full OS downloads must reside on the host computer:
 - The new OS version or OS update (`Q*.out`, `1*.out`, `2*.out`, `3*.out`, `4*.out`, `5*.out`, `6*.out`).
 - A signature file called `VFI.p7s` for the OS update. This signature file is generated by the VeriFone CA using the high-level OS certificates for the VX 805 platform.
 - A file called `VFI.PED`. This file is an encrypted list of the new OS files.
- ☐ The required terminal manager and file group passwords are available to make the required terminal manager menu selections to prepare the receiving terminal to receive the application download.
- ☐ Sufficient memory space exists in the Group 1 RAM to accept the OS download package including certificates, signature files, and all data files.
- ☐ Use the terminal manager menu options to clear the entire RAM or flash or the RAM of Group 1 on the receiving terminal (as necessary).

Checklist for Effects on Files and Settings in the Receiving Terminal

- ☐ A full OS download replaces the existing OS and erases all application files from the Group 1 RAM.
- ☐ A partial OS download returns control of the terminal to terminal manager and does not erase application files from the Group 1 RAM.
- ☐ Protected records in the `CONFIG.SYS` file(s) of the receiving terminal — keyed records that begin with `*` or `#` — are not erased.

- ❑ An OS download does not overwrite terminal configuration settings, including the current date and time, passwords, and modem country code. If required, you can download new terminal configuration settings together with the OS files.
- ❑ The certificate tree that exists on the receiving terminal is not modified unless one or more new certificate files required to authenticate the new OS are being downloaded to the terminal. When new certificates authenticate on the receiving terminal, the data they contain is stored in the certificate tree and the certificate files are deleted from the Group 1 RAM.
- ❑ The certificates and signature files required to authenticate the new OS are processed by the file authentication module of the receiving terminal the same as application files.
- ❑ When the terminal restarts and the new OS files process, they are moved out of the Group 1 RAM into the Group 0 area of the VX 805 file system.

Direct Operating System Download Procedure

The procedure in [Table 14](#) describes how to perform a direct operating system download from a host computer into the Group 1 RAM of a VX 805 terminal.

Steps described in the *Action* column are performed directly on the VX 805 terminal. Notes provided in this column indicate and explain actions you must perform on the host computer.

NOTE



In [Table 14](#) and in the following procedures, only method-specific steps are included. For a description of the steps required to enter terminal manager and display the first menu of **VERIX TERMINAL MGR**, refer to [Table 12](#).

Table 14 Direct Operating System Download Procedure

Step	Display	Action
1	VERIX TERMINAL MGR GROUP ID: nn	FILE GROUP: _1 (Group 1) is automatically displayed on the screen. Note: Operating system files must <i>always</i> download into Group 1. This is the default group number in terminal manager. Press to select Group 1.
2	VERIX TERMINAL MGR EDIT GROUP nn PASSWORD _____	Enter the password for Group 1 and press . If you enter an incorrect password, PLEASE TRY AGAIN appears. Press and type in a valid password. Press to confirm the newly entered password.

Table 14 Direct Operating System Download Procedure

Step	Display	Action
3	VTM DOWNLOAD MGR 1> Full dnld 2> Partial dnld	Select a full or partial OS download. To return to the first VERIX TERMINAL MGR menu, press  .
4	VTM DOWNLOAD MGR Gnn 1> Modem 2> COM1 3> COM2 4> SD Card 5> Memory Stick 6> TCPIP ↓ ↑ ↓	Select 2> COM1 for a direct application download. When you press 2, the terminal is ready to receive the application download from the host computer.
5	VTM DOWNLOAD MGR Gnn *** _____ DOWNLOADING NOW	Initiate the download by executing the proper command(s) in the download tool running on the host computer. The data transfer operation starts, and the status messages are displayed on the terminal screen. The progress of the download is indicated by a series of ten asterisks (each asterisk indicates that 10% of the download is complete). When the last asterisk is displayed, the download is complete. If you performed a full download, the terminal restarts automatically. Otherwise, you must restart the terminal manually by selecting 1> RESTART on the first VERIX TERMINAL MGR menu. If an application resides on the terminal following the download, it executes on restart.

Table 14 Direct Operating System Download Procedure

Step	Display	Action
6	**VERIFYING FILES** CHECK CERTIFICATE FILENAME.CRT *AUTHENTIC*	When the OS download is complete, the terminal restarts automatically. The file authentication module on the receiving terminal begins to check for new certificate (*. crt) and signature (*. p7s) files included in the download. These special files then process one at a time; certificates process first, then signature files.
	VERIFYING FILES COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *AUTHENTIC*	When the file authentication module is invoked, the status display informs you of the progress of the file authentication process. If file authentication succeeds for a specific certificate, the *AUTHENTIC* message is displayed directly below the certificate filename. If file authentication fails for a specific certificate, the *FAILED* message is displayed for five seconds below the filename and the terminal beeps three times, allowing you to note which certificate failed to authenticate.
		The authentication process then continues to the next certificate until all new certificates are checked.
7	<application prompt>	When all new signature files are authenticated, the terminal restarts and begins processing the new OS (full download) or it returns control to terminal manager (partial download).
	DOWNLOAD NEEDED <error message>	Because a full OS download clears the RAM, all terminal applications, related certificates, and signature files must download to the terminal when performing this type of download.

Download by Telephone

The procedure to perform an application or OS download by telephone is similar to that of direct application (see [Table 13](#)) and direct operating system downloads (see [Table 14](#)).

Hardware Checklist

- ☐ Set up the dial-up telephone line and modem connection on the host computer.
- ☐ Set up the direct telephone line connection on the receiving VX 805 terminal, as described in [Telephone Line Connection for Telephone Downloads](#).

Software Checklist

- ☐ Download Manager or VeriCentre running on the host computer.
Note: DDL.EXE can only be used for direct downloads.
- ☐ The information required to control the download by telephone is stored in the CONFIG.SYS file of the target group selected on the receiving terminal. Required settings for Download Manager and VeriCentre may include the following:
 - Dial-up numbers to establish the telephone line connection
 - Baud rate settings for the data transfer
 - Terminal ID
 - Application ID
 - Operating system name or serial number



For detailed information about the setup requirements and download procedures for Download Manager and VeriCentre, refer to the user documentation supplied by VeriFone with these software products.

Telephone Download Procedure

Select the modem port (step 4 in [Table 15](#)) on the receiving terminal when the port selection options are displayed. The internal modem in the receiving VX 805 terminal dials the host computer to request the download. When the host computer accepts the call, the host initiates the download procedure.

Table 15 Download by Telephone Procedure

Step	Display	Action
1	VERIX TERMINAL MGR GROUP ID: nn	FILE GROUP: _1 (Group 1) is automatically displayed on the screen. Note: Operating system files must <i>always</i> download into Group 1. This is the default group number in terminal manager. Press  to select Group 1.

Table 15 Download by Telephone Procedure

Step	Display	Action
2	VERIX TERMINAL MGR EDIT GROUP nn PASSWORD _____	Enter the password for Group 1 and press  . If you enter an incorrect password, PLEASE TRY AGAIN appears. Press  and type in a valid password. Press  to confirm the newly entered password.
3	VTM DOWNLOAD MGR 1> Full dnld 2> Partial dnld	Select a full or partial OS download. To return to the first VERIX TERMINAL MGR menu, press  .
4	VTM DOWNLOAD MGR Gnn 1> Modem 2> COM1 3> COM2 4> SD Card 5> Memory Stick 6> TCPIP ↓ ↑ ↓	Select 1> MODEM for a telephone procedure download.
5	VTM DOWNLOAD MGR Gnn *ZP HOST PHONE NUM _____	If *ZP (host phone number) is not defined, you must enter valid phone number (up to 32 characters long) and press  .
6	VTM DOWNLOAD MGR Gnn *ZT TERMINAL ID _____	If *ZT (terminal ID used by VeriCentre) is not defined, you must enter a valid terminal ID (up to 15 characters long) and press  .

Table 15 Download by Telephone Procedure

Step	Display	Action
7	VTM DOWNLOAD MGR Gnn *ZA APPLICATION ID _____	If *ZA (application ID) is not defined, you must enter a valid application ID (up to 10 characters long) and press .
8	VTM DOWNLOAD MGR Gnn *ZA= nnnn *ZP= nnnn *ZR= nnnn *ZT= nnnn 1> EDIT 2> START	You can view the specified values on the confirmation screen. Select 1> EDIT to go back and modify the specifications or 2> START to begin the download.
9	VTM DOWNLOAD MGR Gnn GID: nn APP ID: nnnn STATUS: DOWNLOADING *** _____	The progress of the download is indicated by a series of ten asterisks (each asterisk indicates that 10% of the download is complete). If the download is successful, the message DOWNLOAD DONE is displayed. If you performed a full download, the terminal restarts automatically. Otherwise, you must restart the terminal manually by selecting 1> RESTART on the first VERIX TERMINAL MGR menu. If an application resides on the terminal following the download, it executes on restart. If an error occurs during connection or download, an error message is displayed. For more information on downloading errors, see DOWNLOADING ERRORS.

Table 15 Download by Telephone Procedure

Step	Display	Action
10	**VERIFYING FILES** COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *AUTHENTIC*	On startup, the file authentication module on the receiving terminal begins to check for new certificate (*.crt) and signature (*.p7s) files included in the download. These special files then process one at a time; certificates process first, then signature files.
	VERIFYING FILES COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *FAILED*	When the file authentication module is invoked, the status display informs you of the progress of the file authentication process. If file authentication succeeds for a specific certificate, the *AUTHENTIC* message is displayed directly below the certificate filename. If file authentication fails for a specific certificate, the *FAILED* message is displayed for five seconds below the filename and the terminal beeps three times, allowing you to note which certificate failed to authenticate. The authentication process then continues to the next certificate until all new certificates are checked.
9	<application prompt>	If the downloaded application successfully authenticates, the corresponding application prompt or logo is displayed upon restart. The terminal can now process transactions.
	DOWNLOAD NEEDED *GO FILE NOT FOUND	Note: The message DOWNLOAD NEEDED appears if: • The *GO variable is not set. • *GO does not specify that an application is present. • The application did not authenticate (invalid or missing *.p7s file). • The application uses shared libraries that are missing or were not authenticated (invalid or missing *.p7s files). If one or more executables in the application fail to successfully authenticate, the application may not run. If the application attempts to access an unauthenticated executable or library, it may crash. Repeat the Download by Telephone Procedure using the correct certificates and/or signature files. For more information on startup errors, see STARTUP ERRORS.

Back-to-Back Application Downloads

This section provides the hardware and software checklist needed for back-to-back application downloads. The procedure for back-to-back terminal downloads is also discussed.

Hardware Checklist

- ☐ The correct serial cable connects the RS-232 ports of the sending and receiving VX 805 terminals (refer to [Cable Connection for Back-to-Back Application Downloads](#)).
- ☐ Verify that the RAM size on the receiving terminal is large enough to receive files uploaded from the sending terminal. If the RAM on the sending terminal is 512 KB, the RAM on the receiving terminal must be at least 512 KB.

Software Checklist

- ☐ The firmware versions of the sending and receiving terminals must be identical or very similar.
- ☐ One or more complete and authenticated application programs are stored in the GIDs 1–15, RAM or flash of the sending terminal. In this type of operation, *all* files stored in application memory of the sending terminal download to the receiving terminal.
- ☐ Before initiating the download procedure, remember to select Group 1 as the target file group on both the sending and receiving terminals. The required terminal manager and file group passwords must also be available to make the required terminal manager menu selections on both terminals.
- ☐ The current `CONFIG.SYS` variables, date and time, and other terminal configuration settings on the sending terminal are those downloaded to the receiving terminal. Ensure that the desired settings are correct.
- ☐ All signature files required to authenticate the application files being downloaded to the receiving terminal are present in the RAM or flash file system of the sending terminal.
- ☐ The certificate tree of the sending and receiving terminal must be synchronized. That is, there can be no more than one revision difference between the certificate data currently stored in the memory of the sending and receiving terminals.
- ☐ If application files are downloaded to the receiving terminal in previous operations, use the terminal manager menu options to clear the RAM and flash file systems of the receiving terminal before you initiate the back-to-back download procedure. This ensures a clean download.

Checklist for Effects on Files and Settings in the Receiving Terminal

- ☐ A back-to-back application download overwrites existing applications, libraries, or any other files stored in the RAM of the receiving terminal.
- ☐ All `CONFIG.SYS` records and settings on the receiving terminal—protected and non-protected—are replaced by those of the sending terminal. Ensure that these records and settings on the sending terminal are correct before initiating the download.
- ☐ Passwords on the receiving terminal are retained.
- ☐ Certificates and signature files downloaded to the receiving terminal, together with application files, must be processed by the file authentication module on the receiving terminal on terminal restart after the back-to-back download completes.
- ☐ The OS software on the receiving terminal is not affected by a back-to-back application download.

Note: OS files cannot be downloaded in a back-to-back operation.

- ☐ An application upload does not overwrite the existing certificate tree on the receiving terminal. Any downloaded certificate files are authenticated and then added to the tree.

Back-to-Back Application Download Procedure

The back-to-back application download process consists of two main phases:

- 1 Preparing a *Gold* VX 805 terminal (transfers application files to the *Target* VX 805 terminal).
- 2 Downloading application files from the Gold terminal to a properly configured Target terminal.

Prepare Gold Terminal (PC-to-Terminal)

- 1 Configure the host PC for an application download operation to the Gold terminal:
 - Set the `*FA` variable (if present in the application) to 1.
 - Ensure that all certificates, `*p7s` files, applications, and other required files are present.
 - Ensure that the download is exactly what you want your Target terminal to receive.
- 2 Configure the Gold terminal to receive an application download from a PC:
 - From **VERIX TERMINAL MGR MENU 2**, set Group 1 and COM1 as the port to receive the download.
- 3 Connect a cable between the RS-232 serial ports of the PC and the Gold terminal.
- 4 Initiate the file transfer on the PC.
- 5 From **VERIX TERMINAL MGR MENU 2** on the Gold terminal, select either a full or a partial download.

The PC transfers files to the Gold terminal.

Download Application Files to Target Terminal

- 1 Configure a Gold terminal for an application download operation to a deployment terminal:
 - If the *FA variable (if present in the application) is set to 0, you can reset it to 1. For more information on the *FA variable, refer to the *Verix V Programmers Manual* (VPN 23230).
 - Ensure that the download is exactly what you want your Target terminals to receive.
 - Ensure that previously authenticated files are not changed prior to the file transfer operation.
- 2 Configure the Target terminal to receive an application download from the Gold terminal. Select **DOWNLOAD F3** from **VERIX TERMINAL MGR MENU 1**. Set Group 1 enter the group password.
- 3 Select **SINGLE-APP F3** or **MULTI-APP F4** from the **VERIX TERMINAL MGR DOWNLOAD** menu. Specify whether to perform a full or partial download then select COM1 as the receiving port.
- 4 Connect a cable (VeriFone part number 05651-xx) between the RS-232 serial ports of the Gold and Target terminals.
- 5 From any terminal manager menu on the Gold terminal, press [*] and enter the GID1 password to initiate the file transfer.

Figure 19 illustrates these two phases and how they relate to each other.

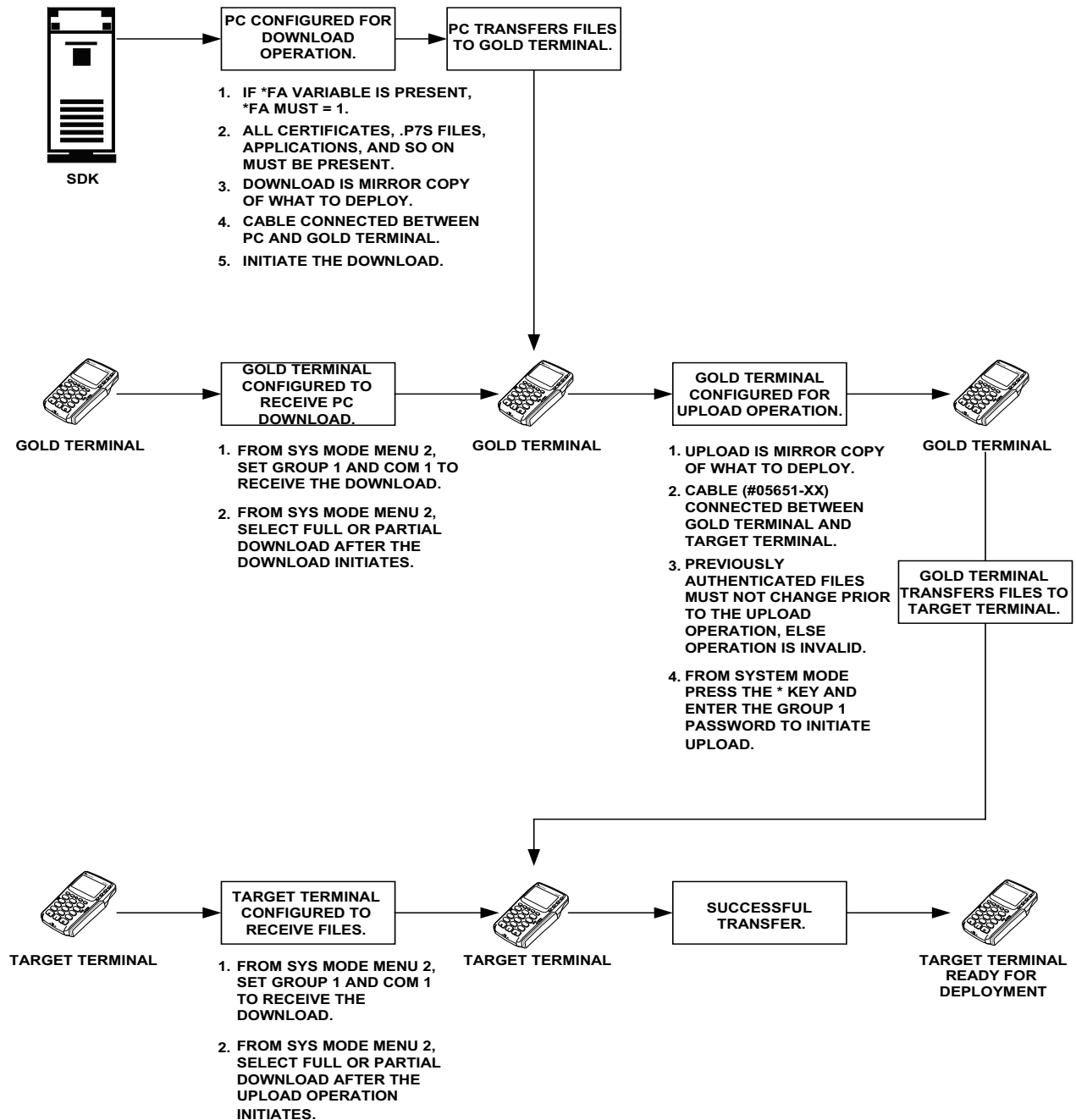


Figure 19 Back-To-Back Download Process

The procedure in Table 16 walks you through a back-to-back application download from a sending VX 805 terminal (Gold) to a receiving VX 805 terminal (Target).

Back-to-back downloads require that one terminal, the *Gold* terminal, be loaded with the required applications. The receiving terminal is the *Target* terminal. The procedure in Table 16 assumes the following:

- The Target terminal has no applications loaded.
- There is enough memory in the Target terminal to complete the download.



The Target terminal does not display an error message if there is not enough memory to complete the download. The Gold terminal displays **DOWNLOAD INCOMPLETE** before returning to **VERIX TERMINAL MGR MENU 2**.

- You are performing a *full* download.

Table 16 Back-to-Back Application Download Procedure

Step	Gold Terminal	Target Terminal
1	Connect a MOD10 cable (P/N 05651-XX) between the RS-232 ports of the terminals. Allow each terminal to boot up. After boot up, the Target terminal displays DOWNLOAD NEEDED .	
2	Press F2+F4 to enter Verix Terminal Manager.	
3	Enter the terminal manager password (factory default is "1, Alpha, Alpha, 66831") and press the enter key.	
4	Press the * (asterisk) key, then press  . You are prompted to reenter the terminal manager password. UPLOADING NOW is displayed.	Press DOWNLOAD to enter download mode.
5		Press  at the next VERIX TERMINAL MGR DOWNLOAD screen to select FILE GROUP_1 (default displayed) as the target file group.
6		Select FULL DNLD at the next VERIX TERMINAL MGR DOWNLOAD screen. Full downloads are required in back-to-back downloads.
8		Select (COM1) in the next VERIX TERMINAL MGR DOWNLOAD screen. DOWNLOADING NOW is displayed.

Both terminals display a status indicator, where each dash represents a 10% increment of the download.

Ensure that the Gold terminal displays **UPLOAD COMPLETE** before returning to the second **VERIX TERMINAL MGR** menu. This is when the Gold terminal might display an error message if problems occurred during the download process.

The Target terminal begins to validate all files. Allow the Target terminal to complete file authentication and reboot the terminal.

The Gold terminal is ready to perform another download. An application-specific menu is displayed after the Target terminal completes the reboot.

Download from a USB Flash Drive

The procedure provided in [Table 17](#) guides you through the process of downloading multiple applications from a USB flash drive.

Before you begin, make sure that the USB device is properly inserted in the terminal's USB port and the `VeriFone.zip` file resides in the device.

`VeriFone.zip` is the only filename recognized by the system as a downloadable file. For more information on how to build a `VeriFone.zip` file, see [Build a VeriFone.zip File](#)

Build a VeriFone.zip File

To build a multiple-application .zip file (`VeriFone.zip`), you must first create folders on your root drive (`C:`) representing the specific groups on the terminal ([Figure 20](#)). All Group 1 files MUST be in unzipped download formats, while other group folders can contain standard pre-compressed .zip files.

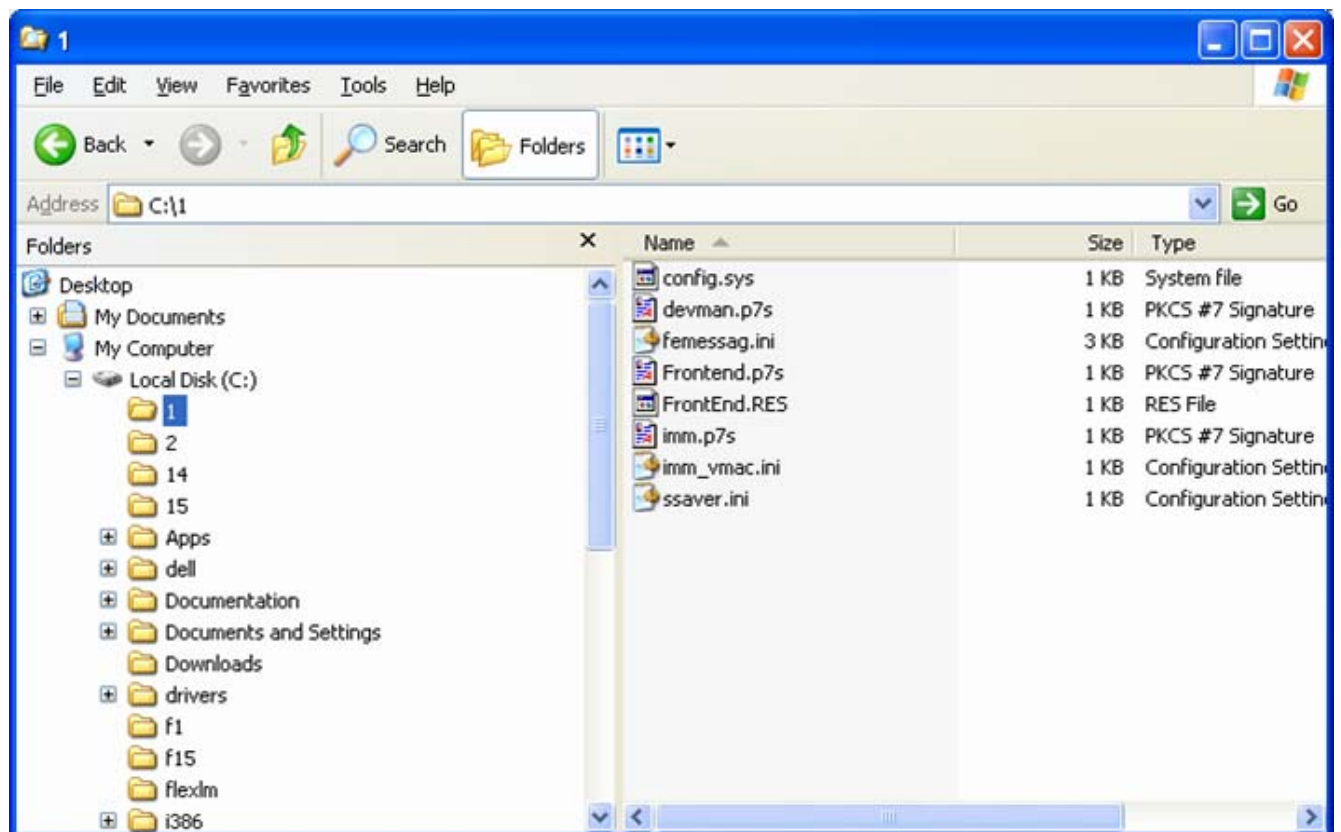


Figure 20 Create GID-Specific Folders

Each RAM folder should contain a `CONFIG.SYS` file of parameters for applications running in that GID (Figure 21).

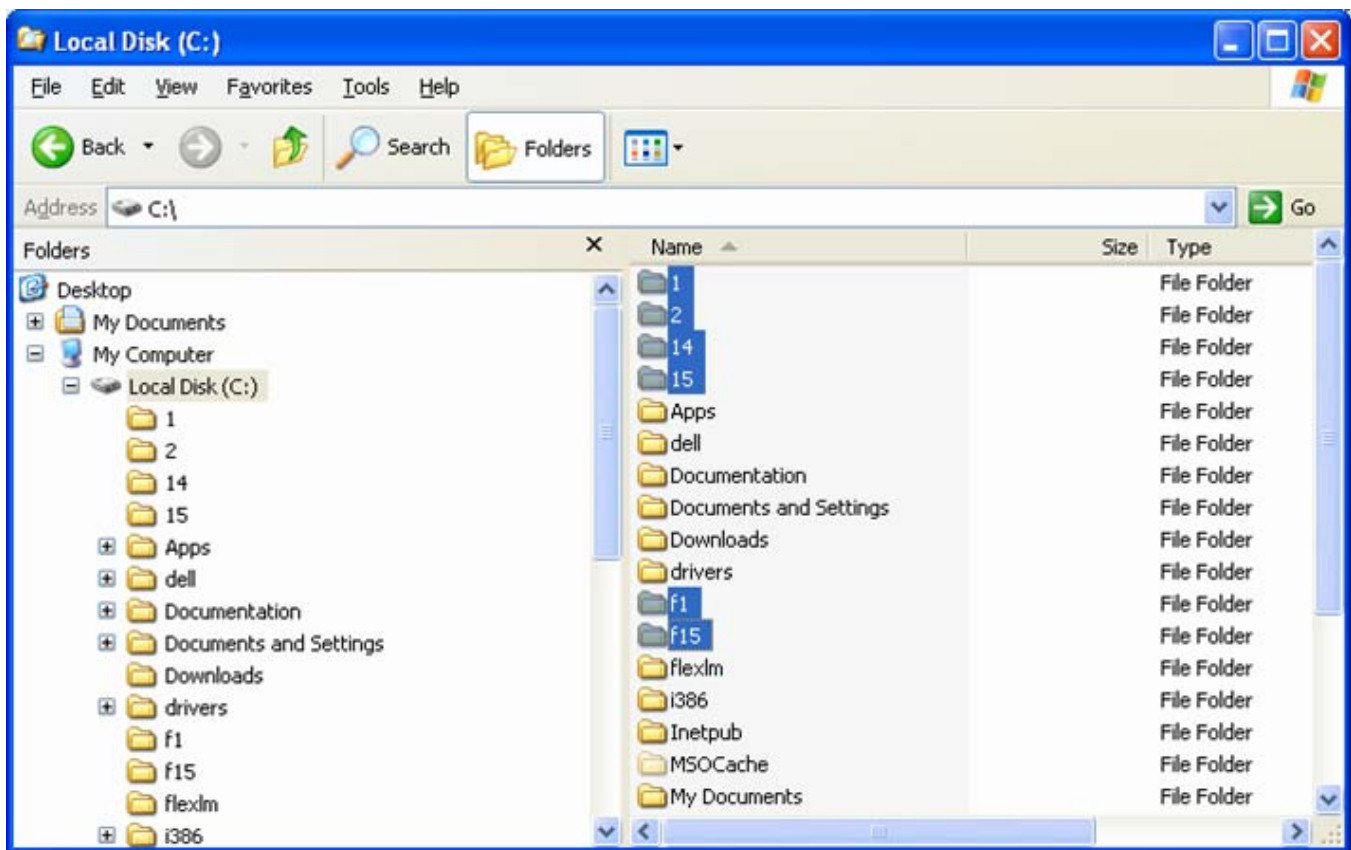


Figure 21 Config.sys File Inside a GID Folder

Use the following instructions to build a `CONFIG.SYS` downloadable file:

- 1 Open Notepad and create a `.txt` file containing parameter and value pairs.
- 2 Run the Variable Length Record (VLR) utility to convert the text file to a downloadable file format (`vlr -c input.file output.file`).

After creating a CONFIG.SYS downloadable file, move the created file to the proper folder. Then, create a new .zip file named VeriFone.zip on your root drive and move all the required GID folders into the .zip file. Make sure that **Save Full Path Info** is selected. Transfer the VeriFone.zip file into a flash drive and you are ready start downloading the applications into a terminal.

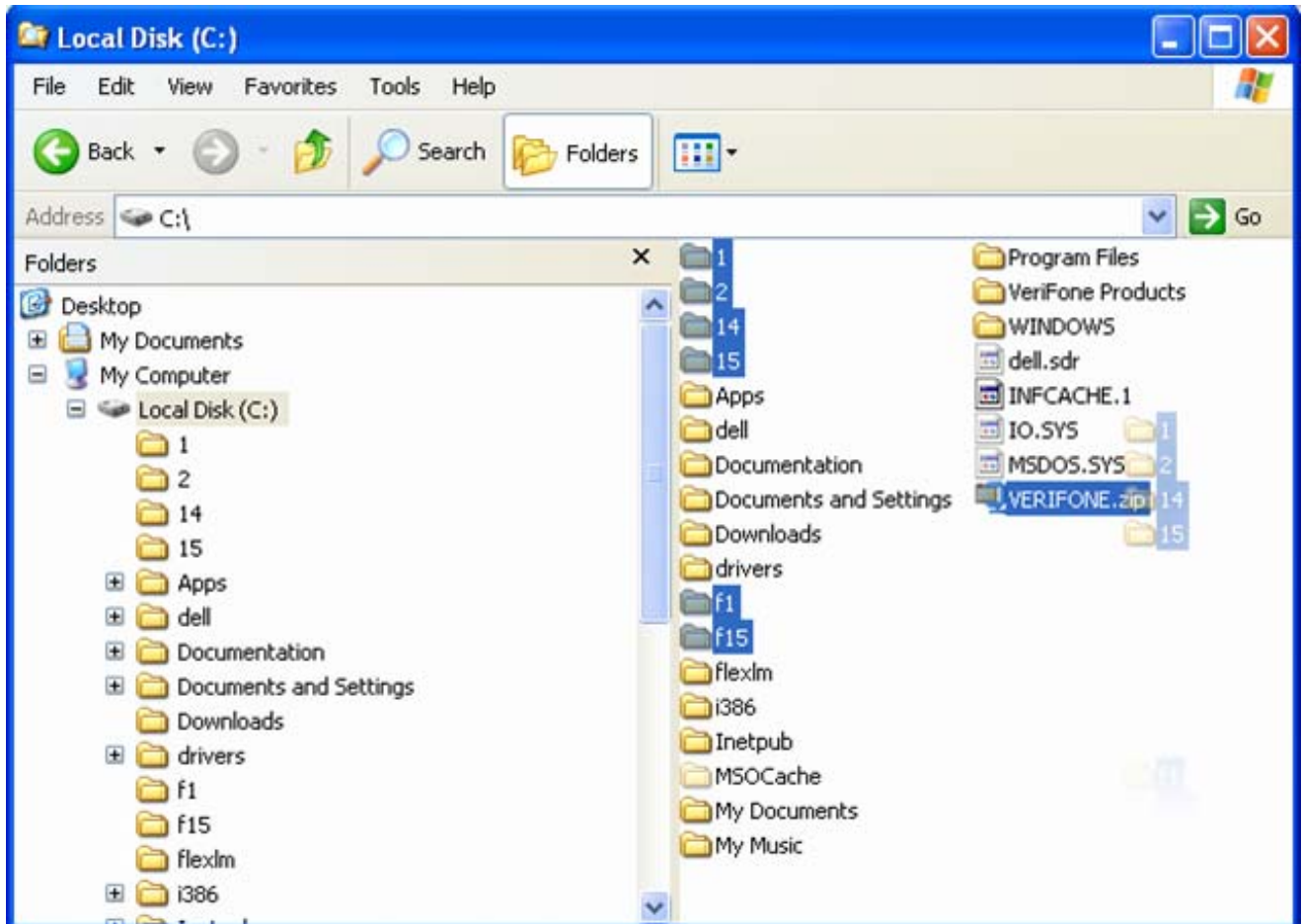


Figure 22 Moving GID files to VERIFONE.zip file

USB Flash Drive Download Procedure

To begin downloading from a USB flash drive, insert the flash drive into the USB port of the VX 805 terminal and follow the instructions on [Table 17](#).

Table 17 USB Flash Drive Download Procedure

Step	Display	Action
1	VERIX TERMINAL MGR DOWNLOAD GROUP ID: nn	Enter the target file group for the download. FILE GROUP _1 (Group 1) is displayed as the default selection. Note: File Group 1 is reserved for the operating system. Try using a different file group when downloading additional applications. For more information on operating system downloads, see Direct Operating System Downloads. To select a file group other than Group 1, type the one or two-digit number of the desired file group (2–15) for the download.
2	VERIX TERMINAL MGR DOWNLOAD GROUP n PASSWORD _____	Enter the password of the selected file group. For example, if Group 2 is the target group, the GROUP _2 PASSWORD message is displayed. Note: If you have not previously entered a group's password in this session, the terminal prompts for the group's password prior to downloading applications. To continue, enter the required password. If you enter an incorrect password, PLEASE TRY AGAIN appears. Press . Verify your password and reenter it.
3	VERIX TERMINAL MGR DOWNLOAD Gnn 1> SINGLE-APP 2> MULTI-APP	Select 1> SINGLE-APP to download a single application. Select 2> MULTI-APP to download multiple applications.

Table 17 USB Flash Drive Download Procedure

Step	Display	Action
4	VERIX TERMINAL MGR DOWNLOAD Gnn 1> Full dnld 2> Partial dnld	Select whether to run a full or partial download. Note: If you selected 1> FULL DNLD on a single application download, a screen will appear warning you that all existing files in the selected group will be deleted. Press F3 to cancel or F4 to continue downloading an application. If you selected 1> FULL DNLD on a multiple application download, you will be prompted to clear the existing application on the currently selected group. Select 1> YES to continue or 2> NO to cancel downloading applications.
5	VERIX TERMINAL MGR DOWNLOAD Gnn 1> MODEM 2> COM1 3> TCPIP ↑ ↓	On the next screen, press the PF1 key to go to the next menu.
6	VERIX TERMINAL MGR DOWNLOAD Gnn 1> COM2 2> USB FLASH MEMORY ↑	Select 2> USB FLASH MEMORY to download from a USB flash drive. When you press 2, the terminal is ready to receive the download from the connected USB device.
7	VERIX TERMINAL MGR DOWNLOAD Gnn DOWNLOAD FROM USB FLASH MEMORY DEVICE 1> CANCEL DOWNLOAD 2> CONTINUE	Select 2> CONTINUE to begin the download.

Table 17 USB Flash Drive Download Procedure

Step	Display	Action
8	VERIX TERMINAL MGR DOWNLOAD Gnn USB DOWNLOAD COMPLETE	The terminal will automatically download the file <code>VeriFone.zip</code> from the USB flash drive. USB DOWNLOAD COMPLETE appears on the terminal screen after a successful download. If you performed a full download, the terminal restarts automatically. Otherwise, you must restart the terminal manually by selecting 1> RESTART on VERIX TERMINAL MGR MENU 1. If an application resides on the terminal following the download, it executes on restart.
9	**VERIFYING FILES** CHECK CERTIFICATE FILENAME.CRT *AUTHENTIC* **VERIFYING FILES** COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *FAILED*	On startup, the file authentication module authenticates any new signature files downloaded with the OS files. When the signature file authentication routine starts, the status display informs you of the progress of the authentication process. If file authentication succeeds for a specific signature file, the *AUTHENTIC* message is displayed directly below the filename of the signature file. If file authentication fails for a specific signature file, the *FAILED* message is displayed for five seconds below the filename and the terminal beeps three times, allowing you to note which signature file failed to authenticate. The authentication process then proceeds to the next signature file until all signature files are validated. When all new signature files are authenticated, the terminal restarts, and the application specified in the *GO variable or the default application in Group 1 executes and starts running on the terminal.

Table 17 USB Flash Drive Download Procedure

Step	Display	Action
8	<application prompt>	If the downloaded application successfully authenticates, the corresponding application prompt or logo is displayed upon restart. The terminal can now process transactions. Note: The message DOWNLOAD NEEDED appears if: • The *GO variable is not set. • *GO does not specify that an application is present. • The application did not authenticate (invalid or missing *.p7s file). • The application uses shared libraries that are missing or were not authenticated (invalid or missing *.p7s files). If one or more executables in the application fail to successfully authenticate, the application may not run. If the application attempts to access an unauthenticated executable or library, it may crash. Repeat the Direct Application Download Procedure using the correct certificates and/or signature files. For more information on startup errors, see STARTUP ERRORS.
	DOWNLOAD NEEDED <error message>	



Specifications

This chapter discusses power requirements, dimensions, and other specifications of the VX 805.

- | | |
|--------------------------------|---|
| Unit Power Requirements | <ul style="list-style-type: none">• 5-12V DC, 2W
(Maximum consumption with backlight active) |
| Power Pack | <ul style="list-style-type: none">• PWR282-001-01-A (varies per region)• UL, ITE listed, Class 2, switching power supply• PS, 100-240V, 9V DC UNIVERSAL, 1A, 9W |
| Temperature | <ul style="list-style-type: none">• Operating temperature: 0° to 40° C (34° to 104° F)• Storage temperature: -20° to 60° C (-4° to 140° F) |
| External Dimensions | <ul style="list-style-type: none">• Length : 149.8 mm (5.90 in.)• Width: 86.4 mm (3.40 in.)• Depth: 31.5 mm (1.24 in.) |
| Weight | <ul style="list-style-type: none">• Unit weight: 0.27 Kg (0.6 lbs.)• Shipping weight: 0.45 Kg (1.0 lbs.) |
| Processor | <ul style="list-style-type: none">• 400 MHz ARM11 32-bit RISC processor |
| Memory | <ul style="list-style-type: none">• 160 MB (128 MB of Flash, 32 MB of mDDR) |
| Display | <ul style="list-style-type: none">• 240 x 320 pixel color TFT (QVGA)• supports up to 26 lines x 26 characters |
| Magnetic Card Reader | <ul style="list-style-type: none">• Triple track (tracks 1, 2, 3), high coercivity, bi-directional |
| Primary Smart Card | <ul style="list-style-type: none">• ISO 7816, 1.8V, 3V, 5V• synchronous and asynchronous cards• EMV Approved |
| SAM Card Reader | <ul style="list-style-type: none">• 3 Security Access Modules (SAMs) |

Keypad • 3 x 4 numeric keypad, plus screen addressable

Peripheral Ports • Single multi-port connector which supports RS-232 and USB 2.0 device

Security • 3DES encryption, Master/Session and DUKPT key management
• VeriShield file authentication
• PCI PED 3.0 approved



Maintenance and Cleaning

Your VX 805 device is a product of superior design and craftsmanship and should be treated with care. It has no user-serviceable parts. The following suggestions will help you protect your warranty coverage.

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, switch off the power, and allow the device to dry completely before replacing it.
- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device. Use only a soft, clean, dry cloth for cleaning.
- Do not paint the device. Paint can clog the moving parts and prevent proper operation.
- Keep the device free from any small, loose items (such as paper clips, staples, or coins) that could accidentally get inside it through an opening, such as the SD card reader slot or the primary smart card reader slot.
- Do not attempt to open the device other than as instructed in this guide. This device has security features that protect it from tampering. For example, if the device's outer casing is opened, file content will be deleted.

These suggestions apply equally to your VX 805 device, or any of its attachments or accessories. If your device is not working properly, take it to the nearest authorized service facility for servicing or replacement. For your safety, have this device serviced only by a VeriFone-authorized service provider.



CAUTION Never use thinner, trichloroethylene, or ketone-based solvents – they can deteriorate plastic or rubber parts.

Do not spray cleaners or other solutions directly onto the keypad or display.

Additional Safety Information

The following are additional information for your safety in using this device.

Power Adapter

Use only the power adapter that came with your device. Adapters for other electronic devices may look similar, but they may affect your device's performance or damage it.

Potentially Explosive Environments

Do not use this device in any area with a potentially explosive atmosphere, and obey all signs and instructions. Potentially explosive atmospheres include areas where you would normally be advised to turn off your vehicle engine. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Card Readers

Do not attempt to clean the card readers. Doing so can void any warranty. For card reader service, contact your VeriFone distributor or service provider.



Service and Support

For VX 805 problems, contact your local VeriFone representative or service provider.

For VX 805 product service and repair information:

- USA – VeriFone Service and Support Group, 1-800-834-4366, Monday - Friday, 8 A.M. - 8 P.M., eastern time.
- International – Contact your VeriFone representative.

Service Returns

Before returning the VX 805 to VeriFone, you must obtain a Merchandise Return Authorization (MRA) number. The following procedure describes how to return one or more VX 805 for repair or replacement (U.S. customers only).



NOTE

International customers, please contact your local VeriFone representative for assistance with your service, return, or replacement.

- 1 Gather the following information from the printed labels (see [Figure 23](#)) on the bottom of each VX 805 to be returned:
 - Product ID, including the model and part number. For example, “m280-xxx-xx” and “PTID xxxxxxxx.”
 - Serial number (S/N xxx-xxx-xxx).
- 2 Within the United States, call VeriFone toll-free at 1-800-834-4366.
- 3 Select the MRA option from the automated message. The MRA department is open Monday–Friday, 8 A.M.–8 P.M., eastern time.
- 4 Give the MRA representative the information gathered in [Step 1](#).
If the list of serial numbers is long, you can fax the list, along with the information gathered in [Step 1](#), to the MRA department at 1-727-953-4172 (U.S.).
 - Please address the fax clearly to the attention of the “VeriFone MRA Dept.”
 - Include a telephone number where you can be reached and your fax number.

- You will be issued MRA number(s) and the fax will be returned to you.



One MRA number must be issued for each VX 805 you return to VeriFone, even if you are returning several of the same model.

- 5 Describe the problem(s) and provide the shipping address where the repaired or replacement unit must be returned.
- 6 Keep a record of the following items:
 - Assigned MRA number(s).
 - VeriFone serial number assigned to the VX 805 you are returning for service or repair (serial numbers are located on the bottom of the unit (see [Figure 23](#)).
 - Shipping documentation, such as air bill numbers used to trace the shipment.
 - Model(s) returned (model numbers are located on the VeriFone label on the bottom of the VX 805).

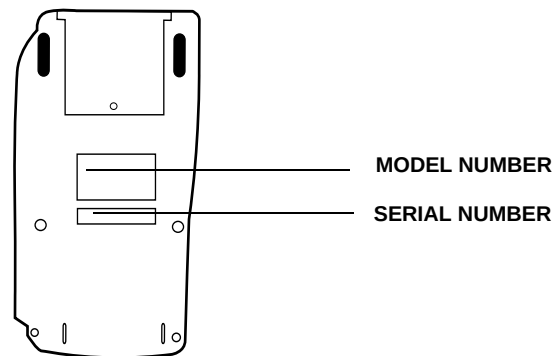


Figure 23 Information Labels on Unit Bottom

Accessories and Documentation

VeriFone produces accessories and documentation for the VX 805. When ordering, please refer to the part number in the left column.

VeriFone Online Store at www.store.verifone.com

- USA – VeriFone Customer Development Center, 1-800-834-4366, Monday - Friday, 7 A.M. - 8 P.M., eastern time
- International – Contact your VeriFone representative

Supplementary Hardware

The following part(s) come as optional accessories:

PPL280-007-01-A Privacy shield

Data Cables

The following cables can be used with the VX 805:

08361-XX-R	Connects to other VX 805 devices and other countertop terminals (Mod-10)
08374-XX-R	Connects the VX 805 to an ECR or other USB devices that support USB Type A
08870-XX-R	Connects the VX 805 to other generic RS232 supported devices

Various others, depending on what they connect to. Contact your local VeriFone representative or service provider to identify the best cable for your needs.

Power Supply

The VX 805 package includes any of the following types of power packs:

PWR282-001-01-A	DC power pack (US)
PWR282-002-01-A	DC power pack (UK)
PWR282-003-01-A	DC power pack (EU)

Troubleshooting Guidelines

This chapter lists typical examples of malfunctions that you may encounter while operating your VX 805 and the steps that you can take to resolve them.

The troubleshooting guidelines provided in the following section are included to assist successful installation and configuration of the VX 805. If you are having problems operating your VX 805, please read these troubleshooting examples. If the problem persists even after performing the outlined guidelines or if the problem is not described, contact your local VeriFone representative for assistance.

NOTE

The VX 805 comes equipped with tamper-evident labels. The VX 805 contains no user-serviceable parts. Do not, under any circumstance, attempt to disassemble the unit. Perform only those adjustments or repairs specified in this guide. For all other services, contact your local VeriFone service provider. Service conducted by parties other than authorized VeriFone representatives may void any warranty.

CAUTION

Not all units require use of a power supply.

Using an incorrectly rated power supply may damage the unit or cause it not to work properly. Before troubleshooting, ensure that the power supply used to power the unit matches the requirements specified on the back of the unit (see [Specifications](#) for detailed power supply specifications). If not, obtain the appropriately rated power supply before continuing with troubleshooting.

Blank Display

When the VX 805 display does not show correct or clearly readable information:

- Check all power and cable connections.
- If the problem persists, contact your local VeriFone service provider.

Keypad Does Not Respond

If the keypad does not respond properly:

- Check the display. If it displays the wrong character or nothing at all when you press a key, follow the steps outlined in [Transactions Fail To Process](#).
- If pressing a function key does not perform the expected action, refer to the user documentation for that application to ensure you are entering data correctly.
- If the problem persists, contact your local VeriFone representative.

Transactions Fail To Process

There are several possible reasons why the unit may not be processing transactions. Use the following steps to troubleshoot failures.

Check Magnetic Card Reader

- Perform a test transaction using one or more different magnetic stripe cards to ensure the problem is not a defective card.
- Ensure that you are swiping cards properly (see [Using the Magnetic Card Reader](#)).
- Process a transaction manually using the keypad instead of the card reader. If the manual transaction works, the problem may be a defective card reader.
- If the problem persists, contact your local VeriFone representative.

Check Smart Card Reader

- Perform a test transaction using several different smart cards to ensure the problem is not a defective card.
- Ensure that the card is inserted correctly (see [Using the Smart Card Reader](#)).
- Ensure the MSAM cards are properly inserted in the slots and are properly secured (see [Installing or Replacing MSAM Cards](#)).
- If the problem persists, contact your local VeriFone representative.

System Messages

This appendix describes two categories of error and information messages. For ease of use, these messages are grouped alphabetically in each of these two categories.

These messages include the following:

- Digital certificate displays and signature file downloaded to the terminal.
- File authentication module processes.
- File compression module use messages from the VeriCentre DMM terminal management and download tool.

Error Messages

The following error messages may appear when the VX 805 terminal is in Verix Terminal Manager.

Table 18 Error Messages

Display	Action
COMPRESSION MODULE ERROR	
** UNZIP Error n xxxxxx yyyyyy	If you are using the file compression module in DMM, information similar to what is shown above appears when an error occurs during file extraction from a downloaded ZIP archive. Note the error number and error codes (xxxxx and yyyyy) and try to download the archive again.
DEBUGGER ERRORS	
ALREADY DEBUGGING	The debugger has already been invoked.

Table 18 Error Messages

Display	Action
LOAD DBMON.OUT	The <code>DBMON.OUT</code> debugging monitor program is included in the SDK, but is not stored in the terminal memory of a factory unit. To use the debugging tool, you must sign, download, and authenticate the <code>DBMON.OUT</code> application.
DOWNLOADING ERRORS	
VERIX TERMINAL MGR DOWNLOAD Gnn TCP/IP NOT PRESENT	This error only occurs on a VX 805 terminal when downloading through TCP/IP. An application that supports the TCP stack does not exist.
VERIX TERMINAL MGR DOWNLOAD Gnn NO *ZTCP VARIABLE	This error only occurs on a VX 805 terminal when downloading through TCP/IP. An application that supports the TCP stack does not exist.
VERIX TERMINAL MGR DOWNLOAD Gnn GID: nn APP ID: nnnn STATUS: CONNECTING <error message>	The following error message may occur while connecting to a host during a modem or wireless download: • NO LINE - Your phone line is currently being used. • NO DIAL TONE - Your phone line has no dial tone. • NO CARRIER - The terminal could not establish a connection with the host. • LOST CARRIER - The carrier was lost during connection. • BUSY - The host is currently busy. • NO ENQ FROM HOST - The host did not send an ENQ (Enquiry).

Table 18 Error Messages

Display	Action
VERIX TERMINAL MGR DOWNLOAD Gnn GID: nn APP ID: nnnn STATUS: DOWNLOADING <error message>	The following error message may occur while connecting to a host during a modem or wireless download: • BAD RX COMM - The terminal received too many bad packets. • BAD TX COMM - The host received too many bad packets. • LOST CARRIER - The carrier was lost during download. • NO RESP FROM HOST - The terminal timed out waiting for a packet from the host.
EDIT PARAMETERS ERROR	
GID nn: NOT EMPTY <parm name> NOT FOUND CANCEL F3 ADD VARIABLE F4	You entered an invalid parameter name. Select CANCEL F3 to go back to the parameter editor or ADD VARIABLE F4 to add the entered parameter name as a new variable.
PASSWORD ERRORS	
VERIX TERMINAL MGR PASSWORD Gnn PLEASE TRY AGAIN	You entered an invalid GID password. Press  or  and enter a valid password.
VERIX TERMINAL MGR PASSWORD ERROR: PASSWORD MUST BE 5 TO 10 CHARACTERS	When changing passwords, this screen appears when you enter an invalid new password length. Press  or  and enter a password with the appropriate length of five to ten characters.
PRINTER DIAGNOSTICS ERRORS	
PRINTER ID P VERSION 0PRED1A1 STATUS 22 NO PAPER TEST F3 PAPER FEED F4	NO PAPER is displayed when you select TEST F3 or PAPER FEED F4 and there is no paper installed in the printer.

Table 18 Error Messages

Display	Action
PRINTER ID P VERSION 0PRED1A1 STATUS 22 PRINTER BUSY TEST F3 PAPER FEED F4	When you select TEST F3 or PAPER FEED F4 from the printer diagnostics screen, terminal manager first checks if the printer is currently active. If it is, PRINTER BUSY is displayed.
REMOTE DIAGNOSTICS ERROR	
LOAD TERMINAL MANAGEMENT AGENT	The (optional) Terminal Management Agent (TMA) software is not resident in the VX 805 terminal. The TMA software is required to perform remote diagnostics. For more information about support for remote diagnostics, contact your VeriFone service provider.
SMART CARD DIAGNOSTICS ERRORS	
TEST NOT SUPPORTED	This message appears if the terminal does not support ICC devices. Therefore, a SAM card diagnostics session cannot be performed. Press any key to go back to the main menu.
SAM nn POWER UP: FAILED	This screen is displayed when there is no SAM card inserted in the selected slot.
NO SYNC DRIVERS INSTALLED	This screen is displayed if sync drivers are not installed in the terminal. Therefore, a sync drivers test cannot be performed. Press any key to go back to the smart card diagnostics screen.

Table 18 Error Messages

Display	Action
STARTUP ERRORS	
DOWNLOAD NEEDED <error message>	The following error messages may occur if a defect is found on the *GO variable. *GO is a variable in the CONFIG.SYS file and is the first thing that runs on startup if available. • NO *GO VARIABLE - There is no *GO environment variable in the group one CONFIG.SYS file. • *GO NOT FOUND - The *GO variable is set but the executable file is missing. • *GO NOT AUTHENTICATED - The *GO variable is set but the executable file is not authenticated. • NOT ENOUGH MEMORY - The *GO variable is set but there is not enough memory to execute the file. • INVALID *GO VARIABLE - This is the default error condition. The system could not run the *GO variable even though it is set, authenticated, and enough memory is available to execute the file.
FLASH CHKSUM ER Gnn	A corrupt file is detected in the flash file system during terminal start up, after power on, or during restart. This message may indicate a hardware problem; the error condition may be resolved through another download of the file.
RAM CHKSUM ERROR Gnn	A corrupt file is detected in the RAM file system at terminal start up, after power-on, or during restart. This message may indicate a hardware problem; the error condition may be resolved through another download of the file.
VERIFYING FILES COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *FAILED*	This message appears on screen when the file authentication module fails to authenticate a new signature file. *FAILED* appears for five seconds and the terminal beeps three times to draw attention to the filename of the certificate that could not be authenticated. This message remains on screen until all new signature files are checked. New digital certificates are always checked first, followed by new signature files, in an uninterrupted process.

Table 18 Error Messages

Display	Action
VERIFYING FILES CHECK CERTIFICATE FILENAME.CRT *FAILED*	This message appears on screen when the file authentication module fails to authenticate a new digital certificate. *FAILED* is displayed for five seconds and the terminal beeps three times to draw attention to the filename of the certificate that could not be authenticated. This message remains on screen until all new certificates are checked, one by one. In special cases where system certificates are being installed, SYSTEM CERTIFICATE is displayed instead of CHECK CERTIFICATE.

Information Messages

The following information messages may appear when the VX 805 terminal is in terminal manager.

Table 19 Information Messages

Display	Action
DOWNLOADING INFORMATION	
VERIX TERMINAL MGR UPLOAD I:CONFIG.SYS **** _____ UPLOADING NOW	During a back-to-back download session, this screen appears on the Gold terminal indicating that an application is being uploaded to the Target terminal.
VERIX TERMINAL MGR DOWNLOAD Gnn **** _____ DOWNLOADING NOW	During a back-to-back download session, this screen appears on the Target terminal indicating that an application is being downloaded from the Gold terminal.
VERIX TERMINAL MGR DOWNLOAD Gnn GID: nn APP ID: nnnn STATUS: DOWNLOADING *** _____	An application is being downloaded to a <i>receiving</i> VX 805 terminal from a host PC via telephone. The terminal displays a series of asterisks (*) to indicate the progress of the download (each asterisk represents 10% of the download). When ten asterisks appear, the data transfer is complete.

Table 19 Information Messages

Display	Action
VERIX TERMINAL MGR DOWNLOAD Gnn UNIT RECEIVE MODE *** _____	An application is being downloaded to a <i>receiving</i> VX 805 terminal from a host PC directly over a serial cable. The terminal displays a series of asterisks (*) to indicate the progress of the download (each asterisk represents 10% of the download). When ten asterisks appear, the data transfer is complete.
VERIX TERMINAL MGR DOWNLOAD Gnn UNIT RECEIVE MODE WAITING FOR DOWNLOAD	This screen indicates that the terminal is ready for download and is waiting for a response from the host.

Table 19 Information Messages

Display	Action
ERROR LOG	
VERIX TERMINAL MGR ERR LOG TYPE 1 TASK 2 TIME 060302201212 CPSR 40000010 PC 00000004 LR 70448B23 ADDR 27FFFFFFF9	The following information helps developers interpret the cause of the most recent unrecoverable software error that occurred on the terminal: This first screen displays the following: • TYPE (error type), where the error type code is: • 1 = Data abort: attempt to access data at an invalid address. • 2 = Program abort: attempt to execute code at an invalid address. • 3 = Undefined abort: attempt to execute an illegal instruction. • TASK (task number): indicates type of task that was currently executed: • 1 = Verix Terminal Manager • 2 = First user task • TIME (time of crash): clock time of the error in the format <i>YYMMDDhhmmss</i>, where <i>YY</i> = year, <i>MM</i> = month, <i>DD</i> = day, <i>hh</i> = hour, <i>mm</i> = minute, and <i>ss</i> = second. • CPSR (Current Program Status Register): contains the processor and state condition code. • PC (Program Counter): holds the execution address. • LR (Link Register): holds the return address of the function call. Note: LR may not always contain the current return address. • ADDR (fault address): contains the illegal address that the application was trying to access. If you report a system error to VeriFone, you may be asked to provide the information displayed on this screen. For detailed information about the error log function and the terms listed above, please refer to the <i>Verix V Programmers Manual</i> (VPN 23230).

Table 19 Information Messages

Display	Action
INTERNAL PIN PAD DIAGNOSTICS INFORMATION	
INTERNAL PIN PAD MEMORY TEST PASSED IPP8 EMUL01A 07/05 OD SN: 246021114A009999 BAUD: 1200 RESET F3 MODE: VISA EXIT F4	After an internal PIN pad diagnostic session, the firmware version and download date, IPP serial number, baud rate, and mode are displayed.
KEYBOARD DIAGNOSTICS INFORMATION	
VERIX TERMINAL MGR KBD TEST KEYCODE nn	This screen displays the hexadecimal ASCII keycode for each key you press during a keyboard diagnostics session. The value displayed corresponds to the actual key pressed. Other values assigned to keys are software dependent.
MAGNETIC CARD DIAGNOSTICS INFORMATION	
VERIX TERMINAL MGR TRK 1:VALID DATA TRK 2:VALID DATA TRK 3:VALID DATA	When you invoke a local terminal manager diagnostic test of the magnetic stripe card reader, status information appears for the data tracks (TRK1, TRK2, and TRK3) on the card. A successful test displays VALID DATA for each track that reads valid data. An error generates one of the following error messages for each track with an error: • NO DATA • NO START • NO END • LRC ERR • PARITY ERR • REVERSE END For more information about magnetic card error messages, refer to the <i>Verix V Operating System Programmers Manual</i> (VPN 23230).
MEMORY INFORMATION	
MEMORY USAGE RAM FILES nnnn INUSE nnnn AVAIL nnnn FLASH FILES nnnn INUSE nnnn AVAIL nnnn	This screen displays how much RAM and flash memory is used and how much is available. • INUSE - Closest estimate of used memory (in KB). • AVAIL - Lowest number of free memory (in KB).

Table 19 Information Messages

Display	Action
RAM DIRECTORY Gnn <filename> 36 MM/DD/YY - <filename> 36 MM/DD/YY - <filename> 36 MM/DD/YY - PRINT	The following screens display the contents of the RAM and flash directories. If there are no files inside a RAM or flash directory, <EMPTY> is displayed.
FLASH DIRECTORY Gnn <filename> 36 MM/DD/YY - <filename> 36 MM/DD/YY - <filename> 36 MM/DD/YY - PRINT	
ALL RAM AND FLASH CLEARED	
ALL RAM AND FLASH CLEAR COALESCING FLASH	This screen indicates that all RAM and flash data within all GIDs is deleted and the flash memory is being merged.
PASSWORD INFORMATION	
VERIX TERMINAL MGR PASSWORD Gnn PASSWORD CHANGED	This message confirms that you have successfully changed a GID password or the system password.

Table 19 Information Messages

Display	Action
PRINTER DIAGNOSTICS INFORMATION	
PRINTER ID P VERSION 0PRED1A1 STATUS 22 TEST F3 PAPER FEED F4	This screen displays the printer ID, firmware version, and the printer status appear. See the <i>Verix V Operating System Programmers Manual</i> (VPN 23230) for specifics on application development and the internal thermal printer.
PRINTER ID P VERSION 0PRED1A1 STATUS 22 NO PAPER TEST F3 PAPER FEED F4	NO PAPER is displayed when you select TEST F3 and there is no paper installed in the printer.
SMART CARD DIAGNOSTICS INFORMATION	
VOYAGER VER 02000007 DRV VER 070125165914 PHILIP VER 2.0 6/06 SMART CARD TEST F3 LIST SYNC DRIVERS F4	This screen displays system and driver information and the number of SAM card slots available.
CUSTOMER CARD POWER UP: PASSED GET ATR: PASSED READ TEST: PASSED WRITE TEST: PASSED READ VERIFY TEST: PASS ALL TESTS: PASSED	When a SAM card is tested, the following information is displayed.

Table 19 Information Messages

Display	Action
STARTUP INFORMATION	
VERIFONE VX 520 QT00E20B 12/22/2009 Verix *DEFAULT CERTIFICATE* COPYRIGHT 1997-2009 VERIFONE ALL RIGHTS RESERVED	At startup, the terminal displays a copyright notice screen that shows the terminal model number, the OS version of the VX 805 stored in the terminal's flash memory, the date the firmware was loaded into the terminal, and the copyright notice. This screen appears for three seconds, during which time you can enter Verix Terminal Manager by simultaneously pressing F2 and F4. You can extend the display period of this screen by pressing any key during the initial three seconds. Each keypress extends the display period an additional three seconds.
VERIFONE VX 520 QT00E20B 12/22/2009 Verix COPYRIGHT 1997-2009 VERIFONE ALL RIGHTS RESERVED	If some other certificate is loaded by a reseller (e.g., bank), the fourth line on the startup screen is left blank.
VERIFONE VX 520 QT00E20B 12/22/2009 Verix ** T A M P E R ** COPYRIGHT 1997-2009 VERIFONE ALL RIGHTS RESERVED	If an attempt to break into the terminal's system has been made, the message ** T A M P E R ** is displayed in place of the certificate on the startup screen. The terminal will remain in this state until the condition has been remedied.
VERIFYING FILES COMPARE SIGNATURE FILENAME.P7S FILENAME.OUT *AUTHENTIC*	This message appears on screen when the file authentication module successfully authenticates a new signature file. *AUTHENTIC* appears for five seconds and the terminal beeps three times to draw attention to the filename of the certificate that could not be authenticated. This message remains on screen until all new signature files are checked. New digital certificates are always checked first, followed by new signature files, in an uninterrupted process.

Table 19 Information Messages

Display	Action
VERIFYING FILES CHECK CERTIFICATE FILENAME.CRT *AUTHENTIC*	This message appears on screen when the file authentication module successfully authenticates a new digital certificate. *AUTHENTIC* is displayed for five seconds and the terminal beeps three times to draw attention to the filename of the certificate that could not be authenticated. This message remains on screen until all new certificates are checked, one by one. In special cases where system certificates are being installed, SYSTEM CERTIFICATE is displayed instead of CHECK CERTIFICATE.
TERMINAL INFORMATION	
VERIX TERMINAL MGR TERM INFO SERNO 711-656-340 PTID 12000000 PART M251553306AP1 REV 1 OS VER QA000819 ↓	The following screens show configuration information specific to your terminal: • SER NO - serial number • PTID - permanent terminal identification number • PART - terminal part number • REV - terminal hardware version number • OS VER - operating system version
VERIX TERMINAL MGR TERM INFO MODL 05150 CTRY GEN KEYPAD 0 DISPLAY 128064 MAG RDR 3 PRINTER 1 ↑ ↓	• MODL - model number • CTRY - country of manufacture • KEYPAD - keypad type (0 = Telco, 1 = calculator, 2 = Singapore, 6 = EBS100) • DISPLAY - display unit type • MAG RDR - magnetic stripe card reader type • PRINTER - shows if a thermal printer is integrated with the terminal (0 = No, 1 = Yes)
VERIX TERMINAL MGR TERM INFO PINPAD 1 LIFE 7195425 RSET 070208170926 RCNT 6658 TAMPER DETECTED N ↑ ↓	• PINPAD - whether or not a PIN Pad device is integrated into the terminal (0 = No, 1 = Yes) • LIFE - number of seconds the terminal has run • RSET - last reset date and time, in YYMMDDHHMMSS format (YY = year, MM = month, DD = day, HH = hour, MM = minute, and SS = second) • RCNT - number of times the terminal has been reset either through application control, a terminal manager request, or a power cycle • TAMPER DETECTED - indicates whether the terminal has been tampered (N = No, Y = Yes)

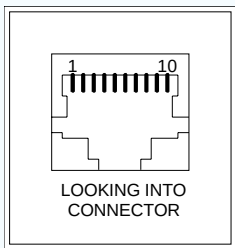
Table 19 Information Messages

Display	Action
VERIX TERMINAL MGR TERM INFO MDM TYPE 22 VER B305xx00yy00zz00 MODEM CTRY 89 I1 042 I3 CX81802-V32 ↑ ↓	• MDM TYPE - determines the modem type (0 = none, 4 = 14.4 modem, 22 = modem/ethernet combo) • VER - shows the modem firmware patch (B3 = Banshee modem, 05xx = firmware patch version, yy = country profile code, zz = country profile major version) • MODEM CTRY - shows 12-bytes of factory-deefined country variant data • I1 - shows the modem firmware version • I3 - shows the modem manufacturer's hardware version
VERIX TERMINAL MGR TERM INFO CERT 234000 HEAP 772 STACK 1700 NEXT CERT F3 ↑	• CERT - shows the first certificate • HEAP - displays the memory designation used by the OS • STACK - shows the memory set aside for the OS stack. This is where the terminal stores data for running tasks like all the parameters from the call Select NEXT CERT F3 to view other certificates.

Port Pinouts

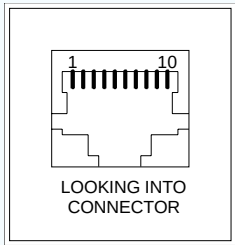
The tables in this appendix list pinouts for the VX 805 terminals.

PIN Pad Serial Port

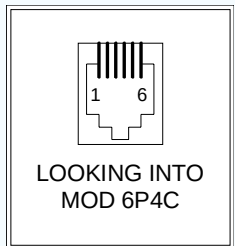
Connector	PIN	Function	Description
	1	NC	No connection
	2	VPINpad	+9V DC regulated power ^a
	3	NC	No connection
	4	NC	No connection
	5	GND	Power ground
	6	/RXD	Receive data
	7	/TXD	Transmit data
	8	NC	No connection
	9	NC	No connection
	10	NC	No connection

a. Maximum 450 mA.

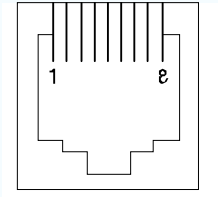
RS-232 Port

Connector	PIN	Function	Description
	1	NC	No connection
	2		9V
	3	NC	No connection
	4	NC	No connection
	5	GND	Power ground
	6	/RXD	Receive data
	7	/TXD	Transmit data
	8	CTS	Clear to send
	9	RTS	Request to send
	10	NC	No connection

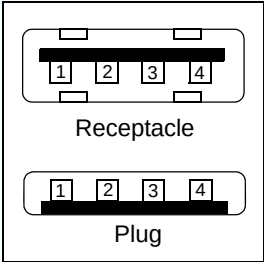
Telco Port

Connector	PIN	Function	Description
	1	NC	No connection
	2	NC	No connection
	3	Tip	Telephone line
	4	Ring	Telephone line
	5	NC	No connection
	6	NC	No connection

Ethernet Port

Connector	PIN	Function	Description
	1	TXD+	Transmit data +
	2	TXD-	Transmit data -
	3	RXD+	Receive data +
	4	NC	No connection
	5	NC	No connection
	6	RXD-	Receive data -
	7	NC	No connection
	8	NC	No connection

USB Pinout

Connector	PIN	Function	Description
	1	USB_5V_EXT	5V USB Power (200mA)
	2	nUSB_DEVICE	USB Device Signal -
	3	pUSB_DEVICE	USB Device Signal +
	4	GND	USB Ground

DC Input Jack
Polarity





APPENDIX C

ASCII Table

ASCII Values The following section shows the ASCII table for the VX 805 display.

Table 20 VX 805 Display ASCII Table

Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII
0	00	NUL	32	20	SP	64	40	@	96	60	'
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	\$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	'	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	DEL

Keypress Scan Codes

Keypress Scan Codes Table

The following section shows the Keypad Scan Code table for the VX 805.

Table 21 Keypress Scan Codes

Key	Scan Code	Notes
1	0xB1	'1' with high order bit set
2	0xB2	'2' with high order bit set
3	0xB3	'3' with high order bit set
4	0xB4	'4' with high order bit set
5	0xB5	'5' with high order bit set
6	0xB6	'6' with high order bit set
7	0xB7	'7' with high order bit set
8	0xB8	'8' with high order bit set
9	0xB9	'9' with high order bit set
*	0xAA	'*' with high order bit set
0	0xB0	'0' with high order bit set
#	0xA3	'#' with high order bit set
CANCEL	0x9B	ESC with high order bit set
BKSP	0x88	BS with high order bit set
BKSP (long key press)	0x8E	SO with high order bit set
ALPHA	0x8F	SI with high order bit set
ENTER	0x8D	CR with high order bit set
F1	0xFA	'z' with high order bit set
F2	0xFB	'{' with high order bit set
F3	0xFC	' ' with high order bit set
F4	0xFD	'}' with high order bit set
F5	0xEF	Vx670 only, 'o' with high order bit set
PF1	0xE1	'a' with high order bit set
PF2	0xE2	'b' with high order bit set
PF3	0xE3	'c' with high order bit set
PF4	0xE4	'd' with high order bit set

Dual Keypress When certain pairs of keys are pressed, the console driver detects it and returns a combined scan code. There are two restrictions to this event:

- One of the pair of keys must be from column three of the physical keypad above (control chars: d, cancel, bksp, clear, enter), otherwise the first key scanned of the pair is returned as a single key.
- The second key must be a numeric key ('0' -'9'). Scan codes for control characters and any other key are undefined.

Dual keypresses are debounced for the same period as single keys (2 scans in a row) and do not auto repeat. The scan codes returned for dual keypresses are shown in the table below:

Table 22 Dual Keypress Scan Code

Key Pair	Scan Code
'd' + '0'..'9'	0xd0..0xd9
Cancel + '0'..'9'	0xc0..0xc9
Bksp/Clear + '0'..'9'	0xa0..0xa9
Alpha + '0'..'9'	0xf0..0xf9
Enter + '0'..'9'	0xe0..0xe9



Some dual keypresses return codes overlap with the normal single keypress return codes. Specifically, dual keypress ENTER-1 through ENTER-4 overlap with single keypress 'a' through 'd', and CLEAR-3 overlaps with the single '#' keypress.

The special keypairs F2-F4 and Enter-7 are used to enter Verix Terminal Manager. These are the only dual keypresses that do not follow the two restrictions outlined in this section.

Auto-repeating Keys If you hold down a key, after a short debounce the console posts an `EVT_KBD` event and passes the key's return code to the keybuffer. If the user continues to hold the key for another 750 msec, then auto-repeat begins. At this point, another event and key code are returned to the application. After this initial repeat, if the same key is still held, the event and key code returns every 100 msec that the key is being held.



Dual keypresses do not auto-repeat.

When you hold down the BACKSPACE key, it changes from 0x88 to 0x8E and does not autorepeat.



Access Code A code number dialed to gain access to a telephone line, such as dialing the number 9 to reach an outside line.

Application ID An alphanumeric code that identifies an application program downloaded to a terminal from a download computer. For ZonTalk 2000 application downloads, the application ID is stored in the `CONFIG.SYS` record which begins with the *ZA key. A VX 805 application ID can be up to 21 characters long. For VeriCentre Download Management Module, the application ID, as well as other `CONFIG.SYS` variables, may differ from those used for ZonTalk 2000.

Application program The ordered set of programmed instructions by which a computer performs an intended task or series of tasks.

Application prompt The information shown on the terminal's display panel when power is applied to the terminal, assuming that an application program has already been downloaded into the terminal's memory and authenticated by the file authentication module. The application prompt often contains a graphical logo, and date and time, but it can consist of anything the programmer chooses for that purpose.

ASCII Abbreviation for *American Standard Code for Information Interchange*. A 7-bit code (with no parity bit) that provides a total of 128 bit patterns (see [ASCII Table](#)). ASCII codes are widely used for information interchange in data processing and communication systems.

Back-to-back application download The process of copying the contents of one terminal's application memory to another terminal's application memory. A terminal-to-terminal application upload requires that the sending and receiving terminal be connected to each other by a serial cable. The same operation as a *terminal-to-terminal* application upload.

Baud The number of times per second that a system, especially a data transmission channel,

changes state. The state of a system may represent a bit, digit, or symbol. For a POS terminal, the baud rate indicates the number of bits per second that are transmitted or received by the terminal's serial ports or modem.

Bit Short for *binary digit*. Either of the two digits 0 and 1 in the binary number system. Also, a unit of information equal to one binary decision. The bit is the smallest unit of storage and hence of information in any binary system within a computer.

Block A collection of data units such as words, characters, or records (generally more than a single word) that are stored in adjacent physical positions in memory or on a peripheral storage device. A block can therefore be treated as a single unit for reading, writing, and other data communication operations.

Boot loader Also called a *bootloader* or *bootstrap loader*. A short program, stored in flash, that allows the terminal to continue operating during an operating system download procedure, until the new operating system is downloaded into terminal memory.

Buffer A temporary memory area for data, normally used to accommodate the difference in the rate at which two devices can handle data during a transfer.

Byte A term developed to indicate a measurable number of consecutive binary digits that are usually operated on as a unit. For the VX 805, a byte consists of eight bits. See also [Bit](#).

Calendar/clock chip A real-time clock inside the VX 805 terminal which keeps track of the current date and time.

Card reader Also called *magnetic stripe card reader*. The slot on the right side of the VX 805 terminal that automatically reads data stored in the magnetic stripe on the back of a specially-encoded card when you swipe the card through the slot.

Carrier Usually, an analog signal that is selected to match the characteristics of a particular transmission system. The carrier signal on a phone line is modulated with frequency or amplitude variations to allow a terminal to transmit or receive data using a modem. A carrier signal transmits data from a host computer to a VX 805 terminal over an analog telephone line.

Certificate Also called a *digital certificate*. A digital document or file that attests to the binding of a public key to an individual or entity, and that allows verification that a specific public key does in fact belong to a specific individual.

Character An element of a given character set. The smallest unit of information in a record. A letter, numeral, or other symbol to express information.

CONFIG.SYS file A special keyed file that is stored in terminal memory and which contains system and application configuration parameters. Each record in a `CONFIG.SYS` file is identified by an alphanumeric search key. In the VX 805 file system, there is one password-protected `CONFIG.SYS` file per file group (Groups 1–15). You can modify `CONFIG.SYS` records using the keyed file editor. See [Keyed file editor](#).

CPU Abbreviation for *central processing unit*. The principal operating part of a computer system that controls the interpretation and execution of instructions stored in memory.

Data Information prepared, often in a particular format, for a specific purpose. Data is to be distinguished from applications or program instructions. In the VX 805 terminal, application files and data files can be stored in RAM or flash memory.

Data entry The process of using a keyboard, card reader, or other device to input data directly into a system.

Data packet A group of bits of fixed maximum size and well-defined format that is switched and transmitted as a composite whole through a packet switching network. Any message that exceeds the maximum size is partitioned and carried as several packets. Data packets are formed by the controller in the sending data terminal and the data is extracted and reassembled by the controller at the receiving end.

Dedicated line A leased or private telephone line that is used for a particular communications purpose, such as to connect a VX 805 terminal to a host computer. See [Leased line](#).

Default A value, parameter, option, or attribute that is assigned by the program or system when another has not been assigned by the user.

Delete To remove a record, field, or item of data.

Diagnostics Techniques employed for detection and isolation of malfunctions and errors in programs, systems, and devices. In a diagnostic test, a program or routine is run to detect failures or potential failures. These tests and routines help detect and isolate problems in a terminal or peripheral device.

Dial-up line A standard public telephone line. The switching equipment on a dial-up line requires that one party dial the other party before a connection can be made.

Direct download The process of transferring files and/or data from a download computer to a terminal over a serial cable connection and in a local, as opposed to a remote, system environment.

Display The backlit LCD screen on the VX 805 terminal that shows numerals, letters, and punctuation symbols in selected fonts, graphics in various formats, information entered from the keypad, as well as system prompts and messages.

Download To transfer files or data from a host computer or sending terminal over a communication link to a receiving terminal.

DTMF *Dual-tone multi-frequency*. The tones used on a touch-tone telephone.

File authentication A process through which one proves and verifies the origin of a file, the identity of the sender, and the integrity of the information it contains.

Firmware System software, including the operating system, boot loader, default display font, and system messages, stored in terminal flash memory.

Fixed prompt A system prompt or message stored as part of system firmware in terminal memory. Fixed prompts appear on the terminal display to alert the user to specific system occurrences or malfunctions, and to prompt the user to enter specific information or select options.

Flash memory An area of non-volatile memory where files can be stored. The VX 805 also has a RAM-based file system. Files can be stored in RAM (drive `I :`) or in flash (drive `F :`) memory area of any file group (Groups 1–15).

Host computer Also called a *download* computer. The primary or controlling computer in a multiple computer operation. Also, a computer used to prepare programs for download to POS terminals. Host computers are also used to process transactions that originate from a distributed network of POS terminals.

Input The process of entering data into a processing system or a peripheral device such as a terminal, or the data that is entered.

Interface A common boundary between two systems, devices, or programs. Also, to interact with a device.

Keyed file character set A limited set of 96 ASCII characters, from 00h to 5Fh (or 0 to 95 decimal), that is used by the VX 805 keyed file editor. Although an application program can download all 95 characters in this set, you can only enter 50 of these characters from the terminal keypad: 0–9, A–Z, and 14 special characters.

Keyed file editor A keyed file editor lets you create new records or modify existing records stored in a keyed file such as `CONFIG.SYS`. See [CONFIG.SYS file](#).

Keyed file record ASCII data, or variables, stored in the terminal's `CONFIG.SYS` file(s). A keyed file record consist of two parts: a search key that identifies the record, and the data or variable stored in the record. See [CONFIG.SYS file](#).

Keypad A small keyboard or section of a keyboard containing a smaller number of keys, generally those used in simple calculators. The 16-key core keypad of the VX 805 terminal is used to enter data and perform operations.

Leased line A private telephone line leased from the phone company. See [Dedicated line](#).

Line cord A telephone-type cord with modular plugs on each end to connect the terminal to a dial-up telephone line.

Local functions Operations performed at the terminal only and not in interaction with a host computer. For the VX 805, local functions such as internal diagnostics are performed in terminal manager. See [Chapter 4, Verix Terminal Manager](#).

Manual transaction A transaction involving the manual entry of account information from the terminal keypad instead of automatic entry of the information from a reading device, such as a magnetic stripe card reader.

Memory A device or medium that can retain information for subsequent retrieval. The term is most frequently used to refer to the internal storage of a computer (or a terminal) that can be directly addressed by operating instructions. In the VX 805, files can be stored in battery-backed RAM or in non-volatile flash memory.

Messages Words and symbols appearing on the display screen which inform the user of the terminal of the result of a process, or if an error has occurred. The term “prompt” is used when the displayed message is requesting the user to enter information or to select an option.

Modem *Modulator/demodulator*. A device that converts a digital bit stream into an analog signal to transmit over an analog communication channel (modulation), and converts incoming analog signals into digital signals (demodulation). The VX 805 terminal's internal modem allows communication with a host computer over a dial-up telephone line.

Non-volatile memory A memory or storage medium that retains data in the absence of power so that the data is available when power is restored. For the VX 805, application files and data files can be stored in battery-backed RAM or non-volatile flash memory, according to the requirements of the application.

Normal Mode The operating mode for normal transaction processing. The main application (downloaded and authenticated) starts and displays an application prompt, indicating that the terminal is in normal mode. In this mode, the terminal is ready to process transactions. See [Chapter 4, Verix Terminal Manager](#).

Packet A group of bits of fixed maximum size and well-defined format that is switched and transmitted as a composite whole through a packet switching network. Any message that exceeds the maximum size is partitioned and carried as several packets.

Packet-switched networks Networks of computers or computing devices in which communication resources are allocated dynamically on a variety of levels to multiple communicating entities. Messages between entities are partitioned into segments, or packets, with a fixed maximum size.

Parameter A variable that is usually assigned a constant value for a specific subroutine, procedure, or function. Parameters stored in terminal memory or in the `CONFIG.SYS` file(s), enable a host or download computer to identify to terminal configuration.

Password A group of characters that identify a user to the system so that they can gain access to the system or part of that system. Passwords are used to ensure the security of computer systems by regulating the amount of access freedom. The password used to enter terminal manager is called the *Verix Terminal Manager password*. In the VX 805 file system, each file group (Groups 1–15) also has its own password.

PC Abbreviation for personal computer. Usually, PC refers to an IBM-compatible personal computer.

Peripheral device In a computer system, any equipment that provides the processing unit with outside communication. Typical peripheral devices for a POS terminal include PIN Pads and check readers.

Port An opening or connection that provides electrical or physical access to a system or circuit. Also, a connection point with associated control circuitry that allows I/O devices to be connected to the internal bus of a microprocessor.

POS terminal A terminal used at the *point of sale*, which is usually at a merchant site where a customer pays for goods or services received. Information concerning the sale can be entered into the terminal and transmitted to a remote host computer for verification and processing.

Power pack A unit for transforming and converting electrical power from one AC voltage level to another AC voltage level, or from AC to DC, for electronic devices.

Prompt A short message, sent from a process to a user, indicating that the process expects the user to input data. For example, a prompt appears on the terminal display asking the user to enter specific information. See [Messages](#).

Protocol An agreement that governs the procedures used to exchange information between cooperating entities. For example, protocols govern the format and timing of messages exchanged between devices in a communication system, such as between a terminal and a host computer.

PTID *Permanent terminal ID*. An optional identifier that can be permanently assigned to a VeriFone terminal at the factory, upon customer request. The PTID is an eight digit number, consisting of a two digit manufacturer's ID (12 for VeriFone), followed by a six digit terminal ID. If no PTID is assigned to the unit then, the default value 12000000 is used.

Pulse dialing A method of telephone dialing that specifies a phone number by the number of electrical pulses sent.

RAM *Random-access memory*. The type of memory in which storage locations are addressable and can therefore be accessed in any order. In the VX 805 terminal, the RAM (or SRAM) is commonly used to store applications and temporary data generated during a transaction.

The RAM is battery-backed, meaning that if power is turned off, data stored in this area of volatile memory is not lost. Application files and data can also be stored in the non-volatile flash memory system. By default, files downloaded to the terminal are stored in the RAM of the target file group(s). The RAM file system is called drive I : . See [Flash memory](#).

Remote host computer A host computer connected to a VX 805 terminal over a dial-up telephone line to download files or data, or to process transactions. The opposite of remote is *local*.

RS-232 A widely used standard interface that covers the electrical connection between data communication equipment, such as a modem, and data terminal equipment, such as a microcomputer or computer terminal. The RS-232 interface standard was developed by the EIA (Electronic Industries Association) and is essentially equivalent to the CCITT's V.24 interface.

Scroll To move all or part of the information displayed on a screen up or down, left or right, to allow new information to appear. For the VX 805, text that does not fit entirely within the display area can be scrolled to the left or right using the pound (#) and asterisk (*) keys.

Search key Also called *key*. In the VX 805, a short character string used by an application to identify a keyed file record stored in `CONFIG.SYS` file(s). For example, *ZA or *OT. A *keyed file record* consist of two parts: a search key to identify the record, and the variable data stored in the record. See also **Keyed file record** and **CONFIG.SYS file**.

Serial port A connection point through which digital information is transferred one digital bit at a time. Same as *serial interface*. The VX 805 terminal has one serial port, labeled RS-232. The main serial port on a download computer is usually assigned the device ID, COM1.

Signature file A digital file with the filename extension *.p7s generated in an industry-standard format by the VeriShield File Signing Tool. The output of the file signing tool is a signature file in an industry-standard format.

SRAM See **RAM**.

Subroutine A software routine that can be part of another routine. When a main routine calls a subroutine, program control is transferred to the subroutine. When the subroutine is completed, control reverts to the instruction in the main routine immediately following the subroutine call.

Swipe The action of sliding a magnetic stripe card

through a terminal card reader. The VX 805 card reader has a bi-directional swipe direction. The user must hold the card so that the magnetic stripe is faces in and towards the keyboard.

Verix Terminal Manager For the VX 805, terminal manager temporarily disables normal mode operations, allowing you to perform local functions such as downloads, diagnostics, and other operations that cannot be performed while the application program is running.

At startup, the terminal displays a copyright notice screen that shows the version of VX 805 system firmware stored in terminal flash memory, the date it was loaded into the terminal, and the copyright notice. This screen appears for three seconds. To enter terminal manager, simultaneously press the F2 and F4 keys during this three-second period. Pressing any other key(s) during that period resets the copyright notice screen to display an additional three seconds.

See also **Local functions** and **Normal Mode**.

Verix Terminal Manager password A unique set of characters entered by the user to access the terminal manager local functions of the terminal. A default password is supplied with each terminal. For the VX 805 terminal, the default system password is: "1, Alpha, Alpha, 66831".

To prevent unauthorized access, change the default password to a confidential password on terminal deployment. Store the new password in a safe place, as it is impossible to restore the terminal default password without sending the unit to VeriFone for service.

Telephone download The process of transferring an application program and/or data from a remote host or download computer to a terminal over a telephone line.

Telephone jack Also, telephone line wall jack. Insert a modular connector into a telephone jack or receptacle. Also, modular-type sockets for connecting telephone line cords. The VX 805 terminal has a TELCO RJ-45-type telephone jack on the back panel used for a direct connection to a telephone line wall jack.

Telephone line The standard telephone wiring connecting your phone or terminal to a local or private telephone company.

Terminal Any device capable of sending and receiving data over a data link, such as a telephone line or a RS-232 cable. Some terminals, such as the VX 805, can print receipts and display information and graphics on a screen.

Terminal ID An alphanumeric code that identifies a terminal to a download computer. In this way, the download computer can determine what data or application programs to download to that terminal. For ZonTalk 2000 downloads, the VX 805 terminal ID is stored in the *ZT record in the `CONFIG.SYS` file. This variable should not exceed 10 characters in length. Not the same as **PTID**

Terminal-to-terminal application upload The process of copying the application memory contents of one terminal to the application memory of another terminal. A terminal-to-terminal application upload requires that the terminals be connected to each other by a serial cable. See also **Back-to-back application download**.

Tone dialing Also called *touch-tone dialing*. A method of telephone dialing that uses different pitched tones to specify a phone number. See also **DTMF**.

Track 1, 2, or 3 data Information stored on tracks 1, 2, or 3 of a debit or credit card magnetic stripe, which can be read by a magnetic card reader device, such as the one that is integrated in the VX 805 terminal.

Transaction An exchange of data resulting in a transfer of goods, services, value, and/or information between two parties.

Variable A string of characters that denotes some value stored within the computer and that can be changed during execution. A variable may be internal to a program, in which case it is held in memory, or external if the program must perform an input operation to read its value. See **Parameter**.

Volatile memory A type of memory where the contents are destroyed if the power supply to the memory is interrupted. When volatile memory, such as SRAM, is used for crucial applications, it is often

back up by battery-supplied power. Compare with **Non-volatile memory**.

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